

# The Estuary Commons: People, Place, and a Path Forward

May 31, 2018



**AECOM**

**CMG**

Berkeley  
UNIVERSITY OF CALIFORNIA

**CCO** California College  
of the Arts



RESILIENT  
BAY AREA CHALLENGE BY  
DESIGN

# **Appendix A**

## **Letters of Support**

## CITY OF OAKLAND



CITY HALL • ONE CITY HALL PLAZA • OAKLAND, CALIFORNIA 94612

Office of the Mayor  
Honorable Libby Schaaf(510) 238-3141  
FAX (510) 238-4731  
TDD (510) 238-3254

May 16, 2018

Resilient By Design Bay Area Challenge  
Bay Area Metro  
375 Beale Street, Suite 800  
San Francisco, CA 94105

Dear Leadership Committee,

I am writing to express my deep appreciation for the vision that the All Bay Collective (ABC) Team developed with East Oakland communities which connects the lived human experience of Oakland Coliseum/San Leandro Bay area residents with the area's ecology, particularly in the face of sea level rise and groundwater flooding. The effort has been a great learning experience for everyone involved. I'm pretty sure that every Oaklander knows the Coliseum, but very few think of the area as the San Leandro Bay shoreline, connecting San Leandro Creek upstream with Damon Marsh and the Oakland Estuary downstream.

I am inspired by the Estuary Commons concept and its vision of a resilient, environmentally thriving community and a vibrant, equitable economy. As Mayor, I commit to ensuring the All Bay Collective's Estuary Commons analyses and vision are taken into consideration in other planning efforts and projects affecting the Coliseum/San Leandro Bay area. The area's "shared ecosystem" includes the Oakland A's, the Port of Oakland, Oakland International Airport, Caltrans, BART, Capitol Corridor, and many, many others.

I am very grateful to Resilient By Design's Bay Area Challenge and the ABC Team members, including AECOM, CMG Landscape Architecture, the University of California, Berkeley, California College of the Arts, Silvestrum, SKEO, modem, and David Baker Architects. It is particularly good to see that community-driven planning principles were incorporated into the community engagement process, and I will make good use of the adopted toolkit!



I look forward to seeing a continuing collaboration among the City of Oakland, community advocates, businesses, residents, and agencies to build long-term value and lasting resilience for the people of the Coliseum/San Leandro Bay area.

Sincerely,

A handwritten signature in black ink, appearing to read "Libby Schaaf". The signature is fluid and cursive, with a large, stylized initial "L".

Libby Schaaf



## City of Alameda, California

May 10, 2018

Resilient By Design Bay Area Challenge  
375 Beale Street, Suite 800  
San Francisco, CA 94105

Dear Resilient By Design Bay Area Challenge Leadership Committee:

I am writing on behalf of the City of Alameda to express support for The All Bay Collective's (ABC) vision of San Leandro Bay as a resilient, equitable, environmentally thriving, and economically vibrant Estuary Commons. We endorse the community-driven planning principles and toolkit adopted through ABC's community engagement process and appended to this letter. As co-creators we fully support the goal of collectively creating a working landscape – a unifying place and process that brings stakeholders and communities together to address existing inequities and develop long-term solutions to environmental vulnerabilities. Additionally, we look forward to engaging with the planning processes underway – like the community-driven East Oakland Neighborhood Initiative and the Alameda Climate Action and Adaptation Plan – and are committed to collaborating to advance initiatives that benefit communities and stakeholders that surround the San Leandro Bay estuary.

The City of Alameda's mission is to serve the wellbeing of its residents and businesses. Within the San Leandro Bay area, we are engaged in multiple efforts to increase our resilience to sea level rise and other hazards. We believe our forthcoming Climate Action and Adaptation Plan presents an opportunity to help realize the vision for the Estuary Commons and address sea level rise, groundwater rise, and the many challenges these present. In pursuit of this effort, we would especially value the opportunity to collaborate with the other members of the All Bay Collective's Project Working Group, including Port of Oakland, BART, and East Bay Regional Parks. Furthermore, we would welcome the opportunity to coordinate with other policy efforts and projects that help further this working landscape.

