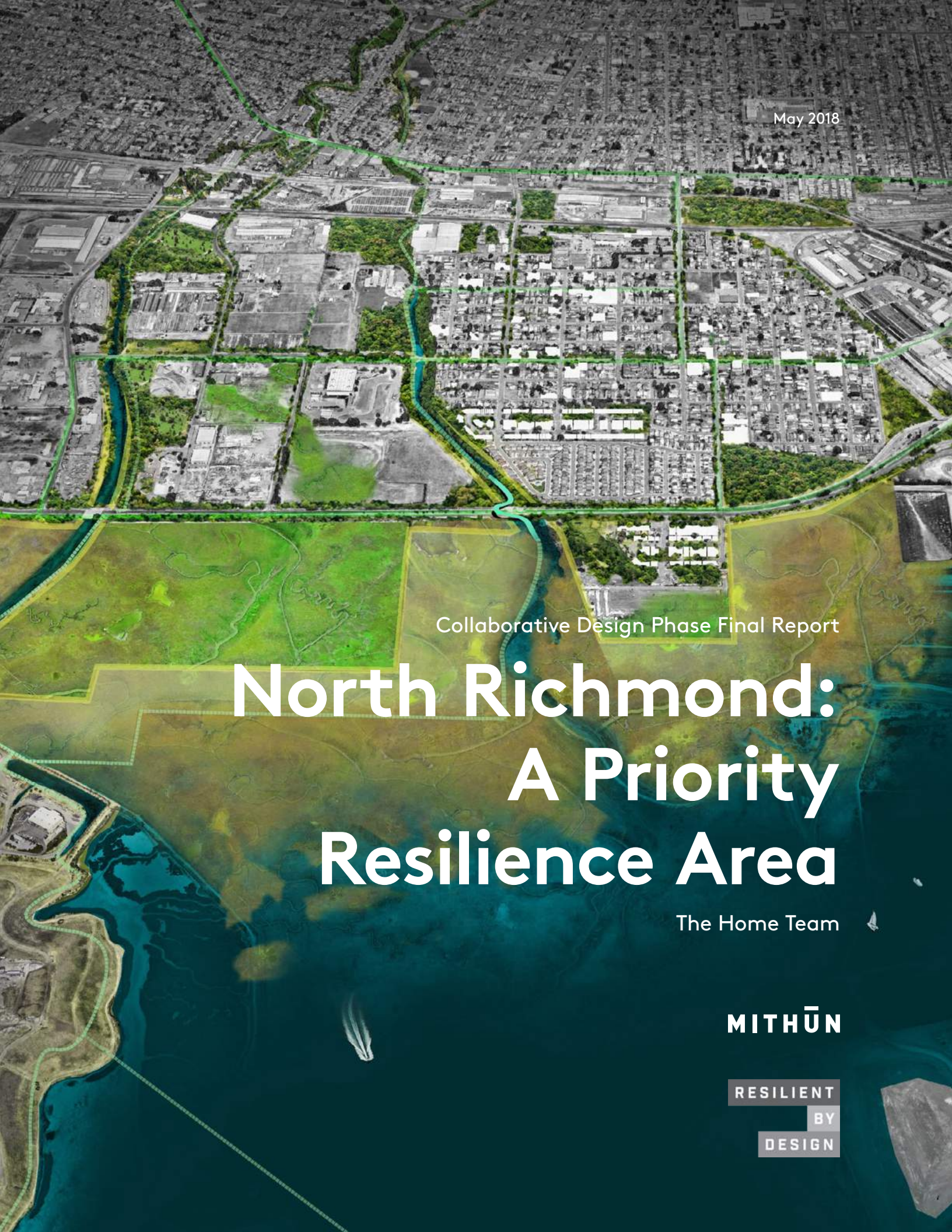


May 2018

Collaborative Design Phase Final Report

North Richmond: A Priority Resilience Area

The Home Team

MITHŪN

RESILIENT BY DESIGN

MITHŪN

Seattle
Mithun/Pier 56
1201 Alaskan Way #200
Seattle, WA 98101

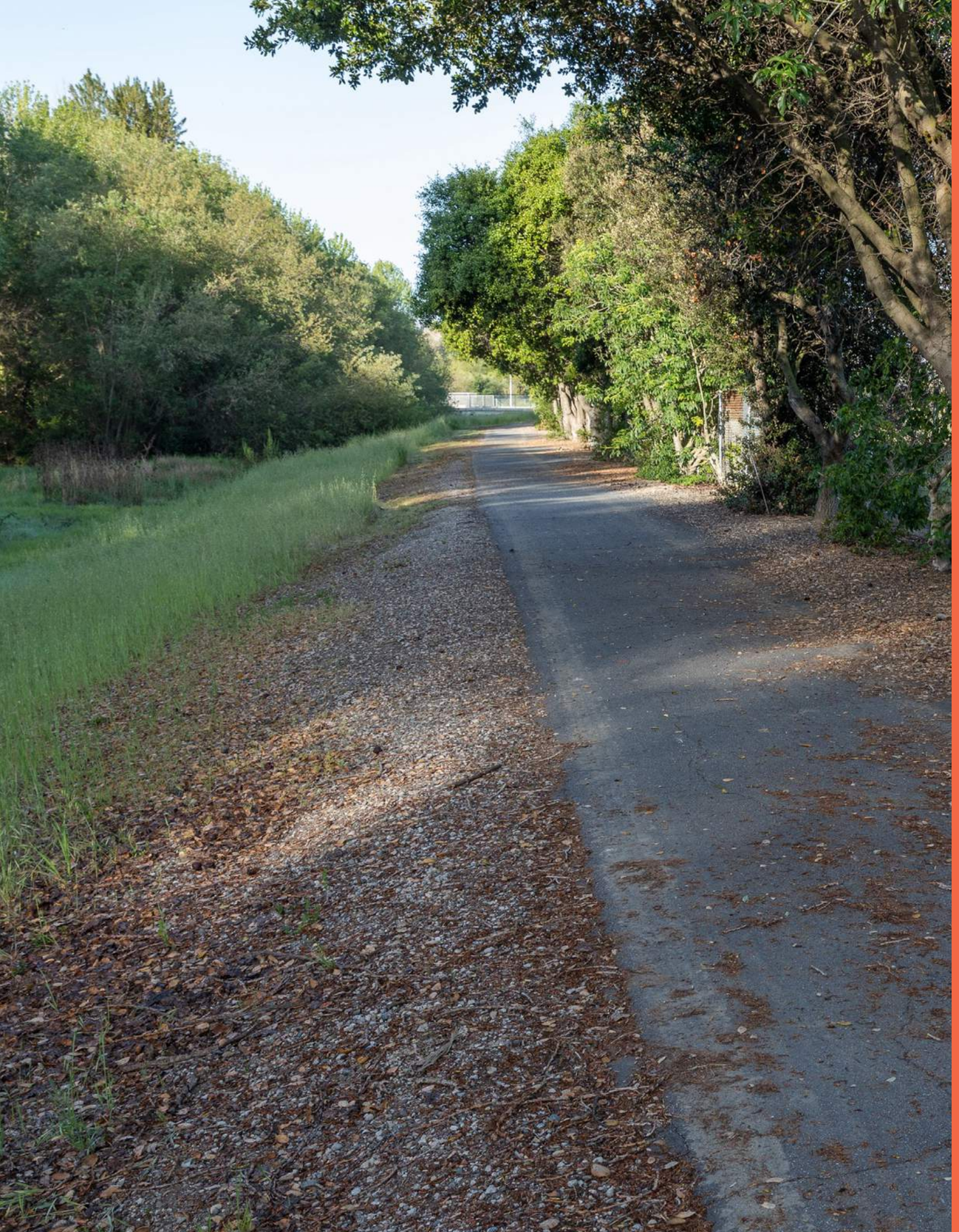
San Francisco
Mithun/Solomon
660 Market Street #300
San Francisco, CA 94104

mithun.com—

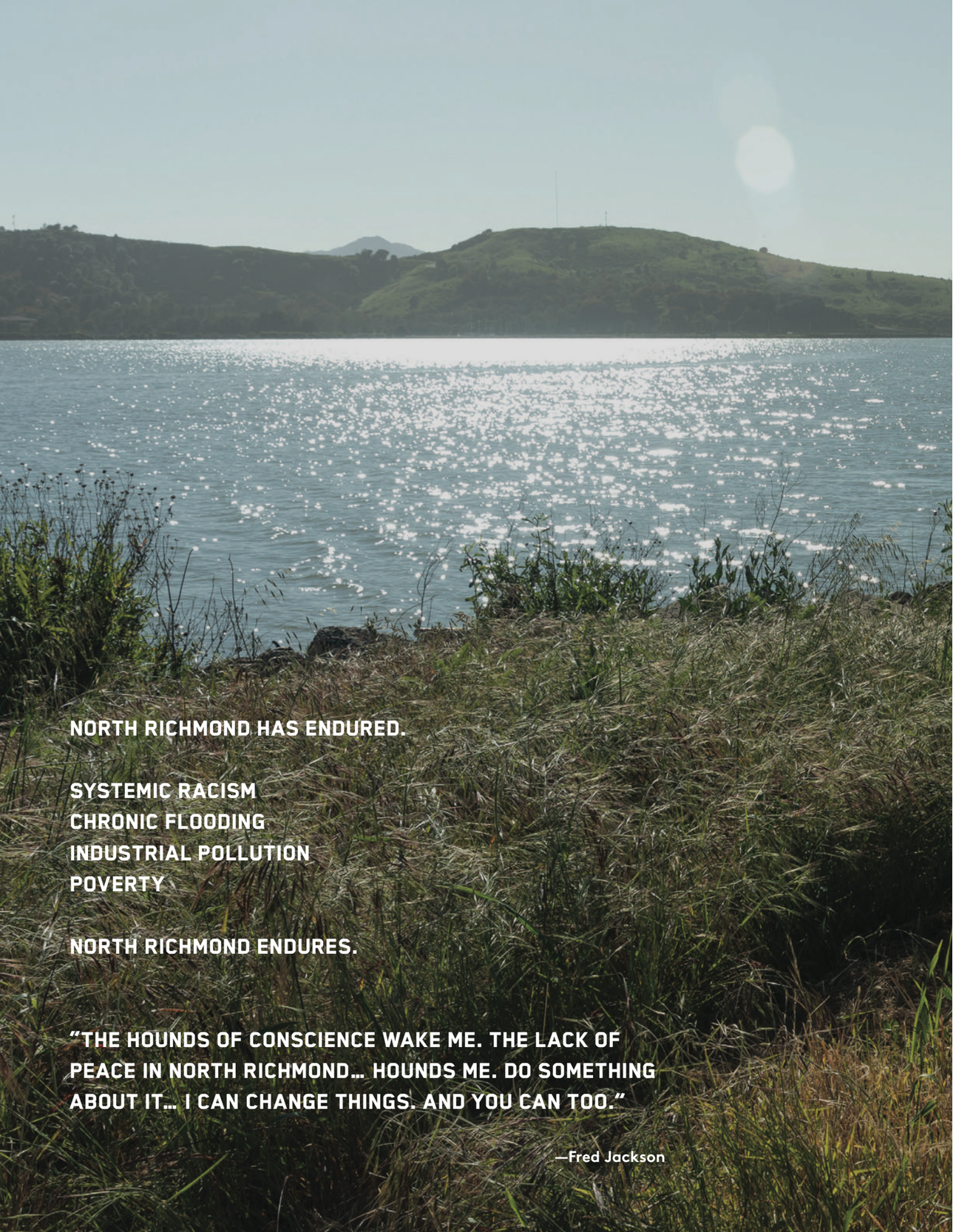
The North Richmond Community Advisory Board and the Mithun Home Team celebrate project creations that build the community capacity to adapt to climate change by linking local health and wealth building to infrastructure investments.

Contents

MITHŪN
INTEGRAL GROUP
HR&A
alta PLANNING + DESIGN
Biohabitats
Chinatown Community Development Center 華協中心
URBAN BIOFILTER
MOFFATT & NICHOL
Streetwyze I-SEED
RESILIENT DESIGN INSTITUTE



Executive Summary



Executive Summary

ouR-HOME emerges from the community’s ideas for building health, wealth and home ownership for more than 5,000 North Richmond residents—turning investments in sea level rise adaptations and aging infrastructure into opportunities for all.

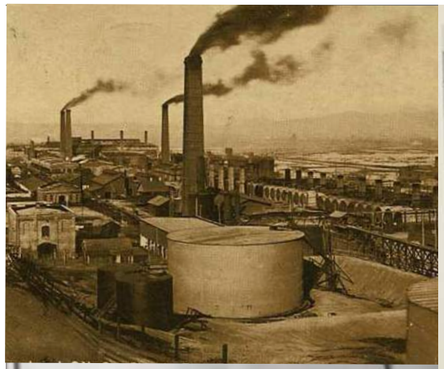
The ouR-HOME sea level rise response projects are linked to the health and financial well-being of residents that have been traditionally shut out of opportunities to build family wealth and stability–restoring opportunity while restoring ecosystems. As sea level rises in North Richmond, the pump and outfall that keeps some homes in a topographic bowl dry will be threatened. The wastewater facility serving west Contra Costa County, marsh habitat and a major vehicular arterial, Richmond Parkway, are also at risk.

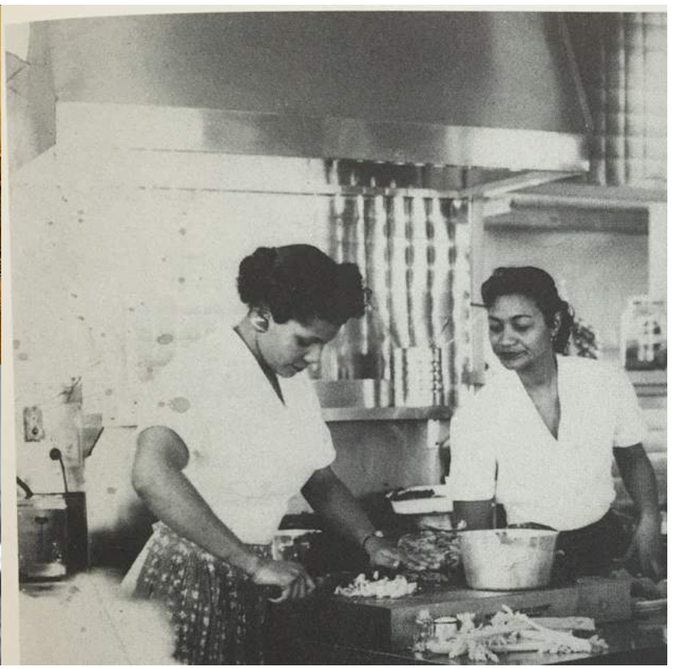
Proposed health and wealth strategies will provide individuals with the financial stability to make choices before and/or after climate change impacts. This social stability is key driver of resilience. Given that the National Institute for Building Sciences indicates that for every $1 spent in mitigating hazards, $6 is saved post-disaster, proactive planning for sea level rise will increase the effectiveness of the Bay Area’s funding capacity over time.

Many strategies that seem unrelated to sea level rise are truly central to wise investments. For example, small lot housing, a community land trust, social impact bonds and community infrastructure combine to lower the cost of entry to home ownership, strengthening the local economy with wealth building opportunities. Strategies that reduce pollution while providing sea level rise protection include green infrastructure proposals to bring the ‘marsh to Main Street’ with a horizontal levee and wetlands restoration, a plan to plant 20,000 trees to filter air and water, a pilot for decentralized wastewater that creates additional reclaimed water for local use, and an overpass to the Richmond Parkway that closes gaps in trail connections and provides access to the Bay. Finally, innovative methods are being explored to fund necessary investments in an equitable manner, including social impact bonds to fund new and renovated housing as a strategy to stabilize housing costs so the local community is not adversely impacted by development, mitigation funds to address historic inequities and health impacts that have already occurred, and a green benefits district for community-wide green infrastructure improvements funded by new commercial development projects. Each of these strategies will also increase economic opportunity, and support local job and career programs—benefiting the people in North Richmond and contributing to resilience.

Link to ouR-HOME video:
https://www.youtube.com/watch?v=YHw80_4fIBg

Link to Resilient by Design North Richmond page:
http://www.resilientbayarea.org/north-richmond/





North Richmond is Resourceful, Resilient, Restorative

The area of unincorporated west Contra Costa County known as North Richmond was a place of tremendous ecological diversity when Ohlone tribes first arrived there in the 6th century. The Bay coastline and marshlands of the Wildcat and San Pablo creek deltas provided critical resources for initial human settlers. The low-lying area with fertile soils provided good agricultural opportunities as human settlement increased.

In the years following the establishment of the adjacent Chevron Richmond Refinery in 1901 and the World War II ship-building effort, North Richmond become a place of racial inequity. African Americans arrived in the Bay Area from across the country during the WWII labor surge and were forced to settle in the low-lying and flood-prone topographic bowl through de facto segregation. Cut off physically from adjacent resources by railroads and other infrastructure, community members also endured a lack of public services and long distance travel to their seat of governmental representation, more than 20 miles away by car in Martinez.

This community that shares a fence line with the largest polluter in the state of California and is surrounded by industrial, rail and arterial barriers, derives strength from a long history of cultural, environmental and social justice issues. Today, the demographics of North Richmond's 5,000 community members is changing, as Hispanic Americans find a home in the neighborhood. The spirit of advocacy and community organization continues to thrive, as evidenced through the work of neighborhood groups such as Urban Tilth, the Verde School, the Watershed Project and other organizations.

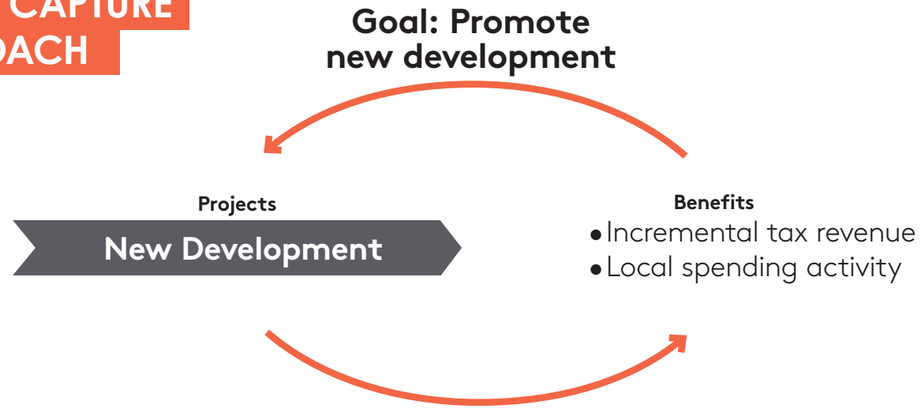
"...we get to be a group of people that come together and strategically plan things so that we won't get hit hard in the end. And that we will have a future to look forward to....."

—Princess Robinson, Urban Tilth Community Engagement Coordinator

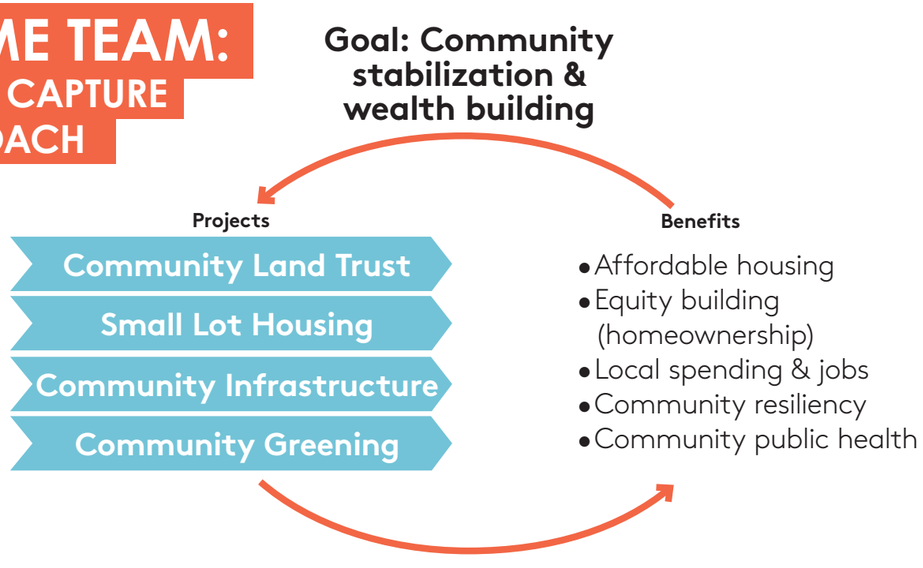
AREA OF INFLUENCE MAP

NORTH RICHMOND PRIORITY RESILIENCE AREA

TRADITIONAL: VALUE CAPTURE APPROACH



HOME TEAM: VALUE CAPTURE APPROACH



Adaptation Capacity Based on Health and Wealth Building

Equity in everyone having capacity to adapt is the goal of linking sea level rise design strategies to health and wealth building in communities. Housing in North Richmond is a challenge with widespread vacancy, a loss of 288 units of Las Deltas federal public housing that is being decommissioned, and a lack of access to capital to renovate or develop. And yet, like the rest of the Bay Area, rental costs are increasing and driving displacement. In the specific conditions of North Richmond, traditional development is not available to drive this link. Although the community just broke ground on 42 units of housing in the center of the neighborhood and the nearby Hilltop neighborhood is seeing redevelopment, funding for affordable housing is scarce and market rate solutions will only drive displacement. Displacement is an outcome that compounds climate impacts as residents are forced to drive even longer distances to work, and is an injustice as valuable social bonds are broken.

Building on the North Richmond Shoreline Vision Plan, deep work and local expertise in the community, a suite of projects have emerged. Advanced by the North Richmond Community Advisory Board and the Mithun Home Team, the projects use proven strategies that respond to the particular place and can have a profound collective impact in the community. These projects are called Thrive, Filter, Flow and Grow, and Relate, together with a new policy for a Green Benefit District. Combined, these projects represent ouR-HOME.

ouR-HOME: Thrive—Home Ownership For Longtime Residents

Adapting to change requires having the agency to respond. Health and wealth building is a foundation that supports the ability of people to make choices about how they respond to climate change impacts as they arise. Joining the path to wealth building through generations is fundamental. To lower barriers to home ownership, the Thrive proposal builds on the history of do-it-yourself resourcefulness of North Richmond residents and proposes subdivision of vacant lots to create small lot housing in keeping with the scale of existing homes.

Larger lot housing redevelopments at Las Deltas and Grove and Garamita can help stabilize affordable home ownership through exploration of a community land trust. Other affordable cost-of-living strategies for energy, water and wastewater create an opportunity for North Richmond to be a model community in the Bay Area—where community members can grow health, wealth and make choices about their future.

A big step has been taken toward reinforcing the shift from traditional development models to community health and wealth building. The City of Richmond has expressed interest in exploring small lot housing splits and community land trust in collaboration with the County for land the City owns within the neighborhood. Additionally, the community task force looking at the interim actions for the Las Deltas housing authority redevelopment has invited Mithun team member Hilary Noll to participate.

ouR-HOME: Filter—20,000 Trees of Justice

What if 20,000 more trees were planted in North Richmond to combat the substantial asthma rates in the neighborhood? Forming a natural air filter, stormwater filter and habitat filter, trees planted in mass can be a green “forcefield” against particulates and toxins. Three typologies of tree species, patterns and maintenance regimes capitalize on the science behind achieving greater health for people, flora and fauna. A greenbelt of planting along the largely diesel-based industrial corridor of the Richmond Parkway and larger scale neighborhood streets, Fred Jackson Way, Market and Chesley, create ecological function and a more walkable neighborhood. Reinforcing a greenbelt along Fred Jackson Way from the center of town to the Urban Tilth farm less than a half mile to the north is a primary goal of the community—connecting to fresh food, community events and career paths offered by the farm. A heritage walk highlighting the history and community leaders of the neighborhood could be incorporated with these improvements.

Air quality parks are groves of trees on larger residual lots not viable for housing that provide new places to gather and for stormwater filtration. Nodes are landmark trees protected and/or strategically

distributed throughout the neighborhood. These large trees complement adjacent planting areas and add to the structural diversity and health of an urban forest canopy.

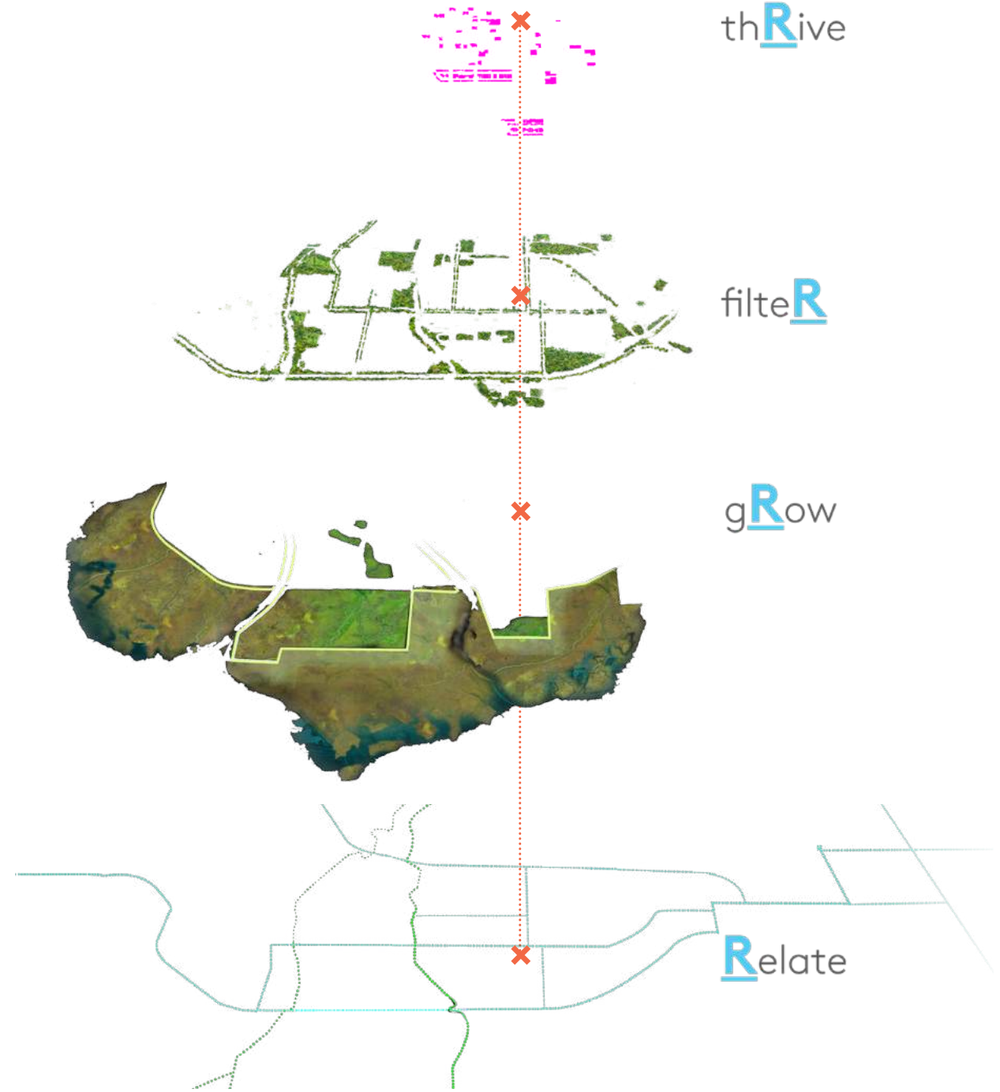
This urban greening project is being championed by Contra Costa Public Works. The Watershed Project, the San Francisco Estuary Partnership and other community organizations are in partnership.

ouR-HOME: Flow and Grow—Marsh to Main Street
The proposed horizontal levee provides both sea level rise protection and more ways to enjoy the shore. Horizontal levees can be a placemaking tool. Building on the North Richmond Shoreline Vision Plan and concepts initiated by the West Contra Costa County Wastewater operations, a horizontal levee will minimize flooding into North Richmond, protect infrastructure assets and enable marsh growth in an ecologically rich part of the Bay. Wetlands restoration and tertiary wastewater treatment are part of the levee strategy, supporting marsh replenishment as sea level rises over time and the current marsh drowns. Levee trails provide redundant trail connections in the event of high tides and different types of walking experiences, including panoramic views. A pilot to test a decentralized wastewater facility in the neighborhood creates additional reclaimed water that can be located closer to local users such as the Urban Tilth farm and new greenbelt plantings. The neighborhood-scale facility is also a placemaking opportunity in a neighborhood that has identified gathering spaces as a much-needed amenity. This coastal restoration and protection project is being championed by County Supervisor John Gioia with multiple partners.

ouR-HOME: Relate—A Doctor's Prescription for Wildcat Creek Trail
A connection to nature is one of the strongest healing experiences for people experiencing trauma and chronic stress. This community has long been isolated from the Bay edge that is so close by. Sea gulls are heard in North Richmond but the residents don't have a safe way to walk to the Bay. A parkway overpass for a multi-use trail connecting Wildcat Creek Trail to the Bay Trail has agreements and easements in place, and a renewed energy around the design concept. The proposed connection creates a sense of identity specific to the history of North Richmond and provides an important educational opportunity, as the overpass to the Wildcat Creek Trail connects to the neighborhood's Verde School, an elementary school that will soon be converted to a K-8 facility. Contra Costa Public Health has a "Walk with the Doctor" program it is interested in considering expanding here as well. The multi-modal trail overpass is being championed by East Bay Regional Parks District in partnership with the Trails for Richmond Action Committee (TRAC).

ouR-HOME: Green Benefits District
A new policy tool is envisioned to support local investment, hiring and project development. This tool, called a "Green Benefits District" will collect funding from three key sources: 1) mitigation funding from state and federal funding sources for environmental remediation, 2) redirected County funds by streamlining waste and water programs, and 3) impact fees from new commercial and industrial development. This is a primary tool in moving from a traditional "return to capital" model to a community wealth building "return to community" model, capturing the benefits of re-localizing labor, capital and resources (such as water and biomass).

A "Community Development Corporation" (CDC) representing North Richmond residents would be the beneficiary of these funds. The CDC is envisioned to be tasked with sustainable development including affordable housing, local employment and urban greening projects in the public space. A new CDC could be formed or an existing NGO could take this program on. The entity will be able to funnel funding from mitigation (e.g. state CAPP funding, Republic Sanitary Services, Chevron, etc), grants and, most importantly, contracts from public works. It will be charged with performing public works maintenance tasks such as gardening, street sweeping and anti-dumping. The residents will be employed/contracted as individuals, small family businesses, local youth/resident teams from other NGOs or as part of re-entry programs. The CDC will work with other organizations for training (e.g., The Watershed Project will be able to train crews on green infrastructure installation and maintenance, and provide an arborist and native plant experts) and technical support. The CDC mission should be collaborative in nature and should have both neighborhood improvements and employment outcomes. Contra Costa Public Works is spearheading the effort to write this policy in partnership with local community organizations, the Watershed Project and Urban Tilth.

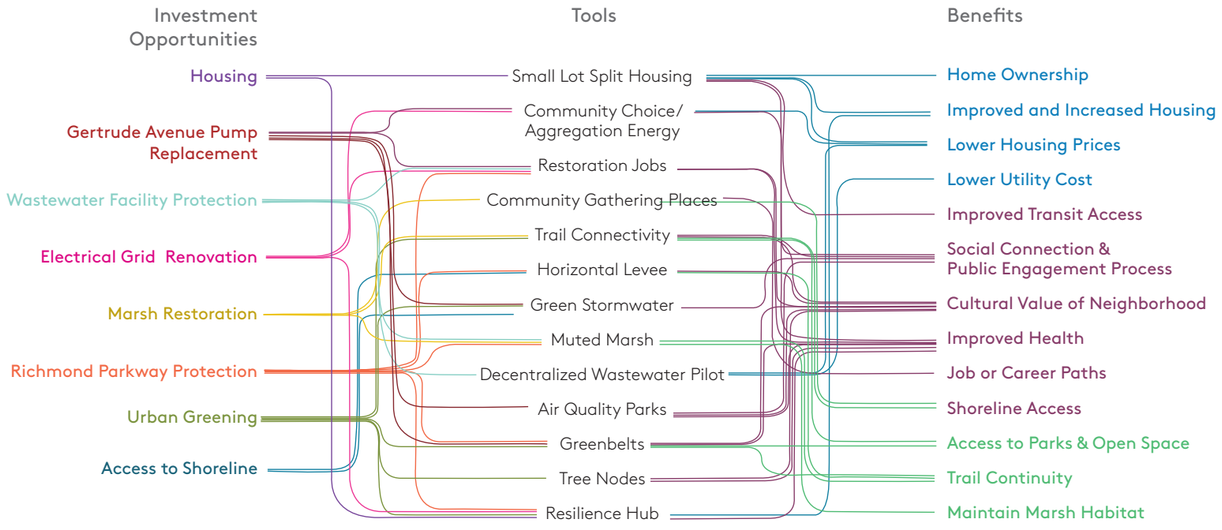


Why North Richmond Can Set an Equity Bar for the Bay Area

Many communities around the Bay have similar challenges to North Richmond: low-lying neighborhoods at the Bay edge, isolated by freeways or industry, with high concentrations of poverty. Chronic health issues in the African American community are linked to long-term stress and trauma from these challenges together with a generational history of slavery, Jim Crow laws and mass incarceration. The conditions in North Richmond are a particularly vivid example.

The community leaders in North Richmond and the collaborative work being done there are strong and well established. North Richmond's sustainable work in oyster restoration, watershed restoration, fresh food access and social justice are already shared nationally as excellent models. This is a place that is well positioned to implement resilience projects and share the stories.

Shipbuilding in North Richmond



Community-Driven Design Choices Informed by Science

The champion of these projects is the North Richmond Community Advisory Board, which includes residents of North Richmond and the City of Richmond. The Community Advisory Board was assembled with community liaisons Juliana Gonzales from the Watershed Project and Robert Rogers from County Supervisor John Gioia's office to reflect the community and stakeholders, and was based on an open call of applications. Key community organizations such as Urban Tilth, Community Housing Development Corporation, Safe Return Project, San Francisco Estuary Partnership and the Council of Industries are participating on the advisory board. Public agencies include Contra Costa Flood Control District, West County Wastewater Facility and Contra Costa Public Works.

The Mithun Home Team is a design team with technical expertise that includes landscape architects, architects, planners, coastal engineers, ecologists, artists, transportation and bike/pedestrian mobility planners, affordable housing finance experts, economic advisors and community outreach facilitators.

Next Steps for Implementation

The community advisory board is looking for seed money to continue the collaboration. Board members noted how useful it has been for resident experts and technical experts to exchange information and use the umbrella of resilience as a way to organize and prioritize their work. The Mithun Home team has also benefitted from exploring ways to share sea level rise information in communities with urgent needs—lessons that can be immediately applied to ongoing work with other neighborhood leaders. Targeted meetings where the Mithun Home Team can work with the advisory board to bring design and science to the process would help advance the community-driven work with a broader audience of funders.

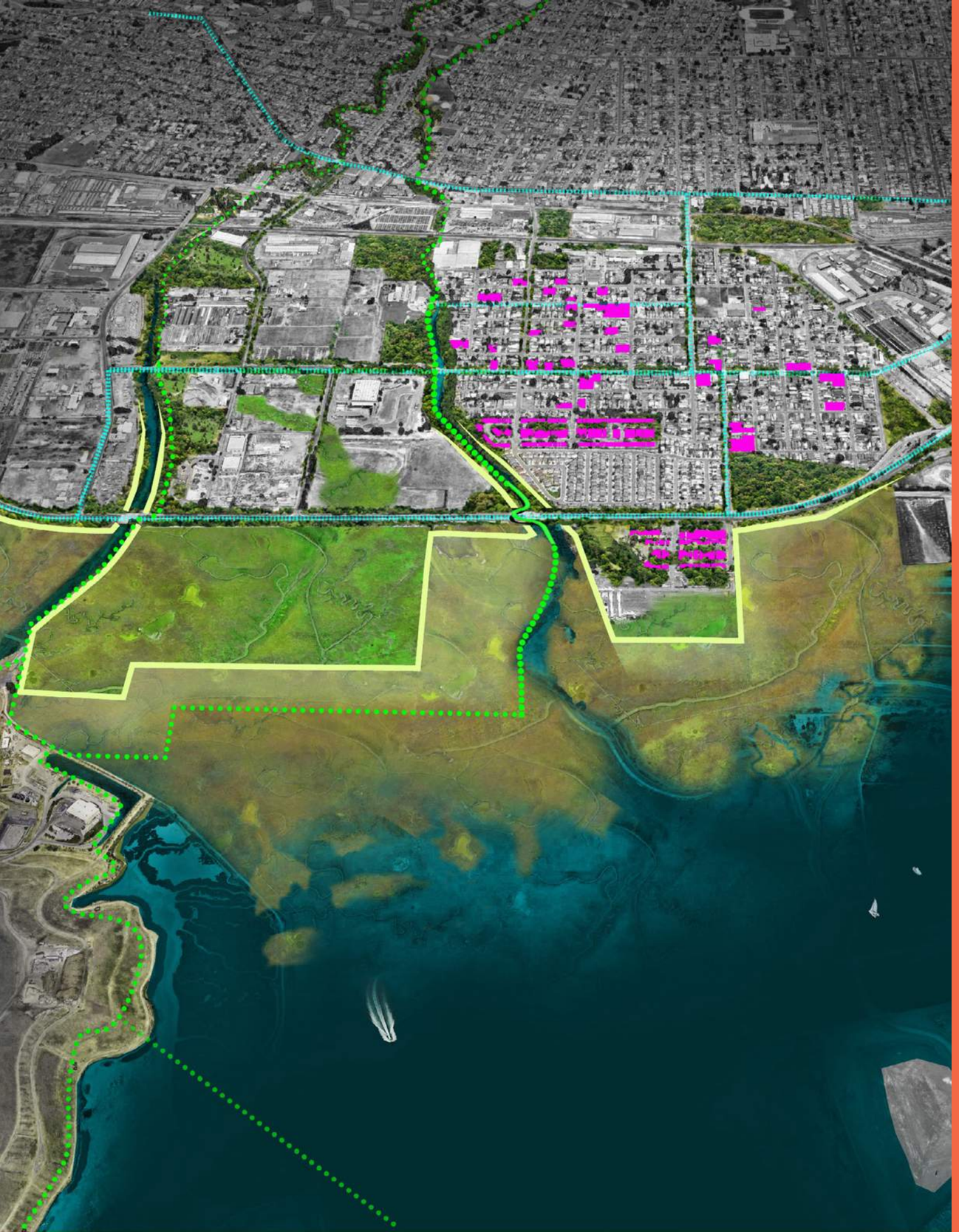
The Mithun Home team is meeting with the County, the Watershed Project and Urban Tilth to discuss how to advance many of these projects under the following major initiatives: an urban forest plan, an integrated water plan and a green benefits district. Each of these has the potential to be tied to a community-driven health action plan with funding, and given the history of exclusion from planning and investment, it will be essential that any new investment be developed with community participation as well as a community benefit framework for implementation. Partners such as the Trust for Public Land have offered to participate if the community desires.

In addition, the team's design process led to a series of prototypes which address distinct conditions along the dynamic Bay edge, and have potential for rapid implementation. Examples include oyster-friendly encasements of creosote piers and oyster-friendly platforms for water trail users, both of which support existing research by the State Coastal Conservancy and the Contra Costa Conservation Resources. Designs have been reviewed by these champions and funding will support physical installations and monitoring to test feasibility.