In addition to the aforementioned projects, the City of Alameda believes the following actions can help to further optimize the vision for the Estuary Commons:

- Tidal Cities as a concept for Alameda's East End.
- Community Resilience Investment Decision-Making tool to be used in strategy development during our upcoming Climate Action and Adaptation Plan outreach.
- "In It Together" game to be used during our upcoming Climate Action and Adaptation Plan outreach.

Public Works Department  
950 W. Mall Square, Room 110  
Alameda, California 94501  
510 747-7900 Fax 510-769-6030 TTY 510-522-7338

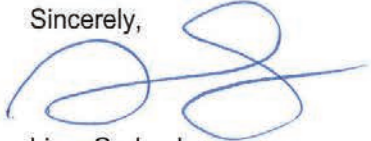
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Resilient By Design Bay Area Challenge  
Letter of Support for ABC

May 10, 2018  
Page 2 of 2

As the Resilient By Design Bay Area Challenge draws to a close, we look forward to continuing to work with stakeholders and communities around San Leandro Bay to make the Estuary Commons a reality. It is our hope that through ongoing collaboration, we can catalyze near-term results, create long-term value, and build lasting resilience for San Leandro Bay communities.

Sincerely,



Liam Garland  
Public Works Director

LG:ms

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**Oakland  
Climate  
Action  
Coalition**



**THE EAST OAKLAND  
COLLECTIVE**



**Brower Dellums  
Institute for  
Sustainable Policy  
Studies and Action**



May 31, 2018

Resilient By Design Bay Area Challenge  
375 Beale Street, Suite 800  
San Francisco, CA 94105

Dear Resilient By Design Bay Area Challenge Leadership Committee:

We are writing on behalf of The East Oakland Collective, Oakland Climate Action Coalition, Repaired Nations and Brower Dellums Institute for Sustainable Policy Studies and Action to express our openness to 'Continued Collaboration' with members of the All Bay Collective (ABC) for the concept of reimagining the San Leandro Bay as a resilient, equitable, environmentally thriving, and economically vibrant Estuary. As co-creators of this concept we intend to further our goal of collectively creating a working landscape – a unifying place and process that brings stakeholders and communities together to prioritize and address the existing socioeconomic inequities of nearby low- and moderate-income Black and Brown communities and develop long-term solutions to environmental vulnerabilities.

Together we are working to serve the communities of deep East Oakland by working towards racial and economic equity and environmental justice. With programming in cooperative and economic development, civic engagement, education, and organizing, we help amplify the leadership of underserved communities, from the ground up. We are committed to driving impact in the landscape, politics and economic climate of deep East Oakland. Within the San Leandro Bay area, we are engaged in The San Leandro Creek Greenway Project, The Transformative Climate Communities Planning Grant, Measure BB Bike Plan Update, the Environmental Coalition for Water Disadvantaged Communities Project, The Black Culture Zone, and Oakland's 2030 Energy & Climate Action Plan.

We believe these community-driven projects should be the centerpiece of a reimagined resilient Oakland Estuary/San Leandro Bay and, in addition to flood risks from sea level rise and groundwater, address the current crisis of displacement, lack of access from the deep East Oakland neighborhoods to the estuary, creeks, open space, transportation and basic services and businesses like grocery stores with fresh produce. In pursuit of this effort, we would especially value the opportunity to collaborate with EBMUD, PG&E, East Bay Community Energy, the Alameda County Flood District, BART, CalTrans, City of Alameda, The City of Oakland, UC Berkeley, California College of the Arts, among other schools and colleges, and the business communities. Furthermore, we would welcome collaboration with the ABC to coordinate with other policy efforts and projects that would help to further our collective goals.