"Sea level rise is coming and anything we do today to get ready will pay off big time. We're facing much shorter timeframes then we used to think we had about this problem."

—Juliana Gonzales, Executive Director, The Watershed Project

	INTEGRATED COMMIUNITY DECISION-MAKING PLAN			FLOW AND GROW				THRIVE					RELATE				FILTER		GREEN BENEFITS DISTRICT		
	Integrated Water Management Plan	Health Assessment	Equity Framework Plan	Horizontal Levee	Marsh Trails	Wetland Restoration	Phase One	North Richmond Specific Plan	Las Deltas Conversion	CLT Small Lot Housing	Net Zero Energy	Phase One	Overpass	Greenway/Walk of Honor	Floating Trail	Phase One	Urban Forest Plan	Phase One	Establish Green Mitigation Fund	Resilience Hub	Air Risk Evaluation Program
AB 617 Community Air Protection Programs	■	■	■														■		■	■	■
AB 398 Cap and Trade	■	■	■	■	■	■	■	■			■	■		■			■			■	■
Affordable Housing Sustainable Communities (AHSC)								■	■	■							■			■	
CHDC Programs								■	■	■	■	■		■						■	
City Of Richmond	■	■	■				■			■						■			■	■	■
Coastal Conservancy Climate Ready Grants	■	■	■	■	■	■	■	■	■		■				■		■				
Contra Costa County	■	■	■				■	■	■	■	■	■				■	■	■	■	■	■
Ducks Unlimited	■	■	■	■																	
Land and Water Conservation Fund	■	■	■	■	■	■									■		■				
Marin Clean Energy								■	■	■	■	■								■	
Measure AA	■	■	■	■	■	■									■		■				
MTC Active Transportation Planning and Safe Routes					■	■		■					■	■	■	■					
North Richmond Green Mitigation Fund								■				■		■				■	■	■	
Opportunity Zone Funds								■	■	■	■						■			■	
Prop 1 Water Bond	■	■	■	■	■	■									■		■				■
SB 595 Regional Transportation					■	■							■	■	■				■		■
SB 1 Gas Tax					■	■					■		■	■	■				■		■
SB5 Resource and Climate Bond	■	■	■	■							■				■		■				
SF Bay Restoration/Coastal Conservancy	■	■	■	■	■	■	■						■		■		■				
Social Impact Bonds										■	■						■			■	



Part I.
Design Concept

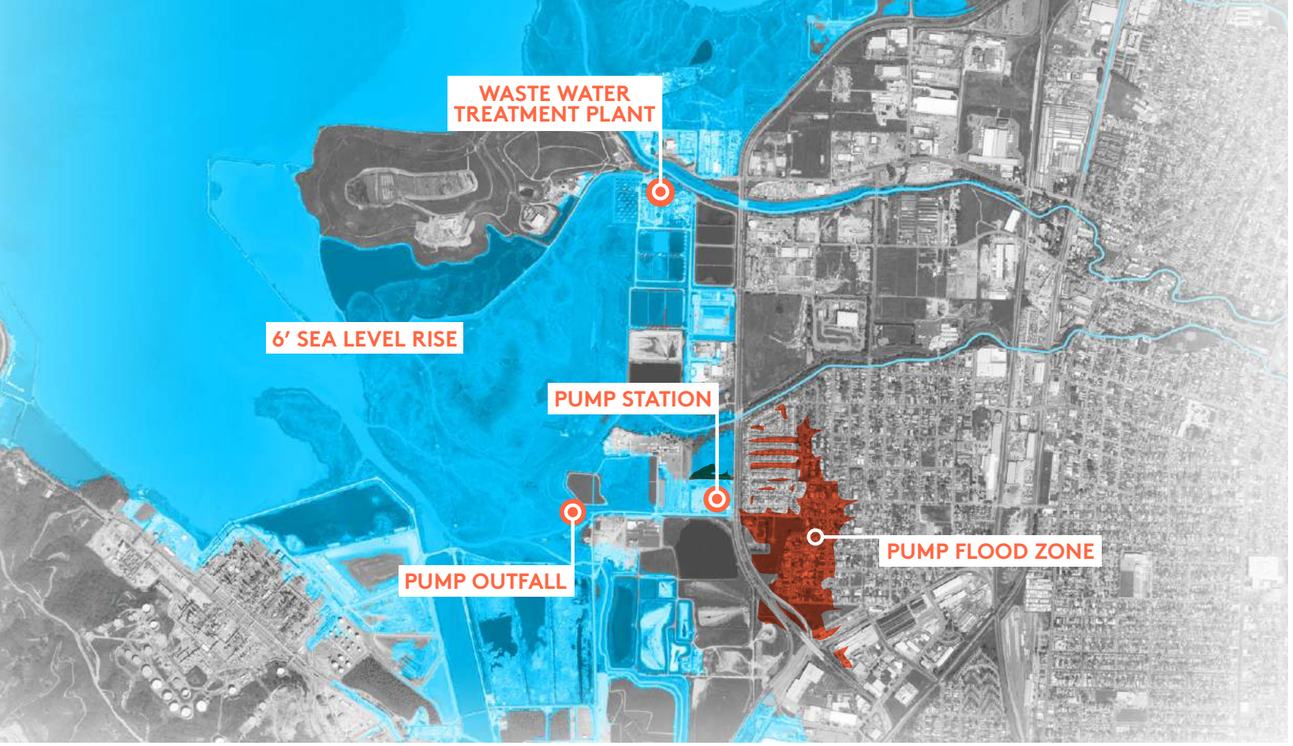
Research & Analysis Overview

The critical overlap between social, environmental and infrastructural challenges brought the Home Team to North Richmond at the end of the Research Phase. Eighty-five billion Bay Area dollars will be invested in climate change in the coming years and those investments must be leveraged for stacked benefits, starting with the communities that currently have the most compounded vulnerability. Seeking implementable multi-benefit solutions, research and analysis in the Design Phase has focused on deepening our understanding along two tracks: identifying the existing and future impacts of environmental factors and climate change in North Richmond, and teasing out community-based needs and priorities for immediate, tangible improvement.

Simultaneous research strands led to key discoveries that directly shaped the Mithun Home Team's design solutions. Mapping and analysis of existing datasets partnered with extensive conversations with vital local organizations and experts to develop a base understanding of the site. A series of meetings with our Community Advisory Board applied resident knowledge and stakeholder priorities towards developing a common vision. Local testing of the Streetwyze app helped spatially locate neighborhood assets and challenges, tying back to design goals and development (see Streetwyze in the Appendix). Through these research tracks, several key discoveries formed the basis for the R-HOME designs:

NORTH RICHMOND COMMUNITY ADVISORY BOARD

Sequoia Erasmus	Richmond Mayor's Office
Beth Williams	North Richmond Homeowner / Resident
Courtney Moore	Urban Tilth
Dr. Henry Clark	North Richmond Municipal Advisory Council
Heidi Nutters	(shared seat) San Francisco Estuary Partnership
Josh Bradt	(shared seat) San Francisco Estuary Partnership
John Steere	Contra Costa County Watershed Program, PWD
Juliana Gonzalez	The Watershed Project
Katrinka Ruk	Council of Industries
LeDamien Flowers	Safe Return Project / North Richmond Resident
Nick Snyder	Tierra Resource Counsultants / CCC Sustainability Commission
Paul R. Detjens	Contra Costa County Flood Control & Water Conservation District
Princess Robinson	Urban Tilth / North Richmond Resident
Regina Cuevas	TWP Block Ambassador / North Richmond Resident
Robert Rogers	Office of County Supervisor John Gioia
Sandra Hamlat	East Bay Regional Park District
Sara Guardian	The Watershed Project / North Richmond Resident
Sherry Stanley	West County Wastewater District
Tania Pulido	Community Housing Development Center, North Richmond



Above—Pump & SLR map: an aging pump and outfall lie within the 6' sea level rise zone, with orange indicating the immediate neighborhood flood risk if the pump is impacted today.

Below—Vacancy Map: orange parcels indicate vacant parcels, both private & county-owned, within the study area, overlaid with 6' SLR

Key Discoveries via Research & Conversations:

Pump: North Richmond lies in a topographic bowl and some of the lowest lying areas of the neighborhood are kept dry from stormwater flooding by a county-owned pump that deposits millions of gallons of urban runoff into the Bay, even during the dry season (See Appendix X for the pump service extent diagram, and the pump flooding map at left for the immediate impact if this infrastructure is impaired). This critical piece of infrastructure lies within the sea level rise zone, is reaching the end of its functional lifespan, and currently serves as a stop-gap solution to inland flooding within the neighborhood.

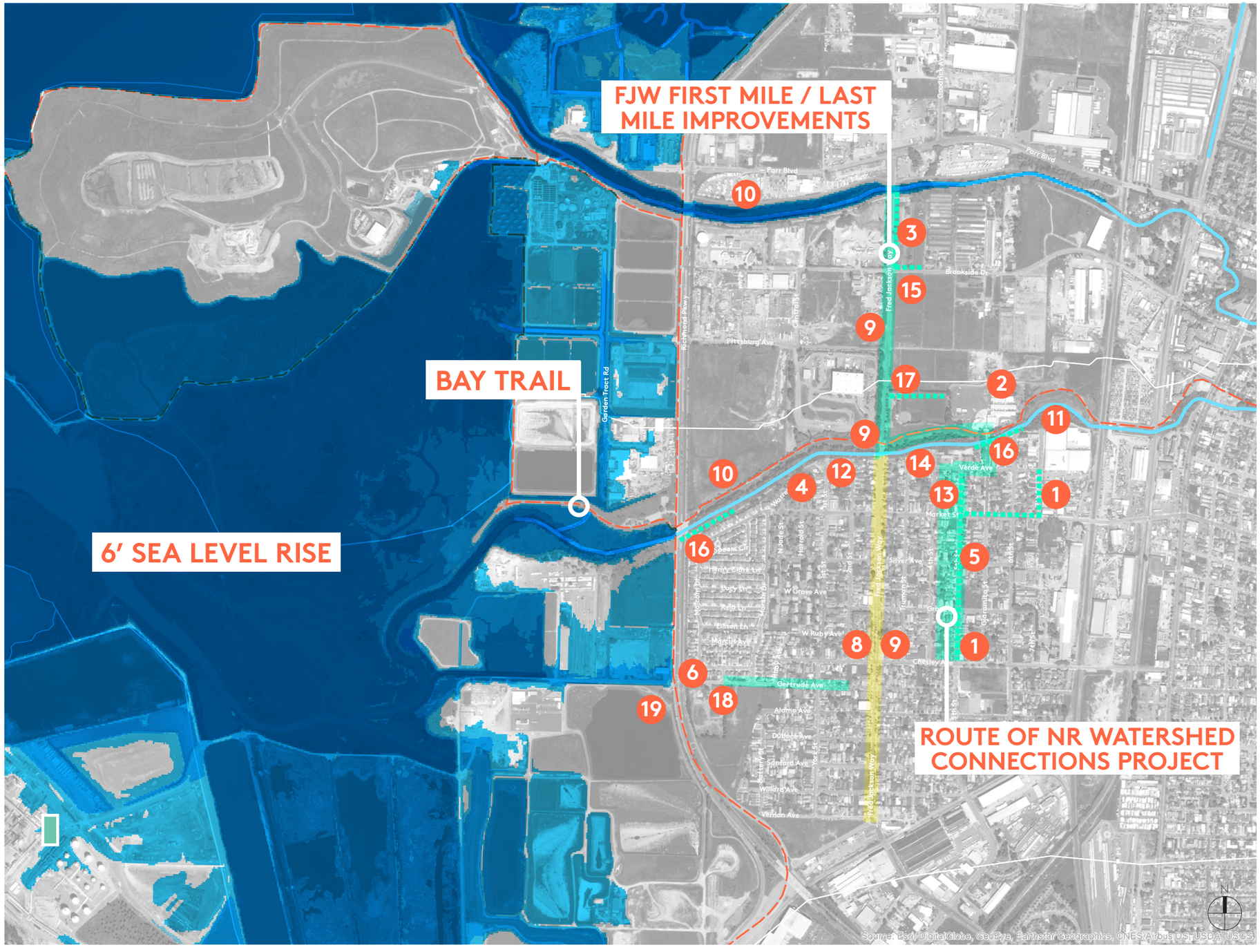
Vacant Land & Hacc Redevelopment: North Richmond contains a significant percentage of vacant parcels, creating key opportunities for strategic long-range planning in the community (See Vacant Parcels map). In addition, xx# Contra Costa Housing Authority parcels formerly comprised of xx# units of housing are currently being vacated and are slated for near-term redevelopment (See HACC Las Deltas Distributed Sites drawing, Appendix X).

Air Quality Significance: Surrounding heavy industrial uses, an adjacent refinery operation and heavily-trafficked transit corridors lead to poor air quality and high community health burdens, with the highest CalEnviroscreen score for asthma in the state. (See Air Quality Map & CalEnviroscreen scores, Appendix X)

Existing Work: A variety of smaller-scale initiatives around urban greening, green infrastructure, pedestrian improvements, local fresh foods and flooding mitigation already exist and elicit significant community support, bolstered by local champions like The Watershed Project and Urban Tilth.

Community Strength & Self Determination: Individual conversations and Community Advisory Board interviews revealed a strong sense of community self-determination, independence and pride.

Design goals and outcomes directly stem from these key research discoveries.



EXISTING INITIATIVES

urban forestry

1. CLEAN AND GREEN - STREET TREES (TWP)
2. VERDE SCHOOL PARTNERSHIP GARDEN (URBAN TILTH)
3. NORTH RICHMOND URBAN FARM (URBAN TILTH)
4. FIRST AND MARKET COMMUNITY GARDEN (URBAN TILTH)
5. SENIOR CENTER NATIVE HABITAT (NHNR)
6. PROJECT PRIDE NATIVE HABITAT GARDEN (NHNR)

Community connectivity

7. WEDNESDAY FARMERS' MARKETS (VARIOUS)
8. PROPOSED SMALL MARKET (VARIOUS)
9. F. JACKSON WAY WALKABILITY - 1ST & LAST MILE (PWD)
10. RAISE FLOOD CONTROL CHANNEL LEVEES (FCD)
11. WILDCAT CREEK SILTATION BASIN COMMUNITY-BASED STEWARDSHIP (URBAN TILTH)
12. NON NATIVE (IVY) REMOVAL (URBAN TILTH)

Watershed cleanup and improvements

13. "ADOPT A BLOCK" - PART OF NR COMMUNITY-BASED CLEANING AND OUTREACH PROGRAM (TWP; CWP)
14. NR GREENING PROJECT - CREEK CLEANUPS (NHNR)
15. DEMONSTRATION BIORETENTION BASIN (URBAN TILTH)
16. ANNUAL "HOT SPOT" CLEAN-IPS (TWP)
17. GREEN INFRASTRUCTURE AT N. RICHMOND BALLFIELD (TWP)
18. FULL TRASH CAPTURE DEVICE PLANNING (CWP)
19. NR PUMP STATION SW RECYCLING PROGRAM (CWP)

ACRONYMS:
TWP = THE WATERSHED PROJECT
PWD = COUNTY PUBLIC WORKS DEPARTMENT
CWP = COUNTY WATERSHED PROGRAM
NHNR = NEIGHBORHOOD HOUSE OF NORTH RICHMOND
NR = NORTH RICHMOND

Site Description & Geographic Context

North Richmond lies on the edge of San Francisco Bay in west-central Contra Costa County. Completely surrounded by the City of Richmond, the unincorporated neighborhood of North Richmond depends primarily on the county for services. The residential heart of the community lies just south of Wildcat Creek; mixed-use industrial land fills the space between Wildcat and San Pablo Creek further to the north. The community is pinned between Chevron's refinery operation and the Republic Services landfill, cut off from the surrounding urban fabric by BNSF rail lines on the east, the refinery and industrial uses on the south, and Richmond parkway on the west.

The area of design interest focuses at a watershed level on the San Pablo and Wildcat watersheds, honing in on the distinct, mostly unincorporated neighborhood of North Richmond and the mixed industrial lands directly to the north. Low-lying geography and systemically disinvested community infrastructure create an area acutely susceptible to climate change impacts, compounded by existing stressors that range from socio-economic challenges including health disparities to air and environmental contamination (See Appendix X for CalEnviroscreen). The neighborhood lies within a topographic bowl at the edge of the bay, at risk to immediate, significant inland flooding and longer-term sea level rise inundation (See detailed topographic map, below, and the Pump Extents diagram, Appendix X).

A 42-unit housing development and several mid-scale light industrial projects are currently opening or approved by the Contra Costa Department of Conservation and Development (See project list, Appendix X). Existing grant-funded small-scale urban greening and pedestrian improvement projects are also underway via the Fred Jackson First Mile/Last Mile Connection Project, the North Richmond Watershed Connections Project, and various non-profit initiatives via Urban Tilth and The Watershed Project (See Existing Work map on the following page).

Below: 1' contour model of the area, showing the residential portion of North Richmond's low-lying topographic bowl.

Design Principles

1. **"Nothing about us, without us"**
2. **Direct community benefits—focused on North Richmond**
3. **Immediate results—there is urgency**
4. **Adapt-in-place strategies**
5. **Prioritize design solutions with most multi-benefit**
6. **Work as a team and unite**
7. **"We are a badass group that is ready."**

Impacts & Vulnerabilities Addressed

- Air quality (measurable indicators: asthma rates, PM 2.5, street-level monitoring)
- Inland flooding (measurable indicators: street flood counts, levels & duration)
- Community identity and perception (measurable indicators: regional survey-based studies, internal/ external crime rates)
- Sea level rise (measurable indicators: marsh transition/habitat retained, number of active properties vulnerable, population numbers in flood area)
- Aging infrastructure (measurable indicators: electrical grid quality, street condition,
- Historic disinvestment (measurable indicators: home ownership rates, employment rates)
- Displacement (measurable indicators: housing burden rates, neighborhood typology analysis, continuity rates)
- Access to shoreline (measurable indicators: number of access points, population numbers served within a 1/2-mile walk)
- Continuity of trail system (measurable indicators: gaps completed, redundant trails available during flooding, management of existing trails)
- Community health (measurable indicators: obesity rates, depression rates, asthma rates, diabetes rates, access to public space, walking frequency)

Design Concept

Leading with Equity

ouR-HOME emerges from the North Richmond community's ideas for building health, wealth and home ownership for more than 5,000 residents—turning investments in sea level rise adaptations and aging infrastructure into opportunities for all. Using a racial equity lens in each stage of work, the Mithun Home Team joined with a community advisory board to explore ways the neighborhood can adapt in place, prioritize projects and co-create a process that can continue as projects are implemented.

Home Ownership and Wealth Building

Building on a vibrant local history, neighborhood stabilization and strategies for home ownership underlie the vision for a resilient North Richmond. Using vacant lots as a catalyst, a community land trust and small lot splits lower the cost of entry for ownership. Sustainable energy and water strategies keep utility costs low. Financial stability is key for residents to have the capacity to respond to sea level rise.

Delivering Multiple Benefits

Major community infrastructure, roadways and valuable marsh habitat are threatened by future sea level rise. Proven green infrastructure strategies, cultural and community gathering places and a health assessment combine to link physical and social benefits for the neighborhood—affordable housing, low utility costs, tree planting for air quality and stormwater, a horizontal levee, wetlands restoration, a decentralized wastewater pilot, a multi-use trail overpass and a Heritage Walk that celebrates the leadership and cultural history of the neighborhood.

Priority Resilience Areas

North Richmond is an acute example of why the current methods for directing funding to Priority Conservation Areas and Priority Development Areas does not support current issues facing the Bay. The current model is dichotomous and the future is a rapid-response hybrid that restructures public investments to support both ecological and economic functions. Priority Resilience Areas can bridge the importance of both and direct funds equitable where the needs from historic disinvestment are greatest. This is shown to have a positive economic and environmental impact for everyone—reducing commute times, lowering healthcare costs and shifting high costs of incarceration to immediate costs of healing people and the Bay.

Part II.
Design Roadmap & Next Steps

Local & Regional Stakeholder Support

Working with community liaisons Juliana Gonzales from the Watershed Project and Robert Rogers with County Supervisor John Gioia's office, Mithun and Streetwyze created an open-call application for a community advisory board with a stipend. The goals were to co-create a process and develop a series of projects that were relevant to community needs. By holding a series of five two-hour workshops in the community at the Verde School and the Senior Center, the team and the board were able to create continuity to support deeper conversations.

The board was intentionally formed to create a mix of residents, public agency representatives, NGOs and private business representatives. Age, race, gender, professional skills and roles, and geographic location reflect the population of North Richmond.
One lesson learned was the language barrier for the initial round of open application. We realized there were no Hispanic applicants and the community is now about 60-70% LatinX. Juliana advised us and through local housing corporation representative, Tania Pulido, additional candidates were recruited.

Additional lessons learned were about the challenges for students in attending this type of meeting. In hindsight, relying on direct communication may have revealed schedule or travel challenges we could have addressed. The importance of beginning co-creation of agendas at the first meeting was also apparent.

The ideas highlighted and refined by the community advisory board run from large-scale housing and infrastructure projects like the Las Deltas redevelopment to the horizontal levee to a modest paving medallion inset to celebrate local leaders and cultural history.

There is local and regional interest in supporting our proposals—for example, the Watershed Project and Urban Tilth are locally based. Regionally, the State Coastal Conservancy has demonstrated continued interest in the potential for the creosote piers.
The appendix includes meeting agendas and meeting notes.

"We as people can be the change. We just have to try. We have to be united to create change here in North Richmond."
—Regina Cuevas, Verde School parent, Block Ambassador

"So Resilient by Design is just a little piece, right? To get the ball rolling for people to come together and think about these issues, long term. And figure out how can we be able to work together to build a stronger community here."
—Ladamien Flowers, Safe Return

Implementation Strategy: Long Term and Short Term

The series of projects are linked together in order to achieve an equitable response to climate change and sea level rise. Considering these solutions together isn't just desirable, it is fundamental to the outcomes. Adaptation to and mitigation of sea level rise and other climate change impacts cannot be solved in isolation. The challenges are systemic and, therefore, are not limited to only shoreline issues. The solutions don't need to be complex to respond effectively—we have the technologies to solve them. Rather we need the will to implement what we know works, to create an equitable context where communities have agency to make their own choices. The stability of housing, health and wealth building are foundational to being able to make personal choices.

Near-term projects that support a stabilized community include many that are underway and can be linked into a framework to create greater results

The two needs that consistently rise up in the community advisory board and stakeholder discussions are home ownership and neighborhood identity. The short term projects that have emerged to support that are part of **Thrive**, **Filter** and **Relate:**

1. A community task force is creating a community plan to work with the County on mitigating the loss of the Las Deltas Contra Costa Housing Authority affordable housing and planning for future affordable housing. Hilary Noll from Mithun has been invited to participate in the task force. The task force seeks to move the redevelopment plan forward as rapidly as possible by determining the combination of factors that will make the site attractive to a mix of uses, primarily affordable housing. The sustainable energy and water systems that can keep costs low for the neighborhood will benefit from having a redevelopment driver. (**THRIVE**)
2. East Bay Regional Parks District and the Bay Trail are supportive of a community process to complete the Wildcat Creek trail crossing to the marsh with a multi-use trail over Richmond Parkway. An overpass not only provides safe crossing and connectivity, it creates an iconic statement about North Richmond in a regionally visible place—providing an equitable response to creating unique landmarks in our communities. (**RELATE**)
3. A community process can be established with the guidance of the advisory board for integrating a Heritage Walk into future street improvement projects such as First Mile/Las Mile along Fred Jackson Way. (**FILTER**)

One of the many powerful things coming out of the Resilient by Design process is the recognition that funding community-driven, pre-development integration of projects makes investments go farther, more effectively. The Bay Area is expected to need to make over $85 billion dollars of investment in climate change responses. These dollars must be streamlined.

In order to get started on an implementation project, the preferred projects must be prioritized and tested for feasibility. The next step is to fund the continuation of the very effective North Richmond Community Advisory Board. A community-driven design process built around equity framework criteria is an important context for moving into implementation. There are a number of implementable projects that have strong support from the Board and the County Supervisor, John Gioia—tree planting, an overpass, a Heritage Walk and a horizontal levee. Contra Costa Public Health is considering providing seed money to this effort by linking their bi-annual county health assessment to these meetings, identifying an epidemiologist that can join the board and increasing community voices in their work. Looking at health issues in conjunction with an integrated water management action plan keeps the social benefits linked to physical green infrastructure improvements. Water management and health issues span the five proposed projects.

By consolidating this brief study to integrate health, water, urban forest and trails, the process also respects the community's time. The process will test feasibility and options for key projects, develop goals and objectives for each project to evaluate design options, identify the preferred design direction, complete the design, make the health benefits of each project explicit and identify County benchmarks for health and performance that can be tracked over time. The Watershed Project and Urban Tilth will be central leaders in this work.

The legacy for the Bay Area will be ouR-HOME projects emerging from the community that link health and wealth building by residents to infrastructure investments. These first next steps are foundational to supporting agency in the community. The implementable next step for the physical green infrastructure response to sea level rise is an integrated water management action plan. This provides a decision-making context that the community can use to prioritize and establish projects that meet needs and objectives and link them to investments. Linking a water management action plan to a healthy living initiative can be vital to keeping the focus of investments on those that are most beneficial to the community.

North Richmond Water Management Action Items

Water Management—Prepare a holistic Water Management Plan that includes strategies for meeting future demands by fully integrating the use, conservation, recycling, reuse, disposal and management of potable water, wastewater, industrial water, stormwater, irrigation water, groundwater, creek water, ecological habitat water and seawater throughout North Richmond.

Horizontal Levee—Use of recycled irrigation water and/or treated wastewater as a means for irrigating the establishment of native plant communities on the horizontal levee.

Stormwater—Capture and treat stormwater off of rooftops and other relatively clean surfaces for greywater reuse, irrigation water and industrial water. Implement water quality best management practices throughout the watershed as part of a comprehensive green infrastructure program to address groundwater recharge, creek water and seawater recharge, and supplementing ecological habitat water.

Sea Level Rise—Prepare a sea level rise adaptive management strategy that includes approaches for addressing marsh migration, sediment transport patterns, aquatic habitat, groundwater intrusion, upland inundation, flooding and storm surges.

San Pablo and Wildcat Creeks—Develop a Creeks Management Plan that addresses flow management, water quality, aquatic habitat, riparian habitat, invasive species management and flooding.

A Healthy Living Initiative

A Healthy Living Initiative would support all of these directions by keeping the focus on the community's health. Through a community process, health indicators are established that are most relevant and can be tracked over time.

Urban Forestry Plan— An Urban Forestry Plan is proposed for North Richmond that addresses needs identified in the health and air quality baseline assessment, and builds on the recently completed Richmond Urban Greening Master Plan.

Green Benefit District

Establishment of a Green Benefit District will provide consistent funding to support community development. Sources of revenue will include mitigation funding from state and federal funding sources, County funds for waste and water programs and impact fees from new commercial and industrial development.

Implementation Process

The community advisory board will be meeting at the end of May to discuss what form it would like to take to continue these efforts. Possible options include operating as a resilience task force of the North Richmond Municipal Advisory Committee; formation of an Ecodistrict to engage in an intentional equity and climate change process with a cohort of other communities; establishing a Living Communities team to set performance targets that support resilience; or other scenarios that may arise in the discussion.
The following project descriptions include next steps and possible champions for a comprehensive suite of projects that can be prioritized in the short term projects identified above.

GROVE AND GIARAMITA
BEFORE

GROVE AND GIARAMITA
AFTER

Thrive: Home Ownership and Affordable Living as a Path for Community Wealth Building

Resilience in North Richmond requires attention to the challenges that limit residents' ability to thrive—the cost of housing, utilities and transportation, the limited access to good jobs that build careers, and the obstacles faced by resident entrepreneurs eager to start local businesses. Strategic investment in affordable "net zero" ownership housing, electric vehicles, transit connections and community support services can reduce the cost of living for residents, and catalyze local reinvestment and wealth building. Resilience hubs will support home ownership, disaster preparedness, local business creation, education and job training, and community connection. The creation of a North Richmond Social Impact Bond together with a land trust will create new permanently affordable "deep green" homes on empty lots and support renovation of existing homes. North Richmond is one of a few federal Opportunity Zones around the Bay that can benefit from a new federal program for long-term tax-free community investments.

The Legacy of Structural Racism

North Richmond is a "pocket" community in west Contra Costa County with a positive sense of identity, strong social bonds, and engaged community activists. It is also a fence-line community, adjacent to industrial uses including the Chevron refinery, the single largest carbon emitter in the state, and surrounded by Richmond Parkway to the west with wastewater treatment and trash handling beyond, rail lines to the east and under-utilized industrially zoned land to the north. The Iron Triangle neighborhood of Richmond is located to the south. The industrial zone to the north is bounded by two creeks. The area between them was historically a flood plain and is now home to industrial uses and urban farms. The legacy of structural racism –slavery, Jim Crow, redlining, predatory lending, mass incarceration—continues to shut this community out of the economic recovery that has benefited much of the Bay. North Richmond's average household income declined over 30% from 2000–2016, while the cost of housing has been increasing, eroding home ownership and driving displacement. North Richmond's home ownership rate—once high at over 60% is currently 31.8%—much lower than the California average of 55%, and the US average of 64%.

Strategies for Building Health and Wealth

Social Impact Bond (SIB): Create an SIB program, similar to the one piloted in Richmond for affordable housing renovations, to support local projects with outside investment by socially conscious investors. Align with the federal tax benefits for Opportunity Zones and create criteria that set reasonable but not excessive financial return.

Community Land Trust (CLT): Develop a CLT with land held in trust and buildings privately owned by residents. Resale profits will be limited to the sale price plus improvements with an annual gain of 2-3% over inflation to support long-term affordability while enabling residents to build wealth through home equity, with home prices within reach because they do not include the land cost.

Small Lot Home Ownership: Redevelop vacant lots with affordable "small lot" housing (~1000 SF each); include small business commercial space on the ground floor for lots along Fred Jackson Way. We propose development of approximately 25 lots with four units each for a total of about 100 new ownership units.

Multi-family Housing with Shared Amenities: Redevelop the Las Deltas housing site and other larger vacant parcels with multi-family development (~500 units total, half rental and half ownership). Include diverse sizes from single rooms to family size apartments with shared amenities including community kitchens, social rooms, daycare, and shared electric cars and bicycles to reduce carbon emissions and the need for private car ownership.

Local Hiring Requirement: As part of the overall equity framework plan criteria, include local hire requirement for all new housing. Because labor accounts for approximately 2/3 of the cost of construction, this provision will boost earnings in the area by as much as $80–$100 million as the projects are built. Those earnings will drive local purchasing power. Local hire is also a strategy for solar PV installation, tree planting, energy upgrades, etc.

Deep Green Energy and Water Systems: Energy and water utility bills are a significant cost for low-income households and green technologies can significantly reduce costs while creating local jobs. Integrate energy efficiency upgrades and locally installed PV with local hiring requirements. Marin Clean Energy (MCE) programs streamline low-cost financing and provide bonuses for energy savings and installed solar power, making solar profitable for residents as well as installers. Partner also with innovative water efficiency programs to create deep green homes that reduce utility costs. Explore potential for fuel switching to all electric within the community to support energy independence.

Electric Vehicles and Car Share: Car ownership is a significant cost for households. Use of electric cars and bicycles reduces climate impacts and also greatly reduces the cost of ownership. Integration of electric vehicle hubs for car/bike sharing can help households reduce the number of cars they own. Contra Costa County recently received a grant to support electric vehicle (EV) readiness and provide incentives to low-income households.

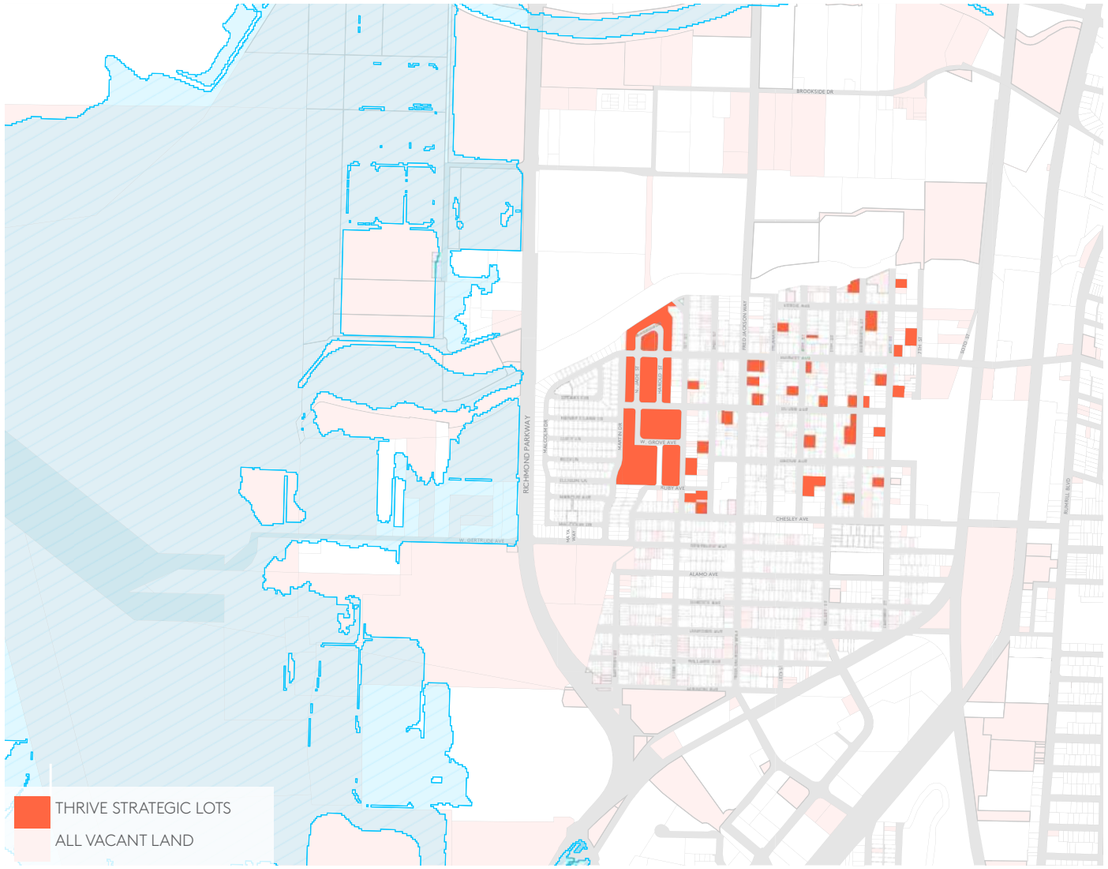
Heritage Walk: North Richmond has a tremendous cultural history around music, environmental justice and civil rights that has been shared through oral storytelling but is not visible in the neighborhood. The Heritage Walk is a series of metal insets honoring local people, important places and the accomplishments of the community. These could be located in the sidewalk either in one key location and/or distributed to highlight significant places around the neighborhood.

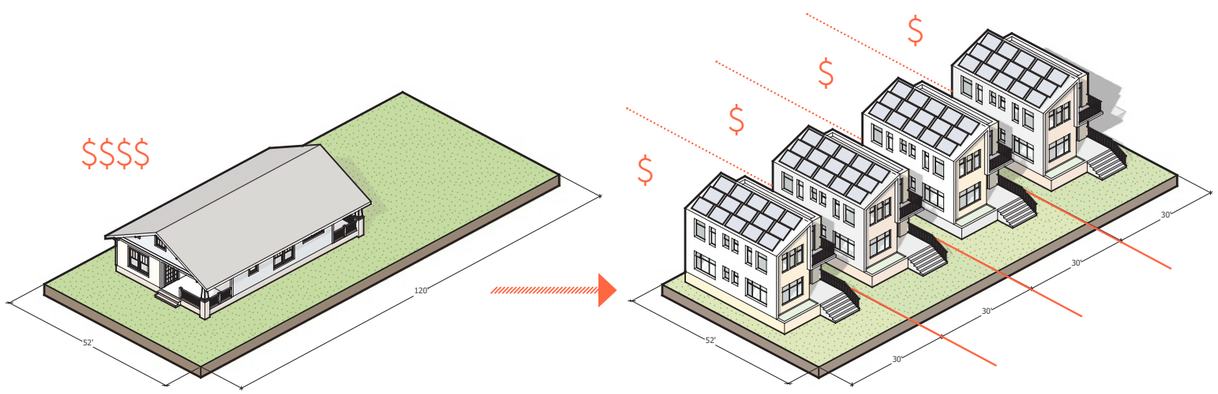
Designing For Equity

Equity means that people at all levels of the income scale get the extra support needed to build wealth through home ownership, low utility costs, quality jobs that build careers and a healthy environment. North Richmond is caught between the challenges of disinvestment and resulting health impacts, and the threat of gentrification. Vacancy is currently a challenge with more than 214 public housing units at Las Deltas in transition, as the rental assistance program will be fully transferred to other sites throughout Contra Costa County, and the existing units either renovated or replaced. Most of the Las Deltas units are already vacant, another 10% of all housing units in the neighborhood are vacant year-round, and many lots are empty. Greening strategies to improve the neighborhood and reduce negative impacts of vacancy and surrounding industry must be paired with new affordable housing and community wealth building strategies to avoid displacing current residents to the margins of the Bay Area with even less access to jobs, transportation, services and the supportive, familiar community on which they currently rely.

Selective housing investment in North Richmond can catalyze employment and improve quality of life for current residents with housing that is affordable by design. Home sizes will vary, with small lot homes averaging about 1000 SF each and multi-family homes ranging from micro-units at 300 SF to larger family units at 1200-1500 SF. This plan will produce housing for moderate-, low- and very low-income households with minimal or no local subsidy. Key factors are as follows:

- impact fees greatly reduced (infrastructure funded through Green Mitigation Fund)
- no-cost financing (social impact bond revolving loan fund)
- minimal or no land cost (transfer of land to community land trust)
- reduced parking requirement
- zero energy water efficient homes have low utility costs
- limited profits allowed at resale (~ 2-3% annual gain over inflation, to be determined by CLT)





EXISTING:

Typical Lot: 52'x120' = 6240 sq ft

Typical Single Family Home:
1500 sq ft (single story)

SMALL LOT SPLIT
52'x120' = / 4 =
Small Lots at 1560 sq ft each

Small Lot Infill Homes:
1250 sq ft (two story)

Champions of Thrive
This concept has the strong support of the North Richmond Community Advisory Board, which includes residents as well as representatives from Contra Costa County Supervisor John Gioia's office, and the City of Richmond Mayor's office. Marin Clean Energy (MCE) will offer technical support and incentives for renewable energy and the ARB has generous incentives for electric cars for low income residents.

This proposed multi-benefit initiative is being developed with partnership from the Richmond Mayor's Office, and the Contra Costa Housing Authority. Community Housing Development Corporation (CHDC) in North Richmond would be a key project partner for implementation of a community planning process. Mithun would continue in a coordinating and overarching planning role working with the community to develop a specific plan for the area.

Lead funding for development could potentially come from HUD and the new federal Opportunity Zone program which allows investors to defer capital gains taxes by investing in the zones. The Opportunity Zone investment could provide initial capital for housing construction with a steady long-term rate of return for investors.

Funding for pre-development planning and entitlements could potentially come from HCD, as a grant or no-interest loan. SB 540 (Roth): Workforce Opportunity Zone is the state legislative vehicle for the federal Opportunity Zone program. The bill would authorize local governments to apply for a grant or no-interest loan, or both, from the Department of Housing and Community Development to support its efforts to develop a specific plan and accompanying EIR within the zone. Once approved, housing developed within the zone would be by-right development.

"I feel like every struggle is a blessing. You feel like it is holding you back but really you learning from your lesson. It's a blessing we get to be a group of people that come together and strategically plan things so that we won't get hit hard in the end. And that we will have a future to look forward to..."
—Princess Robinson,
Urban Tilth Community Engagement Coordinator

Many good programs are available to support home ownership through the state of California Housing and Community Development (CHCD), and CHDC has offices in North Richmond that provide support for home buyers. These programs include:

— **California Home Source Lease Purchase Program**
The Lease Purchase Program allows qualified residents to choose a home, lease it for three years, and assume the mortgage at the end of the lease term. The program is designed to provide home ownership opportunities to persons with credit difficulties, lack of credit history or lack of a down payment.

— **California Housing Finance Agency (CHFA)**
The mission of CHFA Homeownership Program is to provide affordable housing opportunities by offering below-market interest rate mortgage loans to very low-to-moderate income first-time home buyers. They offer a large variety of programs with lower interest rates, minimum down payment of 3-5% and lower fees to borrowers.

Next Steps for Thrive
This proposal for community wealth building is applicable and transferable to many disinvested communities that have been shut out of the booming Bay Area economy. The next steps include:

— **Equity Framework Plan Criteria**—Work with community to develop equity framework criteria plan that can be used to evaluate the plans and implementation at each milestone.

— **Land Trust**—Identify seed funding to establish land trust and organize stakeholders with strong community participation. Planning staff with the City of Richmond has expressed an interest in participating as lead sponsor and Contra Costa County is interested in participating as a stakeholder, creating a valuable multi-level governance team that would benefit implementation.

— **Social Impact Bond**—Develop financial mechanism for a social impact bond, with non-profit governance, modeled after the Richmond social impact bond. Investors make a long-term commitment in exchange for tax benefits. Homes are renovated by a local work force.

— **Small Lot Housing Pilot**—Develop a design prototype for small lot housing, using a process that includes broad community input and participation in this process. Planning staff with the City of Richmond have expressed an interest in participating as lead sponsor to develop a prototype project, potentially on a site along Fred Jackson Way.

— **Develop Las Deltas Conversion Plan**—Collaborative community effort to develop an equitable vision and plan for the conversion of the Las Deltas housing sites, which were previously federal public housing.

— **Specific Plan**—A specific plan will be co-created with the community to coordinate the community design objectives for larger lot housing including the Las Deltas site (in coordination with the Las Deltas task force), infill small lot opportunity sites, permanent locations for the resilience hub, live-work housing, locations for electric car/bike share, green infrastructure including street trees and open space.

— **Net Zero Energy Leadership**—Develop North Richmond as a leading "Net Zero Energy" community, and link to local hire requirements. Much of the first cost and operating costs of energy efficiency and solar installation can be offset by available program offerings. Negotiation with PG&E on necessary grid upgrades to address deferred maintenance and modernization will be an essential step in the process. Marin Clean Energy (MCE), the Community Choice Aggregation program adopted by Contra Costa County, has the following programs available to North Richmond:

» Energy Efficiency for Low-Income Families and Tenants (LIFT) provides rebates to cover efficiency retrofits and fuel switching for income-qualified multifamily properties.

» Low-Income Home Energy Assistance Program (LIHEAP) will pay energy bills for customers and support energy efficiency retrofits.

» GRID Alternatives also offers low-income solar rebates, and free home solar system installations for income-qualifying homes in North Richmond. Utility savings directly benefit the homeowner. This program makes solar installations accessible to low-income homeowners who make less than 80% of area median income.

» Multifamily and Small Commercial Energy Savings Programs provide rebates for energy efficiency retrofits.

» Electric Vehicle charging program in pilot includes installation of EV charging stations in the community at workplace and multifamily homes in partnership with PG&E.

» Net Metering program pays customers $0.01 above the kWh retail rate for solar energy produced. This program optimizes the solar rebates to the customer and can lead to an annual energy bill of $0.

"Home ownership is important for us out here because that's another way of building community. It's something to live for. It's something you can leave to your loved ones, your children."

—Courtney Moore, Urban Tilth Watershed Program Manager

"Creating housing...for people to be able to have housing...all that is all part of wealth. Having a just transition—there is a lot of potential in this community for that. I just think in the holistic way, building all the ideas that we talk about, it's all part of building wealth in our community."

—Ladamien Flowers, Safe Return Project

» Feed-In-Tariff (FIT) program available to larger scale solar installations up to 5 MW at commercial, municipal or industrial sites. This program pays renewable energy producers directly for the solar power they produce. The MCE program pays roughly three times the rate of other FIT programs at $85/MW-yr.

» RichmondBUILD is a workforce development program that recently installed a 10.5 MW local solar installation, Solar One, with locally trained workforce resulting in jobs and renewable power. GRID Alternatives is a similar program in North Richmond, partnering with job training programs, and offering additional training for installers who already have experience, but want to move up in their career.

» Contra Costa County (CCC) is pursuing community-wide solar installations. Jody London is working with CCC to identify potential sites for solar installation. These installations will lock in lower energy rates for the community into the future.

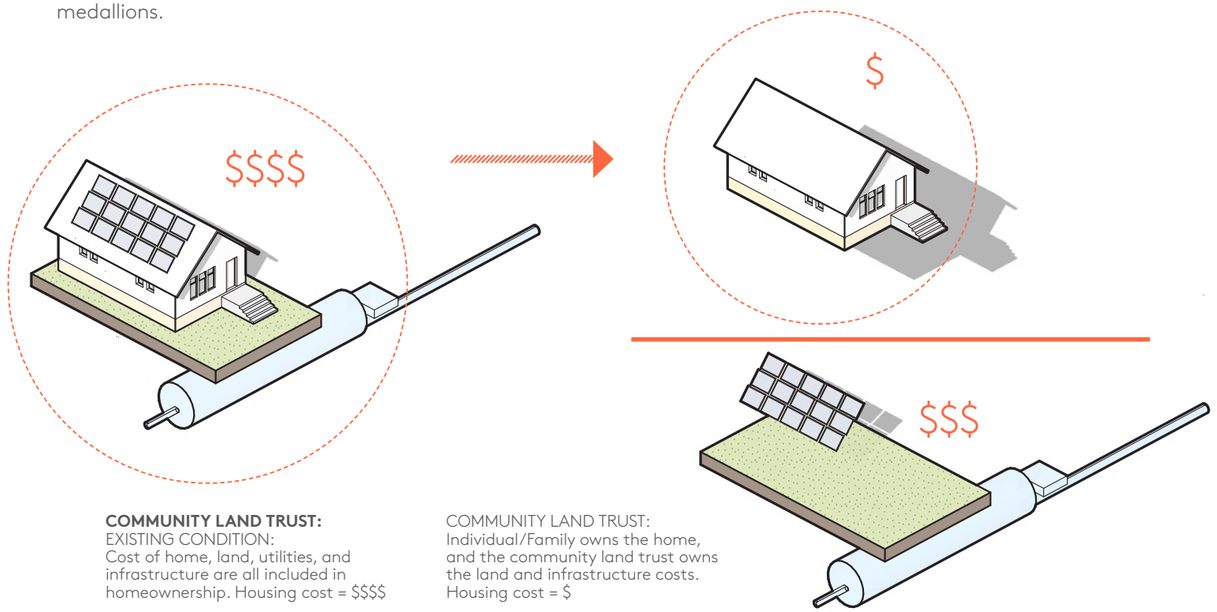
— **Heritage Walk**—Mithun will work with a community liaison, potentially from Urban Tilth, to develop a community process for identifying people and places to honor and the design and locations of the medallions.

Looking at Opportunity Zones

North Richmond is one of the few federal Opportunity Zones around the Bay. Opportunity Zone funding could replicate aspects of the City of Richmond's Social Impact Bond and market the combination of positive social benefits together with a very secure rate of return. Richmond's Social Impact Bond supports renovation of homes with local labor and sales of those homes replenishes the program.

"...by having ways to accumulate wealth and credit and really be a participant in the overall economy is really what we are looking for. Home ownership is really an anchor for that. This community has been locked out of that for a really long time."

—Josh Bradt, San Francisco Estuary Partnership, Resilient by Design Research Advisory Committee



COMMUNITY LAND TRUST:
EXISTING CONDITION:
Cost of home, land, utilities, and infrastructure are all included in homeownership. Housing cost = $$$$

COMMUNITY LAND TRUST:
Individual/Family owns the home, and the community land trust owns the land and infrastructure costs.
Housing cost = $

FRED JACKSON WAY
BEFORE

FRED JACKSON WAY
AFTER

Filter: 20,000 Trees of Justice

Richmond residents' rate of asthma is 17% versus an average of 7% statewide. The simple act of planting trees en masse can create a multi-functional air filter for particulates from heavy truck traffic on Richmond Parkway, as well as emissions from industrial neighbors. Landscape-based stormwater treatment, such as raingardens, can also slow and pre-treat stormwater while reducing localized flooding. A comprehensive approach is envisioned with trees and green stormwater infrastructure acting as a filter for air and water, reducing pollutants, providing shade and moderating the climate, with diverse plant communities providing habitat to wildlife. While trees contribute to a healthy community and healthy ecosystems, local organizations and individuals will benefit from expanding existing jobs growing, installing and maintaining these trees and raingardens.

Tree Typologies

Trees are familiar and underappreciated for the efficient and effective ecological and health benefits they provide—clean air, clean water, healthy soils, lower temperatures, mental restoration and shelter for birds and insects. More than 20,000 trees could be planted in the streets, parks and some of the residual lots throughout North Richmond. Tree groves are compatible with occasional inundation from localized flooding and can be designed to hold stormwater.

In the Bay Area region, projected climate changes include warmer days and more frequent and intense rain. Trees can capture up to 30% of rainfall on their leaves and transpire it back into the atmosphere which then in turn cools temperatures. By testing different species of willows and oaks, this project can help the region understand which tree types will be hardy in future conditions in the Bay Area provenance—improving the success rates of tree health.

"On a national scale asthma is at 7% but in Richmond it's at 17%. 17% of folks in Richmond got asthma."

—Ladamien Flowers, Safe Return Project, North Richmond resident

The trees envisioned for North Richmond will be permanent and temporary, edible and shade trees, for distribution and sales as well as for local restoration, for experimentation and for products. Growing, installing and maintaining trees is a career path that has an established history in North Richmond with local organizations Urban Tilth and the Watershed Project, which already plant more than 200 trees each year. By carefully selecting the composition and combination of trees, performance and research, shared goals can be established and met.

Closing Health Disparity Gap

Residents in the North Richmond neighborhood experience much higher asthma rates, diabetes, obesity and other health challenges, and research shows this is directly correlated to the physical environment.

Many communities around the Bay have similar challenges to North Richmond—low-lying neighborhoods at the Bay edge, isolated by freeways or industry, with high concentrations of poverty and exposure to contaminated air. With a proactive approach to creation of tree planting areas in the residential areas, and careful attention to species and location, masses of trees planted in sufficient quantities can make a real difference to air quality. This is one of the best practices to reduce exposure to local air pollution identified by the Bay Area Air Quality Management District (BAAQMD) in their guidance document entitled "Planning Healthy Places." Tree planting also has many valuable co-benefits including stormwater management, noise control and temperature moderation, and enhances community value overall.

North Richmond can demonstrate how familiar solutions and technologies can be combined in a comprehensive approach for greater health impact and innovation. These combined strategies support new ways existing residents can start small businesses, follow a career path and enhance health of their community with cleaner air and water, more walkability streets and places for recreation.

"Putting trees and biofiltration together is going to be a real service to this community in terms of impacting heat islands and treating urban runoff through these old industrial areas that are heavily polluted with legacies of PCBs in them, so this is really a hotspot for those kinds of approaches."

—Josh Bradt, San Francisco Estuary Partnership, Resilient by Design Research Advisory Committee

Champions of Trees of Justice

The project champion of this idea is the North Richmond Community Advisory Board, which includes residents as well as representatives from the East Bay Parks District, the West County Wastewater Facility, the Contra Costa Flood Control District, the City of Richmond Mayor's Office and County Supervisor John Gioia's office. We will be requesting that the North Richmond MAC and the West County Toxics Coalition and Communities for a Better Environment support this proposal as key project partners.

To advance the urban forest plan and establish a related health and air quality baseline assessment, the design team would include Mithun; Biohabitats; Stew Winchester, a local arborist; the Watershed Project and/or Urban Tilth; a local geotechnical and local civil engineer to be determined for soils evaluation, drainage and permitting. San Francisco Estuary Partnership will be a resource for additional technical expertise and coordination with other regional initiatives.

This project will benefit from the recently completed Richmond Urban Greening Master Plan. San Francisco Estuary Institute is developing green infrastructure planning guidance and each jurisdiction will need to provide a green stormwater infrastructure plan by 2019. Multi-benefit strategies developed to address air and water quality will be highly transferable and add value to the Richmond Greening Master Plan.

Suggested pre-project funding could potentially come from Chevron or area distribution centers that rely on truck use and other local businesses such as Republic Services, or from the Contra Costa County Department of Public Health. Trust for Public Land has been a partner on many Richmond parks and green infrastructure projects and may be a good partner/ resource here as well due to their focus on health.

The urban forest plan could be funded by:

- Coastal Conservancy Climate Ready Grants, $3.6 million available, 75% of funds for disadvantaged and low-income communities. The Conservancy is seeking to support multi-benefit projects that use natural systems to assist communities in adapting to the impacts of climate change, with an emphasis on projects that enhance natural systems and benefit disadvantaged communities. Proposals due July 2nd.
- Cap and Trade, estimated at $2 billion per year. Align with AB398 which outlines funding priorities including—(1) air toxic and criteria air pollutants from stationary and mobile sources, (2) low- and zero-carbon transportation alternatives, (3) sustainable agricultural practices that promote transitions to clean technology, water efficiency and improved air quality, (4) healthy forests and urban greening, (5) short-lived climate pollutants, (6) climate adaptation and resiliency, and (7) climate and clean energy research. Note: this could be a part of a larger grant including other projects and green mitigation fund.
- Prop 1 State Water Bond, $2.7 billion with $1.495 billion for multi-benefit ecosystem and watershed protection and restoration projects.
- Measure AA Funds, $25 million per year, distributed by SF Bay Restoration Authority (SFBRA) for restoration and flood protection in the nine county Bay Area.
- SB5 Resources and Climate bond, up to $3.5 billion, measure to improve community's ability to adapt to unavoidable impacts of climate change including landscape resilience and water retention.
- Other sources of funding could include North Richmond Green Mitigation Fund.

GERTRUDE AND RICHMOND PARKWAY BEFORE


NORTH RICHMOND
Richmond Pkwy

Next Steps for Trees of Justice

The next step is the formation of a team with a modest amount of pre-project funding to pursue grant funds for a community process to develop the urban forestry planning project in conjunction with a health assessment baseline that can be revisited to demonstrate how the implementation is meeting its goals. An equity framework plan has been discussed for creating criteria that can be used by the North Richmond MAC or the continuation of the North Richmond Community Advisory Board to evaluate the proposed implementation plans.

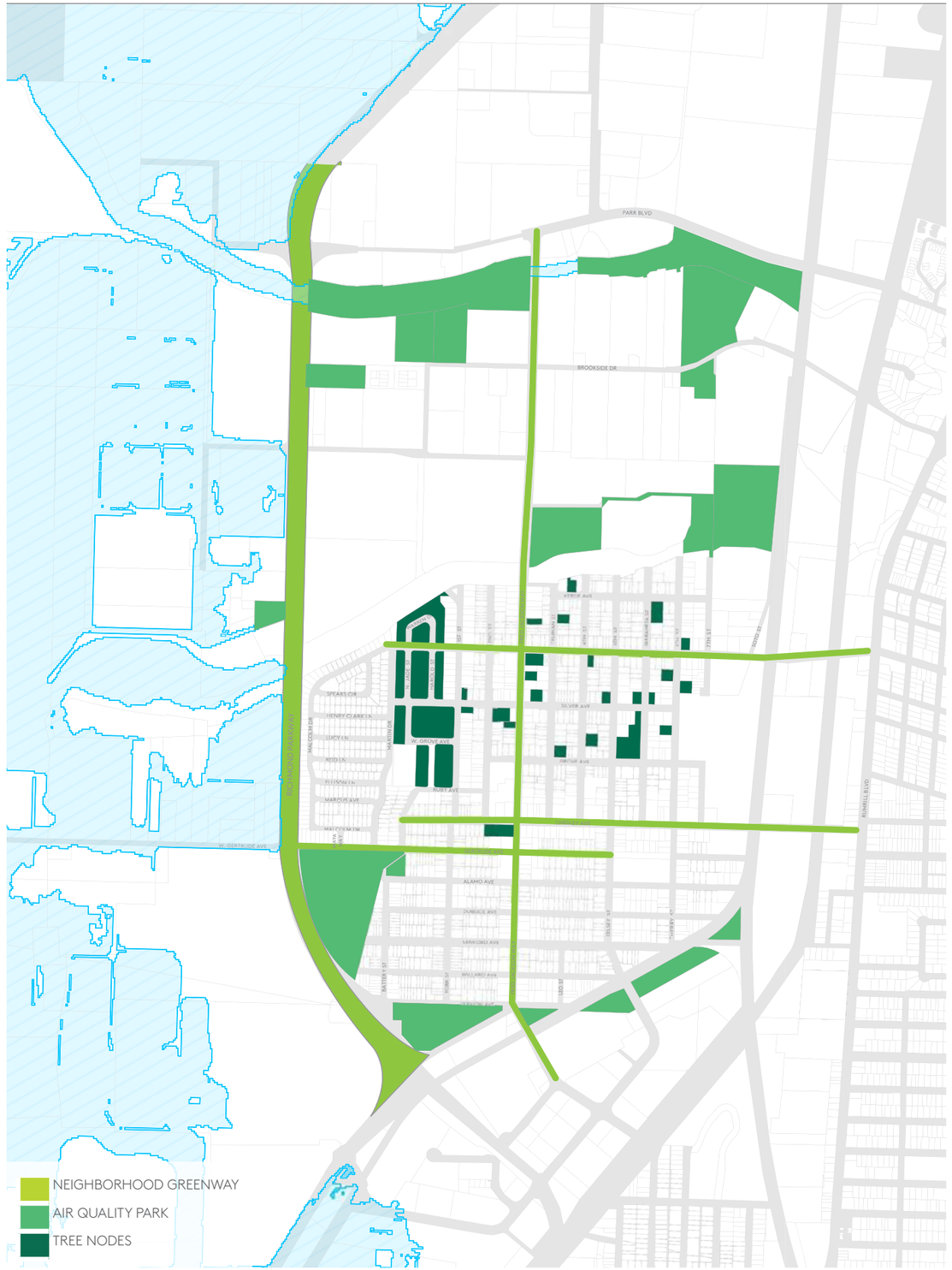
The project is an urban forestry/greening plan for the North Richmond area that would be one layer of a more comprehensive specific plan for the area. Given the pace of commercial and industrial development, it would be beneficial to establish a baseline plan outlining ecological buffer areas and street tree opportunity areas as soon as possible. The plan would include an implementation strategy and a phase one installation that would include evaluating the conditions of sites; developing goals and objectives for the project with the community and project sponsors; building criteria with the community, land owners and scientists for the range of installation typologies; identifying the phase one installation and developing the benchmarks for health and performance that can be tracked over time. A goal of this plan would include a commitment to develop a work plan with a substantial role for local experts to perform at least 30% of the design work, and 90% of the installation and maintenance work. Technical expertise in design and maintenance would be developed in collaboration with the local experts.

Measuring Climate Change Impacts on Trees

The compact North Richmond residential neighborhood provides an ideal study area for measuring the impact of strategically located and selected tree species to filter air pollutants, reducing exposure to diesel exhaust and industrial emissions. Tracking the air quality baseline of North Richmond, and the impact of tree buffer zones on the concentration of pollutants can be correlated with health outcomes over time as part of this study.

"We are a frontline community...with (high) asthma toll rates. Planting more trees will help and create better air quality for everyone, not just us, but everyone."

—Courtney Moore, Urban Tilth, Watershed Program Manager



Neighborhood Greenway:
Capitalize on space along wide rights of way such as the Richmond Parkway. Tree species selections are based on high effectiveness at removal of fine particulate matter from large number of diesel truck trips. Focus on large evergreen trees with long life spans that do not emit high levels of volatile organic compounds—for example cypress, pines and possibly poplars.

KEY SPECIES:

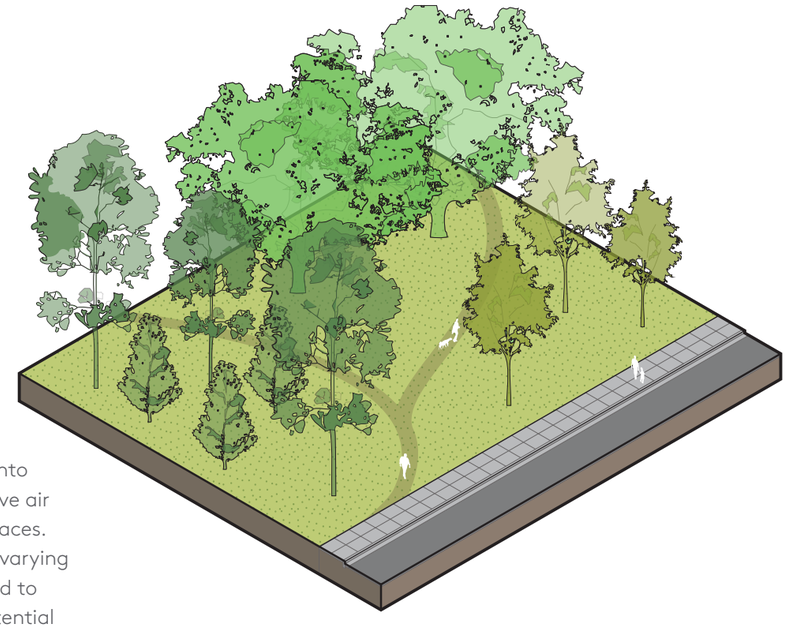
ARROYO WILLOW

MONTERREY CYPRESS

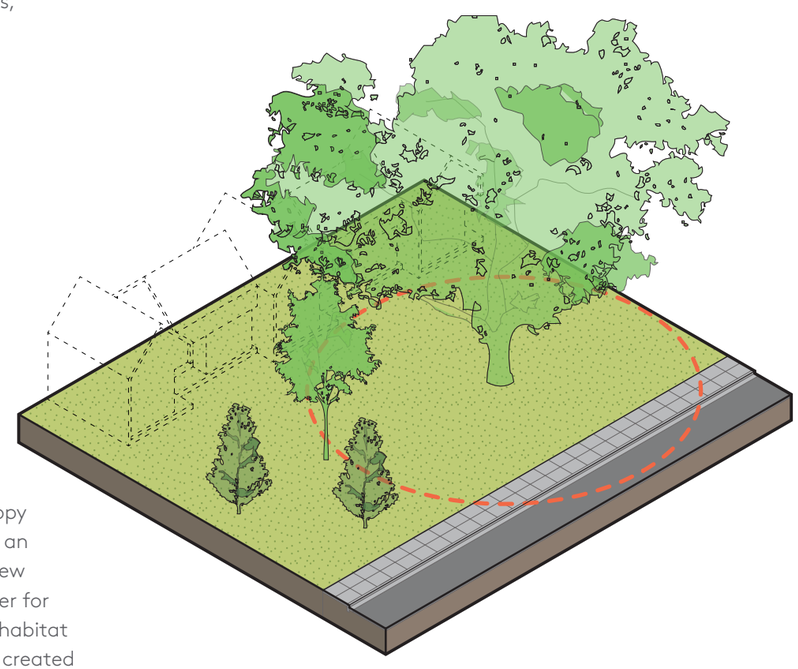
VALLEY OAK

COAST LIVE OAK

filteR



Air Quality Park:
Vacant lots can be transformed into densely planted parks that improve air quality and provide new social spaces. Trees are planted in clusters with varying species for ecological diversity and to maximize air quality benefits. Potential species suites include native oaks, willows and sycamores.



Tree Nodes:
Preserve large, healthy tree canopy by protecting existing trees with an appropriate buffer zone. Plant new trees outside the protective buffer for future successional canopy and habitat connectivity. The tree nodes are created in tandem with new housing proposals on neighborhood vacant lots.

Flow and Grow: Marsh to 'Main Street'

Adaptation is the ability of a place to adjust to changes and continue to thrive. Building on the North Richmond Shoreline Vision Plan, a horizontal levee and muted marshland can protect the neighborhood, the West County Wastewater facility and the Richmond Parkway, and co-exist with the warehouse uses that are providing local jobs. The levee and muted marsh strategies support a 'transition zone' where sediment can slowly gather and rise to grow valuable marsh habitat that will continue to filter and support the largest eelgrass bed in the Bay Area, oyster beds and bird migration paths. The interactions between the horizontal levee, muted marsh and the creek system provide opportunities to grow the marsh while improving riparian and fish habitat in the flood plain. Nearby wastewater, stormwater pumping systems and composting infrastructure are engaged as beneficial contributors to this hybrid ecology. The creek levees, built by the flood control district to provide basic neighborhood protection that accomodates projected sea level for 2100, can also be designed to provide the option for a long term, 'grey-to-green' transition from industrial uses to farming to marshland, exploring bioremediation and sediment value capture strategies in the future.

Why Here?

The Richmond region has the most shoreline of any area around the Bay. It is one of the few places that has undeveloped or reusable land to create transition zones where marsh can grow. Transition zones are where sediment naturally gathers to create more marsh over time. As marsh drowns with sea level rise, new marsh takes hold on higher ground within the transition zone to support marine life, as well as healthy water and air for people.

This area is also home to industry, many distribution centers and County services such as waste transfer, composting and wastewater treatment that rely on Richmond Parkway for truck access. This is not a unique combination around the Bay although it is a vivid example—an ecologically exceptional creek and marine ecosystem paired with highly polluted land and intensively used infrastructure.

This is a place to break down the conceptual duality between natural systems and hard infrastructure, by creating hybrid ecological systems. The West County Wastewater Treatment Plant is engaged in resource recovery and reuse of treated effluent providing purple pipe water to Chevron. Urban Tilth and other agricultural uses in the area would also benefit from recycled water. The landfill nearby operated by Republic Services has been capped, however it is still a solid waste transfer site and has active composting on site that could become a beneficial contributor to local agriculture and to the maintenance of the horizontal levee system. Finally, the watershed was reconfigured with the introduction of levees and a pumping system located at Richmond Parkway and Gertrude Avenue

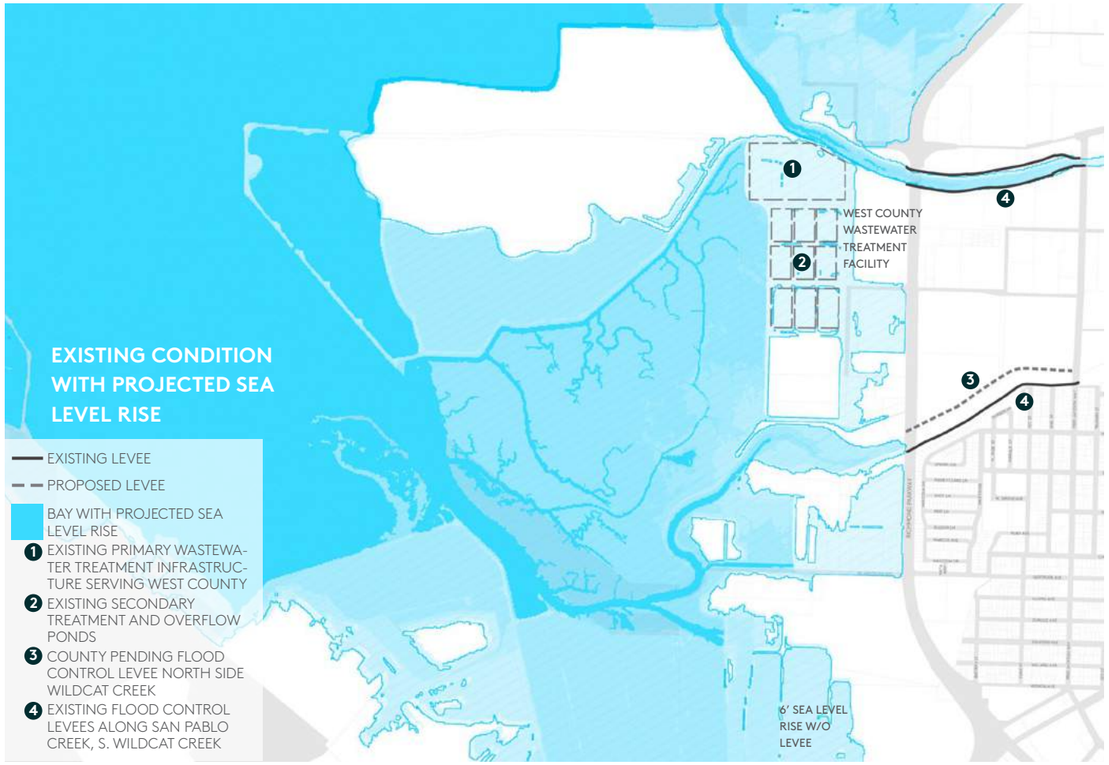
"Sea level rise is coming and anything we do today to get ready will pay off big time. We're facing this is much shorter timeframes then we used to think about this problem."

—Juliana Gonzales, Executive Director, The Watershed Project

which currently runs all year round to keep low-lying areas of the community dry.

A Multi-Purpose and Flexing Levee

A protective horizontal levee running north-south, just west of the existing West Contra Costa County wastewater treatment facility, will protect critical infrastructure in the face of rising tides and storms while also providing new marshland acreage and a naturally occurring transition zone. A muted marsh, or wetlands restoration, is managed with tidal gates that allow high tides to come in and out of the inundated area—creating healthy habitat. Trails can connect to future interpretive destinations planned at Point Pinole

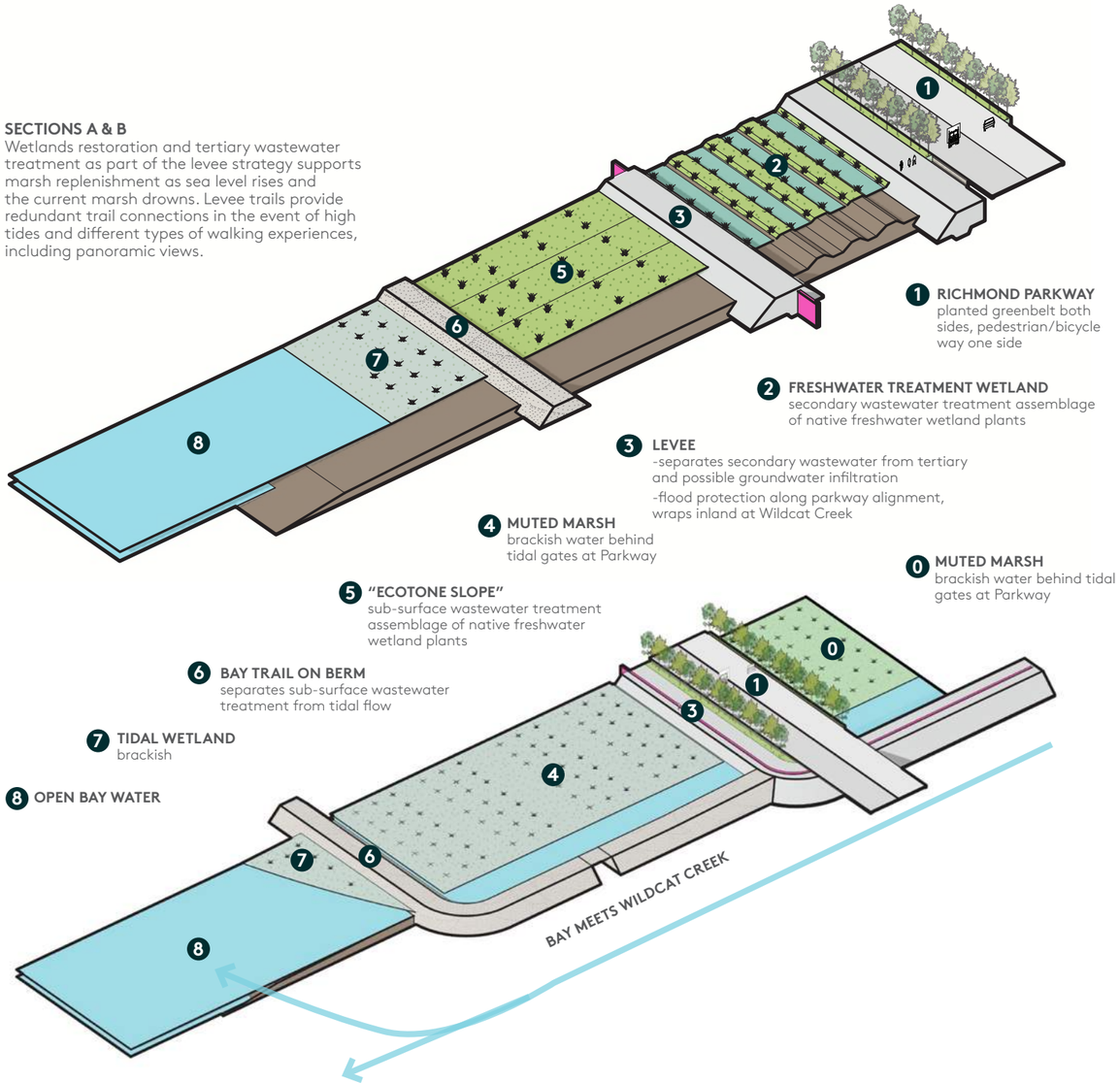


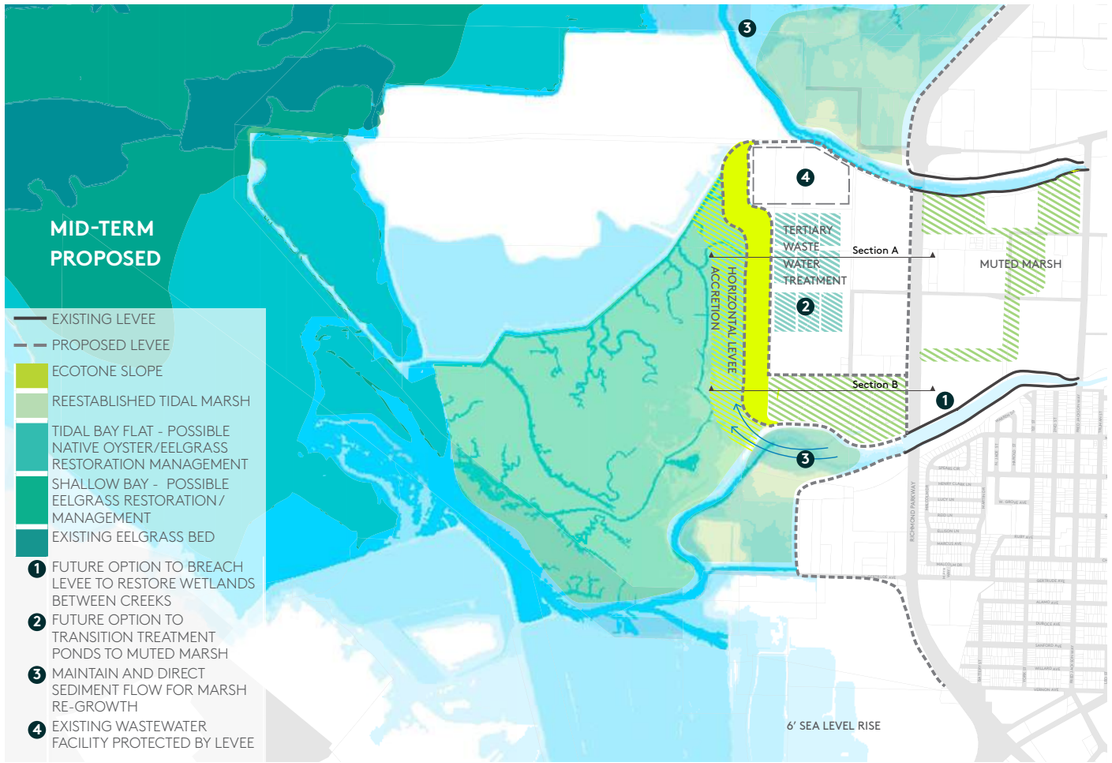
and West County Wastewater Facility, and the marsh can be designed to fit around planned industrial uses.

The West County Wastewater District's levee strategy would be coordinated and extended within the greater shoreline to protect the North Richmond neighborhood and existing and planned industrial uses from sea level rise and storm surge. However, the stormwater pumping system is also needed to protect North Richmond and City of Richmond residents, and to improve and maintain access at Gertrude Avenue. The pump will require modernization as it is in the future inundation zone and is also getting to the end of its useful life. The water from the pump is envisioned as a beneficial future water source for agriculture, tree nurseries, establishing the plantings on the horizontal levee and other non-potable uses.

A portion of the integrated levee concept is described as "flood control 2.0" because the innovative linked systems combine the flood control structure with beneficial sediment delivery, where re-connection of creek systems enables marsh regeneration Bay-ward of the levee; on the inward side, the levee provides a structured 'ecotone' slope for tertiary wastewater treatment and polishing via subsurface wetlands. The nearby compost recovery operation may also provide a source of organic material to supplement the natural sediment flow, however this option requires further study. Finally, all elements of this plan—the nurturing of the marsh and the creative resource recovery opportunities—all create opportunities for green jobs and ongoing scientific research.

SECTIONS A & B
Wetlands restoration and tertiary wastewater treatment as part of the levee strategy supports marsh replenishment as sea level rises and the current marsh drowns. Levee trails provide redundant trail connections in the event of high tides and different types of walking experiences, including panoramic views.





An Adaptable System
Flood control in North Richmond, like many coastal communities in the Bay Area, requires attention to sea level rise, storm surge and inland flooding. It is also a community that has experienced health impacts and environmental injustices with the location of multiple industrial and waste management systems nearby. The integrated approach to multi-benefit flood control produces a hybrid ecological system that uses tidal and sub-tidal vegetation as an integral part of the water treatment system, while creeks and riparian habitat support the flow of sediment to build up a healthy marshplain and sustain it. Additional water flows from the pumping systems provide a necessary service to keep low lying areas from flooding while producing a valuable resource to irrigate the adjacent urban forest, agriculture and nurseries. Household and green debris from North Richmond forests will be treated locally by Republic Services to create valuable compost for the larger system. A beneficial circular economy is forming from input that was previously seen as waste.

This system will evolve and grow over time, to respond to the evolving sea level rise realities. The concept is intentionally developed with a "loose fit" that can accommodate change over time. Space between the levee and the parkway is a transitional zone that could accommodate an even larger levee in the future or could be part of an enlarged marsh in the future if land use priorities shift and green infrastructure needs take priority in the longer-term future. Historically the creeks connected in this area. The levees along the creeks can be designed to allow for breaching in the longer-term future should a "grey to green" strategy be adopted. Allowing space for marsh and wetland between the creeks provides options for managing stormwater and upland flooding in the context of the dynamic conditions of climate change.