In addition to the aforementioned projects, we believe the following actions can help to further optimize the vision for a more equitable, reimagined “Oakland Estuary”:

- **Ongoing communication between Stakeholders:** Community partners, public agencies and private agencies that are all working on projects with similar goals in the San Leandro Bay area who will meet on a biannual or quarterly basis to continue to inform each other of progress made, and make sure that in between appropriate touch points are made with community groups and residents.
- **The Model and Game:** Whilst the model is stored at CCA it will be made available to CBOs for community planning meetings and CCA staff will assist with the planning of transportation of the model. CCA staff will provide ‘train the trainer’ sessions to teach CBO’s how to administer the ‘*In It Together*’ game. Donation by CCA of one (possibly two) of the fabricated games to the community (with the understanding that we are willing to lend it out to other stakeholders such as the City of Alameda, who are interested in running game sessions too).

As the Resilient By Design Bay Area Challenge draws to a close, we look forward to continuing to work with local public agencies, local private agencies and communities around San Leandro Bay to do what it will take to improve the Estuary. We, are not bound to this letter. It is our hope that this collaboration will be carried out in good faith to build lasting resilience for San Leandro Bay’s communities and ecology.

Sincerely,

Marquita Price  
Urban and Regional Planning Officer, The East Oakland Collective

Colin Miller  
Coordinator, Oakland Climate Action Coalition

Robin Freeman  
Brower Dellums Institute for Sustainable Policy Studies and Action

Gregory Jackson  
Director, Repaired Nations


**SAN FRANCISCO BAY AREA RAPID TRANSIT DISTRICT**

300 Lakeside Drive, P.O. Box 12688  
Oakland, CA 94604-2688  
(510) 464-6000

2018

May 8, 2018

Robert Raburn, Ph.D.  
PRESIDENT

Nicholas Josefowitz  
VICE PRESIDENT

Grace Crunican  
GENERAL MANAGER

Resilient By Design Bay Area Challenge (RDB)  
375 Beale Street, Suite 800  
San Francisco, CA 94105

Dear Resilient By Design Staff:

**DIRECTORS**

Debra Allen  
1ST DISTRICT

Joel Keller  
2ND DISTRICT

Rebecca Saltzman  
3RD DISTRICT

Robert Raburn, Ph.D.  
4TH DISTRICT

John McPartland  
5TH DISTRICT

Thomas M. Blalock, P.E.  
6TH DISTRICT

Lateefah Simon  
7TH DISTRICT

Nicholas Josefowitz  
8TH DISTRICT

Bevan Duffy  
9TH DISTRICT

As a technical research advisor for RDB and the district architect at BART, I am writing to you in support of the work that has been accomplished by the All Bay Collective (ABC) team on resiliency for the San Leandro Bay. BART is a regional transit system providing sustainable mobility to a community consisting of a hundred plus municipalities. Within the San Leandro Bay area, we have been working with regional agencies and stakeholders such as MTC, BCDC, and Caltrans in a number of climate change adaptation projects and initiatives. We believe the work of the ABC team will challenge us to think more creatively in developing adaptation strategies toward sea-level rise and flooding. The working landscape the ABC team has created will allow us to be more effective in coordinating and collaborating with our stakeholders.

The ABC team has made a remarkable effort in engaging the community of the site and broad stakeholders as they advanced the education sessions on vulnerability and deliberations on adaptation strategies. ABC has demonstrated their ability to apply community-driven planning principles to address complex resiliency issues. As a result, the team created an inspiring vision for the site – the Estuary Commons, where adaptation to sea-level rising is not merely a passive measure, but a positive force for integration of community development and environmental sustainability.

ABC has been creative during the RDB process including preparing communication materials, inventing toolkits, and developing solutions for adaptation. The idea for Estuary Commons manifested itself through the process of team work, where professional practitioners met with academics and policy makers worked with community leaders. I believe such a process reflects the essence of how climate change adaptation can be sustained and implemented.

We look forward to continuing to work with stakeholders and communities around San Leandro Bay to advance the work accomplished by the ABC team. I want to thank ABC's outstanding work in bringing stakeholders together and in creating the vision of Estuary Commons for the resiliency of the San Leandro Bay communities.