MUTED MARSH VIEW

Many Champions
Anticipated project champions for the horizontal levee are County Supervisor John Gioia, and the Contra Costa Flood Control District in partnership with the West County Wastewater Facility. Funding sources could include Ducks Unlimited and California State Coastal Conservancy. County Supervisor John Gioia, City of Richmond Mayor Tom Butt and Assembly member Tony Thurmond are the elected officials that will potentially be supporting the project.

Community partners that would guide and implement the project include Urban Tilth and the Watershed Project. The design team would include Moffatt Nichol, Biohabitats, Mithun and geotechnical, structural, and regulatory and permitting consultants. Community support from San Pablo-Wildcat Creek Watershed Council, the North Richmond Municipal Advisory Committee will be important.

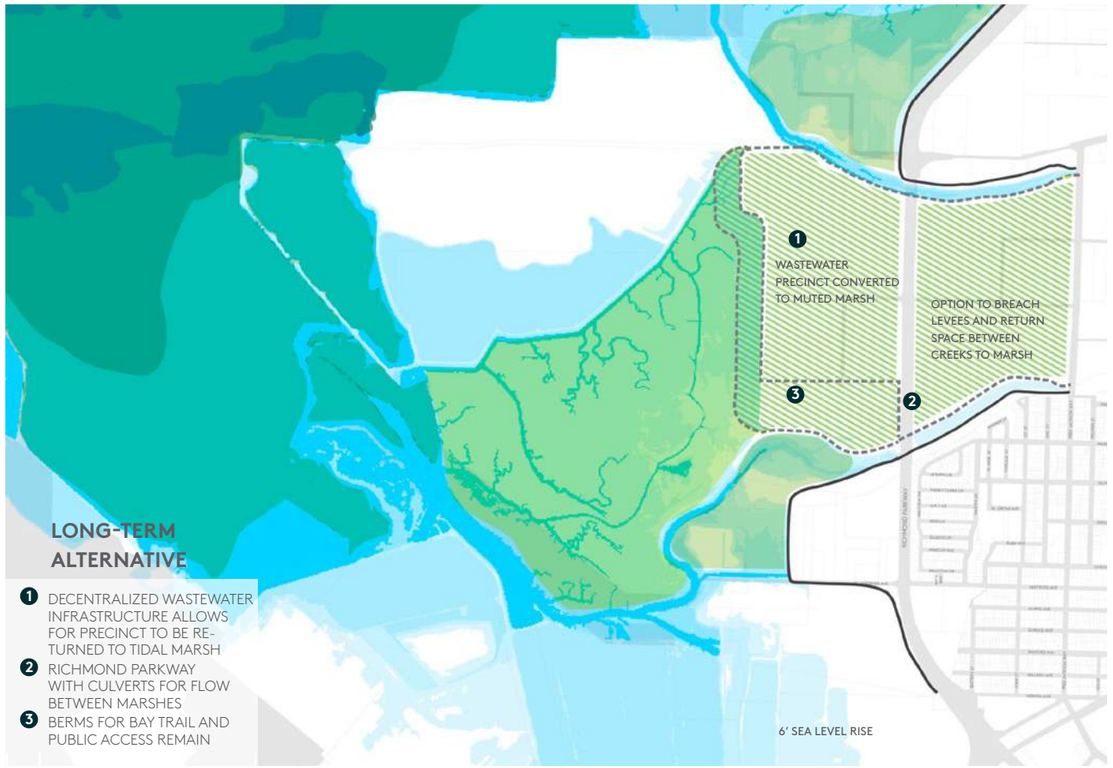
Potential funding sources include:
- State Coastal Conservancy Grants, funds from Prop 1, applications due June 8th. Topics include wetland restoration and urban greening, with priority for projects that benefit disadvantaged communities.
- FEMA for pump and outfall replacement costs. Funds requested could include a study as part of the water management plan that would leverage the cost to replace the pumping system and outfall for multiple functions beyond a direct, one-to-one replacement
- Prop 1 State Water Bond, total program is total is $7.545 billion, funds watershed protection and restoration, integrated water management, flood management. Align with funding priorities including: $1.495 billion for multi-benefit ecosystem and watershed protection and restoration projects; $810 million integrated regional water management plan projects; $725 million for water recycling and advanced water treatment technology projects; $395 million for statewide flood management projects and activities.
- Measure AA Funds, $25 million per year, distributed by SF Bay Restoration Authority (SFBRA) for restoration and flood protection in the nine-county Bay Area.
- SB5 Resources and Climate bond measure, up to $440 million. Funds to improve the community's ability to adapt to unavoidable impacts of climate change, improve and protect coastal and rural economies, agricultural viability, wildlife corridors, or habitat, develop future recreational opportunities, or enhance drought tolerance, landscape resilience and water retention.
- Ducks Unlimited, for muted marshlands.
- California Coastal Land Conservancy.

"A lot of the marshes that characterize North Richmond are going to be lost to sea level rise. We are working with the community to look at places where the wildlife and the bird communities and other critters that rely on these marshlands can find places to escape to as sea level rises."

—Josh Bradt, San Francisco Estuary Partnership, Resilient by Design Research Advisory Committee

Prioritizing with an Integrated Water Plan
To avoid additional permitting in Bay water as sea level rises, decisions about this project need to happen sooner than may be assumed. Moffatt Nichol determined that based on current sea level rise predictions in the Bay Area the toe of the horizontal levee will begin to meet sea level rise plus king tides around 2040. Working backwards with a two-year construction period and the current eight-year permitting process means that a decision to proceed would need to happen within the next decade.

An integrated water management plan for the neighborhood is a next step that can help prioritize implementation of related projects such as the reuse of greywater for irrigation of the levee and the specific locations of the horizontal levee and muted marsh.



A conceptual levee design project is another key step to build interest in future development of shoreline protection as a multi-benefit project. This project will bring together designers, technical experts and community representatives to scope out the location and extent of the future levee project so that potential synergies can be explored and future conflicts avoided.

The legacy of this project for the Bay Area will be a marsh 'transition zone' demonstration in one of the most ecologically rich areas of the Bay, in one of the few remaining areas of the Bay that can incorporate a transition zone without major property disruptions.

Unique Conditions in the Bay Area
This shoreline is among the few around the Bay that can provide a marsh "transition zone." In addition, a muted marsh can co-exist with the warehouse uses that are providing local jobs. The levee, which can take many forms, will protect multiple assets—the neighborhood, the Richmond Parkway, the wastewater facility, and industrial and farming lands that provide jobs and valuable marsh habitat.

SEE THE APPENDIX FOR A MEMO ON THE BENEFITS OF DECENTRALIZED WASTEWATER TREATMENT BY BIOHABITIATS.

Relate

CREEK PATH
BEFORE


TO VERDE
SCHOOL

Relate: Wildcat Creek Trail, an Upland to Bayland Connector

Wildcat Creek Trail is well-used and the focus of clean ups, restoration and positive memories from childhood for residents. However, the trail is not continuous—gaps limit opportunities for shoreline and upland access. Use is increasing. The Verde School—a local elementary school along the trail—is adding middle schoolers, a fish ladder along the creek is targeted for improvements and a "complete street" design for Rumrill Road will connect directly to BART one mile away and the new ferry terminal with 30-minute service to downtown. A pedestrian/bike overpass at Richmond Parkway will create a destination overlook and connection to the shore, the weekend flea market, the Bay Trail and Water Trail.

More Than a Trail

Much more than simply a connecting bridge that fills a gap in the trail, this multi-use overpass will help strengthen the identity of North Richmond. Visible to people throughout the region, the bridge will be a statement about North Richmond and celebrate the cultural history of an evolving community with a rich African American past. The design of the bridge must be exceptional to live up to the message that North Richmond wants to share a new narrative about itself—about self-determination, entrepreneurship and agency.

A Class I bike and pedestrian overpass will be 15-feet wide and have 17-foot clearance for the Richmond Parkway. Accessible ramps on either end will create a comfortable experience and dramatic views of San Pablo Bay and the marsh. Environmental agreements were reached in 2007 regarding an alignment for the bridge. Maintenance and ownership agreements between public agencies have been substantially worked out.

At the east landing of the bridge, a community gathering space could serve as a picnic spot along the creek and a way to visit with people coming and going to and from the marsh. Willow groves can provide shade and picnicking. Oak nurseries are a testing ground for hybrid species that are adapting to changing temperatures and wetter and drier seasons. And on the bay side of the bridge, trails will be connected and a floating trail will be built out into the marsh to offer visitors an experience of immersion in that unique environment.

"The bridge idea is so motivating because not only does it involve community development but also a connection to nature that a lot of people don't know. People literally don't know that the shoreline is there."

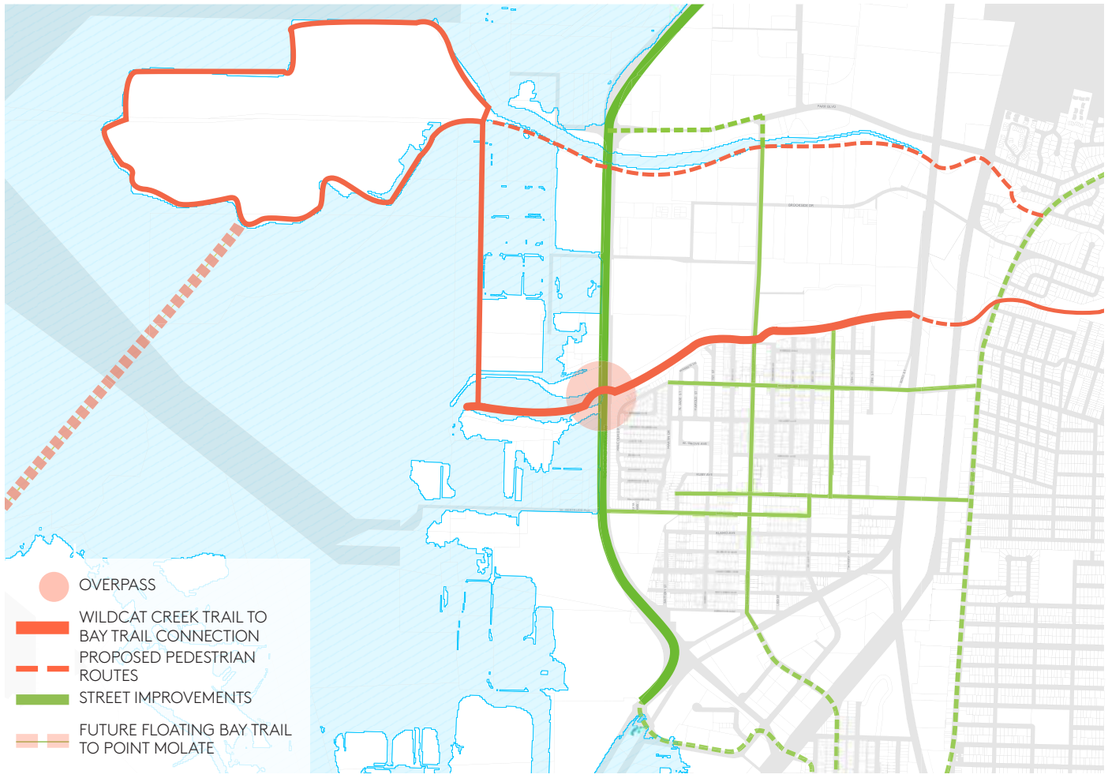
—Sara Gurdian, student intern for the Watershed Project

"I went to Verde School. I played in the creeks. But as a kid, I didn't know what I was playing in. We was kind of like oblivious to the fact we actually had this nature in our backyard."

—Courtney Moore, Urban Tilth, Watershed Program Manager

Health Benefits of Nature

Wildcat Creek Trail is an important community asset that will see increased use with the addition of middle schoolers to the Verde School. The trail is representative of many creeks that connect baylands to uplands around the Bay. It changes in character as it moves through forest, agriculture, neighborhoods and urban areas. Its location immediately adjacent to so many residents, having a high sediment load, connecting to the regional Bay Trail and being a salmon-bearing creek make it particularly well suited as a focus for the Bay Area Challenge because this is a replicable project.



RESILIENT BY DESIGN: MITHUN HOME TEAM FINAL REPORT

A key opportunity for the Bay Area is to acknowledge the isolated and neglected neighborhoods that have strong cultures and leadership but have not been celebrated for their unique contribution. A pedestrian overpass with a strong cultural message will celebrate this contribution. By also providing redundant trail systems throughout the neighborhood, this gap closure project for the region also serves to create trail continuity that support multi-modal commuting, recreation and physical health that supports social cohesion, mental health restoration and growing Bay stewards into future generations.

This overpass will also play a key role in reducing reliance on the automobile by providing a convenient bicycle and pedestrian connection to the Bay Trail, an extremely popular flea market, and the new Richmond ferry terminal with a 30-minute ride to downtown San Francisco. As new housing is developed in North Richmond it will be increasingly important to have strong bicycle and pedestrian connections to reduce vehicle trips. The alternative, a signalized intersection, would impact traffic flow and increase diesel emissions from idling at the intersection.

Bay Trail and East Bay Regional Parks District
The project champion of this idea is the North Richmond Community Advisory Board, which includes residents as well as the East Bay Parks District, the City of Richmond Mayor's Office and County Supervisor John Gioia's office. We will be requesting that the North Richmond MAC, Contra Costa Public Works, and Bay and Water Trails support this proposal as key project partners.

To advance this idea the design team would work collaboratively with local organizations such as the Watershed Project and/or Urban Tilth to conduct a community driven design process. The design team would include Mithun, Alta Transportation, and local geotechnical, lighting, structural and civil engineers.

Source of funds to explore:
- Recommendations from Lee Ho of the Bay Trail include pursuing Measure AA funds through the Restoration Authority ($25 million per year), and partnering with The California Outdoor Engagement Coalition.
- Recommendations from Jessica Davenport of the Coastal Conservancy include working with Marilyn Latta at the Coastal Conservancy to develop a proposal for the SF Bay Restoration Authority, which is a grant maker for measure AA funds.
- SB1: Gas tax increase to support state roadway improvements, $5 billion per year.
- MTC: Public transit and transportation, $1.5 billion per year. Includes active transportation funding to support street upgrades, bike paths and pedestrian trails.
- SB 595: Increase to bridge tolls (+$3), estimated at $4.45 billion over 25 yrs. This will be voted on as regional Measure 3 in the next election. Toll revenue will be used for transportation enhancements in the Bay Area.
- Cap and Trade, estimated at $2 billion per year. Align with AB398 which outlines funding priorities including—(1) air toxic and criteria air pollutants from stationary and mobile sources, (2) low- and zero-carbon transportation alternatives, (3) sustainable agricultural practices that promote the transitions to clean technology, water efficiency, and improved air quality, (4) healthy forests and urban greening, (5) short-lived climate pollutants, (6) climate adaptation and resiliency, and (7) climate and clean energy research. Note: this could be a part of a larger grant including other projects and green mitigation fund.
- Land and Water Conservation Fund (LWCF) grants provide funding for the acquisition or development of land to create new outdoor recreation opportunities, grants up to $3 million.
- Active Transportation Planning and Safe Routes to School grants.
- Other sources of funding could include North Richmond Green Mitigation Fund.

"I used to be so scared of animals, trees and being out in the forest and stuff. I used to be so scared but once I got out there it was so calm and relaxing. It definitely gives my whole family something to do. My kids can go out there and play and they get to be out in the wild and have fun. A connection is important for our community because we don't get to see that every day. We're blocked from it. It's taken away with no means or no way of getting there. Opening up the connection will bring more people together."

—Princess Robinson, Urban Tilth Community Engagement Manager

Next Steps for Wildcat Creek Trail Overpass
The next step is to identify funds to support the development of grant proposals for the connector and floating trail. The Bay Trail or the Coastal Conservancy may be a source, or possibly the West County Wastewater Treatment facility.

Next, a concept design would be developed using community driven design process that includes evaluating the existing site conditions; developing goals and objectives for the project with the community and project sponsors; building criteria with the community and public agencies to evaluate design options; identifying the preferred design direction; complete the design; and developing benchmarks for health and performance that can be tracked over time.

Most Unique Feature
Turning barriers and historic isolation of the community into opportunities to create shoreline access to future destinations also has potential to grow personal health and connection with stewardship of the Bay.

"The Verde School will be extended to the 8th grade so there will be a lot more kids and teenagers. To go for a walk on these trails people could take their mind off things, it would be great for relaxation. North Richmond can be a city just like any other—safe, calm and a nice place to take a walk."

—Regina Cuevas, North Richmond resident, Verde School parent and Watershed Project Block Ambassador

HIDDEN HABITATS:


CLAPPER RAIL


SALT HARVEST MOUSE


EEL GRASS


PACIFIC HERRING


MIGRATORY BIRDS


OYSTERS


BayTrail

Green Benefits District: A Tool for Restorative Justice

A Green Benefits District (GBD) will enable North Richmond to invest in green infrastructure solutions that provide career and job opportunities, reduce health impacts on residents from harmful emissions and begin to offset decades of under-investment in infrastructure, while also improving the ecological health of the bay. The GBD will collect funding from three key sources – first, mitigation funding from state and federal funding sources for environmental remediation and second, redirect County funds by streamlining waste and water programs and third, collect impact fees from new commercial and industrial development. As a fence-line community that has experienced long-term impacts of chemical emission from adjacent refineries, factories, and waste and recycling centers, diesel emissions from the Richmond Parkway, an active trucking route, North Richmond residents deserve an equitable alternative. GBD projects will support community greening goals and protect public health. This fund will indirectly support the development of affordable housing by removing some of the current disincentives to investment in the community.

Policies and Community Infrastructure

Green Benefits Fund: A new policy tool is envisioned for collecting funds from polluting industries, utilities with a record of delayed maintenance, and/or state and federal funds that pool resources to mitigate indirect impacts, to shift the cost burden for mitigations away from those who have been most impacted. For example, the policy would include a mechanism to direct a portion of gas tax funds to communities bordering major roadways, for the purpose of paying for measures that reduce resident's exposure to diesel exhaust. Finally, the fund would include impact fees for regional users, new commercial and industrial development, and some existing commercial and industrial development. In cases where the impacts are the legacy of earlier adjacent polluting uses, EPA brownfield funding will be pursued.

Resilience Hub: The proposed hub is a community space to offer services including disaster preparedness, home ownership financing, details on energy and water efficiency retrofit programs, renewable energy financing and incentives, electric car and bike sharing programs, small business startup support, etc. Given past challenges with local hire provisions in the area, a local non-profit CDC would facilitate training, job placement and completion of required documentation to meet contracting requirements. The GBD would be a source of funding to support these programs.

Community Air Risk Evaluation Program: This program will develop mitigations and testing protocol to measure air quality over time, working closely with the criteria established by the Air District's Community Air Risk Evaluation (CARE) program that was developed to identify residential areas with high levels of risk from toxic air contaminants (TACs) and to use that information to help focus mitigation measures. According to the findings of the CARE Program, "diesel PM, mostly from on and off-road mobile sources, accounts for over 80 percent of the inhalation cancer risk from TACs in the Bay Area (Bay Area Air Quality Management District, Assessing and Mitigating Local Community Risk and Hazard Impacts, page 5-3)." Richmond is one of the priority areas identified as most highly impacted in the Bay Area.

Community Infrastructure: North Richmond infrastructure has suffered from decades of deferred maintenance and is in urgent need of investment to upgrade water piping, electrical grid infrastructure etc. The residents have been rate payers but have not received upgrades to basic infrastructure. Given the high levels of vacancy, new development will be returning the community to its previous occupancy levels, and will only add new density in the later phases of development.

Energy Grid Upgrade: The local electric grid faces many current limitations for North Richmond to reach net zero energy and carbon goals. The current grid is already facing stability issues, resulting in power outages and inability to feed power from renewables back into the grid. Overall, the local utility grid is overdue for infrastructure upgrades and has been under-invested historically. Without upgrades, this is expected to get worse with time, since community electrical demand is expected to increase when fuel switching takes place, and as population densities increase. Grid upgrades are the responsibility of the utility, PG&E, and a productive conversation of upgrades that will be needed can be initiated once a master plan is developed. Advocacy organizations that may be helpful to North Richmond in negotiating a healthy and economically viable community include:

- TURN (The Utility Reform Network) advocates for reliable, safe, economical utility rates; see www.turn.org.
- Communities for Better a Environment advocates for environmental justice, clean energy and healthy communities; see www.cbecal.org.
- CEC Disadvantaged Communities Advisory Group: The California Energy Commission has set up a new advisory group this year that will take part in discussing how to make sure that benefits from grid upgrades will reach low-income communities.

Energy Storage: Energy storage can play more than one role. The storage allows continuous energy use during grid shutdowns, however energy storage also provides critical grid stability services by providing peak shaving. There may be an opportunity to partner with adjacent industrial users to bring the benefits of energy storage to North Richmond.

Decentralized Wastewater Pilot: Given the need for widespread investment and placemaking destinations in the neighborhood, the opportunity exists to develop innovative integrated water infrastructure systems that will pilot decentralized wastewater treatment and enable resource recovery of water and nutrients to support irrigation of trees, nurseries and agriculture. There is interest from private companies that specialize in developing "Living Machines" and have experience with becoming a utility district within a utility district in order to manage this unique system. Grant funding will be pursued to support this work, as well as the attendant local jobs and research opportunities.

Job Opportunities and Lower Utility Costs

North Richmond residents have been paying a price for environmental burdens imposed by others. For example, the truck route along he Richmond Parkway serves the northern California economy, and yet it impacts the health of local residents with diesel emissions, cuts off the community from the bay, and creates a dangerous environment for children. Contaminated stormwater flows from upland industrial and rail uses, and adjacent industry also contributes to air emissions. This fence-line community is highly impacted and the health impacts are well documented.

"Putting trees and bio filtration together is going to be a real service to this community in terms of impacting heat islands and treating urban runoff through these old industrial areas that are heavily polluted with legacies of PCB's in them, so this is really a hotspot for those kinds of approaches."

—Josh Bradt, San Francisco Estuary Partnership, Resilient by Design Research Advisory Committee

The proposed mitigations will support the development of green infrastructure using tree planting and bioswales to filter air and water, as well as investment in widespread use of green technology for renewable energy, electric cars, integrated water treatment systems, etc. Combined, these strategies will contribute to greater health and well-being, more affordable living, and the future identity of North Richmond as a place of innovation and an engine of the restoration economy.

"We are a frontline community...with (high) asthma toll rates. Planting more trees will help and create better air quality for everyone, not just us, but everyone."

—Courtney Moore, Urban Tilth, Watershed Program Manager;

Direct Benefits to Successful Community Programs
The North Richmond Community Advisory Board, which includes residents as well as representatives from the City of Richmond Mayor's Office and County Supervisor John Gioia's office are in support of this proposal. The Watershed Project and the Contra Costa County Flood Control District have been active in developing the conceptual framework for a green benefits district, emphasizing the need to gather funding from those that have generated the impacts, not from the impacted residential community.

Urban Tilth and the Watershed Project have expertise, as demonstrated from the Richmond Greenway project, in designing and implementing large-scale green infrastructure projects with community input and local hiring. The Trust for Public Land has played a key role in recent green infrastructure and parks projects in Richmond and North Richmond and is a likely partner here as well.

The sources of funding to be pursued include the following: gas tax, MTC, BAAQMD air quality mitigation funds, EPA Brownfield funding, California cap-and-trade funds, water bond, etc. Given that the Richmond Parkway and the rail lines to the east pass through North Richmond to serve the greater California economy, it is essential that the pool of funding supporting the Green Benefits District include resources outside of the local impacted area. Impact fees on local industrial uses can be a part of the funding but should not bear the full cost. Grant programs for early project development include the following:

- **AB 617 Community Air Protection Program (CAPP),** $250 million in first year for "targeted incentive funding for early actions"—$50M of this for the SF Bay Area. Funds for the deployment of community air monitoring campaigns and/or preparation of community emissions reduction programs to reduce emissions and exposure. This will include communities around the State with the highest cumulative exposure burden for criteria pollutants and toxic air contaminants. The law establishes several criteria for community selection, including prioritization of disadvantaged communities and sensitive receptor locations.
- **AB398 California Global Warming Solutions Act**, $2 billion per year, which outlines cap and trade funding priorities including—(1) air toxic and criteria air pollutants from stationary and mobile sources, (2) low- and zero-carbon transportation alternatives, (3) sustainable agricultural practices that promote the transitions to clean technology, water efficiency, and improved air quality, (4) healthy forests and urban greening, (5) short-lived climate pollutants, (6) climate adaptation and resiliency, and (7) climate and clean energy research.
- **Prop 1 State Water Bond**, includes $725 million for water recycling and advanced water treatment technology projects.

Next Steps for Green Benefits District
Develop the legal framework: A legal team will be formed to create the Green Benefits District for North Richmond, with participation from local government and community representatives as stakeholders. The Trust for Public Land and the Contra Costa County department of public health are likely partners to lead this effort.

Resilience Hub Pilot—Identify temporary location for a Resilience Hub to support local hiring, job training and home ownership support. CHDC in North Richmond provides home ownership counseling and is a likely partner for expanding upon those offerings.

Urban Greening Mitigations—Work with a community driven process in collaboration with the Watershed Project and/or Urban Tilth to develop a comprehensive urban greening plan, including ecological buffer zones along the Richmond Parkway, between residential and industrial uses, and tree planting throughout the neighborhood. Tree planting areas will be developed as multi-benefit systems to address air quality, stormwater filtration, and heat reduction, as well as biological diversity and ecosystem health. Street tree and street reorganizations will be considered, particularly for key pedestrian and bike routes. These will be documented as part of a future specific plan described in the "Thrive" proposal. BAAQMD and the Public Health experts from Contra Costa County and the City of Richmond will be consulted throughout this process. Use equity framework plan criteria established by the community advisory board or North Richmond MAC to evaluate each stage of the project planning and implementation.

"On a national scale asthma is at 7% but in Richmond it's at 17%. 17% of folks in Richmond got asthma."

—Ladamien Flowers, Safe Return Project, North Richmond resident

Community Infrastructure Mitigations—Work with Contra Costa County Sustainability team and community representatives, to identify and prioritize infrastructure upgrades with a focus on making the case for utility investment in electrical grid upgrades, and leveraging private investment for decentralized wastewater treatment. Explore potential for funding from state bonds or cap and trade funds to support innovative net zero and low carbon strategies, and to incentive utility upgrades.

Turning Air Quality Around
Shifting the burden of payment for mitigations away from the under-invested low-income community. The "Ditching Dirty Diesel Collaborative" is an example of a similar effort during the Plan Bay Area EIR process to create a mitigation fund based on diesel truck emissions to benefit low-income communities of color near active trucking routes.

Prototypes for Testing Habitat and Habitation

The design process led to a series of prototypes which address distinct conditions along the dynamic Bay edge, including intertidal zones, mudflats and historic baylands. The prototypes will **test components that constitute hybrid models of housing and ecology (Habitat + Habitation)** in support of the design proposals put forward by the Home Team for North Richmond. The prototypes will serve two main functions in the design process: enhancing community engagement and excitement through building a tangible project and, secondly, providing a research platform that will inform evidence-based design of resilient ecological infrastructure appropriate to the Bay Area environment going forward.

— Floating Wetland "Buoyant BioFilter"
— Creosote Piling Encasement
— Piling Platforms

Floating Wetland "Buoyant BioFilter"
The constructed floating wetland system provides critical new marshland and intertidal zone habitat, improves water quality by making use of indigenous aquatic plants and natural processes to remove the contaminants from bay waters, particularly industrial effluent and stormwater outfalls from urban streets. The constructed floating wetland system prototype is designed as a constitutive element that incorporates into the Filter, Grow and Thrive Home Team Resilience Projects by:

— Advancing the horizontal levee and living-system wastewater treatment facility; floating trails habitat enhancement,
— Providing opportunity for new green-infrastructure job creation (maintenance and propagation and sale/export to other areas), and
— Constructing wetland flora suspended within a a buoyant concrete hexagonal frame and hydrophilic soil media within a mesh enclosure.
— Design feedback received has included: State Coastal Conservancy, BioHabitats, Watershed Project.

Possible Site Support: Point San Pablo Harbor

Creosote Piling Encasement
There are more than 33,000 existing creosote pilings currently polluting the San Francisco Bay, and while various agencies are working to remediate these ecological habitats by removing the pilings, there are challenges to remove them entirely. Therefore, the Coastal Conservancy has identified the need for alternative, immediate measures to mitigate the negative impacts of these polluting pilings, particularly the habitat and egg-laying environment for pacific herring. The Home Team's design is an innovative, adaptive response that not only encases the creosote piling for mitigation, but also improves the local ecological conditions through biomimetic materials and form.

The creosote piling adaptation prototype is designed as a constitutive element that incorporates into the Filter, Relate and Flow Home Team Resilience Projects. Specifically, it is intended to become the structural member for the floating trail and other recreation (Bay and Water Trail) projects and:

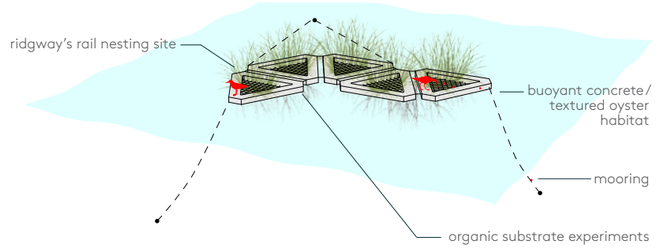
— Advances the immediate engagement with degraded historic infrastructure that may be transformed for new programming along the bay edge, and
— Provides opportunity for new green-infrastructure job creation (installation, observation and maintenance including replication to other areas).
— Existing pilings are wrapped in a customized fabric formwork and filled with a specialized concrete mixture which creates increased surface area, small nooks and crannies and enhanced porosity—all design features that facilitate the formation of restored habitat for a variety of keystone species, particularly the pacific herring.
— Design Feedback received has included: State Coastal Conservancy, BioHabitats, Water Trail, East Bay Regional Park District, Watershed Project, Contra Costa Resource Conservation District

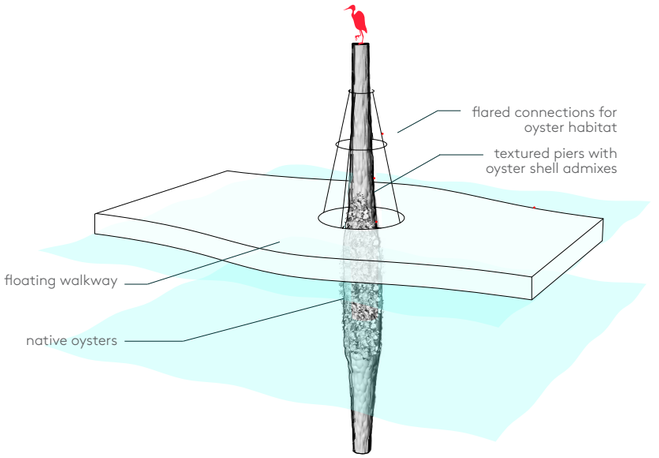
Possible Site Support: State Coastal Conservancy

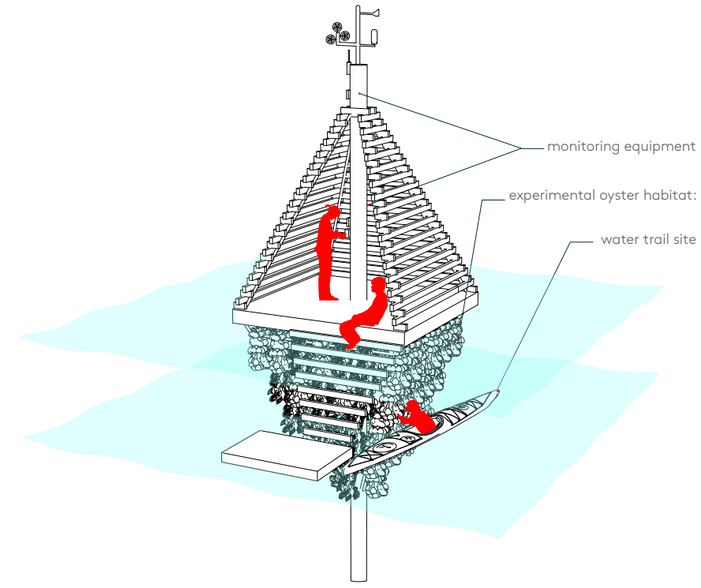
Piling Platforms
Piling platforms are built on and around structural pilings in aquatic and intertidal environments. Development in current Bay edge conditions, and those that will be subject to inundation due to sea level rise will require structural pilings. The habitat dimensions of these human-made structures is an area that requires significant study. The piling platforms prototype is designed to explore implications for sub-tidal, tidal, and non-aqueous habitat for piling structures, while also integrating human use. The piling platforms prototype is designed as a constitutive element that incorporates into the Flow/Relate, and Thrive Home Team Resilience Projects that:

— Advances the immediate engagement with Bay edge development areas, and those subject to inundation in the future, including floating trail, piling for housing structures within muted marsh,
— Provides opportunity for new green-infrastructure job creation (installation, observation and maintenance including replication to other areas), and
— Is constructed of new steel piling, locally milled heavy timber members, steel and oyster shells (media for new habitat).
— Design Feedback received has included: State Coastal Conservancy, BioHabitats, Water Trail, East Bay Regional Park District, Watershed Project, Contra Costa Resource Conservation District

Possible Site Support: Point San Pablo Harbor, State Coastal Conservancy







FLOATING TRAIL & PROTOTYPES

Design Alternatives Explored

Design alternatives were part of the discussions with community advisory board members and other agency stakeholders.

Thrive

Explored housing and social gathering space at Grove and Garamita where there is a large lot mid-way between the school and park that could be a site for infill housing, a public space and resilience hub. Garamita is a Safe Routes to School street that has Block Ambassadors that keep it clean and know their neighbors. This street will be a priority street within the 'FILTER' project—trees and raingardens to improve the pedestrian experience and capture localized stormwater.

Considered exploring housing redevelopment plan for Las Deltas with district scale water and energy strategies that would mitigate climate change impacts and support an 'adapt-in-place' strategy for low-income residents who want to stay in the community. A community process regarding Las Deltas was just getting underway when we started the design phase. The County and CHDC is interested in having the Mithun Home Team continue to work with the community on this large-scale housing redevelopment plan.

Relate

Explored improving the existing pedestrian underpass to allow wider flow zone. Even at low flow and in relation to current sea level, there is limited head room under the Parkway.

Considered exploration of east end Wildcat Creek Trail connections to Rumrill Road, a future complete street that has direct access to ferry and BART. This part of the trail is used by people experiencing homelessness. There is a recurring issue with trash that is generated by the encampment getting into the creek. The Watershed Project runs programs that hire the people living in the encampment to manage the trash. Part of an integrated water plan could include redirecting County program funds for creek cleanups to expand the local hire program.

Filter

Explored social gathering for tree plantings in conjunction with nurseries or temporary tree installations.

Considered phytoremediation strategies for contaminated lands. Determined that timeframe would be difficult to explore to a level we were confident about. The City considers this an important strategy to revisit as part of the "FILTER" approach.

Flow and Grow

Explored how creeks could have space to rebraid in the space between the two creeks. This would be more effective ecologically but economically the community and the County do not want to lose local job commitments from the planned distribution centers there.

Explored an option to bring horizontal levee east of Richmond Parkway between the two creeks and along Fred Jackson Way. The Parkway would be retrofitted with culverts to allow marsh transition to occur in free flow of tides and rising sea levels. Provides more marsh transition zone in an ecologically important location and in a rare place with both high sediment flow and space to provide transition. Would need to shift the flow line of the Wildcat Creek to make space for levee and not remove housing.

Process

The following are process approaches that were originally targeted but not realized. They remain relevant and can be implemented in the evolution of the proposed projects.

Ground truthing racial history context with community. As part of establishing a process for the Heritage Walk—recognizing places of cultural history and community leaders of North Richmond—the ground truthing of the racial history developed by Streetwyze with the community would provide a context for the discussions.

Building equity framework plan with community. Draft feedback on a proposed set of principles and criteria was obtained from the community advisory board at the first meeting. As discussed at that time, the equity framework plan development best evolves through the organization that will be evaluating the projects—such as the North Richmond Municipal Advisory Committee. A May 22nd community advisory board meeting discussed what form the community feels is most appropriate for next steps toward monitoring these projects. One option is to use the Ecodistricts Protocol, which is a roadmap and metrics to link, leverage and track performance of multiple projects and programs that are happening throughout the community and their synergies. Technical assistance through the Ecodistricts organization provides neighborhoods with a learning community of other neighborhoods to develop and advance their ideas.

Streetwyze. This online platform, founded and owned by black and women entrepreneurs in the East Bay, was introduced to more than 40 local community members during the design process, including project managers with the Watershed Project. These people populated a map of the neighborhood with places of value, opportunities and challenges, as well as locations of regular flooding. An interactive tool that allows community members to communicate with broader data information, this tool is still open and available for use by the community through the Streetwyze website. It is targeted to become an app available in the future.

Finance Plan

Bay Area RBD | Home Team Benefits Evaluation & Funding Alignment Approach

In close coordination with North Richmond community stakeholders, the Home Team has developed a series of initiatives, including investments in sea level rise adaptation, infrastructure and community-supportive programs, that respond to local needs and create new opportunities for local and regional residents and stakeholders. The initiatives that make up the ouR-HOME project address a series of environmental, social and physical vulnerabilities while also celebrating local context, elevating North Richmond's history and current community, tapping into existing opportunities within the community, and creating new opportunities to drive multiple local benefits.

Rather than utilizing the traditional value capture approach—which prioritizes the generation of new opportunities to investment and development, and captures the economic and fiscal benefits of increased value associated with these investments—the Mithun Home Team developed interventions that seek to stabilize the existing community, provide tools for local wealth building and catalyze locally-concentrated economic activity. Our approach to initiative development was shaped by a benefits assessment methodology that identifies and positions individual projects and initiatives to deliver community priorities and environmental, social and economic benefits. Taken together, the team's initiatives simultaneously prioritize physical resilience and goals around building health, wealth, and social cohesion in this community.

Benefits Evaluation & Funding Alignment

To articulate the benefits associated with the core projects and draw an alignment to the most promising funding sources, the Home Team followed the below process for each project:

i. Evaluate specific **benefits** that may accrue to the community based on project implementation, considering ecological and environmental, social and economic benefits.

ii. Assess potential **project champions and implementation partners** from local, regional and state organizations, governments and non-governmental actors, based on the alignment of their missions and goals, and interest and involvement in project development throughout the Resilient by Design process.

iii. Compare and evaluate benefit types and project champions and partners with the most well-aligned public, private, and philanthropic **funding sources and financing tools**. Because each project initiative is a piece of the Home Team's full resilience strategy for North Richmond, the focus of ouR-HOME is not on near- and long-term actions but on a more comprehensive response to a wide array of local issues. In many cases, project elements are cumulative and will evolve over many years in both parallel and incremental steps. Therefore, funding alignment was evaluated for pre-development activities and implementation activities, rather than for near- versus long-term opportunities.

While the individual initiatives require further development to produce cost estimates and progress analysis of a potential funding stack, the attached Benefits Matrix illustrates the alignment between benefits, project champions and/or partners, and funding and financing alignment for each proposed project. An illustrative example, using the Home Team's "Filter" initiative, is described below.

Challenge

North Richmond suffers from rates of asthma higher than those anywhere else in the Bay Area. Meetings with local stakeholders and the North Richmond Community Advisory Board demonstrated the community priority of addressing public health concerns with the goal of decreasing local asthma rates and avoiding future healthcare costs to treat associated impacts of poor air quality.

Initiative Development

This led to development of Filter: 20,000 Trees of Justice, which seeks to plant 20,000 trees throughout underutilized and vacant lots in North Richmond, creating an "urban forest" and including associated green infrastructure improvements.

Benefits Evaluation

Based on the team's assessment of this initiative, Filter is anticipated to produce the following benefits (for example):

—**Ecological Benefits**

- Climate adaptation benefits, including stormwater management, and temperature moderation
- Restoration of natural habitat through planting of local species

—**Social Benefits**

- Reduced instance/rate of asthma and other ailments related to poor air quality
- Increased access to nature/urban forest

—**Economic Benefits**

- Future avoided costs associated with enhanced stormwater management capacity and temperature moderation
- Future healthcare and social welfare cost savings

Potential Project Champions & Partners

In recognition of Chevron's historic role in degrading air quality and their more recent commitment to local philanthropy, the Home Team proposes that Chevron play an active role in funding Filter. Partially funding Filter would provide some of the capital costs needed for project initiative, while also off-setting some of the refinery's cap-and-trade costs. Recognizing that this single source may not fulfill the full project cost need, the team recommends exploring the following additional funding and financing sources to support project predevelopment (including final planning and design) and implementation:

—**Predevelopment Planning & Design**

- Local funding for infrastructure development (ex: Contra Costa County budget)
- Philanthropic grants (ex: Trust for Public Land conservation funds, Chevron Corporate Responsibility grant)

—**Implementation**

- Local funding for infrastructure development (ex: Contra Costa County budget)
- State/local grant funding (ex: Grant of Measure AA funds, CA State Coastal Conservancy Climate Ready Grant)
- Value Capture through Cap and Trade Auction Investments
- State/local bond issuance (ex: Prop 1 State Water Bond, SB5 Resources and Climate bond)
- Social impact bonds (may be tied to improved health conditions)
- North Richmond Green Mitigation Fund (as proposed by Home Team)

This example is illustrative of the Home Team's implementation and finance plan development process. The outcomes of this process for all projects is captured

FILTER: 20,000 TREES OF JUSTICE

Project Components	Anticipated Benefits	Project Champions/Partners	Potential Funding Alignments
Create an urban forest and natural air filter by planting 20,000 trees in streets, open spaces, and underutilized lots throughout North Richmond.	**Ecological Benefits** — Enhanced air quality — Climate adaptation benefits, including stormwater management, temperature moderation, and others — Restoration of natural habitat through planting of local species **Social Benefits** — Reduced instance/rate of asthma and other ailments related to poor air quality — Increased access to nature/ urban forest **Economic Benefits** — Future avoided costs associated with enhanced stormwater management capacity, temperature moderation, and other ecological benefits — Future healthcare cost savings — Future social welfare cost savings	**Local/Grassroots Organizations** — West County Toxics Coalition — Urban Tilth — The Watershed ProjectCommunities for a Better Environment — East Bay Parks District **Local Government** — North Richmond Municipal Advisory Council — City of Richmond Mayor's Office — Contra Costa County Supervisor John Gioia **Regional/State Government** — Contra Costa Flood Control District **Regional/State Non-Government** — Communities for a Better Environment — West County Wastewater Facility — SF Bay Restoration Authority — North Richmond Green Mitigation Fund (as proposed by Home Team)	**Predevelopment Planning & Design** — Local funding for infrastructure development (ex: Contra Costa County budget) — Philanthropic grants (ex: Trust for Public Land conservation funds, Chevron Corporate Responsibility grant) **Implementation** — Local funding for infrastructure development (ex: Contra Costa County budget) — State/local grant funding (ex: Grant of Measure AA funds, CA State Coastal Conservancy Climate Ready Grant) — Value Capture through Cap and Trade Auction Investments — State/local bond issuance (ex: Prop 1 State Water Bond, SB5 Resources and Climate bond) — Social impact bonds (may be tied to improved health conditions)

THRIVE: HOME OWNERSHIP AND AFFORDABLE LIVING AS A PATH FOR COMMUNITY WEALTH BUILDING

Project Components	Anticipated Benefits	Project Champions/Partners	Potential Funding Alignments
— Social Impact Bond (SIB) — Establish a Community Land Trust (CLT) to manage programs for, and develop: •Small Lot Home Ownership •Multi-family Housing with Shared Amenities — Resilience Hub — Walk of Honor — Programs: •Local Hiring Requirement •Deep Green Energy and Water Systems •Electric Vehicles and Car Share	**Ecological Benefits** — Reduced energy and water consumption — Reduced vehicular emissions **Social Benefits** — Increased opportunity for local homeownership and equity-building, strengthening community stability — Increased social cohesion developed through shared housing/homeownership programs and recognition of local history — Increased financial literacy and support for homeowners — Education and increased awareness of local resiliency challenges and adaptation measures **Economic Benefits** — Local job generation (through construction, program management, etc.) — Local spending and economic output associated with construction and program management activities — Use of underutilized land, and associated local and regional fiscal benefits	**Local/Grassroots Organizations** — Marin County Energy — Urban Tilth — Las Deltas Task Force **Local Government** — Contra Costa County Supervisor John Gioia — City of Richmond Mayor's Office — Contra Costa Housing Authority **Regional/State Government** — Marin Clean Energy — California Housing Development Corporation — Contra Costa County	**Predevelopment Planning & Design** — Future implementation partner/actor fundraising — Program-related investments (ex: Kresge Foundation grants and social investments) — Predevelopment loan (ex: SB540: Workforce Opportunity Zone) — Federal tax incentive programs (ex: Opportunity Zone Program) **Implementation (Development Initiatives)** — Low-income housing tax credits (LIHTC), depending on project affordability — Local affordable housing funding (ex: Home Investment Partnerships Program) — North Richmond Affordable Housing Social Impact Bond (proposed by Home Team) — Mission or program-related investments — Local fundraising for Heritage Walk (through CAB or another local champion) **Implementation (Program Initiatives)** — North Richmond Affordable Housing Social Impact Bond (proposed by Home Team) — Property Assessed Clean Energy (PACE) loans — Low Interest Loans (ex: CA Energy Commission Energy Efficiency Financing Program) — PG&E Electric Vehicles Charge Network Program

RELATE: WILDCAT CREEK TRAIL: AN UPLAND TO BAYLAND CONNECTOR

Project Components	Anticipated Benefits	Project Champions/Partners	Potential Funding Alignments
A multi-use overpass to connect Wildcat Creek Trail and upland bay areas, providing a safe overpass of the Richmond Parkway.	**Social Benefits** — Increased connectivity and cohesion between the upland and bayfront areas, and creation of new open space, within North Richmond — Increased safety and avoided loss of life — New opportunities for recreation and education, related to local ecology and history **Economic Benefits** — Local job generation (through construction, program management, etc.) — Local spending and economic output associated with construction and ongoing O&M	**Local/Grassroots Organizations** — East Bay Parks District — Bay and Water Trails — The Watershed Project — Urban Tilth **Local Government** — City of Richmond Mayor's Office — Contra Costa County Supervisor John Gioia — North Richmond Municipal Advisory Council — Contra Costa Public Works Department **Regional/State Government** — Metropolitan Transit Council **Regional/State Non-Government** — The California Outdoor Engagement Coalition — The Coastal Conservancy — California Restoration Authority — SF Bay Restoration Authority	**Predevelopment Planning & Design** — Local funding for infrastructure planning and development — State and local grants (ex: Grant of Measure AA funds) — Philanthropic grants (ex: Land and Water Conservation Fund grants, Active Transportation/ Safe Routes to School) **Implementation (Development Initiatives)** — Local funding for infrastructure development — Federal grant funding (ex: TIGER grants) — Local/regional grant funding (ex: MTC) — Value Capture through Cap and Trade Auction Investments, SB595 toll revenue — Green Mitigation Fund (as proposed by Home Team)

GREEN MITIGATION FUND: A TOOL FOR RESTORATIVE JUSTICE

Project Components	Anticipated Benefits	Project Champions/Partners	Potential Funding Alignments
— Green Mitigation Fund — Community Air Risk Evaluation Program — Community Infrastructure — Energy Grid Upgrade — Energy Storage — Decentralized Wastewater Pilot	**Ecological Benefits** — Enhanced air quality — Climate adaptation benefits, including decreased emissions, cleaner energy production **Social Benefits** — Improved community health — Potential job training and local employment opportunities **Economic Benefits** — Future avoided costs associated with electrical grid reinforcement, increased energy storage efficiencies — Local spending and economic output associated with construction of new infrastructure — New funding sources for local climate mitigation projects	**Local/Grassroots Organizations** — The Watershed Project — Urban Tilth **Local Government** — City of Richmond Mayor's Office — Contra Costa County Supervisor John Gioia — Contra Costa County Flood Control District — Contra Costa Department of Public Health — North Richmond Municipal Advisory Council **Regional/State Government** — Metropolitan Transit Council **Regional/State Non-Government** — Bay Area Air Quality Management District	**Predevelopment Planning & Design** — Local funding for infrastructure planning & development — Philanthropic grants for program development **Implementation (Development Initiatives)** — Local funding for infrastructure development — Grant funding (ex: BAAQMD Air Quality Mitigation Funds, EPA Brownfield Remediation funding, AB617 Community Air Protection Program) — State/Local Bond Issuance (ex: Prop 1 State Water Bonds, — Value Capture through Cap and Trade Auction Investments — Retrofit Loans — North Richmond Green Mitigation Fund (proposed by Home Team), supported by: •Corporate investments/ contributions •Grant funding •Local/regional impact fees

FLOW AND GROW: INNOVATIVE MULTI-BENEFIT FLOOD CONTROL

Project Components	Anticipated Benefits	Project Champions/Partners	Potential Funding Alignments
A protective horizontal levee to protect critical infrastructure in the face of rising tides and storms while also providing new marshland acreage and a naturally occurring transition zone that combines flood control with a natural, low-energy way to provide tertiary treatment of wastewater.	**Ecological Benefits** — Climate adaptation benefits, including protection from rising tides and storm surges — Regeneration and protection of existing marshland habitat — An alternative to high-energy wastewater treatment **Social Benefits** — Fortified protection of critical assets from rising tides and storm surges **Economic Benefits** — Future avoided costs associated with sea level rise and storm surges	**Local/Grassroots Organizations** — Ducks Unlimited — Urban Tilth — The Watershed Project — San Pablo-Wildcat Creek Watershed Council **Local Government** — Contra Costa County Supervisor John Gioia — Contra Costa Flood Control District — City of Richmond Mayor's Office — North Richmond Municipal Advisory Committee **Regional/State Government** — California State Coastal Conservancy — Senator Tony Thurmond — FEMA **Regional/State Non-Government** — SF Bay Restoration Authority — West County Wastewater Facility	**Predevelopment Planning & Design** — Local funding for infrastructure planning and development — State/local grant funding (ex: Grant of Measure AA funds) — Philanthropic grants **Implementation (Development Initiatives)** — Federal funding (FEMA dollars for pump replacement) — State grants (ex: State Coastal Conservancy Grants) — Local/state bond issuance (ex: Prop 1 State Water Bonds, SB5 Resources and Climate bond) — Value Capture through Cap and Trade Auction Investments — Public-private partnership (with corporate participation in capital costs or ongoing O&M costs) — Catastrophe bonds and/or resilience bonds (depending on affected land ownership)

Governance and Regulatory Challenges and Opportunities

The Mithun Home Team project proposals were developed with broad participation by local stakeholders. The North Richmond Community Advisory Board (CAB) assembled to guide the design process was intentionally developed with a mix of representatives from different sectors, including Contra Costa County and the City of Richmond government, non-profit advocates, technical experts, business representatives and local residents. Given the process for generating design concepts, it is not surprising that the implementation plans envisioned are also leveraging collaborative governance models, engaging multiple layers of government together with community representatives and technical experts. Preliminary concepts exploring collaborative governance include the following:

Community Land Trust

The proposal to develop a community land trust (CLT) will require the development of new organizational structures that include public and private sector partners working together. The City of Richmond is interested in CLTs and will take the lead in exploring the legal structure that would support this, with Contra Costa County staff and community representatives participating as stakeholders. The city and county government representatives acknowledged that shared projects are not common, but that there is no history of difficulty working together. The parties are open to collaboration and see the benefit of greater partnership.

CLTs reflect a choice to stabilize the housing market in favor of slower, more predictable growth over dramatic swings in the market that create windfall profits for some and loss for others. While clear and equitable rules are needed to protect those that invest in housing developed on CLT land, the structure also benefits from the social bonds in a community that cultivate trust and a sense of shared interest. City of Richmond representatives are eager to engage residents and ultimately transfer the control over the CLT process to a non-profit community-based board or coalition.

Social Impact Bond

Social impact bonds (SIB) are an investment product that brings together donors, impact investors and nonprofit organizations to fund socially beneficial projects in a completely new, performance-driven way. For example, SIBs provide investors an opportunity to fund a project by a non-profit housing developer, and earn a financial return based on "impact" measured against a set of established goals, such as affordability metrics and energy performance. Small local for-profit contractors could also be funded to build small lot infill housing depending on the performance criteria set. The governance challenge is complex because programs need to be clearly defined and conflicts of interest need to be avoided. However a benefit of community collaboration on the terms of the SIB is that the process itself would create benefits as more people would come to know about.

Transitioning Public Housing

North Richmond includes a public housing site called Las Deltas that is in the process of being decommissioned under a plan that will transfer 100% of the housing subsidy to units elsewhere in the county. After the transition is complete, housing will transfer either to private parties or to another supported affordable housing structure. There are provisions that enable residents to have first right of refusal for all sold properties, however they will need considerable funding to purchase even if the sale is subsidized.

Regulatory Challenges

Regulatory challenges arise when change occurs. Given the nature of the RbD process, it is not surprising that a number of regulatory challenges have been identified.

Green Mitigation Fund

The Green Mitigation Fund (GMF) is envisioned as a tool to support restorative justice. It is envisioned as a mechanism for collecting funds from polluting industries, and others such as utilities with a record of delayed maintenance, or state and/or federal funds that pool resources among a larger population for indirect impacts, to shift the cost burden for mitigations to those that have "benefited" from the condition. These kinds of funds are currently agreed upon as part of a community benefit agreement tied to approvals for construction or expansion of facilities, like the Waste and Recovery Mitigation Fee which levees an annual fee on the waste transfer station nearby to offset impacts to the community. While this case by case agreements are helpful, other sources could be identified that would be more reliable such as a linkage to the gas tax on diesel fuel.

Funding for Utility Upgrades

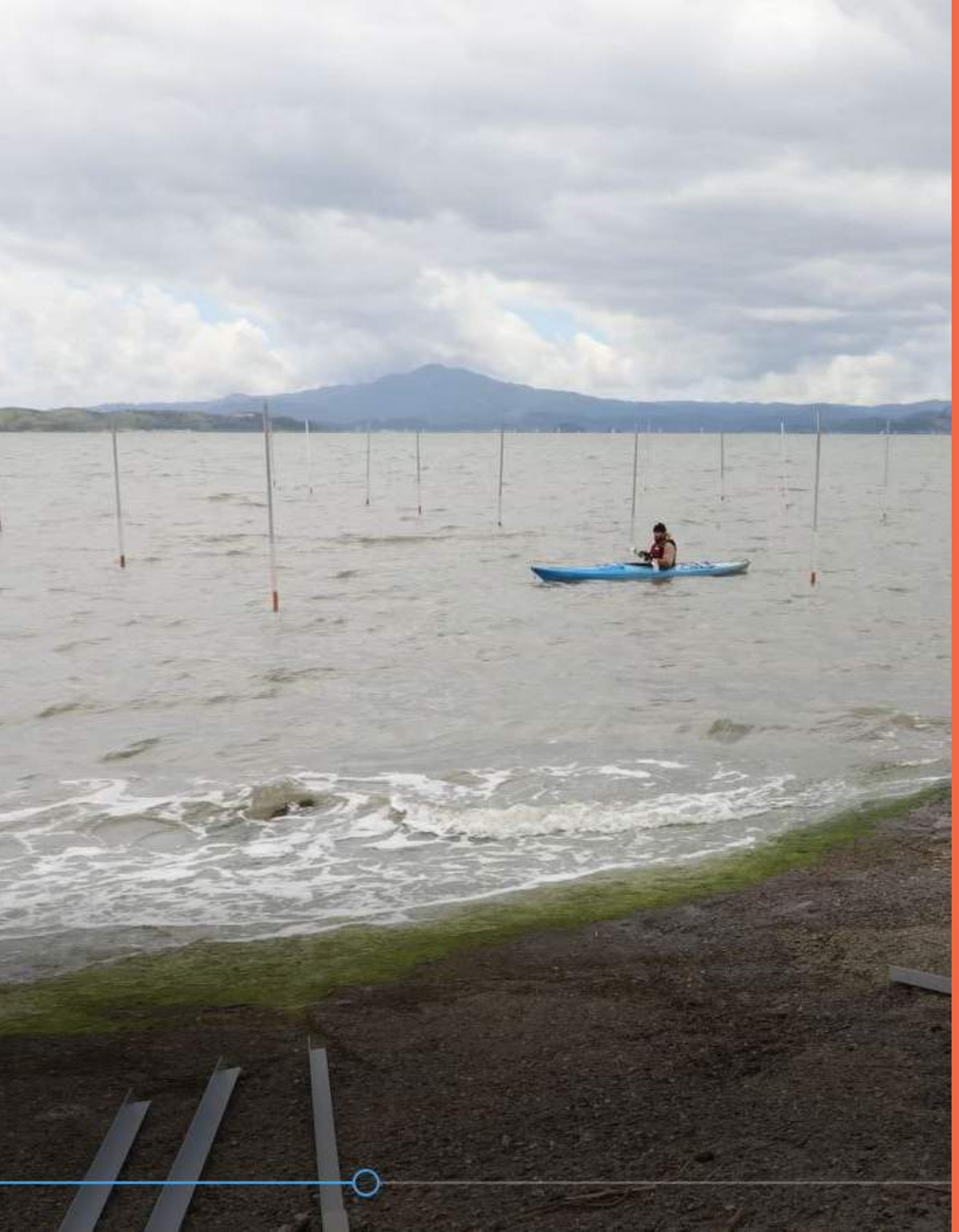
A related challenge includes funding for utility upgrades when there has been persistent under-investment and deferred maintenance that has led to a condition requiring a major upgrade. PG&E upgrades to the grid are expensive, and would unfairly burden the low-income community in North Richmond, however the community will not be able to participate in utility incentives for PV installations that rely on feeding back into the grid until repairs are made. The California Energy Commission has set up a new advisory group this year called the CEC Disadvantaged Communities Advisory Group that will take part in discussing how to make sure that benefits from grid upgrades will reach low-income communities. Membership in the advisory group has already been decided, however these committee meetings are usually open to stakeholders, who can engage through informing discussions and agenda items.

Decentralized Wastewater Treatment

Decentralized wastewater systems are emerging in some cities as an economically viable alternative to large centralized wastewater treatment systems, and could be explored in North Richmond. The advantages include reduced pumping requirements, and the opportunity to create systems that function more like a closed loop, capturing treated effluent, compost and nutrients for reuse locally for homes, urban farms and tree nurseries. In the past the Regional Water Quality Control Board (RWQCB) has frowned on decentralized wastewater systems because they don't have the staff to monitor water quality on a regular basis at multiple facilities. One way to address this challenge is to partner with the West County Wastewater Facility at the remote sites, potentially engaging them to operate the plants or to coordinate oversight and testing procedures. Another option to explore is private management of a mini-utility district that is responsible for the management and monitoring of the system. This is happening in the City of San Francisco, there are pilots in other parts of California and Portland, Oregon's 8th and Hassalo project is a prime example (See Appendix C for additional information).

Other Resource Recovery Opportunities

Local resource recovery can help build the local economy through the supply of cost-effective and conveniently located resources, while reducing environmental impacts from transporting materials. For example, local compost is currently trucked to the Central Valley, even though the material is in demand locally. Regulatory approvals are needed to gain permission to use compost that is generated from nearby facilities. And a fresh water pumping system is currently in place to keep the low-lying portion of North Richmond from flooding. This water could be recycled and used for agriculture or other uses, however water rights in California are complex. A process is needed to determine who "owns" the water that is discharged through pumping—East Bay MUD (municipal utility district) may or may not own the rights. If ownership and regulatory requirements can be clearly defined for reuse of water and compost these could be beneficial local resources.



Appendix

Appendix A: Team

North Richmond Community Advisory Board

Beth Williams	North Richmond Homeowner / Resident
Courtney Moore	Urban Tilth
Dr. Henry Clark	North Richmond Municipal Advisory Council
Heidi Nutters	(shared seat) San Francisco Estuary Partnership
Josh Bradt	(shared seat) San Francisco Estuary Partnership
John Steere	Contra Costa County Watershed Program, PWD
Juliana Gonzalez	The Watershed Project
Katrinka Ruk	Council of Industries
LeDamien Flowers	Safe Return Project / North Richmond Resident
Marena Brown	Shields Reid Neighborhood Council / North Richmond Resident
Nick Snyder	Tierra Resource Counsultants / CCC Sustainability Commission
Paul R. Detjens	Contra Costa County Flood Control & Water Conservation District
Princess Robinson	Urban Tilth / North Richmond Resident
Regina Cuevas	TWP Block Ambassador / North Richmond Resident
Robert Rogers	Office of County Supervisor John Gioia
Sandra Hamlat	East Bay Regional Park District
Sara Guardian	The Watershed Project / North Richmond Resident
Sequoia Erasmus	Richmond Mayor's Office
Sherry Stanley	West County Wastewater District
Tania Pulido	Community Housing Development Center, North Richmond

Mithun HOME Team

Mithun: Team Lead/Landscape Architecture, Urban Design, Architecture, Affordable Housing
- Deb Guenther
- Tim Mollette-Parks
- Sandy Mendler
- Katie Stege
- Hilary Noll
- Graham Laird Prentice
- + many Mithun team members!

Streetwyze, Community Asset Mapping and Facilitation
- Antwi Akom
- Aektah Shaw
- Tessa Cruz

Integral Group: Energy and Water Systems
- Andrea Traber
- Kaorie Tsukada
- Janika McFeely

Alta Planning & Design: Mobility
- Lisa Beyers

Biohabitats: Ecology and Water Systems
- Keith Bower
- Pete Munoz

Moffatt & Nichols: Coastal Engineering
- Mads Jorgenson

HR&A Advisors: Economic and Governance Systems
- Olivia Moss
- Kate Collignon
- Emily Klein

The Resilient Design Institute
- Alex Wilson

Chinatown Community Development Corporation: Affordable Housing Development
- Joanna Ladd

Urban Biofilter: Community-based Living Infrastructure Prototyping
- Marisha Farnsworth
- Laney College Students

Additional Stakeholders / Outreach

STAKEHOLDER ENGAGEMENT LOG

Organization	Contact Person First Name	Contact Person Last Name	Category	Title	Home team personal connection?	Community Advisory Board (CAB)?	Personal conversation	discuss project proposals?	potential project sponsor?	Contact Info
The Watershed Project	Juliana	Gonzalez	Local non-profit	Executive Director	RbD contact	yes	yes, many	yes	yes	Juliana@thewatershedproject.org
SF Estuary Partnership	Josh	Bradt	Local non-profit	Watershed Specialist ar	team	yes	yes	yes	yes	
City of Richmond	Sequoia	Erasmus	Government employee	Director of Community		yes	Sandy	yes	yes	
City of Richmond	Alex	Knox	Government employee	Mayor's chief of staff			Sandy	yes		Alex_Knox@ci.richmond.ca.us
City of Richmond	Lina	Velasco	Government employee	Planning Manager			Sandy, Katie	yes	yes	Lina_Velasco@ci.richmond.ca.us
City of Richmond	Richard	Mitchell	Government employee	Planner			Sandy			Richard_Mitchell@ci.richmond.ca.us
City of Richmond	Adam	Lenz	Government employee	Environmental Initiative	Alex Knox contact		Sandy			Adam_Lenz@ci.richmond.ca.us
Contra Costa County, District 1, North Richmond Advisory Council	Robert	Rogers	Government employee	District Coordinator	ref by Josh Bradt	yes	yes, many		yes	robert.rogers@bos.cccounty.us, (510) 231-8688
Contra Costa County, Supervisor District 1, member of BAAQMD Board	John	Goia	Elected government offic	County Supervisor			Deb, Sandy		yes	
Contra Costa County	Jody	London	Government employee	Sustainability office	RbD contact		Sandy, Tim	yes		Jody.London@dcd.cccounty.us, (925) 674-7871
Contra Costa County Health Services	Michael	Kent	Government employee	Pipeline & Envt. Health	ref by Robert Rogers		yes			Michael.Kent@hsd.cccounty.us, (925)313-6587
Contra Costa County Flood Control	Mitch	Avalon	Government employee		RbD contact					mitch.avalon@pw.cccounty.us
Contra Costa County Flood Control	Paul	Detjens	Government employee		RbD contact	yes	yes	yes	yes	paul.detjens@pw.cccounty.us
Contra Costa County Watershed Program	John	Steere	Watershed Planner		ref by Robert Rogers	yes	yes		yes	www.cccleanwater.org
Contra Costa County Watershed Program	Cece	Sellgren	Stormwater Manager		ref by Robert Rogers					cece.sellgren@pw.cccounty.us
The North Richmond Network	Eric	Aaholm		admin	Robert Rodgers		(Tessa email)			eric@yesfamilies.org
The North Richmond Network	Tana	Monteiro		admin	Robert Rodgers		(Tessa email)			tana@yesfamilies.org
County Housing Authority	Joseph	Villarreal		Director	Robert Rodgers		(Tessa email)			jvillarreal@contracostahousing.org
The State Coastal Conservancy (Living Shorelines Project)	Marilyn	Latta		Project Manager	RbD advisor		Yes	yes	yes	
Urban Tilth	Doria	Robinson	Local non-profit	Director	RbD advisor		yes	yes	yes	doria@urbantilth.org, 510-232-0911
Urban Tilth	Tania	Pulido	Local non-profit		ref by Robert Rogers	yes	yes			tania@urbantilth.org
Urban Tilth	Princess	Robinson	Local non-profit		RbD advisor	yes	yes			
Urban Tilth	Courtney	Moore	Local non-profit		RbD advisor	yes	yes			
Urban Tilth	Luis		Local non-profit		ref by Robert Rogers		Sandy			luis@urbantilth.org
Water Trail	Ben	Botkin	Local non-profit	Water Trail Planner	RbD advisor		Hilary, Sandy	yes		bbotkin@bayareametro.gov 415-820-7936
Bay Trail	Lee	Huo	Local non-profit	Bay Trail Planner	RbD advisor		Sandy	yes		(415) 820-7915 or lhuo@bayareametro.gov
Trust for Public Land	Trudy	Garber	National non-profit		Tim		Tim / left message 1/23		yes	trudy.garber@tpl.org , (415) 495-4014
EPA	Luisa		Government employee		RbD advisor					
Coastal Conservancy	Jessica	Davenport	Local non-profit		RbD advisor		Sandy	yes		Jessica.davenport@scc.ca.gov
BCDC	Brad	McCrea	Government employee	Environmental Planner	RbD advisor		Deb, Sandy	yes		
RWQCB	Xavier	Fernandez	Government employee	Environmental Planner	RbD advisor		Sandy	yes		
SF Estuary Institute	Robin	Grossinger	Local non-profit	Environmental Planner			Deb, Sandy	yes		
Richmond CDE (Comm Development Enterprise)	Eli	Moore	Local non-profit		Hilary Noll		Hilary	yes		moore.eli@gmail.com or nwamaka.agbo@gmail.com
Tom Leader Studios	Tom	Leader	resident and City of Richn				Deb 1/18			510-524-3363, tom@tlslandarch.com (maybe)
BAHRII Richmond Program Manager	Matt	Byers	Government employee	former BARHII data cha	referred by Michael Ke		Sandy			Matt.Beyers@acgov.org
California State Assembly Director	Mary	Nicely	Government employee	District Director, Office	RbD contact		Tim, Deb, Zoe, 1/25			Mary.Nicely@asm.ca.gov 510-286-1400
Chevron	Jane	Anderson	Other business	Environtmental Manage			Hilary			Jane.Anderson@Chevron.com
APEN	Parin	Shah	Local non-profit		RbD contact		left message			parin@apen4ej.org, (510) 834-8920 ex 305
Council of Industries	Katrinka	Ruk	Local non-profit	director	Alex Knox contact list	yes	Sandy			kpruk@sbcglobal.net
North Richmond Center for Health	Chinyere	Madawaki	Other business	MPH, Center Manager			left message			510-231-1375
YES Nature to Neighborhood	Eric	Aaholm	Local non-profit	Executive Director			Sandy, 1/22			eric@yesfamilies.org
Community Housing Development Corporation, North Richmond Advisory Council	Don	Gilmore	Aff housing developer	ED, CHDC			Sandy, Hilary		yes	
Richmond YPLAN Group	Myrna	Ortiz Villar	School / University	Regional Y-Plan Speciali			Deb, Sandy			3234814725, maortiz@berkeley.edu
Contra Costa Housing Authority (CCHA) and chair of CHDC	Joseph	Villareal		Executive Director	ref by Robert Rogers		Sandy	yes	yes	(925) 957-8007
State Coastal Conservancy	Avra	Heller		Project Manager, SF Ba	RbD Coastal Conservar		Deb			avra.heller@scc.ca.gov 510-286-1212
East Bay Regional Parks District	Sandra	Hamlat	Govt - Park/natural resources			yes				
East Bay Regional Parks District	Brian	Holt	Government employee	Principal Planner	Tim in contact for MLK		Tim			(510) 544-2623; bholt@ebparks.org
Muwekma Ohlone Tribe	Monica	Arellano		Vice Chairwoman, Tribe			Hilary			Marellano@muwekma.org or MuwekmaOhloneTribe@g
Pogo Park, Iron Triangle	Toody	Maher	Local non-profit	Executive Director	reffered by Tom Leade		yes			contact@pogopark.org, 510-215-5500
Richmond Mayor's Office	Craig	Murray	Government employee		RbD contact					Craig_Murray@ci.richmond.ca.us
Wildcat / San Pablo Watershed Council	Helen				reffered by Josh Bradt		Tim			helen@thewatershedproject.org 510-665-3538
The Shields Reid Neighborhood Council	Marena	Brown	Local non-profit	Chair	Robert Rodgers	yes	yes			marenabrown@sbcglobal.net
Social Progress Inc.	Eleanor	Thompson	Nonprofit organizations		Robert Rogers					eleanorspi@yahoo.com
Republic Services (Sanitation)	Bielle	Moore	Business	Municipal Relationship	Manager		left messages			bmoore2@republicservices.com
SF Estuary Partnership	Heidi	Nutters					yes	Yes	yes	
Safe Return Project	Le'Damian	Flowers				yes	yes	yes		
West County Toxics Coalition	Dr. Henry	Clark	Resident			yes	yes	yes		
Contra Costa County, Sustainabilty Committee	Nick	Snyder	Business			yes	yes			
Richmond Community Developement Enterprisw	Regina	Celestin Willi	Local non-profit communi	Board of Directors mem	Hilary Noll		Yes			ReginaCW@firsthousing.org
Point San Pablo Yacht Harbor	Rob	Fyfe	Private Landowner / Hou	Owner/ Developer			Yes	Yes		fyfe.rob@me.com
Point San Pablo Yacht Harbor	Daryl	Henline	Private Landowner / Houseboat Coop				Yes	Yes	yes	daryl@pspharbor.com
Richmond Rod & Gun Club	Patrick	Clark		President						
Green Waste Recycle Yard	Bernie	Lenhoff	Manager				Yes			
Contra Costa Resource Conservation District	Chris	Lim	Land Management /Natur	Executive Director			Yes	Yes	yes	clim@ccrcd.org
Contra Costa Public Health	Ori	Tzvieli			Anne Torney		yes	yes		potentially interested in providing seed money to continue CAB meetings and have epidemiologist join the meetings to get information to support bi-annual County health survey.
CA Regional Water Quality Control Board	Chuck	Striplen					Yes			email: charles.striplen@waterboards.ca.gov
Weigh of Life	Jan	Shilling	Nonprofit organizations and churches		Robert Rogers		(Tessa email)			janschilli@aol.com
Learning Out Loud (LOL)	Cristal	Banagan	Nonprofit organizations and churches		Robert Rogers		(Tessa email)			loleducationalcommunity@gmail.com
The Multicultural Family Center (The Senior Cente	Corrine	Sain	Nonprofit organizations and churches		Robert Rogers		(Tessa email)			corrine.sain@nhnr.org
Communities United Restoring Mother Earth (CUE	Iyalode	Kinney	Nonprofit organizations and churches		Robert Rogers		(Tessa email)			earthmotheriyalode@yahoo.com
Davis Chapel Christian Methodist Episcopal (CME	Micheal	Williams	Nonprofit organizations and churches				(Tessa email)			dr_michealwilliams@messiahsministries.org
Community Housing Development Corporation (C	Don	Gilmore	Nonprofit organizations and churches				(Tessa email)			dgilmore@chdcnr.com
Community Housing Development Corporation (C	Janie	Holland	Nonprofit organizations and churches				(Tessa email)			jholland@chdcnr.com
Macedonia Baptist Church			Nonprofit organizations and churches				(Tessa email)			(510) 232-3032
YES Nature to Neighborhoods	Tina	Monteiro	Nonprofit organizations and churches				(Tessa email)			tana@yesfamilies.org
The Ed Fund	Robert	Bunce	Nonprofit organizations ar	Program Director			(Tessa email)			robert@edfundwest.org
New Bethel Apostolic Church			Nonprofit organizations and churches				(Tessa email)			(510) 236-7882
True Fellowship Baptist Church			Nonprofit organizations and churches				(Tessa email)			(510) 215-8322
All Nations Church of God			Nonprofit organizations and churches				(Tessa email)			(510) 232-6441
Chevron Corp.	Andrea	Bailey	Businesses				(Tessa email)			andreabailey@chevron.com
NRMAC Member	Aaron	Morgan	Resident				(Tessa email)			morganaaron1@yahoo.com
	Beth	Williams	Resident				(Tessa email)			2bethwilliams@gmail.com
RYSE Center	Kimberly	Aceves					(Tessa email)			kimberly@rysecenter.org

Appendix B: Public Events

Community Leadership Training: Streetwyze

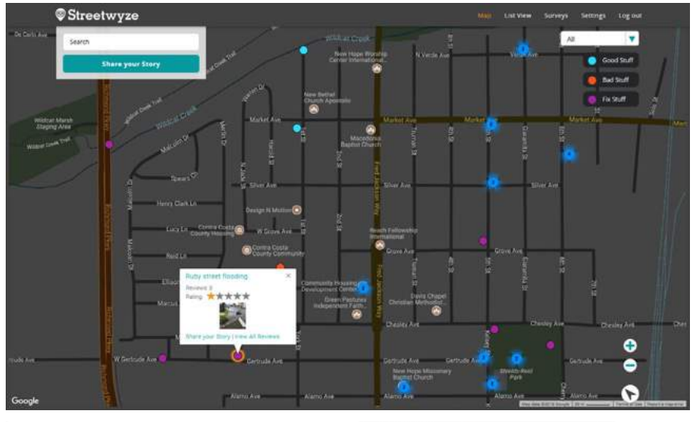
- Over 40 active users
- ~12 users have logged points
- ~45 data points

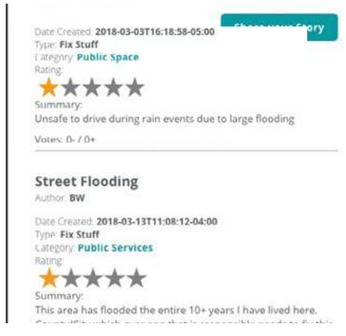
The following represent, in order of prevalence, the most common themes/areas that community members disliked or wanted to see improvements on:

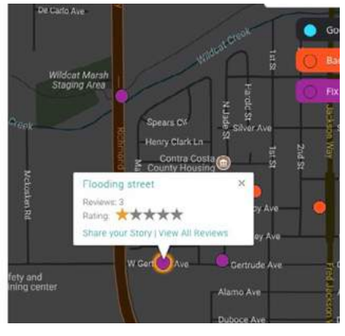
- Flooding
- Illegal Dumping
- Vacant Lots
- Food Access
- Access to Point Molate

Community members identified the following as good things or community assets:

- Community Services/Resources: Community Centers and Churches
- Schools
- Gardens
- Parks and natural resources
- Food availability







North Richmond Earth Day Festival

Measure local flooding:
make and take your own
measuring stick

Measure photograph & post
with
#ResilientNorthRichmond
#ResilientBay

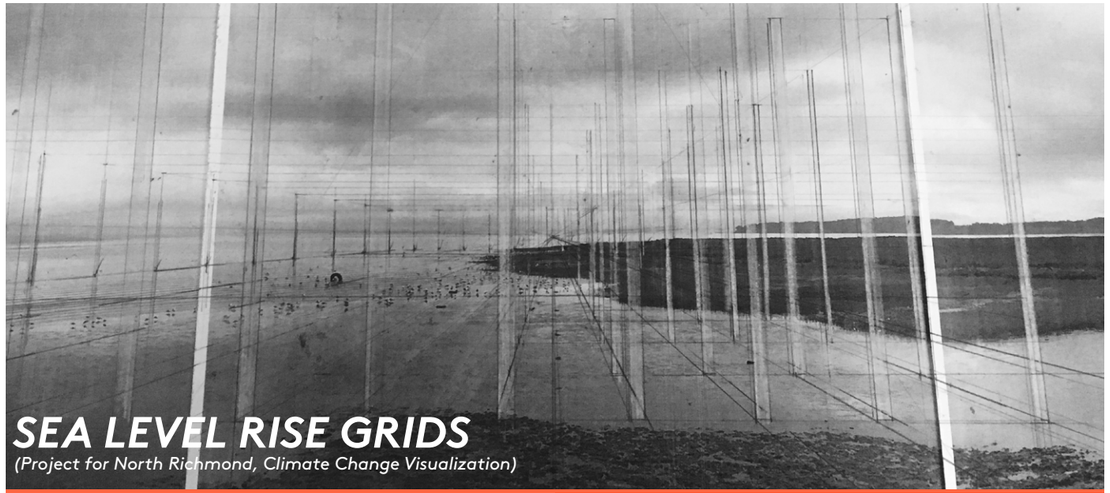
COME OUT TO THE BAY!

Help create a temporary art installation to illustrate sea level rise

Saturday, April 28 @ Dotson Family Marsh

details and sign-up sheet at the booth.

Sea Leveling Rods Participatory Art Installation



SEA LEVEL RISE GRIDS

(Project for North Richmond, Climate Change Visualization)

is an art project and a community building first-response tool to visualize the effects of climate change in North Richmond. An array of rods is placed in the inter-tidal zone of the Bay to measure projected sea level rise due to global warming. The project gathers community to physically articulate change at scale: a co-operative exercise for appreciating the present while enabling dialogue about the future.

GET INVOLVED!

Building the project will be easy and fun. There will be dry land volunteer work as well as work in the inter-tidal edge of the water. Yup, in the Bay. Our team and those water-loving volunteers will place measuring stakes in a 100'x100' grid area and attach aluminum edging to the stakes to create the Sea Leveling Rods.

What you will need:
-Ready to be outside. Hat, sunglasses, shoes that can get muddy and wet.
-Towel and water costume you dont mind getting dirty (if you plan to get down in the bay mud with us).
-Bring a sack lunch and plenty of water.