Sincerely,

Tian Feng, FAIA, FCSI  
District Architect

[www.bart.gov](http://www.bart.gov)



2950 PERALTA OAKS COURT P.O. BOX 5381 OAKLAND CALIFORNIA 94605-0381 T: 1-888-EBPARKS F: 510-569-4319 TRS RELAY: 711 WWW.EBPARKS.ORG

May 8, 2018

Resilient by Design Bay Area Challenge  
 375 Beale Street, Suite 800  
 San Francisco, CA 94105

Dear Resilient by Design Bay Area Challenge Leadership Committee:

The East Bay Regional Park District is a steward of nearly 122,000 acres of shorelines and wildlands located in the east San Francisco Bay. We appreciate the opportunity to participate in the Resilient by Design process and engage with the All Bay Collective (ABC) team in San Leandro Bay. In the area, the Park District operates the Tidewater Boating Center and San Francisco Bay Trail. These facilities serve an important recreation need while providing sustainable transportation, habitat protection, and green infrastructure. On behalf of the Park District, I would like to express support for ABC's vision of San Leandro Bay as a resilient, equitable, environmentally thriving, and economically vibrant Estuary Commons.

Within the San Leandro Bay area, we are engaged in improvements to the Doolittle Bay Trail as well as public access at Tidewater Boating Center. We believe these projects present an opportunity to help realize the vision for the Estuary Commons and address sea level rise and public access. Furthermore, the Park District would welcome the opportunity to coordinate with other policy efforts and projects that help further this working landscape.

As the Resilient by Design Bay Area Challenge draws to a close, we look forward to continuing to work with stakeholders and communities around San Leandro Bay to make the Estuary Commons a reality. It is the Park District's hope that through ongoing collaboration, we can catalyze near-term results, create long-term value, and build lasting resilience for San Leandro Bay communities.

Sincerely,

Sandra Hamlat  
 Senior Planner

cc: Brian Holt  
 Chief of Planning/GIS

Board of Directors

Dennis Waespi President	Ayn Wieskamp Vice-President	Ellen Corbett Treasurer	Dee Rosario Secretary	Whitney Dotson Ward 1	Beverly Lane Ward 6	Colin Coffey Ward 7	Robert E. Doyle General Manager
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STATE OF CALIFORNIA—BUSINESS, TRANSPORTATION AND HOUSING AGENCY

EDMUND G. BROWN Jr., Governor

**DEPARTMENT OF TRANSPORTATION**

111 GRAND AVENUE  
OAKLAND, CA 94623-0660  
PHONE (510) 622-0716  
FAX (510) 286-4563  
TTY (800) 735-2929



*Flex your power!  
Be energy efficient!*

May 11, 2018

Resilient By Design Bay Area Challenge  
375 Beale Street, Suite 800  
San Francisco, CA 94105

Dear Resilient By Design Bay Area Challenge Leadership Committee:

This purpose of this letter is to express support, from the California Department of Transportation (Caltrans) District 4, for the All Bay Collective (ABC) vision for San Leandro Bay as a center of resilient and equitable redevelopment. As a participant in various workshops, the effort of community engagement witnessed was crucial in the process of collectively creating a unifying concept, by offering a place to bring stakeholders and community members together. One result of these workshops was adoption of Community-Driven Planning Principles, as well as a Planning Toolkit (see attached); these will prove invaluable.

Caltrans' mission is to "provide a safe, sustainable, integrated and efficient transportation system to enhance California's economy and livability". This mission is inherent in the concept presented by ABC. Looking further ahead, Caltrans would value the opportunity to engage with any/all stakeholders and community members.

With such a collaborative framework, it is hopeful that lasting resilience may be manifest for the surrounding San Leandro Bay.

Sincerely,

A handwritten signature in blue ink, appearing to read "Brian Rowley".