Dry Volunteers will help measure surveying line for the grid placement. We will need eyes on the staking, making sure each rod is placed in a straight line from the shore.

We also invite you to simply come hang out.
This is a community project:
folks coming out, engaging with the bay and imagining the future together.

SATURDAY, APRIL 28 @ DOTSON FAMILY MARSH

Entrance, restrooms, parking at end of Goodrick Ave.
Installation begins at low tide, 7:30 AM
12-2 PM lunch, meditation, conversation. Please join in.

Appendix C: Site Information

Energy Efficiency and Renewables addendum

THRIVE addendum via Integral Group:

ENERGY EFFICIENCY AND RENEWABLES

CHALLENGES:

- The local grid faces many current limitations for North Richmond to reach net zero energy and carbon goals:
    - Overall, the local utility grid is overdue for infrastructure upgrades and has been under-invested historically. There are already capacity and reliability issues in this area. Without upgrades, this is expected to get worse with time, since community electrical demand is expected to increase when fuel switching takes place, and as population densities increase. Grid upgrades are the responsibility of the utility, PG&E, and a productive conversation of upgrades that will be needed can be initiated once a master plan is developed.
- Advocacy organizations that may be helpful to North Richmond in negotiating a healthy and economically viable community include:
    - TURN/The Utility Reform Network advocates for reliable, safe, economical utility rates www.turn.org
    - Communities for Better A Environment advocates for environmental justice, clean energy and healthy communities www.cbecal.org
- A catastrophic event, such as earthquake or flooding, could easily disable critical services. On site energy generation and storage is required to support residences, resilience hubs and distributed water and wastewater treatment serving resilience hubs.
- Energy Independence
    - To move to a net zero energy and net zero carbon emissions for energy, North Richmond will need to transition from using a combination of gas and electricity, to using electricity for most needs, including those traditionally using combustion sources, such as heating, cooking and transportation. This is referred to as fuel switching.
    - In order to produce renewable energy locally, North Richmond will transition to solar installations at residences, apartments, commercial buildings, municipal buildings and properties, and industrial sites.
    - Working with Marin Clean Energy (MCE), which is the Community Choice Aggregation program adopted by Contra Costa County, North Richmond and Richmond jurisdictions will be able take full advantage of the many program offerings for energy efficiency, renewables, storage, and electric vehicles that will support economic benefit to the community. In general, MCE's rate structure is 2-4% lower than PG&E's rates, before the benefits of the program offerings listed here. Additional MCE programs specific to North Richmond include:
        - Energy Efficiency for Low-Income Families and Tenants (LIFT) provides rebates to cover efficiency retrofits and fuel switching for income-qualified multifamily properties
        - Low-Income Home Energy Assistance Program (LIHEAP) will pay energy bills for customers and support energy efficiency retrofits
        - Low-Income solar rebates through Grid Alternatives provides no-cost solar systems to low-income families
        - Multifamily Energy Savings Program provides rebates for energy efficiency retrofits
        - Small Commercial Energy Savings Program provides rebates for energy efficiency retrofits
        - Residential Demand Response program provides rebates for reduced peak demand usage
        - Electric Vehicle charging program in pilot includes installation of EV charging stations in the community at workplace and multifamily homes in partnership with PG&E
        - Net Metering program pays customers $0.01 above the kWh retail rate for solar energy produced
            - This program optimizes the solar rebates to the customer and can lead to an annual energy bill of $0.
        - Feed-In-Tariff (FIT) program available to larger scale solar installations up to 5 MW at commercial, municipal or industrial sites. This program pays renewable energy producers directly for the solar power they produce. The MCE program pays roughly three times the rate of other FIT programs at $85/MW-yr.
            - RichmondBUILD is a workforce development program that recently installed a 10.5 MW local solar installation, Solar One, with locally trained workforce resulting in jobs and renewable power. This program is available to North Richmond and we are including the development of a similar installation.

        Much of the first cost and operating costs of energy efficiency and solar installation can be offset by these program offerings. In addition, Contra Costa County (CCC) is pursuing community-wide solar installations as discussed in the April 23, 2018 Sustainability Commission report presented by Jody London. CCC has commissioned a renewables study to identify potential sites for solar installation. As a programmatic approach, these installations will be the most cost effective for the community and will lock in lower energy rates for the community into the future.
    - Green Business District (GBD)
        - CCC is considering implementing a Green Business District in North Richmond modeled on San Francisco's GBD to provide additional volunteer and public resources to stormwater, public space, energy and waste projects in the community. This mechanism directly supports the community goals of resilience, climate change mitigation, carbon neutrality and energy independence.

PROPOSALS

Local Hiring Requirement: Include local hire requirement for all new housing. Because labor accounts for approximately 2/3 of the cost of construction, this provision will boost earnings in the

Energy Efficiency and Renewables addendum (contd.)

area by as much as $80 - $100 million as the projects are built. Those earnings will drive local purchasing power.

Green For All's High Road Agreements Best Practices Brief details an excellent set of strategies to further local economic development, develop access to career opportunities, and build local hire requirements for living wage, career track jobs. Strategies include holding contractors accountable for complying with local hire agreements, and building a workforce development training pipeline that provide support to both trainees and contractors. Examples include successful energy efficiency programs and program elements such as Clean Energy Works Oregon, Milwaukee Energy Efficiency (Me^2), Long Island Green Homes, Clean Power Works Seattle, and NYSERDA's Green Jobs-Green New York. MPower Oregon also creates living wage, career track jobs for the multifamily energy efficiency sector.

Staying Green and Growing Jobs outlines strategies to apply the same principles to the green infrastructure sector. Workforce development and pipeline to jobs programs such as the Seattle Conservation Corps and Onondaga Earth Corps are raised as examples of successful training programs that build strong hands-on experience and focus on quality installations. The success of these programs are also based in strong community connections. Programs that apply local hire and career track jobs to green infrastructure results in real local investment, such as in the case of the Northeast Ohio Regional Sewer District, which is expected to create 219 jobs and economic activity in the range of $23 million.

On the renewable energy side, GRID Alternatives is already on the ground in North Richmond. GRID partners with job training programs, and also offers additional training for installers who already have experience, but want to move up in their career.

In the energy efficiency, green infrastructure, and renewable energy sectors, local hiring and building career pathways generate sustained local wealth and investment while providing critical community upgrades.

Resilience Hub: A "resilience hub" will provide access to services including home ownership financing, energy and water efficiency retrofit, and renewable energy financing and incentives, electric car and bike sharing programs, small business startup support, etc. Given past challenges with local hire provisions in the area, a non-profit will be established to facilitate training, job placement and completion of required documentation to meet contracting requirements.

Community Solar: Marin Clean Energy has programs with strong social justice goals that support locally installed solar in low income communities. Programs streamline low-cost financing and provide bonuses for energy savings and installed solar power to make solar profitable for residents as well as installers.

GRID Alternatives also offers free home solar system installations for income-qualifying homes in North Richmond. Utility savings directly benefit the homeowner, while the entire community benefits through greenhouse gas emissions reductions. This programs make solar installations accessible to low-income homeowners who make less than 80% of area median income. This opens up solar upgrades to an even larger set of residents for whom such upgrades would otherwise be out of reach, especially since they would not be part of a land trust.

Community Solar and Green Infrastructure

In addition to the above two options, Contra Costa County Sustainability Commission has already developed a proposal for a Green Benefits Districts Proposal, to present a comprehensive program that would push forward green infrastructure efforts in North Richmond. The Green Benefits Districts can also be a focal point for making community-level renewable energy upgrades.

The Green Benefits District would be a Communities Facilities District, or CFD. The CFD is a legal mechanism that would allow financing for infrastructure improvements through two main mechanisms: property tax based finance, and leveraging third party capital. The Green Gneefits District would then be able to make public improvements that finance energy efficiency, water conservation, and renewable energy improvements.

Grid Upgrades: The current grid is already facing stability issues, resulting in power outages and inability to feed power from renewables back into the grid. With expected population rise, which would only increase strain, the local grid is overdue for an upgrade, which also presents the community with an opportunity: starting these conversations now with PG&E would enable the community to guide the types of upgrades so that newer infrastructure is capable of answering future needs.

Energy Storage: Energy storage can play more than one role. The storage allows continuous energy use during grid shutdowns. Energy storage also provides critical grid stability services, by providing peak shaving.

- Flywheel or Lithium Ion storage for large energy uses, such as water treatment and industrial.
- 2kWh power packs that can physically be moved from energy generation sources to where energy use needs are.

Water Supply and Treatment Summary

Biohabitats
CASCADIA BIOREGION
412 NW Couch Street, Suite 202
Portland, OR 97209
800.220.0919
www.biohabitats.com

MEMORANDUM

Date: June 1st, 2018

To: Debra Guenther - Mithun

From: Pete Munoz, PE - Biohabitats, Inc.

RE: Resilient by Design – North Richmond, HOME Team
Subject: Water Infrastructure Summary

The East Bay Municipal Utility District (EBMUD) supplies water to the North Richmond community by capturing water from 575 square miles of the Mokelumne River Watershed. Over the last decade EBMUD has reduced its water use by 20% by incentivizing water reduction through conservation and water reuse programs (EBMUD, 2018). Why is the utility proud of this reduction? EBMUD is better equipped to meet their mission, especially during times of crisis (drought, earthquakes, etc.) EBMUD mission is:

> To manage the natural resources with which the District is entrusted; to provide reliable, high quality water and wastewater services at fair and reasonable rates for the people of the East Bay; and to preserve and protect the environment for future generations.

North Richmond is serviced by West County Wastewater District (WCWD), whose mission is:

> To protect public health and the environment by safely and responsibly collecting and treating wastewater for reuse.

Additionally, their newly adapted vision is to become 'a great place to work where we use the latest proven technology and best industry practices to care for District resources, enhance our environment and collaborate with our partners and community.' (WCWD, 2018).

WCWD's wastewater treatment plant (WWTP), like many other WWTP's around the country, is located at the bottom of a watershed and near coastal and riverine areas. This makes WWTP's vulnerability to extreme flooding events, storm surges, and sea level rise. Furthermore, nationwide it is estimated the 532 new treatment systems will need to be constructed by 2032 to meet future needs (ASCE, 2017). One strategy for upgrading or expanding water infrastructure

is to develop decentralized infrastructure that can create a non-potable supply within the community. Decentralized water infrastructure like this provides several unique benefits:

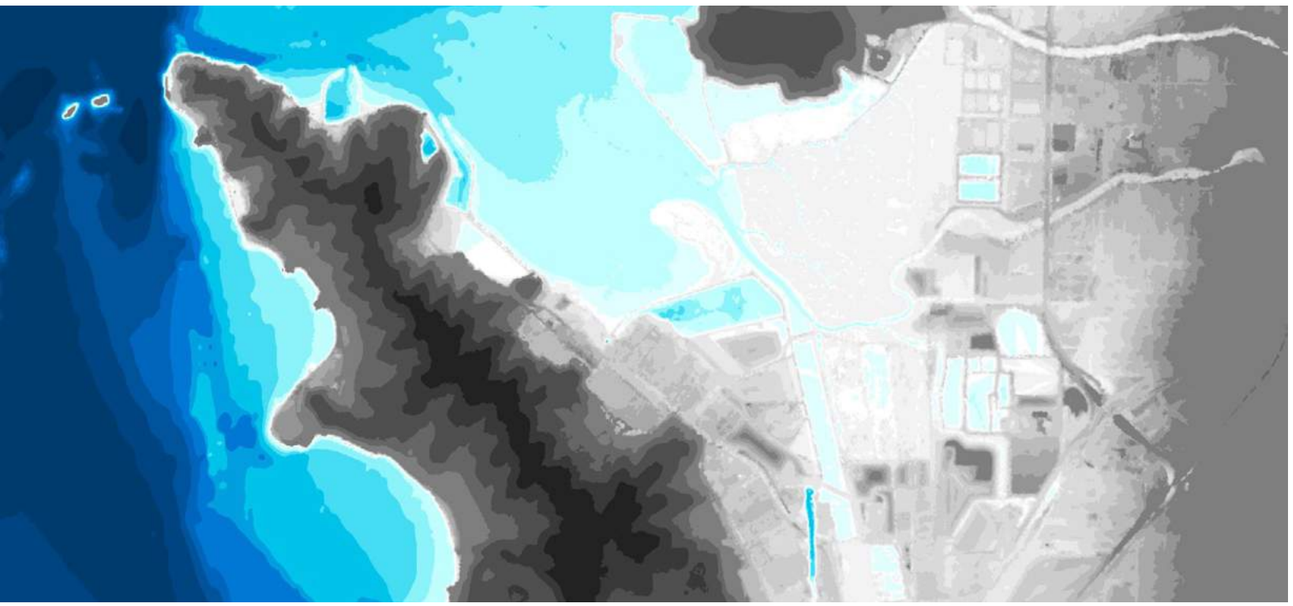
1) reduces wastewater conveyance limitations by minimizing the amount of water transported in a single sewer line,
2) reduces the potential for WWTP overflow, by not concentrating wastewater to a single location,
3) increases utility resilience by having multiple treatment locations,
4) decreases operating cost of conveying wastewater long distances through lift stations,
5) decreases the cost of operating water reuse infrastructure by creating treatment locations closer to non-potable water customers,
6) protects potable water supplies by limiting the use of potable water to meet non-potable demands,
7) contributes to meeting California carbon emissions reduction goals by reducing the need to convey water great distances (reduces - wastewater to centralized locations, non-potable water from centralized locations, and potable from treatment locations).
8) generates revenue by providing non-potable water supply,
9) decreases the impact of wastewater outfalls on the environment by reducing the amount of treated discharge, and
10) increases community equity but distributing water infrastructure throughout the community.

Public utilities throughout the United States are working to understand opportunities with decentralized infrastructure by assessing vulnerabilities, examining needed upgrades, quantifying ecosystem benefits and calculating economic advantages. Public utilities are also encouraging and incentivizing the private sector to fill a needed gap in the shift from centralized to decentralized infrastructure. Private utilities and developers have much more flexibility and less constraints in making infrastructure choices. Public utilities see the private sector as able to test out scale, public perception, and urban integration of new decentralized infrastructure. The Hassalo on 8th superblock project in Portland, OR is great example of public agencies working with private developers to craft innovative infrastructure that create win-win outcomes. Hassalo on 8th has a small wastewater facility integrated into the mixed-use urban development. It treats up to 45,000 gallons of wastewater a day and produces a non-potable water supply that is used for irrigation and flushing toilets for the onsite office building and for 657 residential units. Localized treatment and reuse reduces the reliance of the municipal sewer and lengthens the time needed before the city will be required to make more extensive collection grid improvements.

Existing wastewater lift stations, new developments, and civic spaces (parks, schools, etc.) are great places to begin to look for decentralized water infrastructure opportunities. Decentralized water reuse projects are win win solutions that are deeply aligned with the mission of the utilities that serve North Richmond.

Tidal Barrage System Analysis (Moffatt & Nichol)

Topographic and bathymetric data for the North Richmond study area in a digital elevation model.

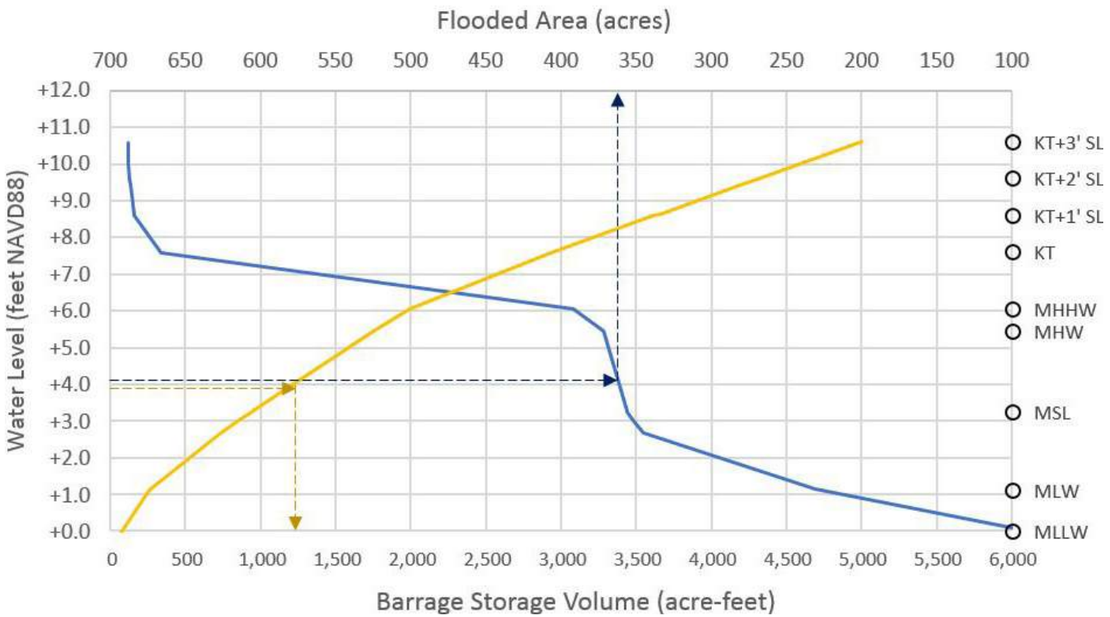


Yellow line = study alignment for barrage system.

The water level referenced to NAVD88 is indicated on the left hand side of the figure. For a given water level you can go horizontal until you hit the yellow curve (see yellow arrows). You can then read off the water storage volume within the barrage on the scale along the bottom. The same procedure can be used to figure the size of the flooded area within the barrage enclosure. Follow the example blue arrows and read off the area in acres using the scale along the top of the figure.

On the right hand side of the figure, common tide levels are listed, which may be more relevant than the NAVD88 elevation data.

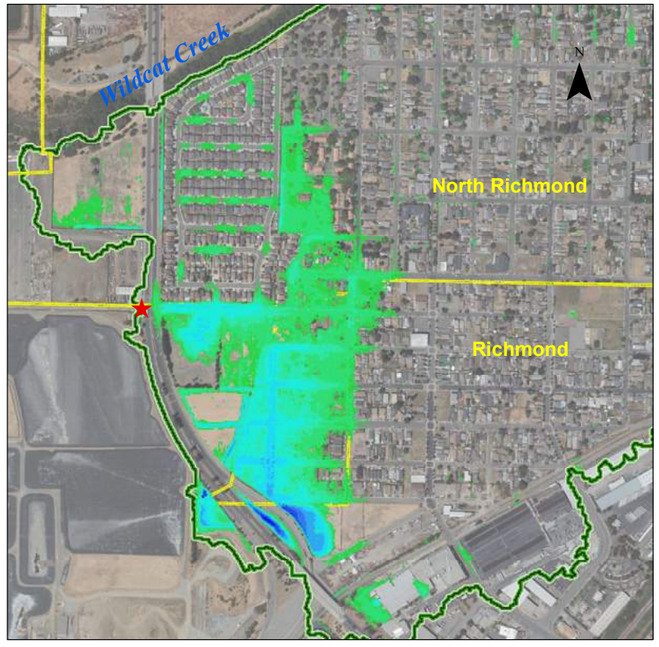
As an example, if you figure the storage volume at Mean Higher High Water (MHHW), say 2,000 acre-feet. And then figure the storage volume at Mean Lower Low Water (MLLW), say 200 acre-feet. The difference: 2,000-200 = 1,800 acre feet is the water volume exchanged over a high tide cycle.
The volume of water exchanged (tidal prism) can be utilized to figure power production from the tides.

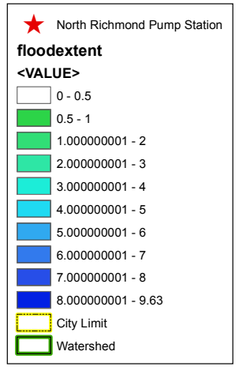


Pump and Outflow Map

Figure 1. Location map showing the watershed boundary and the location of the pump station (green circle). Watershed delineation courtesy of the City of Richmond and Contra Costa County Public Works Department.

North Richmond Pump Station Inundation Map



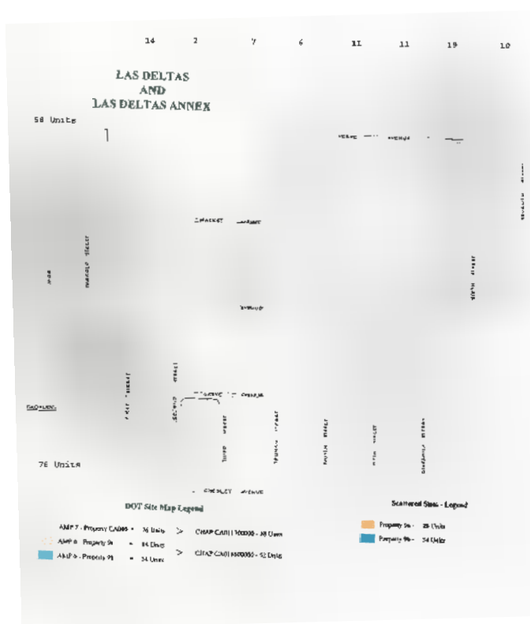


Methodology: Using 2008 LiDAR, use the GIS spatial analyst "Fill Sinks" tool to model the inundation resulting from a full blockage of the North Richmond Pump Station.

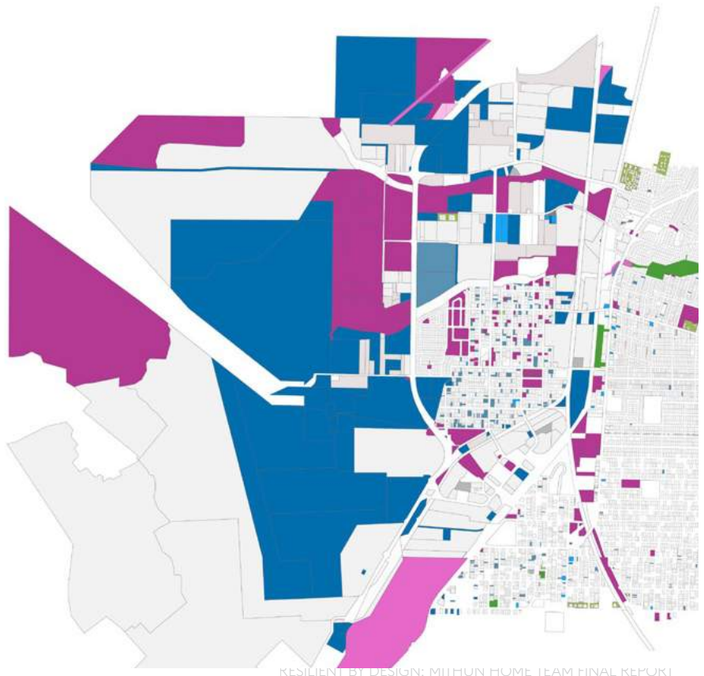
Date: 03/01/2018
By: Trevor McGuire

Document Path: \\PW-DATA\grpdata\fldctl\GIS\North Richmond Pump Station\NRPS_Inundation.mxd

Las Deltas property map, Parcel ownership map

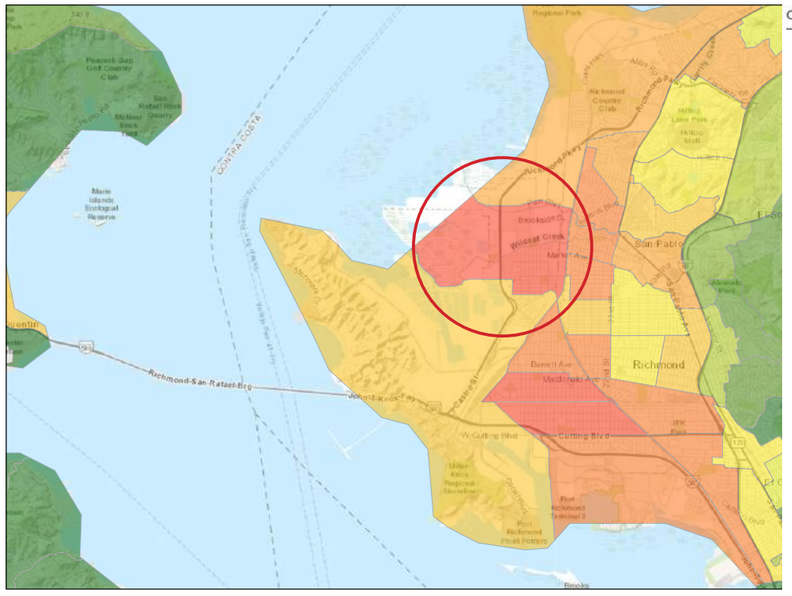


The Last Deltas property is located in unincorporated North Richmond and is comprised of 214 units built in three phases in 1952, 1960 and 1961. There are 76 units in the phase built in 1952. These are a mix of duplexes and six-unit row houses located together in a roughly 2x4 block area. Of these 76 units, 4 are being used for service delivery and 46 are vacant. The remaining two phases are comprised of 138 units scattered throughout North Richmond, all but 5 of which are duplexes (the 5 are single unit homes). Of these 138 units, 133 are vacant. The 37.9% overall occupancy rate at Las Deltas is an anomaly for HACCC. All 12 of HACCC's other properties have occupancy rates ranging from 96% to 100%.



Contaminated Land Map

CalEnviroScreen 3.0 Results



Census Tract: 6013365002

Population:	5,462
CalEnviroScreen 3.0 Percentile:	91 - 95%
Pollution Burden Percentile:	77
Population Characteristics Percentile:	94
Ozone:	8
PM 2.5:	18
Diesel:	84
Pesticides:	27
Toxic Releases:	60
Traffic:	12
Drinking Water:	4
Cleanups:	99
Groundwater Threats:	90
Hazardous Waste:	100
Impaired Water:	91
Solid Waste:	97
Asthma:	100
Low Birth Weight:	58
Cardiovascular Rate:	78
Education:	79
Linguistic Isolation:	81
Poverty:	85
Unemployment:	88
Housing Burden:	86

May 9, 2018

CalEnviroScreen 3.0 Results

- 1 - 10% (Lowest Scores)
- 11 - 20%
- 21 - 30%
- 31 - 40%
- 41 - 50%
- 51 - 60%
- 61 - 70%
- 71 - 80%
- 81 - 90%
- 91 - 100% (Highest Scores)

1:72,224

0 0.5 1 2 mi

0 1 2 4 km

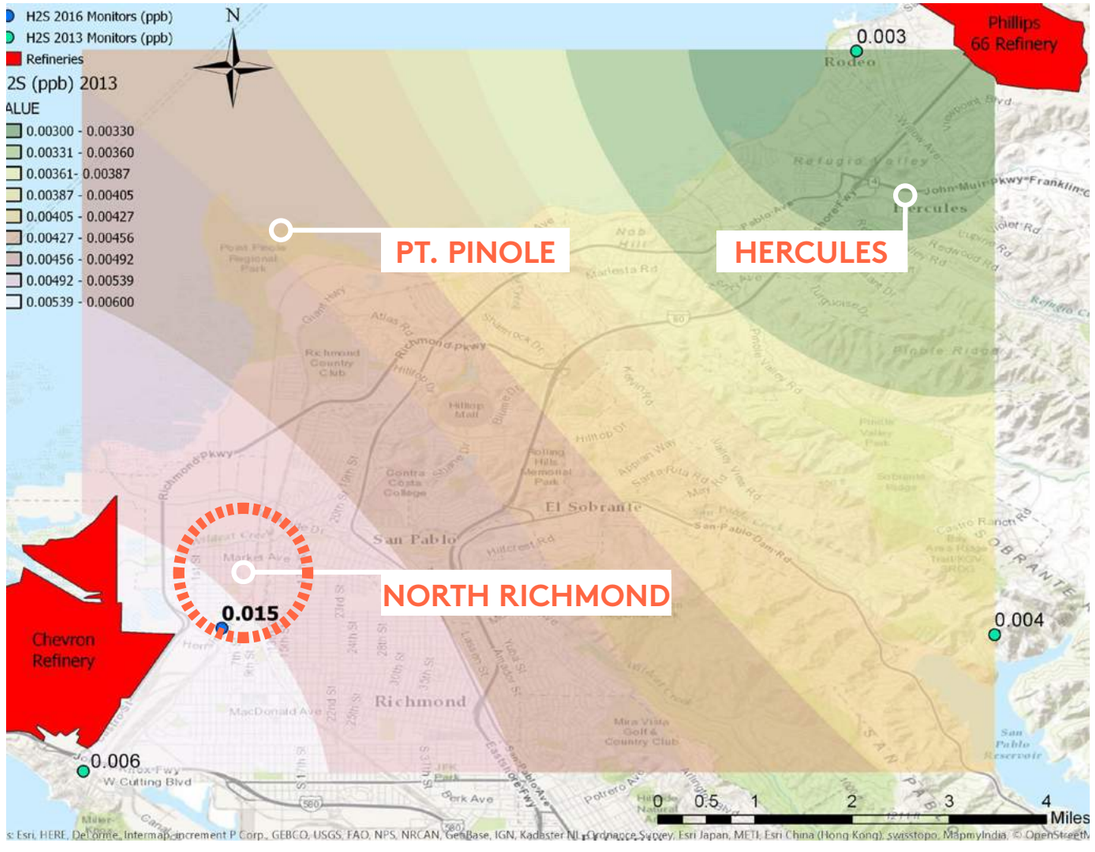
Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, © OpenStreetMap contributors, and the GIS User Community

Web AppBuilder for ArcGIS

County of Marin, Bureau of Land Management, Esri, HERE, Garmin, INCREMENT P, USGS, METI/NASA, NGA, EPA, USDA | OEHHA |

Air Quality Map

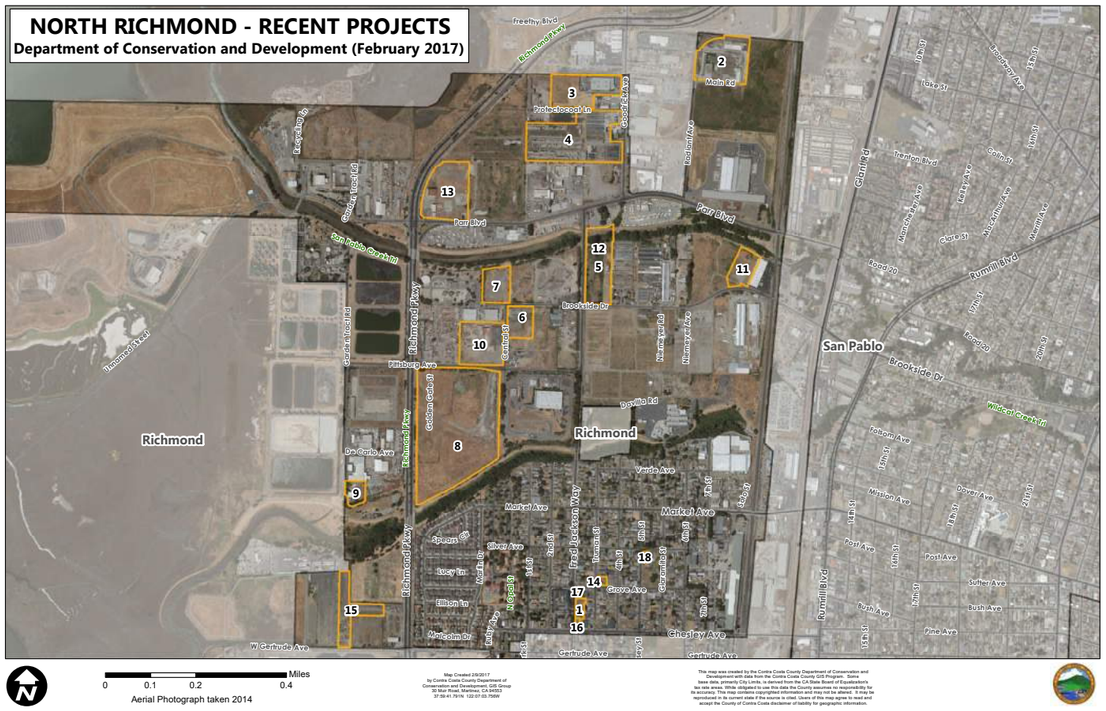
Figure 1. Map of Hydrogen Sulfide Emissions from the Richmond Chevron Refinery (FRACTRACKER.ORG, KYLE FERRAR, MPH)



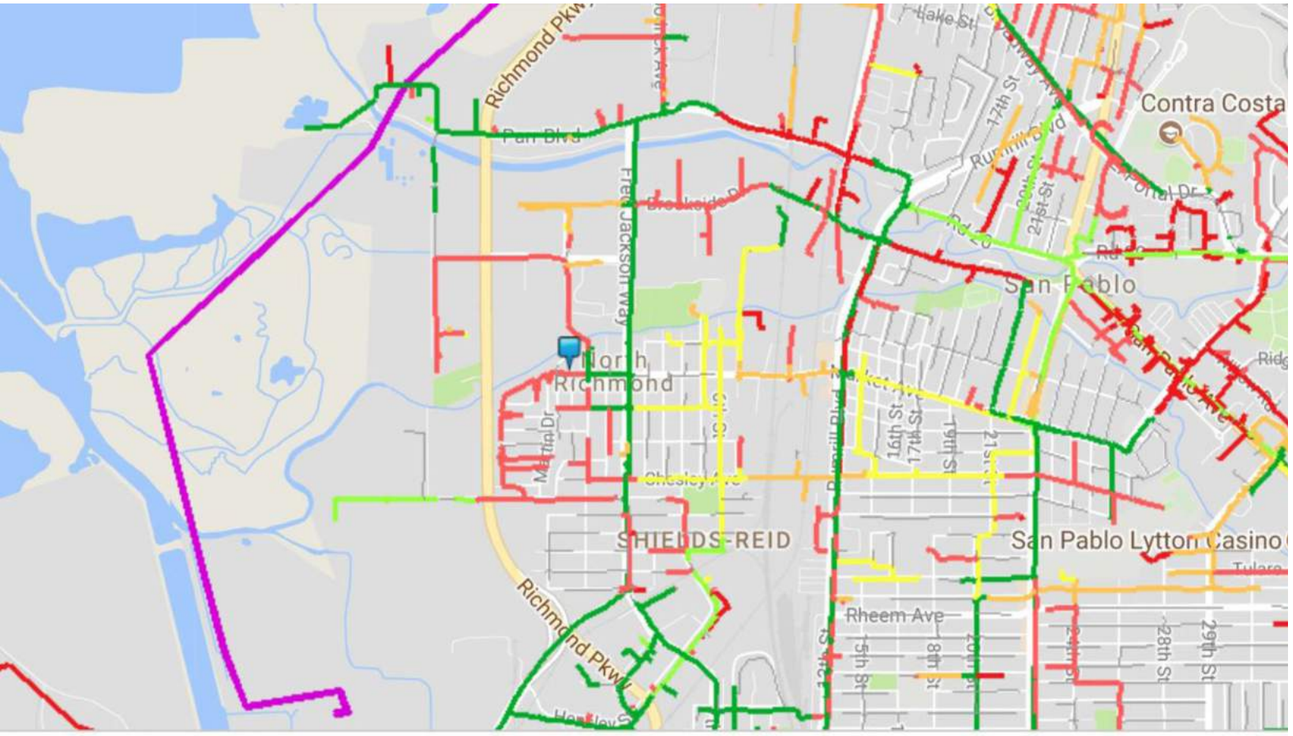
North Richmond Projects List

NORTH RICHMOND PROJECTS (February 2017) **Department of Conservation and Development**

Map	Project	Site Address/Location	Project Description and Status
Approved Projects			
1.	Heritage Point	Corner of Chesley Avenue and Fred Jackson Way	Heritage Point is a 4-story, 42-unit, multi-family, affordable housing development with retail and office uses on the ground level. The project was approved by the Board of Supervisors May 5, 2015. Applicant is waiting for funding to begin construction. (File#: DP14-3026, GP13-0004, MS14-0007; APN: 409-080-001, 013, 014, 015, 016, 020, 021) Project Planner: John Oborne, (925) 674-7793
2.	Oliver's Tow Yard	2800 Radiant Avenue	Oliver's Tow Yard was approved by County Zoning Administrator on October 5, 2015. (File#: LP07-2065; APN: 408-082-029) Project Planner: Stan Muraoka, (925) 674-7781
3.	Sign Production Business	2217 Goodrick Avenue	Approved May 3, 2016. Project is currently in Building Inspection Plan Check. (File #CV16-00019, APN: 408-090-042) Project Planner: Adrian Veliz, (925) 674-7798
4.	Industrial Buildings	2601 Goodrick Avenue	Proposed construction of 2, one-story, industrial buildings (171,000 square feet total). Approved by County Planning Commission on January 25, 2017. Awaiting condition of approval compliance review application. (File#: DP16-3023; APN: 408-090-020) Project Planner: Francisco Avila, (925) 674-7801
5.	Urban Tilth Phase 1	Corner of Brookside Drive and Fred Jackson Way	Community supported agricultural production farm and community learning center and farm stand. Admin application approved, Tree Permit request for ultimate farm footprint under review. (File #'s NR16-0007 and TP16-0036; APN: 408-201-017) Project Planner: Francisco Avila, (925) 674-7801
6.	Commercial Greenhouse	112 Brookside Drive	Proposal to construct 72,417-square-foot commercial greenhouse facilities. Approved by the Zoning Administrator on December 5, 2016. (File#: DP16-3008; APN: 408-203-006) Project Planner: Adrian Veliz, (925) 674-7798
Projects Under Review			
7.	Wood Recycling Facility	109 Brookside Drive	Proposed wood recycling, chipping and grinding facility. Project is currently undergoing environmental review. (File#: LP15-2010; APN: 408-190-054) Project Planner: Daniel Barrios, (925) 674-7788
8.	500,000 SQ. FT. Warehouse	500 Pittsburg Avenue (Panettoni property)	Proposed construction of a 500,000-square foot distribution center. Under review for completeness, environmental review to begin upon acceptance of complete project. (File#: DP14-3041; APN: 408-180-010, 408-170-072) Project Planner: Francisco Avila, (925) 674-7801
9.	Commercial Water Treatment Facility	1850 Garden Tract Road	Proposal to establish a centralized commercial water treatment facility within an existing warehouse building. Application is currently incomplete. (File#: LP15-2017; APN: 408-170-063) Project Planner: Sean Tully, (925) 674-7800
10.	Light Industry Commercial Condominiums	2200 Central Street	Proposed nine-parcel commercial subdivision/commercial condominium conversion. Application is currently incomplete. (File#: SD15-9423, DP15-3044; APN: 408-190-004) Project Planner: Stanley Muraoka, (925) 674-7781
11.	Glass Door Production Facility Expansion	0 Brookside Drive, between Fred Jackson Way and Giant Road	Construction of a 50,820-square-foot production facility to be an expansion of a glass door production facility currently located at 775 Brookside Drive. CEQA comment period ends February 15 2017. (File#: DP15-3040; APN: 409-320-032) Project Planner: Adrian Veliz, (925) 674-7798
12.	Urban Tilth	Corner of Brookside Drive and Fred Jackson Way	Proposed community supported agricultural production farm and community learning center and farm stand. Admin application approved, Tree Permit request for ultimate farm footprint under review. (File #'s NR16-0007 and TP16-0036; APN: 408-201-017) Project Planner: Francisco Avila, (925) 674-7801
13.	Galaxy Desserts	81 Parr Boulevard	Proposed 266,700 square-foot bakery. Application is currently incomplete. (File #DP16-3039; APN's 408-090-044, 408-130-018, 408-130-037, 038 and 039) Project Planner: Francisco Avila, (925) 674-7801
14.	Minor Subdivision – Residential	345 Grove Avenue	Proposed two-lot subdivision. Currently under review. (File #MS16-00010; APN:409-172-019) Project Planner: Sean Tully, (925) 674-7800
15.	Contractor's Yard	560 Gertrude Avenue	Proposed contractor's yard for storage of trucks and building materials. (File #NR16-00006, APN: 408-160-019) Project Planner: Jesus Del Toro, (925) 674-7797
16.	Wireless Access Permit	Utility pole within right-of-way on Chelsley Ave.	Wireless Access Permit to establish an ExteNet Systems cell site, including one 2-foot antenna, accessory equipment, attached to a utility pole located in the public right-of-way on Chelsley Ave.. Project is pending submittal of new location due to undergrounding of utilities. (File #WA16-0003; Reference APN: 409-080-013) Project Planner: Joseph Lawlor, (925) 674-7802
17.	Wireless Access Permit	Utility pole within right-of-way on Grove St.	Wireless Facility Access Permit to establish an new ExteNet cell site attached to a utility pole, including 2 antenna and accessory equipment in the public right-of-way on Grove St.. Project is pending submittal of new location due to undergrounding of utilities. (File #WA16-0005, APN: 409-080-001) Project Planner: Joseph Lawlor, (925) 674-7802
18.	Sprint Cell Site	Corner of 5th St. and Silver Ave.	Proposed Sprint cell site to be attached on a utility pole in the public right-of-way at the corner of 5th St. and Silver Ave.. Application is incomplete. (File #LP16-2037; APN: 409-142-001) Project Planner: Dominique Vogelphol, (925) 674-7814



Current Electrical Grid Conditions Map



Trail Dimensions / Bikeway

Bicyclists at Intersections

Several techniques can improve the safety and operations of bicyclists at intersections. Traffic control devices such as **signage**, **roadway markings** and **signals**, or **geometric design features** can reduce ambiguity for all roadway users and draw attention to the presence of bicyclists. Many of these strategies are found in the Caltrans Complete Intersections Guide. Some techniques are relatively new or newly approved in California. A few examples are provided here.

BROADWAY, OAKLAND

Bike Signals

A bicycle signal is a traffic signal that uses bicycle signal faces and directs bicyclists to take specific actions when there are no conflicting movements. Use of bicycle signal faces is analogous to using pedestrian signal heads. Implementation is based on engineering judgment.

REFERENCE: CAMUTCD SECTION 4D.104(CA); FHWA INTERIM APPROVAL IA-16; NACTO URBAN BIKEWAY DESIGN GUIDE/ SIGNALS

RENDERING OF CONFLICT AREA WITH GREEN PAVEMENT

Green-Colored Pavement Through Conflict Areas

Green-colored pavement can be used on Class II or Class IV bikeways. When bikeways cross intersections or motorists need to merge across a bikeway, green-colored markings become dashed. This can be useful at ramp intersections to increase visibility and draw attention to the presence of bicyclists.

REFERENCE: FHWA INTERIM APPROVAL IA-14; CAMUTCD FIGURE 9C-103(CA)

RENDERING OF PROTECTED INTERSECTION

Protected Intersections

Separated bikeways at intersections can be designed as a protected intersection—providing greater separation and protection for bicyclists and minimizing the number of conflict points with motor traffic. Corner islands keep bicyclists to the right, placing them downstream of the cross street and allowing right-turning motorists to complete a turn before intersecting with bicyclists. Bicycle crossings are placed next to, but separated from, pedestrian crossings. Protected intersections can facilitate left turns for bicyclists by providing a waiting area to complete the crossing in two stages.

REFERENCE: CALTRANS DESIGN INFORMATION BULLETIN 89 – CLASS IV BIKEWAY GUIDANCE, SECTION 2.2; FHWA SEPARATED BIKE LANE PLANNING AND DESIGN GUIDE, CHAPTER 5, STEP 4

TIBURON BLVD, STATE ROUTE 131, TIBURON

Intersection Bike Boxes

The intersection bike box, a designated area on the approach to a signalized intersection, provides bicyclists a space to wait in front of stopped motor vehicles during the red signal phase so that they are more visible to motorists at the start of the green signal phase.

REFERENCE: FHWA INTERIM APPROVAL IA-18; NACTO URBAN BIKEWAY DESIGN GUIDE/ INTERSECTIONS/ BIKE BOXES

Two-Stage Turn Queue Boxes

Two-stage turn queue boxes offer bicyclists a way to make left turns at multi-lane intersections by separating the turn into two moves, which is helpful for bicyclists who are uncomfortable merging across multiple lanes of traffic to make a left.

REFERENCE: FHWA INTERIM APPROVAL IA-20; NACTO URBAN BIKEWAY DESIGN GUIDE/ INTERSECTIONS/ TWO-STAGE TURN QUEUE BOXES

RENDERING OF ROUNDABOUT

Bicyclists at Roundabouts

Roundabouts are circulatory intersections where motorists and bicyclists yield to enter. While roundabouts have been shown to reduce the number and severity of crashes overall, it is important to design them for all users by minimizing the design speed and the number of lanes and conflict points to reduce exposure for all users. . Bicyclists are allowed to take the lane with vehicle traffic, but can also be provided a separated bikeway or a shared use path that circulates around the roundabout to reduce the level of stress. While single-lane roundabouts are easier for bicyclists to navigate, multilane roundabouts require additional considerations at conflict points and bikeway crossings.

REFERENCE: NCHRP REPORT 672; ROUNDABOUTS; AN INFORMATIONAL GUIDE; MASSDOT SEPARATED BIKE LANE PLANNING AND DESIGN GUIDE

PRESENTED BY CALTRANS IN CONJUNCTION WITH THE DISTRICT 4 BICYCLE PLAN

A GUIDE TO

Bikeway Classification

JULY 2017

PREPARED BY

alta PLANNING + DESIGN

Appendix D: Community Advisory Board

Meeting #1

Resident By Design // Home Team
North Richmond CAB Meeting #1 2/22/2018

Introductions / name, affiliation, one thing they love about Richmond
- Deb Guenther / Mithun Home Team / Landscape architect
- Dave Jarrad / Home Team
- Sandy Mendler / Mithun Home Team / Architect and planner
- Katie Stege / Mithun Home Team / Architectural designer
- Tim Mollette Parks / Mithun Home Team / Landscape architect
- Zoe Siegel / RbD
- Hanah Goldov / RbD
- Sherry Stanley / West County Wastewater District / North Richmond - optimism and values
- Paula White / The Watershed Project (TWP) / Richmond Shoreline
- Nick Snyder / CCC Sustainability Commission/Tierra Resource Consultants / Like sustainability efforts
- Sequoia Erasmus / City of Richmond
- Josh Bradt/ San Francisco Estuary Partnership (SFEP) /Geography and people
- Tania Pulido / Community Housing Development Corporation (CHDC) / The people
- Regina Cuevas / North Richmond Resident / Loves this area, been living here 19 years
- Sara Gurdian / The Watershed Project (TWP) /Diversity and culture we live in everyday
- Juliana Gonzalez / The Watershed Project (TWP) /Shoreline, progressive minds and climate smart efforts
- Paul R Detjens / CCC Flood Control District
- Beth Williams / North Richmond Homeowner & resident / One of the last places in the east bay with lots of potential
- Bob Lilley / Business developer with Contra Costa Electric. Career Path (nonprofit) / Likes the potential for citizen involvement
- Jawhasar Rashed / Here with her brother
- Dr Henry Clark / Environmental Justice, West County Doctors Coalition / born & raised in North Richmond, likes the North Richmond Shoreline Festival
- John Steere / Watershed Planner with Contra Costa County / Green infrastructure projects with local nonprofits; North Richmond Watershed Connections Projects involvement
- Sandra Hamlat / EBRPD/ Dodson Family Marsh
- Princess Robinson / Urban Tilth & North Richmond Farm, North Richmond Resident / Loves this area, and loves the struggles and strength
- Courtney Moore / Urban Tilth /Loves the diversity
- LaDamier Flowers / Community organizer, North Richmond resident

---

Home Team: Share with you what we have been thinking about in this project, update on process and what is the CAB, RbD and hopes/expectations

RBD process: funded by Rockefeller Foundation, funders of Rebuild by Design New York / wanted to make sure that the communities were involved in rebuilding process / what if this community input took place before a disaster — thinking about sea level rise/climate related challenges
- Want to think before another disaster takes place and thinking about sea level rise/other climate related challenges — our focus is on housing
- A year long design challenge across the Bay Area - creative design process - 10 sites, including North Richmond
- Focus on a regional solution / Breaking Down Silos - creating holistic solutions that look at the whole system
- Look into projects that are achievable and realizable
- 10 project areas were selected. Design teams submitted applications. cities applied - 10 design teams 10 sites / **Home Team matched with North Richmond**

How this process works?
- Together with community we want to bring together our efforts to focus our efforts / focus efforts on creating a community based plan
- Take the results and have resources in the future - narrative of resilient planning - can be a future resource

Who is the Home Team?
Transportation planners, Designers, Architects, Ecologists, Engineers - many different people with unique and diverse expertise - focus on Home (housing)

Why focus on Home/housing?
Tim/Home Team - personal story from my Home past / how concept of Home shapes our view/process
- Big Sandy Rural Electrification Cooperative - grandfather's buy-in in the 1940s in the Appalachian Mountains
- Community owning their infrastructure / economic by-in, stake in their community
- Big Sandy - live along the Big Sandy River / knew we were part of the larger watershed / connecting to economic, ecology etc

Home Team - see this opportunity to look at challenges facing residents, and see that the challenges of sea level rise as an opportunity to improve and reflect on community resilience / to plan holistically to foster social and environmental resilience (example: infrastructure)
Relate Adapt Thrive / regionally based priority resilience area
low investment over time and sea level rise - "priority development areas" - to change that that "priority resilience area" - think more holistically to build communities and resilience side by side - tangible ideas

Wildcat/San Pablo Creeks & North Richmond Watershed
- History of flood - pumps reaching end of useful life - a pressing challenges
- Upland to lowland complete system - tidal, flood areas - whole system, not just about the shoreline but the whole watershed

Home = Habitat and Habitation (natural system to provide healthy ecosystems and human life)

CAB
- What to have an interactive project design process - assembled CAB
- How we went about assembling the group - tried to build groups with different expertise in these regions - want different expertise / different perspectives
  - 2* seats on board / 24 people
  - Racial Balance
  - 25-60 age range
  - 1/3 city of Richmond, north Richmond, other County Residents
  - 1/3 non profits, residents, municipal
- **Objective:** CAB will be advising team, ongoing collaboration, incorporating feedback from communities into draft design, ambassadors to the greater community, possible ideas to stay involved

SCHEDULE:
Four key meetings
March 1st - second meeting
March 13th - third meeting
April 19th - final meeting

Areas of Influence / Study Area
- Boundaries defined by watersheds of Wildcat/San Pablo Creeks
- Pretty broad area, trying to define where the projects within this area
- Exploring existing initiatives - want to build on and collaborate with existing ideas (encourage people to add to map at back of room during the break)

What Home TEAM are hoping to accomplish:
1) Define the priority project(s) / priority resilience concept
2) Build a physical prototype
3) Explore governance group (this CAB) for future implementation of project(s)

Co-developing all these accomplishments with the CAB, natural tension with the time frame (MAY) and what we want to accomplish and what the community

PROTOTYPE: value, to build a small version of something to see how it goes, helps engage the community, often in physically building something. Some possible ideas Home Team have discussed include:
- Oak testing/ with climate change oaks will not thrive, maybe there are opportunities for an oak testing scenario/nursery - a regional need - which oaks to plant for the future, build a testing facility in North Richmond - could be center for future research for the whole Bay Area
- Vacant Lots / what are the temporary uses for the land, tiny Homes, gardens - while the future use in being decided, build something in the short term that could benefit the community

Meeting on the 13th of March - all about getting your ideas on the prototypes - not going to decide all this tonight, but will help the project move forward - not just a report on a shelve - get you thinking about that before the third meeting
(if you have thoughts on prototype - write it down on the blue cards, and we will add them to the list)

Home Team - here are some big picture ideas that we have been thinking about.
- Community owned renewable energy (solar)
- Floating Bay Trail - increase accessibility
- Affordable housing, would adjust with sea level rise - amphibious housing
- Green infrastructure
- Living shoreline
- Decentralized Wastewater - marsh connections
- Housing and transportation overlay to the North Richmond Shoreline Vision Plan
- Health Action Plan
- Community Anti-Displacement Plan - know that is something many community groups have been working on

Any questions?

QUESTION / Bob: regional solution - sea level rise in particular, or larger than that?
A: Rockefeller Foundation goal is to link all the 10 locations together, for Home, if we are looking at regulatory challenges then that could help the whole community, they all with inform each other
QUESTION / Bob: what is your definition of resources?
A: our hope is through this process, and RbD process, will help define financial resources
QUESTION / Bob: projects, mostly environmental projects?
A: a resilient by design challenge / environmental/climate resilient and community resilience connections (including economic) How will climate resilience strengthen and benefit the whole community: environmental issues tied to climate and solutions

QUESTION / Dr. Clark: How long will you have the community based energy that could potentially tied to new solar farm to the new solar farm by the parkway/Chevron, floating houses - if that became a viable idea, would the planning obstacles be explored? How realistic would that be? Would like the ideas to be realistic and could be implemented easily with obstacles. List of possible ideas - some people in the community, think that pot farms could be a great idea for this community - but I am not on board with this idea

QUESTION / Beth Williams: Climate issues - flood potential - is that the focus?
A: the challenge was defined by RbD with sea level rise. Home team see resilience as more holistic, people are not planning to sea level rise because of other crisis, can we combine this multiple crisis together. This is really about health of communities and of the environment.

QUESTION / Sherry: is the end goal to leave ideas with the 10 areas, or to come back in to implement them?

A: to define a project, that could be implemented in the future by the community. One of our challenges to to think about who could take on this project in the LR and who could fund it.

QUESTION / Nick Snyder: Is there a second phase of funding for implementation.
A: we have an economics person on our team to look into grants and a whole range of funding sources

QUESTION / Sandra: Many of us have been very involved in many other plans for this region. Could there be more focused on implementation, especially on large scale ideas. Many of us participated in the TPL climate smart cities; went through similar processes - identifying different data points for many future projects.
A: want to build on the past ideas

Relationship building exercise: 1) if you have a magic wand how would you improve the community; 2) and how to address systems of historic inequality
(turn to the people near you and discuss)

Groups come back, and discuss their thoughts:
Group 1 // employment, local jobs, access to higher education through scholarships, more renewable energy/solar on individual houses, addressing sediment issue in Wildcat Creek, housing displacement, relocation plans, ways of avoiding gentrification, multiples development, population growth, dense housing, keeping communities intact, pride in community.

Group 2 // housing experts on the CAB, anti-displacement, our power as a environmental justice collaborations, what can we learn from current actions and how they can connect with them, increasing rent/affordable housing, tenants rights, thinking about areas abandons by the county - flipping them, turning them into land trust, ownership at Homes, creating more community hubs.

Group 3 // importance of bringing pride to the area, infrastructure pieces for walkability for lighting, safe routes to schools, crosswalks, employment opportunity wages, importance of brining investment, safety - role at safety in attracting investment, it has improved significantly - and will bring in more resources, change the perception of North Richmond.

Group 4 // knowledge of what's there - increasing destination of trails, signage along the trails - plants/animals, parks, beautification of the area, small/big businesses, local ownership in the community, equity of employment - businesses coming in to make commitment to hire locals, north Richmond MAC, holding the upper watershed accountable - thinking about the full watershed health.

Racial Equity Framework Plan
– draft – what to think about the framework used to evaluate projects and critical steps to achieve the goals –look up on slides for full objectives–

Any initial thoughts?
Dr. Clark: community housing corporation, groups like Tania, they are the community groups that would be involved in displacement issues and ground breaking on two blocks of Fred Jackson way, the MAC (Dan Gilmore) has been discussing the very same issues, discuss with affordable housing advocates, relocating back to North Richmond is no longer the plan often for many who have been displaced (especially from community housing)
Bob: would like to replace the ward job with the ward career - there is a big difference - just a job is not sustainable, a career - require training, ownership, good wage, long term, health care plan, retirement plan, benefits
Sequoia: Thinking of different levels of privilege we all have, some with more, some with less, we have the responsibility of acknowledge how short this time is but how much is already being down in Richmond and how active and involved this community is, as a resident - Richmond is a wonderful place to live/work, deep plans/connections, not just "here is now we are going to help you"

Resilient Toolkit
Talking about what the resilience issues are - and how to communicate with the community (on resilience planning and implementation might look like, and the benefits of resilience planning)
What Home Team are thinking:
- stabilization (careers/community wealth), mitigation (sustainable energy, water, waste), adaptation (responsive physical environment to flooding, social cohesion)
- ex. Community energy solution, marsh restoration, career program, sea level rise maps - from our experts; have been compiling this information and would like to share
- FEEDBACK: could be helpful to share with our own organization, could read with your own organization, give it to kids to be more effective. getting the word out on resilient communities/sea level rise - tours along the shoreline have been helpful to sharing with the North Richmond community, another tour could be helpful, thinking about linking to other current activities going on

---

Next meeting:
- Think about other people are not in this room, who else would you like to be part of this effort? -will send out a letter you can send out to other people or the Home team can contact them as well
  - Stakeholder brainstorm: recommendation on who to join this workshop? Who in your network can you or we reach out to? Other meetings that the Home Team can attend?
  - Wildcat San Pablo Watershed Council meeting : Home Team could make a presentation
- **Streetwyze** - a mobile friendly tool that can gather feedback on the community; answers simple questions like: how safe is this street, how walkable is this neighborhood? Used to generate questions via community mapping : where are their vacant lots? What is your favorite/least favorite places? Where have you seen flooding? Survey tools
location specific input // All the questions will be emailed out, and everyone will get trained on the tool next meeting.

Juliana Gonzalez and Robert Rogers of Supervisor John Gioia's office - reach out to in between meetings

---

Final questions/comments before wrapping up?

- Could Home Team send out information on the previous RbD project in New York? Examples of past projects?
- many of the environmental issues are being tackled by communication/talking - multi-level group asking for money, we are more successful, we should all be working together and collaborating // the time frame with sea level rise is getting shorter; try to make that work as valuable as possible // building connections and organizing with each other and bringing all our different resources to the table.

Anyone not getting emails from katies@mithun.com?

Thank you!

Meeting #2

CAB Meeting Notes 2 // March 1st, 2018

I. Welcome and Introductions
Thank you to all the partners, partner organizations, neighbors, community leaders // the whole can be greater than all the individual parts

Brief intros

Resilient by Design - Overview
What's Resilience by Design (RbD), about being proactive in changes as we are planning for a future with climate change, and tie those things together to make smarter investments / interconnecting future designs with resiliency

- Opportunity for North Richmond (NR) - share work that is being done and how that can be part of next phase of community designing
- NR already has done a lot; RbD want to build on these ideas and this knowledge
- 10 teams in 10 locations // sharing knowledge between them too
- Home Team // more than just folks seen in this room // many experts in wide range of fields

VIDEO - on how the Home Team approaches resilience

How are things connected? // home & climate change & resilience

- Communities that are strong are also tied to ecosystems that are strong // social/economic/environment needs // **strong communities and strong ecosystems thrive together**
- Examples
  - eucalyptus - invasive species // Replace eucalyptus trees with native oaks, create a local oak nursery with in community AND provide jobs/career development, economic ownership/vitality etc
  - stormwater issues - pump - area shown in red that is served by pump that reduces flooding, yet pump is vulnerable to sea level rise // put in more green infrastructure etc to reduce the need for the pump AND increase green spaces, build community connections, ecosystem health
- Multi-**benefits**: addresses more than one challenge // green infrastructure addresses more than just flooding

Some multi-benefit design opportunities for North Richmond

- Nursery // community research station
- Affordable - amphibious house
- Community owned renewable energy
- Floating bay trail connections
- Living Shorelines
- Plus many more resources on the **thumb drive** - please take with you and share with your community

---

II - Streetwyze
Presentation by Antwi Akom, Ph.D
Nothin' bout us without us
Language // We want to start in multiple languages

- Streetwyze is multilingual and this is at its core - critical to have a platform that is multilingual to communicate with people, especially in underserved communities

Can't talk about place-making without talking about about race-making and its impact on spaces and places

Great ideas that have already been presented by the Home Team, but does not have the community's input/voice and this is where Streetwyze comes in today

It's not enough to ask: how can we build healthier? how can we build happier? how can we build greener communities
FIRST must look into **structural inequalities** and how they have shaped our cities (race, gender, immigration, poverty and other forms of structure inequality)

How to do redesign our cities for communities that have been locked out out sustainability conservations?

- Who will have a SAY in how we redesign our cities? Everyday people or elite?
- How to redesign our communities: not FOR but WITH

ECO-APARTHEID - system theory that examines that ecological impacts of structural racism & unequal benefits based on race, class, gender, language, immigration, healthy and their interconnection

Cumulative Causation: examine close your eyes

- Imagine that you are all dark skin black/brown youth like me - using West Oakland as an example - but this should also hold true for North Richmond - remember we are talking eco-apartheid, cumulative causation
- how many grocery stores are there in West Oakland? Depending on how you draw the boundaries - between 0-1
- how many liquor stores are there in West Oakland? Guesses 30, 25, 45—depending on how you draw the boundaries - between 50-60
- where are we going to stop on our way to school for food? Junk food at the liquor store
- what is the race and the gender that teach us black/brown children in schools? White women — teaching is about dedication, commitment and love, but they do not look like we do and come from a very different cultural place then we do so when we go into the classroom, all sugared up, what is the general diagnosis? ADAH

THAT's eco-apartheid. cumulative causation — outcomes matter more than the intent — because of the structure of our neighborhood, we just got put on op-eds that impacts our life, our trajectory, and our neighborhoods and resiliency

Environmental bads (Chevron) in low income communities while environmental goods - in higher income communities - is that true?

Eco-apartheid: more powerful definition than environmental racism - includes more - captures more (grocery stores etc) while simultaneously centering race and racism and their political implications

Policy is not neutral // Place-making cannot be discussed without race-making // Racial/spatial reproduction of inequality

- Tim Wise: History of America is the history of privilege of white people/white looking folks / all the way back to the constitution, homestead act of 1852 (160 acres for 10 bucks but defined that to black/brown), to the rejection of loans, black/brown folks with ass standerwelfare, white folks=good sound economic policy --- white families have 20x more wealth because of institutional wealth built on institutional racism
- Too often we end up blaming individuals for structure problems

Thriving resiliency // Re-frame our understanding of resiliency from surviving resiliency (disaster preparedness) - to **thriving resiliency** (about social cohesion, social connection, social capital

- First generation immigrants from Latin America live longer than second generation
- Why? It's all about community // first generation keeps their cultural connection, social cohesion
- When we think about resiliency we need to think about social connectivity and people's sense of self

Gap between professional knowledge & local knowledge

- When scientists think about climate change they talk about parts per million
- But when low income communities think of climate change - asthma, health, impacts of neighborhood and everyday lives

Hardware vs. Software // Community Data Revolution
We have not correctly identified the problem - including RbD and federal government - we have been setting TOP-DOWN goals for the design of the built environment (**HARDWARE**) but we think what is missing is our **lived experience (SOFTWARE) power of place**

- real challenge is the community data revolution // how we bridge this gap between hard & software // in a way that makes the data more authentic and meaningful, valid and authentic
- **Missing link - equity**

POWER POWER PLACEMAKING = realtime, 2-way communication

To fill this gap - we've built Streetwyze - turns real-time information about how people are experiencing cities and turns them into actionable analytics

Experiential Data // we have data that you live near a park but we do not have data on experiences with/in the park // Streetwyze captures experience and spatial data

- How do we democratize data? Decision making?
- Datasets are not holistic //walk-scores do not capture harassment, liquor stores
- Eric Klinenberg // Heat Wave: social autopsy of the city // what role did community resiliency play in the heat wave deaths?
  - In disconnected neighborhoods, people died alone in their homes
  - In connected neighborhoods - people checked on each other, had active public spaces and had a higher survival rate
  - Variable best explains the mortality - not hardware - but the **soft infrastructure** // **the connectivity** // things that get overlooked too often

Streetwyze - gives you the opportunity to report on soft infrastructure // where you walk, where you see friends, where you see the doctor, where you get food

- East Oakland - compare the difference between County public data with ground truthed data with Streetwyze // compare grocery stores rates (count had dozens of grocery stores listed, Streetwyze only had a few)
- Can upload video, photos - important while communicating with bilingual populations
- Google – Streetwyze – Aclima = collaboration on air quality in Oakland // google cars drive around capturing air pollution data // the cars go too fast to capture why those hot spots exist // streetwyze ground truthed those high pollution hotspots // used the data to make policy changes in Oakland
- Mapping the geography of homeless in east Oakland, data platform for BLM

Join us in building a new data revolution - science and technology behind community driven data // Streetwyze is black owned, women led one of the few in the tech space

Up next - Streetwyze training

QUESTIONS.
Q: Sherry // Role of annexation in North Richmond? How do you take this passion, when it reaches the roadblocks of politics & money? Streetwyze, we support communities in working with roadblocks, support grassroots solutions & looking for solutions outside of the system / we built the platform for the roadblocks - politics exist with or without the crowdsourced data and it changes the responsiveness of politicians - political leverage

Q: Dr. Clark // great presentation on structural racism - unless we do something about the education system, how will things change? / black history month & learn something new everyday / a black man created the face mask (forerunner to gas mask) / thinking about black history and the gaps of knowledge of black history, role of black history in Mexico, history of power and ruling, social history not taught with knowledge of black history / how does this educational system fit in with what you are talking about? At right now there is miseducation, and part of what is missing from this education system are things that young people care about in the curriculum // with more engagement we will see more achievement

Q: Sequoia - inside/outside perspective of city of richmond employee and resident / city of Richmond is open to more community engagement in the political process, looking for more engagement with the actions that are already happening between the community/government / important to acknowledge the connections that are already happening / see this as a tool to be used / would like to see a clear call to action on how to use this role A: bridge-building is at the heart of this platform / despite government's best efforts - there is still more that needs to done to acknowledge the trauma that exists within the community / the city of Richmond should be lauded up for their equity work - but that doesn't take away the sins and the harm / the reason you didn't hear a clear call to action is because we have not heard from the community yet - let's work together to define that clear call to action

Q: Robert - great presentation on experiential data & local knowledge / what are other ways that data gets populated? Does it go to social media? A: currently we are in phase 2.0 to populate the platform in a semi-private phase / in phase 3.0 we will allow people download from the App Store and post publically

Q: Dr. Connie - I appreciate you presentation with a strong theoretical base, when I came, I was skeptical at first with elements (e.g. emphasis on low income housing which is not what I see as the solution) but with Streetwyze - it gives me hope, when you take your voice from the streets to the larger scale, it often changes // have you considered how you are going to integrate this into the rest of the challenge? A: we are all collaborating

III. Streetwyze Training
(data captures - good stuff; bad stuff; fix stuff; real time responsive data)
If you post at least 10, then you get a $25 gift certificate

If you have already signed up, should receive an email invitation
If you have not (or would like to invite people), email: akom@streetwyze.com, aekta@streemwyze.com

Q: is there oversight? A: can flag reviews (thumbs up or thumbs down to weight in on posts) plus algorithms that they try

Hands-on Streetwyze training

Thank you!

Meeting #3

CAB Meeting 3 - March 13th, 2018

Welcome and Introductions.
New people to CAB:
- Katrina Rus, NE Richmond resident
- Heidi Nutters, SFEP

Other CAB Attendees
- Robert Rogers
- Juliana Gonzalez
- Tanya Pulido
- Princess Robinson
- Sherry Stanley
- Sandra Hamlat
- Josh Brady
- Regina Cuevas

Hilary Noll—Mithun
Ethan—Streetwyze

Sea Level Rise (SLR) in North Richmond | NBI and Design
Framing context: sea level rise and urban infrastructure
Key areas. Wastewater treatment
Historically flooded areas and path of Wildcat and San Pablo Creeks

Restoration Economy
- NR as the North Bay Area's resource for restoration
- NR is engine for driving change
- $25 mill on annually to be spent on infrastructure investment

Q. How will these investments directly benefit North Richmond?
A. Still unknown, but potentially by scaling up work already being done here. This is the conversation we want to have about how we can benefit people here.
1) Jobs and careers
2) Healthier environment
3) Attracting clean/green / tech businesses

Examples of planned infrastructure improvements.
1) Gertrude Ave pump replacement
2) Wastewater facility protection
3) Electrical grid renovation
4) Marsh restoration

Goal is to leverage these planned improvements to provide multiple benefits to the community
Big Ideas
GATHER—LAND
Strategies: land trust and more

FLOW—CREEK
How do we maintain a healthy creek for NR residents and the Bay

FILTER-- TREES
15,000 trees would provide.
Better air quality, better infiltration, thereby mitigating flooding risk

Could some of the open land in NR be used to plant trees?
Q: Will discussion include historical ecology? Is there a scientific basis or just a design exercise?
A: Potential laboratory for exploring adaptability of species, best fit given potential climate change scenario. Science-based design exercise—scientific knowledge informs the plans.
Q: How can we integrate our discussion with stakeholders from Flood Control and Wastewater, Sanitary district? Ideally we want to work together on these issues, best to be one voice with an integrated plan.
A: Need to be mindful of who is absent that needs to be a part of these conversations.

Process comment. Trying to stir up some discussion: role of Home Team is to be good listeners and thereby build on the ideas, incorporate perspectives, solutions from resident experts

Break-out Sessions
GATHER— LAND
STRATEGIES

1) Community Land Trust/increased home ownership/Affordable Housing Models—Hedge against gentrification
Small lots, community-owned process
Design, different types/sizes

Q: Many renters currently, how will financing work for people who are currently renters?
A: Considering vacant lots now, not those with dwellings units on them now.

Another option: entity maintains housing, can buy into community. Price stabilization is goal upon sale of home. Trying to protect current residents from the risk of gentrification
Must think about how to address the risk of gentrification because any improvements in the community without a specific plan for this will result in gentrification and displacement.

Q: Connection between housing and transportation—will help attract funding, but absent from current vision.

Q: San Francisco—impossible to protect neighborhoods from rising prices—can it be done in NR? Model from CHDC: mean income based

Q: Historical housing was shanties, demolition related to many vacant lots. Historically isolated from transportation corridors

2) Living shoreline/horizontal levee/decentralized wastewater treatment

3) Energy production: community renewable energy facilities district—another way to keep wealth in the community
Q: Regulations around wastewater discharge, currently not allowed to do decentralized discharge.
A. wastewater special district—open to looking into converting ww discharge to energy

FLOW/CREEK
Wildcat Creek current projects
Rheem Creek
Trash assessments
Urban Tilth gardens - 1st St. and at Verde Elementary
Sedimentation basin

Ideas:
- Destinations
- Improve access Fred Jackson Way (FJW) trail—fenced to prevent dumping
- Flooded trail at Richmond Parkway
- Potential projects Richmond Pkwy overpass with bike connectivity—but might get more bang for your buck to improve area under bridge where existing trail dead ends,
- Plan would be to widen creek to allow water level to come down
- Complete creek model - have more recreational spaces, homes fronting on the creek

Feedback:
- Need interpretive features to make trail more of a destination, accessible signage, helping people understand the connection to the shoreline
- Create sense of place and identity, watershed type model
- More places for trash, restroom, building for meeting space, bookstore
- Picnic benches, spaces for family gatherings. Be intentional about what you're trying to create and the demographics of the population you're trying to attract, cultural competence. Consider age groups, ability to walk, need to supervise children.
  BATHROOMS!
- Additional survey data needed.

Would creeks be seen as a centerpiece of the community? Over time, something in center today could be on the edge.

Development opportunity along creek—historical walling off of creeks has created sense of creeks as places not to go. Explore development that is most closely tied to community interests.
Be sure to take into account flooding risk with all of the proposed plans.

FILTER/TREES
Benefits. Tree canopy and stormwater infrastructure with overlapping benefits. water storage under trees, mitigate flooding, improve air quality. Reduce urban heat island effect.

Vacant lots. Opportunities primarily vacant lots. Lots of different street types in North Richmond. more or less parking, wider, narrower. Constraint to traditional tree planting along streets model. given need for ADA compliance. This is reason for driving change in vacant lots.

Future planting model: keep trees containerized, so they can be moved. Modi planting idea.
Feedback: Oaks—once planted, can never be moved, so perhaps this would be a work around.
Could be a nursery model, eventually mature trees could be sold, be a money maker.
Water storage. If large enough, could be source of water for irrigation (truck could pump for use in other parts of area)

Maintenance and funding—needs to be considered

Trees as a buffer—could be very helpful in buffering emissions from Chevron, visual blight (smoke)
Q: Orchards and food production
Block ambassadors—foster stewardship, ownership of community assets, help with maintenance.
Non-profits such as TWP could play a role with developing and maintenance.
Historical ecology and its role in informing planting—seed banks, remnant native grasslands. Trees historically were not part of the landscape.
Some outreach to native groups, but there is not as much local historical knowledge in this particular area.
Mimolly, try to restore natural functions.
FJW—links to more industrialized area. Just north of traditional housing area, large trees providing a buffer. Urban Tilth's North Richmond Farm though not actually very far seems to be a lot farther to residents partially because of the lack of infrastructure along FJW. Currently there are plans to provide a complete street treatment along FJW. Should help shrink the distance.
Could county provide a buffer east of FJW south of industrial area? Currently undeveloped county owned parcels. Preserve a certain buffer along that corridor.
Complete street v stormwater perspective—would be helpful to have these perspectives cross-pollinating, produce better design.

Industrial zoning typically impervious—requiring a pervious buffer (trees, bioswale?) could be a good strategy.
General chemical—historically lots of emissions from toxins (General Chemical, Chevron).
Approach industry to help pay for buffers to reduce the remissions—would serve their interest
May be a good way to test an idea of a local carbon market. Mitigate carbon emissions with trees/planting

Share out session:

Takeaways—Round robin style
- Katrina—community renewable energy—ties to creating stability, more resilient community
- Princess—Adopting a tree in lawn, ramp over Richmond Pkwy, cottage model for housing
- Josh—Prototype model of decentralized wastewater system and a co-housing concept
- Tania—Discussing money for all of these ideas—Green Benefit District idea to pay for it, potential funding from nearby businesses, and sustaining work over the long term

- Juliana—Opportunities with publicly-owned land, multiple uses, energy, housing, very exciting
- Regina—3 ideas: energy production/solar, creating housing options, doesn't want to be displaced, creek—works with kids at Verde, school should have more pride in appearance of creek, changing narrative around North Richmond
- Robert—Tree canopy as buffer of industrial uses, protect community from sight, noise, and air pollution and increase canopy within community. Also, thinking of smaller affordable lots in community with history of diy types of structures
- Heidi—Plant trees that are appropriate for landscape, safer more walkable streets, culturally appropriate signage, place making, housing ideas are exciting
- Sandra—Potentially create a local carbon market, store carbon in tree carbon

Amplification of ideas from Ethan:
Changing narrative of community, imagining best outcomes done best with community input, so how can we keep conversation going?

STREETWYZE session afterwards to help get more community input

Mithun seeking input for next meeting's agenda
RBD overall process is having an agenda sharing session end of March with the other 10 design teams

If **interested in participating in agenda setting, contact** Deb Guenther
Goal for next meeting—come up with specific project proposal and get feedback

Meeting #4

CAB Meeting 4 Notes
Thursday, April 19, 2018

Location: Multicultural Senior and Family Center, 515 Silver Ave Richmond CA
Attendees: CAB, Home Team, Bay Nature, Landscape Architecture Magazine

Outcomes:
- Shared understanding of where project development stands
- Discussion of projects and their refinement
- Discussion of vision - how that can be reflected in narrative and storyboard for video

I. Welcome (10 minutes)
- Welcome and thanks everyone for joining
- Introduce visitors
- Brief overview of the agenda
  - 5th meeting: May 22nd, Location TBA - after the public presentation of the development of the ideas, but before we finalize our plans
  - 20 minutes at each table - figure out the cluster of projects that belong together - a fundable package with partners, sponsors, funders, projects - have blank cards as well for new ideas
  - Last 45 minutes - on the narrative of North Richmond
  - May 11th - will be submitting a draft to the CAB, and RbD Home Team will take into account CAB comments before submitting to Resilient by Design
  - Will be doing video after the meeting as well

II. Design and Project Development (60 minutes) - 3 groups of 20 minutes each
- Group A: RELATE - Wildcat Creek trail and shoreline access
- Group B: FILTER - Healthy air and water quality (trees, horizontal levee)
- Group C: THRIVE - Home ownership and wealth building with green benefits district

Share out as a group after rotations
- Liked the intersectionality between resiliency, connectedness, housing — all three work well together in a small area like North Richmond and all three ideas are important to think about
- Public access is a good - but safety is a still an issue, haven't talked too much about the public safety aspect of these projects
- Ideas build on a lot that has already been done
- Some concerns with the horizontal levee - will continue to discuss with the technical experts
- Diverse funding sources in the deck of cards is interested
- Most compelled to the bridge concept - many gap closure projects already going on in Richmond, so this would pair well and could be done
- Pleased at the renderings and the ability to visually respond
- Really curious about the housing options and the community ownership of housing and community design — could create a lot of local spaces
- Housing - the most interesting
- Safety for the bridge is a concern
- Like all the designs - can you do all three at the same time? Would probably depend on how they all evolved/funding
- Bridge idea - might be able to develop quickly
- Like the displays - good way to get feedback
- Want to integrate them - bring all three together and connect them
- Housing - emphasis green benefit district - county has been exploring ways to give more funding to local residents
- Really likes all the ideas, have a lot potential - particularly like the housing so people don't get displaced
- Language about "land trust". Spanish translation?
- Lots of trauma in the community and not a lot of resources
- Bridge - and connecting educational elements, all could be implemented in different ways to connect people to place
- Trees - could help solve many of the flooding issues
- Opportunity for North Richmond to be a jewel, and create a lot of pride in the community and could reduce crime in the community
- Pride and sense of place - great framework is there with the two creeks and the connection on to the bay - having the means to fund programs through green benefit districts - create more connectivity
- As we are developing and opening the community up to people beyond North Richmond — coming through North Richmond on trail, beautifying quality of life year — but how will that fit in with the North Richmond community? How will it fit with non residents coming through participating in illegal activity?

Restoration economy? How does North Richmond want to participate?
Funding coming through Measure AA in the future
Does North Richmond want to post on itself as a resource to the whole Bay Area?

What is the narrative that people would like this process to take forward? What's the big idea?

What form does this group take going forward?