Brian Rowley, P.E.  
Transportation Engineer  
Caltrans, District 4

*"Caltrans improves mobility across California"*

# **Appendix B**

## **Project Working Group Participation**

Name	Organization	"PWG1 February 27"	"PWG2 March 13"	"PWG3 April 17"
<b>Community Based Organizations</b>				
Marquita Price	East Oakland Collective	●	●	●
Robin Freeman	Brower Dellums Institute	●	●	●
Beth Teper	Brower Dellums Institute		●	●
Colin Miller	OCAC	●		●
Gregory Jackson	OCAC			●
Gavan Raders	Planting Justice			●
Reggie Burnette	Scaper Bike Team			●
Tyrone Stevenson	Scaper Bike Team			●
Mario Balcita	HOPE Collaborative			●
Kelly Carlisle	ANV			●
Chris Cruz	ISPS			●
<b>Cities - Oakland, Alameda, and San Leandro</b>				
Devan Reiff	City of Oakland			●
Edward Manasse	City of Oakland	●		
Andrew Nowacki	City of Alameda	●	●	
Patrick Pelegri	City of Alameda			●
Delaney King	City of San Leandro			●
Sally Barros	City of San Leandro			●

Name	Organization	"PWG1 February 27"	"PWG2 March 13"	"PWG3 April 17"
<b>Transportation Agencies</b>				
Norman Wong	BART	●		
Tian Feng	BART		●	●
Brian Rowley	Caltrans	●	●	●
<b>Environmental Agencies</b>				
Sandra Hamlet	EBRPD	●	●	●
Lisa Brodtmann	EBRPD		●	
Jeremy Lowe	SFEI		●	
Yun Shang	EBMUD		●	
Rohin Saleh	ACPWA		●	
<b>Port of Oakland</b>				
Jan Novak	Port of Oakland	●		
Joshua Polston	Port of Oakland			●



**Appendix C**  
**California College of the Arts**  
**Student Design Work**

## CCA Advanced Architecture Studio: Reformatting Land

**Professor: Neeraj Bhatia / Research Fellow: Cesar Lopez**

Two of the most pressing urban challenges facing the Bay Area in coming years include rising sea levels and rising house prices. While seemingly unrelated, both challenges require us to rethink how we deploy, evaluate, organize, and urbanize land. Relatedly, these demands are new opportunities for us to consider how ecological and urban processes find synergetic relationships. This studio will examine different states of land and water to unpack how design can create more equitable and resilient cities. Understanding resilience as the capacity to adapt or transform to known as well as unforeseen circumstances, the studio will employ scenario building through different scales of time, to test how architecture can empower people and environments in the future — even if these futures are difficult to envision. We will interface with stakeholders and experts to create new templates of urbanism that examine the co-evolution of natural and artificial systems. We will examine how to reformat land to:

- Create security against rising sea levels
- Create more robust ecologies
- Create new value for equitable development
- Examine new models of ownership and living

How do we design with futures that are difficult to envision? How will emerging technologies, political situations, or economic realities radically transform the way we live? Architecture has typically been employed to order and structure the world we live in. The ramifications of this way of working has had the effect of silencing particular voices and negating the role of environmental systems. Events such as the wave of hurricanes this past fall remind us of the futility of attempting to control nature.

Designing for the future in architecture has typically yielded techno-utopian visions that often are in denial of the world we live in today. As designers, we have used the masterplan as a drawing that implies a set of relationships, typically programmatic in nature, that are projected onto planimetric space and are ordered, static and rarely account for future transformations. Color notated program type, zoned in larger chunks, and arranged into generic geometries, severing any link between the qualities of space, the design of discrete artifacts and the organization and qualities of the expansive field.

This studio will instead examine relationships between environmental and human systems through time. Instead of privileging a ‘masterplan’ — a final state which is typically viewed as the end goal, we will privilege different states of development, each which have unique opportunities. We are interested in the relationships between various networks that are organized to create productive or symbiotic overlaps — some

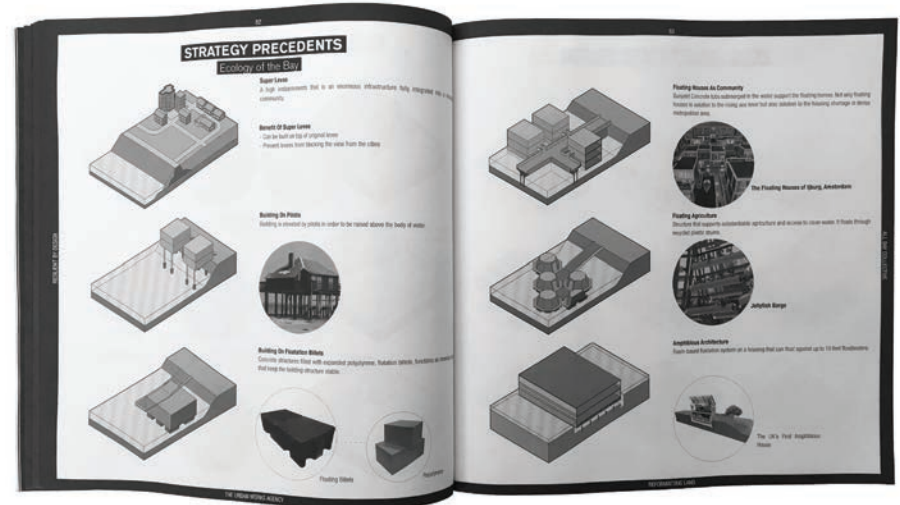
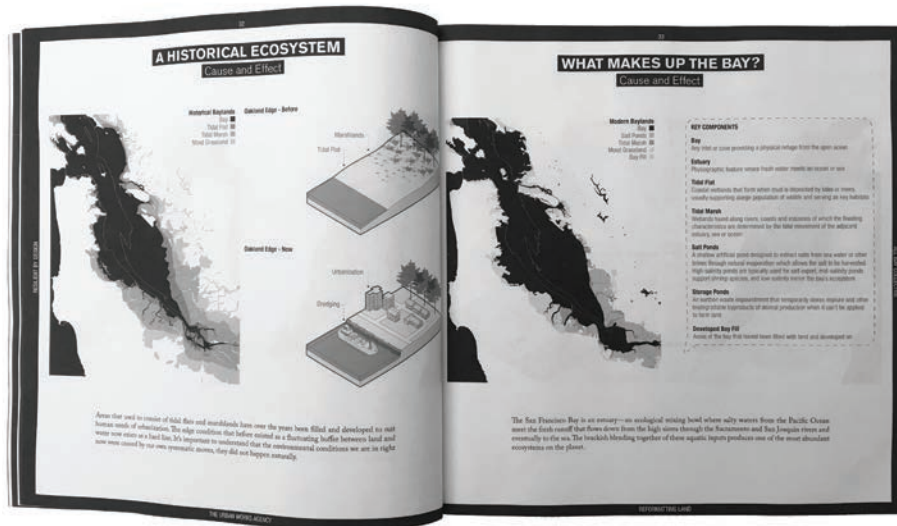
of which we can forecast, and others which remain unknown. This means we will be designing for contingency.

This studio focuses on the overlap between infrastructural, ecological, and housing development in response to sea level rise in the Bay Area. In particular, we are interested in how land development and organization can create more robust ecologies as well as innovative and equitable housing. The studio is concerned with how the architectural discipline interfaces and finds agency with stakeholders, experts, civic leaders, institutions and organizations. Students are encouraged to work in a dialectic manner across two axes—visionary and implementable projects that address technical and cultural issues.



Students meet with Linda Holm from the Army Corps of Engineers at the Bay Model to understand the Bay's Hydrology

# Studio Research Report



CCA Reformatting Land Studio Research Book culminates the studio's analysis, investigations and fieldwork in the San Leandro Bay helping frame semester projects. Content's include: Subjects (Ecological Subjects, Human Subjects), Built Form (Built Form, Housing) and Regional Connections (Corridors).