III. Discussion of North Richmond's narrative and video storyboard (40 minutes)

- NR as a place people can live happily and safely
- Working as a team - the community and the government - all levels of the community
- To make friends through programs and community involvement - and get together with neighbors and community
- Reclaiming the collective commons - collective ownership of the space that has been ripped from a lot of in the past - build a buffer around our community
- Working with government that works for us and with us
- How do people feel about R-Home catchphrase?
  - Probably not the most important thing to focus on

- Community involvement - pulling the community together - example, community wide Earth Day - events designed to unit community - community is already moving in the direction
- We have this great dynamic, strengthening within the community (planting trees and gardens, reconnecting with creek, bridges, strengthening the marshland) and opening up new lands (opening new property, welcoming new residents)
- Community-driven and at the community/neighborhood scale - creating the webbing of the community and increasing resident al capacity, decentralization - self-determination
- Changing minds, changing perspectives - from the outs de-often see just crime etc - but local residents would not describe it that way
- Impact of a negative outside perspective
- Think that the outside perspective is rapidly changing
- We don't just live here, we own it - taking ownership in the place to keep it going
- Think about honoring North Richmond's history
- Think about gathering spaces, parks, restaurants, concert venues
- Identity of North Richmond and Richmond - how do they relate?
  - NR has a different history, is a different place - is separate from Richmond
  - Take pride in NR - has been carrying their weight culturally, historically, producing leaders - to be defined as separate
  - Yet when thinking about disasters - think in regional terms, in watershed terms - if something happens to Wildcat Creek, an earthquake, sea level rise, climate change - but issues like housing might be local

IV. Housekeeping (5 minutes)

Reminder: May 22nd meeting
Resilient by Design will have a booth at Earth Day
May 18th - everyone is invited to the large Resilient by Design meeting
Video - Will be filming a few people tonight and then can also stop by at Earth Day on April 21st

EcoDistricts, in town and will be having a reception in downtown SF soon

Visualizing Sea Level Rise at Earth Day
- *A slow process, so creating ways to communicate and engage people in sea level rise*
- *Earth Day - people will be making measuring sticks that they can take home - plus will be going down the marsh - will be filming a time-lapse of the tide going up and down*

V. Next meeting: Tuesday, May 22 4pm-6pm (location TBA)

Meeting #5

CAB Meeting 5 Notes -- Tuesday, May 22, 2018

Location: Multicultural Senior and Family Center, 515 Silver Ave Richmond CA
Attendees: CAB, Home Team, and special guests

Brief recap of final events & projects status at the last meeting:
- Thank you! This is technically our last meeting with the Resilient by Design process, and we feel very fortunate to be able to learn and work with you all
- Origins of the sea level rise preparation - in places like NR and other communities around the by that have been disinvested, this is a social justice tool
- Sea level rise adaptation for housing
- Will be spending the time speaking as a group: 1) breaking down the projects and the ways different community organizations can be involved; 2) if this CAB group would like to continue meeting and in what form

Discussion of current status of projects:
- Thrive, specific plan, small lot splits, land trusts *(housing)*
  - small lot splits & land trusts; sounds like already interest by the City of Richmond and County an government owned lots
  - Land trusts - Question, how does exactly work? A non-profit enterprise or part of the City/County?
    - 275 community land trusts around the country - the vast majority non-governmental, but the vast majority have had some seed money/some partnership especially at the beginning with government/ include government structure
    - Question: Incentive for property owner to join a land trust? Could have both incentives and disincentives depending on financial situation of land owner
    - Question, could this be a possible re-development possibility for Las Deltas? Tania will create a report for CDHC on the RbD process and ideas, community visioning boards etc to bring more community input into the redevelopment of Las Deltas
      - Question: Would you need support to be an expert on land trusts? Richmond Community Development Enterprise - brand new, an outgrowth of when they tried to create the Berkeley Global Campus, some expertise on land trusts on the board
      - Perhaps doing something as a land trust could make the development more appealing to developers
      - Balance of rental and home ownership
    - First Mile - Last Mile transportation connection - more energy around this idea, and North Richmond has this challenge connecting to Bart (poor bike, walk paths, limited bus)
      - county just came out with an interactive bike/pedestrian pathway vision plan - County needs the input by May 25th - Richmond big focus, NR not as big of focus, still needs a stronger equity framework
      - The county will be repaving Parr - will include some bike access, but needs public comment to push this forward - could create the best connection to the Bay trail
    - Question: thinking about transportation, has anyone talked to the people re-developing the Hilltop area? They are planning on bus bridges to bart
      - possibility of a creation of a sub-task force to tackle IDing Land Trust champions to collaborate with for future (City, County - both interested but moving slowly and have not scratched the surface much, Richmond Cooperative - looking at small cooperative businesses in Richmond)
- Filter: air quality tree parks, greenbelts, nodes and heritage walk
  - School district and county health department on the heat island effect and has identified school as heat island - interest in planting trees at Verde and other schools with heat island challenges; funding sources? Michael Kent - looking into funding sources - think it is cap/trade funding
  - County will really have to rely on nonprofits to plant/maintain trees
  - Urban Greening Master Plan for the area including the school districts- bring together climate action plan of the county to harness all the interests and energy
    - Why would the schools not want the trees? Liability, newly installed blacktop, maintenance
    - Master Plan could put some pressure on businesses/developers to think a little differently - makes a stronger sell
    - Question: who in the county would be the best to speak to? Michael Kent, Jody London - no one department will want to carry it alone, additional funding will also be necessary to move things forward
  - Street reorganization - key streets that are wider than they need to be? To put in bioswale/trees/bike paths
  - Green Benefit District to respond to the maintenance challenges
  - Stormwater planning that is already in the works - tying in as well into public health
  - Health Campaign in Denver, Co: Denver housing authority redeveloping a public housing development and Mithun coming in to design a healthy design guidance into the development plan - the way it is being structured is into "campaigns" - Save/Inclusive, Opportunity for All - campaigns that are cross cutting
    - all designed with the community
- Relate, overpass, creek picnic area and floating trail
  - Thinking of creating a bridge/overpass, a floating trail - going over from marsh to Point Molate
  - Sandra (EBRPD) - re-ignited interest in overpass idea connecting wildcat creek to staging area , including positive feedback from TRAC, the refreshed design has created more momentum and a definite positive outcome, challenge is building more support etc
  - How can Mithun best help you move this forward? The imagery has already been incredibly powerful in renewing interest especially with the new Dotson Family Marsh project, logical next step is connecting to the community
  - Is Mr. Dotson still on the board of EBRPD? Yes
  - How do projects move forward with the EBRPD? In a variety of ways, but communicating to Mr. Dotson/members of the board the value of the project would help
  - The Watershed Program in Urban Tilth - new grant funding to do outreach around beautification of Wildcat Creek from Verde to the Parkway
  - Overpass - would be beyond the current easement of either flood control or EBRPD, that extra right of way is private/(slated for development) land, and still unsure of the timing of the entitlement from a 45 foot dedication
  - Flea Market is close to the path/overpass area - could we create a walking connection
  - Could also be close to where a future horizontal levee might be - would be around the same elevation. Parkway is a pretty good line in the sand, but it will wrap in at Wildcat
- Grow: extended levee, muted marsh integration with industrial
  - Levee and marsh conversation - models to protect the current wastewater facility and thereby protecting Parkway and neighborhood
  - Most critical area might be near the creeks, it could be intriguing to continue it to the south, but not totally convinced that it would be worth the cost/benefit
  - The Parkway is not designed to be a levee - how we could continue to use the parkway during sea level rise
  - Further to the south is so industrial and would require such remediation that it may not be worth it as oppose to further north with the current and historical pressure
  - Question, we know that the efficiency of the pump will be decreasing, what about upstream infrastructure? encouraging upstream development, but also planning for event that all upstream GI get inundated, but pump is still needed in our projection pump near the end of its design life and in next 5-10 years can we redesign the pump possibly with more features
  - Question, marshes - protection for sea level rise - will it be protecting the houses/neighborhood? That is what needs to be studied more, especially with groundwater infiltration and flooding from upstream - raise a good point to focus the study on the neighborhood
  - Connection with each other:
    - Questions that you are asking right now really show why all the groups need to continue to talk and bring all the stakeholders to the table while we make these designs/decisions - we are all interconnected, each group can no longer be completely specialized and operating in silos
    - Wildcat San Pablo Watershed Council - serves as a great collaboration group, and everyone here is welcome to join
    - Expanding the idea of when/how/who connects - maybe an outcome that we can plan into the future so we can all move forward collaboratively and collectively
- Prototypes, pier, platform, floating bio-islands
- Integration with equity framework, health and stormwater plans and North Richmond Shoreline Vision Plan

Discuss ways group could b organized going forward
- 1.5 years ago we met to flesh out urban greening and resiliency plan for north Richmond - it would behove the County to take leadership in this arena and it fulfill our plans in partnership with nonprofit groups, however, the leadership cannot come from the County but will need to come from the people and community who continue to push the County in a positive direction and work with them, like the idea of a Green Benefit District in North Richmond
- Question, worried that we might lose the housing and transportation in this process - we might end up moving too far into urban greening and loosing the more holistic idea of resilience, maybe a new working group within the MAC, this CAB group could be a technical advisory to the working group.
- MAC - would be the best place to continue this group - is a primary leadership within the community, many of the other MAC members would valuable members of this discussion but were unable to to attend these meetings, the ideal way to keep the community and elected officials involved
- Link in the Shields-Reids Neighborhood Council
- Framing as a Resiliency Master Plan?
- How much of a challenge would it be to plug in North Richmond into the Richmond Master Plan? The challenge would be governance, but should always be in collaboration

- this could be an opportunity for a pilot for Contra Costa County - that could be taken to other unincorporated communities
- Question: could the MAC apply for funding? We need to think about who would be the primary for the grant application process - SFEP can be an umbrella organization
- Richmond - has an government that defines the priorities, then the nonprofit and departments can apply for funding to make those plans a reality; Sustainability Commission could be a place to think about — we need to create a roadmap to follow for the funding
- July Application - could we apply?
- Right now, there is no seed money to keep this money going
- Dr. Clark has connections with both the County and the MAC - could you help provide a meeting place and facilitate? Separate from the MAC meeting or together? Would probably want to meet separately from the MAC and report to the MAC. Not certain about that idea, would have to check in about that, challenge of having staff outside of MAC meetings. Meetings at CHDC conference centers - Tania can speak to the CHDC about using the space.
- Tania - managing North Richmond Green Campaign - how could we incorporate this into that plan?
- What about the Watershed Council? It meets in two days - they would be interested in learning more and possibly join
- Think about the time/space that would be needed to get it done - might need a staff/go over the time that any one group is able to commit - think about if there is a cost
- Can we apply through Resilient by Design group for a few hours
- Creating a proposal/master plan - while also thinking about what our existing line items/projects are to possibly review funding opportunities
- Greatest opportunity - to meet other leaders in the community and share what everyone is working on

Resilient by Design opportunities & summary of activities coming up

- We are thinking of creating a longer version of our video to share with the group
- Share out at the Resilient by Design event
  - sometimes the graphics don't have much substance behind it, both other teams brought so much depth into their projects far beyond the project boards
  - thought the jurors has very obtuse questions, maybe could have had questions from the audience
  - encouraged and inspired by the projects
  - let's just play, think about that role Mithun and other outside groups have within the community, about to bring North Richmond onto a really large stage
  - some of the biggest feedback - how is it that we are taking about resilience and yet communities are not driving the process, not choosing the projects themselves, more people are coming to the realization that these projects need to reflect the needs of the community - our projects seem more grounded in the community
  - Resilient by Design; needs to have a summit/reflection on what went well and what needs to change
  - Funding for RbD closes on May 31st - ideally we are looking for funding for the future that would go directly to the participating organizations - it was intended to be a jump start
  - you can contact us/Mithun at any time

Thank you!

Appendix E: Equity Framework Criteria Draft

DRAFT RACIAL EQUITY FRAMEWORK

NORTH RICHMOND PRIORITY RESILIENCE AREA

MITHŪN · The Home Team · Resilient by Design Bay Area Challenge

OBJECTIVE 1: Enhance quality of life for North Richmond area residents

OBJECTIVE 2: Create job and ownership opportunities for existing and new residents

OBJECTIVE 3: Incorporate community voice in planning, implementation and evaluation. Articulate how community voice has influenced decision making

OBJECTIVE 4: Intentionally plan for knowledge exchange to grow community capacity and include community expertise

OBJECTIVE 5: Actively promote housing affordability and protect residents from displacement

OBJECTIVE 6: Link infrastructure investments to multiple benefits, such as sea level rise protections, flood reductions, air quality improvements, highlighting cultural and historic character of area

OBJECTIVE 7: Expand partnerships

BORRADOR DE PLAN MARCO DE EQUIDAD RACIAL

ZONA de RESILIENCIA PRIORITARIA de NORTH RICHMOND

OBJETIVO 1: Mejorar la calidad de vida de los residentes del área de North Richmond

OBJETIVO 2: Crear oportunidades de empleo y propiedad para residentes nuevos y existentes

OBJETIVO 3: Incorporar voz comunitaria en la planificación, implementación y evaluación. Articular cómo la voz de la comunidad ha influido en la toma de decisiones

OBJETIVO 4: Planificar intencionalmente el intercambio de conocimientos para aumentar la capacidad de la comunidad e incluir la experiencia de la comunidad

OBJETIVO 5: Promoveer activamente la vivienda asequible y proteger a los residentes del desplazamiento

OBJETIVO 6: Vincular las inversiones en infraestructura a múltiples beneficios, como la protección del aumento del nivel del mar, las reducciones de las inundaciones, las mejoras de la calidad del aire, destacando el carácter cultural e histórico del área

OBJETIVO 7: Ampliar las alianzas

Appendix F: Prototype Research

Research Investigations: Digital/Analog Production of Resilient by Design Prototypes in Collaboration with Laney College Students

Project Goals

Develop habitat for humans (opportunities to engage with the bay for local communities), plants (native Bay Area marshland species) and animals (the endangered CA Clapper Rail, oysters and others) in anticipation of rising sea levels.

Key Project Infrastructure

- Floating walkways
- Observation platforms
- Bike path links
- Floating wetlands
  - Native plant species habitat
  - Bird nesting islands
- Migratory wetland home

Bay Illustration from www.sumacm.com

Ridgeway Rail / California Clapper Rail

Endangered species: Their population has been reduced to a few thousand; indicative of the health of Bay wetlands as the rail lives nowhere else. There were **193,800 acres** of tidal marsh in San Francisco, San Pablo and Suisun Bay existing in the 1850s, only about **30,100** remain.

The birds take refuge at higher elevations during high-tides and storm tides where they are more vulnerable to predators. Urban development impedes on wetland vegetation, decreasing cover.

Floating Islands can serve as highground for the birds: Floating Islands were included in the CA Coastal Conservancy Clapper Rail Habitat Enhancement Plan: "Initial use of the islands by roosting clapper rail was very high, with documented presence of clapper rail within three days of deployment."

Ridgewey Rail Habitat

Pacific Cordgrass: Largely outcompeted by a non-native/invasive species of cordgrass (*Spartina)*. Rail populations do better with invasive species because it provides more cover from predators.

Grindelia Stricta: Rail's high-tide refuge; also known to nest here

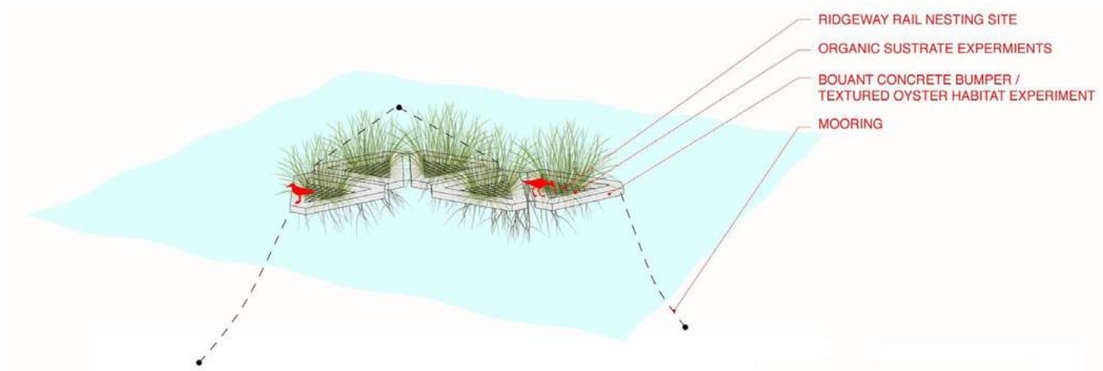
Pickleweed: Key coastal wetland species; Rails will nest in dense stands. Also home to the endangered Salt Marsh Harvest Mouse

Floating Wetland Calculations

Prototype Link				*Densities pulled from standard volumes		
Materials	**Volume (cubic inches)**	**Volume (cubic feet)**	**Weight (lbs)**	**Density (lbs/cubic foot)**	**Cost/lb**	**Percent**
Concrete Mix Materials						
Cement	10.00	0.01	0.55	95.00	0.12	0.20
Glass	0.00	0.00	0.00	62.00	0.00	0.00
Styrofoam	20.00	0.01	0.04	3.12	0.00	0.40
Sand	20.00	0.01	1.16	100.00	0.00	0.40
Totals Our "Lightweight Concrete"		0.03		60.25	0.12	
Bouyant Fillers						
Aluminum Can	439.68	0.25	0.56	2.20		0.38
Styrofoam	0.00	0.00	0.00	3.12		0.00
Concrete types: needed volume of concrete calculated using fusion model						
Poravor Concrete	670.38	0.39	24.05	62.00	0.52	0.58
Regular Weight Concrete		0.00	0.00	145.00		0.00
Our "Lightweight Concrete" (use totals from above)	0.00	0.00		60.25	0.12	0.00
Frame Totals	1,160.06	0.70	26.36	36.66	12.51	
Loads						
	Description	**Area (sqft)**	**Weight (lbs)**	**Load (lbs/sqft)**	**Cost/sqft**	
Wetland Plants	Pickleweed	3.94	8.23	2.09		
Coir		0.33	3.75	11.42		
Plastic netting		3.94	0.00			
Load Totals			11.97			
Floating Wetland Totals			38.33			
Sea Water		0.70	44.75	63.90		

Floating Island

Floating, modular concrete forms that house native plant species (pickleweed and pacific cordgrass) and bird platforms



Why Floating Wetlands?

Provide refuge to Ridgeway Rails during high tides.

A unique design feature that captures human imagination: *How might we take an active role in environmental stewardship?*

Floating Concrete Design

- Durable and ecological (will not degrade/leach toxins into the Bay over time)
- Provides a good surface for oyster habitat
- Facilitates the use of recycled materials (embedded in the concrete)
- Diverse forms and shapes
- Lightweight aggregate, concrete density of 62 pcf < water
- Simple fabrication could facilitate community participation

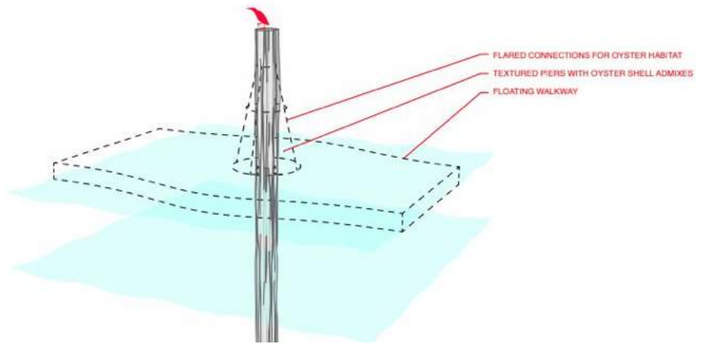
Floating Island Prototypes

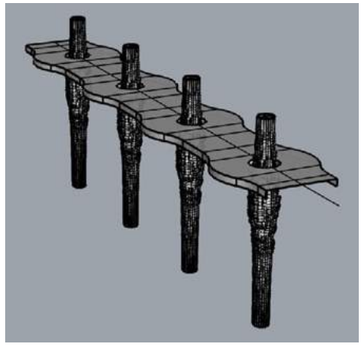
Pylon Walkway Design

Connects the bay trail and allows walkers and bikers to interact with habitats

Creates oyster habitat

Makes use of similar floating concrete design from floating islands





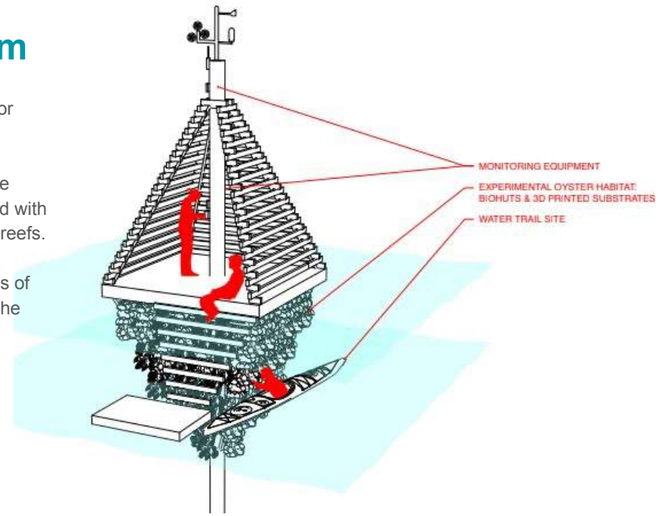
Observation Platform

Platform accessible by kayak; a rest stop for voyagers on coastal kayak trail.

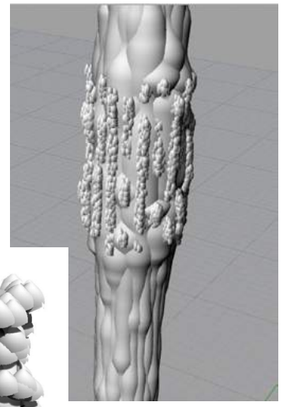
Oyster and shellfish habitat in the tidal zone created by unique concrete form embedded with oyster shell to encourage growth of oyster reefs.

Approach from bay-level will provides views of sea-life living on structure exposed below the high-tide mark.

Platform mounted on a pylon.



Pylon Design



Textured Pylon

Oyster Blob

Covered in concrete texture with oyster shells to promote the development of oyster reefs; oysters prefer vertical surfaces for growth.

Oyster reefs play critical roles in water filtration, feeding on algae and removing excess nutrient load. Additionally, they protect wetlands from surging tides and storms.

Pylon Wrapping Prototypes

Pylon Platform

- Prevent creosote from leaching into environment
- Reinforce old pylons
- Create platform for human activity
- Increase surfaces for oyster habitat

Olympia Oysters/Ostrea Lurida

Endangered species: Once thriving, native oysters have been endangered by pollution, overharvesting, reduction in surface substrates, silt sediments, and predation by invasive species like the whelk snail, Atlantic Oyster Drill and Japanese Oyster Drill.

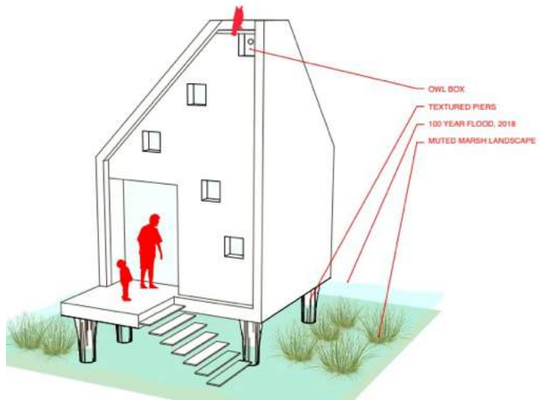
The oyster beds, or reefs, they create provide habitat for myriad fish, crabs and other creatures. Oysters filter water and help remove nitrogen pollution while increasing the growth and survival of other fish.

Eelgrass presence increased the occurrence of certain fish species among oyster reef structures (bay pipefish, shiner surfperch, and saddleback gunnel), suggesting that restoring the two habitats in proximity to each other can increase the richness of species present.

Higher tidal elevations and with more exposure may provide oysters with some measure of protection from marine predators and non-native fouling species.

Baycrete structure study showed that more oysters were present at lower and mid-level elevations than at the high elevation, on the north side than the south side, and on vertical than horizontal faces.

Oyster Spat grow on old shells. Incorporating shells into concrete promotes oyster attachment and creates complex surface areas oysters like.



Migratory Wetland Home

Living Shoreline Prototypes R + D (Biohabitats)

Shoreline Green Infrastructure– The Next Generation of Resilient Techniques

Ed Morgereth
Senior Ecologist
Biohabitats Inc.
emorgereth@biohabitats.com

Biohabitats
2081 Clipper Park Road/Baltimore, Maryland 21211
800.22BIO919 / www.biohabitats.com

PAST APPROACH & PRACTICES

Bank Stabilization: Bulkheads, Seawalls, Spoil Banks, & Other Revetments

Hardened shorelines interrupting natural processes

Vertical structures with little habitat value

Changes in ecosystem services of entire shorelines

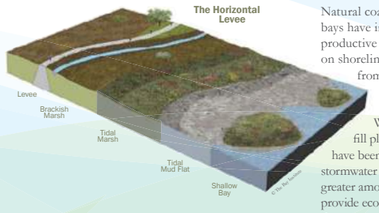
Infrastructure that ultimately fails and is not resilient to change

CHANGING CONDITIONS & NEEDS

Coastal Impacts: Climate Change, Sea Level Rise, Increased Erosion, Land Loss, & Flooding

CHALLENGES

- What are the altered conditions causing habitat loss?
- What ecological processes and functions are comprised?
- How can green/living infrastructure replace traditional gray infrastructure?
- Can we modify these systems to provide better services and resiliency?



Natural coastal shorelines of creeks, bayous, canals, rivers, lakes and bays have important roles in providing habitat for fish and wildlife, productive native communities and protection from erosion. We also rely on shorelines and adjacent aquatic resources for natural hazard protection from coastal storms and flooding, and also for commercial and recreational uses and productivity.

Where shorelines have been altered by natural condition destruction, fill placement and hardening by structural protection, valuable functions have been lost including accreting of marsh sediments, capture of land-based stormwater run-off, water quality filtering functions and habitat provision. As greater amounts of shoreline are altered, the ability of the system to function and provide ecosystem services are further compromised. Modifying and advancing the way we treat shorelines has ecological and societal benefits that can be less expensive than structural measures and more resilient.

LOOKING FOR FUTURE ALTERNATIVES

Living Shorelines/Levees,
Green Bulkheads/Living Seawalls,
& Remediated Canal Banks

The changes we are facing in light of sea level rise, subsidence and land loss require forward thinking to provide shoreline conditions that are more resilient to not only currently observed impacts, but anticipated acceleration of the rate and magnitude of changes that are predicted. Because we rely on our shorelines zones for providing productive ecosystems, our livelihood and habitation new ways of addressing their resilient are needed in the near future to reduce impacts and conserve natural and economic capitol. Advancing techniques that work with natural processes, provide natural functions, and are adaptable to further changes and variability is needed.

RESILIENT FUNCTIONAL SHORELINES

Regenerative Green Infrastructure

Leonardtown Wharf, St. Mary's County, MD
Commissioners of Leonardtown

Goal: establish an environmentally friendly park responsive to sensitive resources of Breton Bay and mitigate impacts of construction

Approach: expand existing tidal wetlands with a living shoreline fringe marsh, and a high marsh green bulkhead landing

Benefits:
- Stable marsh shoreline, and polishing of up-gradient stormwater run-off flow
- Provide additional habitat and mitigate for site remediation and bulkhead impacts
- Establish and aesthetic and functional amenity for the community, resistant to coastal flooding

Jean Laffite National Historic Park & Preserve, LA
National Park Service

Goal: address oil and gas canal spoil bank impacts including altered wetland hydrology and invasive species

Approach: Remove invasive tree cover and excavate spoil banks to backfill canals to establish hydrology/water levels for native emergent marsh re-colonization

Benefits:
- Reduce extent of invasive trees such as Chinese tallow and preserving native specimen trees
- Alter the marsh hydrology to emulate the more natural water regime and enhance habitat
- Contribute to visitor experience and access to a historically important National Park site

Galveston Island State Park, TX
Texas Parks and Wildlife

Goal: provide adaptive restoration strategies post-Hurricane Ike for Gulf and Bay shorelines and associated habitats; resilient to anticipated future conditions

Approach: develop ecologically regenerative and functional strategies for Gulf side dune and swale system, and Bay side tidal shorelines, oyster reefs and sea grass beds

Benefits:
- Provide a buffer to future park redevelopment to allow for natural dune filed dynamics
- Enhance beach and dune habitat for wildlife, including the potential use by rare species (such as Kemp's Ridley sea turtle)
- Accommodate for the power and impacts of hurricane/tropical storms and predicted sea level rise

Living Seawall–Biohut Technologies,
Various Ports and Harbors, French Riviera, France
by ECOCEAN, a French marine innovation company

Goal: to enhance refuge habitat availability and increase survivability of post-larval juvenile fish including estuarine and marine species that have been depleted

Approach: Deploying Biohhut cage habitat structures along piers and seawalls to provide food and shelter, and refuge from predation often in concert with post-larvae capture and wet lab sustainable rearing

Benefits:
- Support sustainable solutions to restore marine ecosystems boosting biodiversity and resilience
- Provide new opportunities for scientific research on population dynamics, biodiversity and coastal marine ecosystems
- Provide educational values for interpretive signs and learning, and educating about fish vulnerability

A New Way to Save Young Fish in Baltimore Harbor

TECHNIQUE USED IN THE MEDITERRANEAN NOW BEING TESTED IN THE U.S.

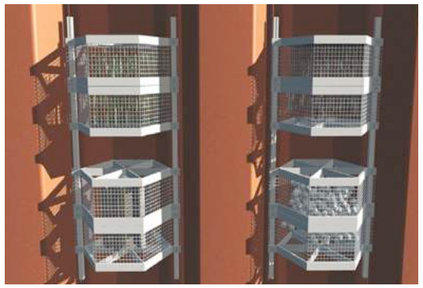
In conjunction with the National Aquarium, the Oyster Recovery Partnership, ECOCEAN, and Biohabitats–

Artificial nursery habitats are installed along the docks to preserve and improve biodiversity.

The Biohut® provides shoreline habitat for young fish in places where it has been damaged by human activities and infrastructure like bulkheads and piers. It protects post larvae and young of the year fish from predation and provides them with food so they can grow.

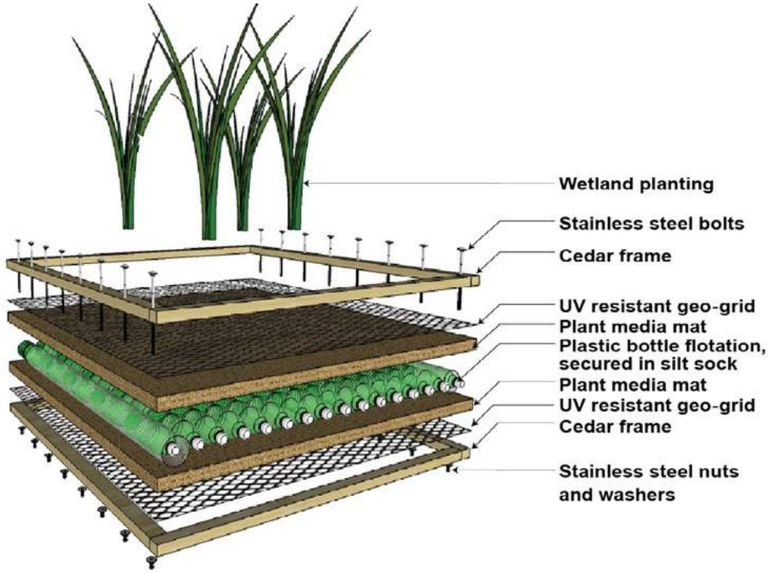
Biohut®
ecocean
Oyster Recovery Partnership
Biohabitats
National Aquarium

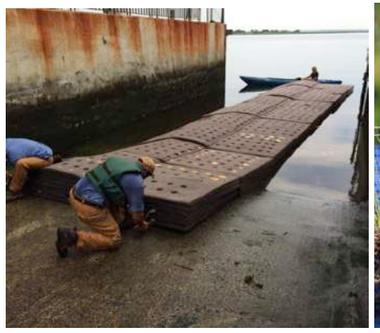
creating – Green Bulkhead Inserts

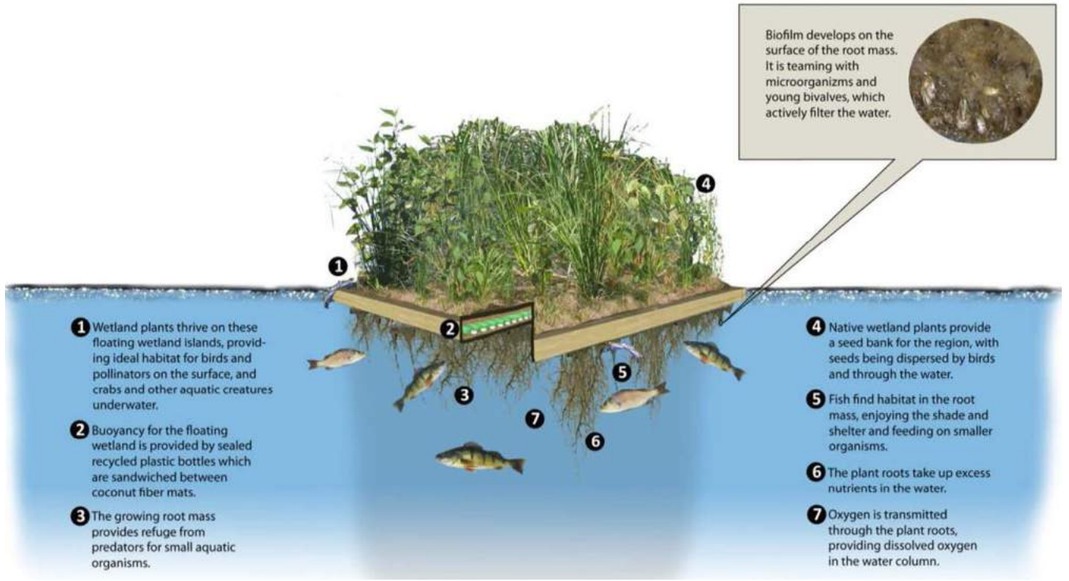


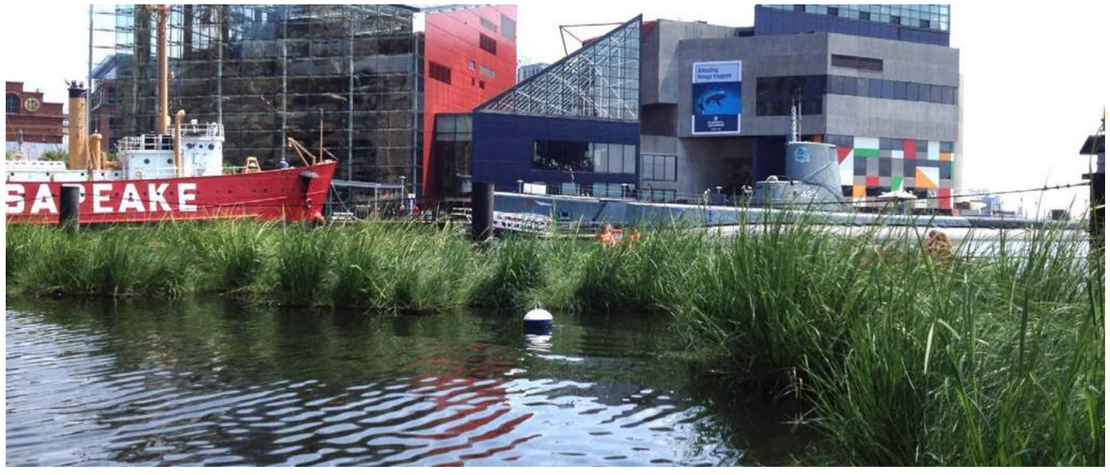
Living Shoreline Prototypes R + D (Biohabitats), contd.

Floating Wave Attenuators









Floating Wave Attenuators

Floating / Aqueous Housing Systems Analysis (Moffat Nichol)

Granville Island

Fisherman's Wharf Victoria

Float Home Study - Sirocco Project Comparables

At the request of the District of Squamish (DOS), Squamish Blue Pacific Developments (SBPD) have analyzed a number of existing float home developments in the Pacific Northwest in order to compare these existing developments to the proposed Sirocco Float Home project. The locations included in the study are illustrated in Figure 1 below.

Figure 1 : Existing Float Home Developments

Illustration – Similar Home Size and Densitv

Location	Canoe Pass	Mosquito Creek	Ladner Reach	Sirocco	Fisher-man's Wharf	Granville Island	Lake Union
Size of Lot (Sq.ft.)	149,435	65,950	95,820	57,403	71,763	31,430	176,065
Float Home Coverage (Sq.ft.)	64,304	30,623	45,693	28,352	45,617	21,960	130,523
Percent Coverage	43%	46%	48%	50%	64%	70%	74%
Number of Units	42	17	27	31	39	15	82
Range in Building Footprint (Sq.ft.)	800 to 1,350	800 to 1,200	700 to 1,300	700	350 to 1,000	585 to 940	650 to 2,000
Number of Storeys	2.5	2	2.5	2	2	2.5	2.5
Estimated Floor Area Ratio	1.1	0.9	1.2	1.0	1.3	1.75	1.85

Table 1 : The above assessment was conducted using aerial photos and GIS software. Red indicates the measure is Higher than Sirocco, Green that the measure is lower than Sirocco, White indicates the measure is the same.

The Sirocco development includes 31 float homes (27 residential homes and 4 commercial units) and a floating accessory building. The float homes will have a footprint of 700 sq.ft. and be limited to two storeys. The float homes and dock will be constructed in a 1.74ha private water lot (Figure 2) held by SBPD. The proposed site coverage for the float homes, accessory building and the docks is 14% over the entire private water lot and 50% within the application area. The following analysis (Table 1) demonstrates that the Sirocco float home proposal is in the 'middle of the road' when compared with other float home developments measured by percent coverage, number of units and floor area ratio. The size of the individual float homes proposed for the Sirocco development are smaller and more compact when compared to the majority of developments included in this study.

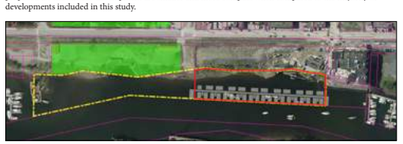


Figure 2 : Sirocco Float Home Proposal (grey), Private Water Lot (yellow) and Application Area (red)

Figure 3 : The water lot coverage is calculated based on the above proposed dike alignment along the Mamquam Blind Channel

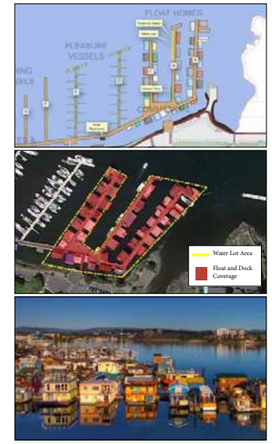
Lake Union - Seattle

Lot Coverage - 74% Building Footprint 650-2,000 sq.ft. Number of Storeys - 2.5 Number of Units - 82

Granville Island - Vancouver

Lot Coverage - 70% Building Footprint 585-940 sq.ft. Number of Storeys - 2.5 Number of Units - 15

Fisherman's Wharf - Victoria



Lot Coverage - 64% Building Footprint 350-1,000 sq.ft. Number of Storeys - 2 Number of Units - 39

Canoe Pass Village - Delta

Lot Coverage - 43% Building Footprint 800-1,350 sq.ft. Number of Storeys - 2.5 Number of Units - 42

Mosquito Creek - Squamish Nation - North Vancouver

Lot Coverage - 46% Building Footprint 800-1,200 sq.ft. Number of Storeys - 2 Number of Units - 17

Ladner Reach - Delta

Lot Coverage - 48% Building Footprint 700-1,300 sq.ft. Number of Storeys - 2.5 Number of Units - 27

MITHŪN®

Seattle
Mithun/Pier 56
1201 Alaskan Way #200
Seattle, WA 98101

San Francisco
Mithun/Solomon
660 Market Street #300
San Francisco, CA 94104

mithun.com——