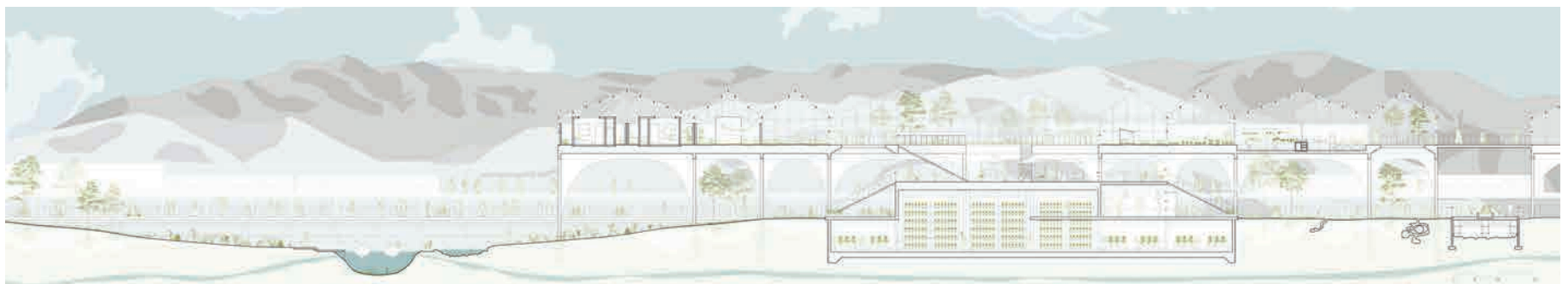
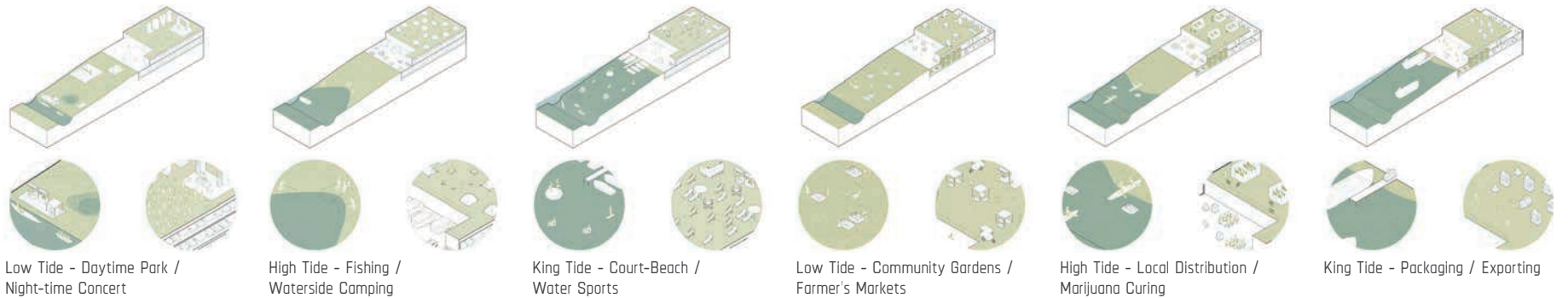
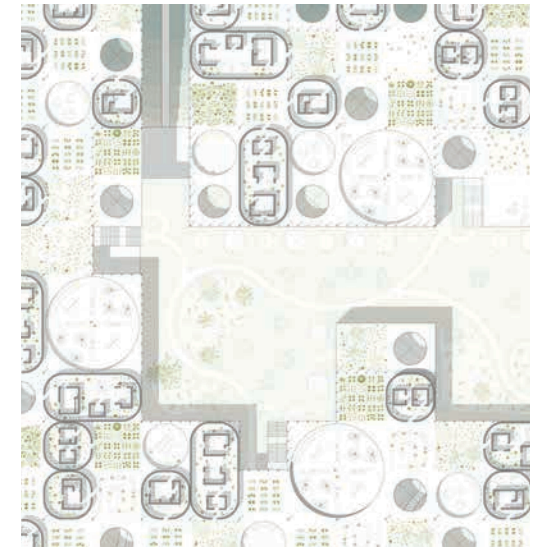


CCA students presenting projections of dynamic scenarios of sea level rise, tidal changes, and groundwater rise on a fabricated 12' diameter model of the San Leandro Bay. In addition to testing simulations, the model also served as a critical tool for community engagement.

## Agrarian Village

**Team: Yoo Bin Jung, Adan Rios, Maria Ulloa**

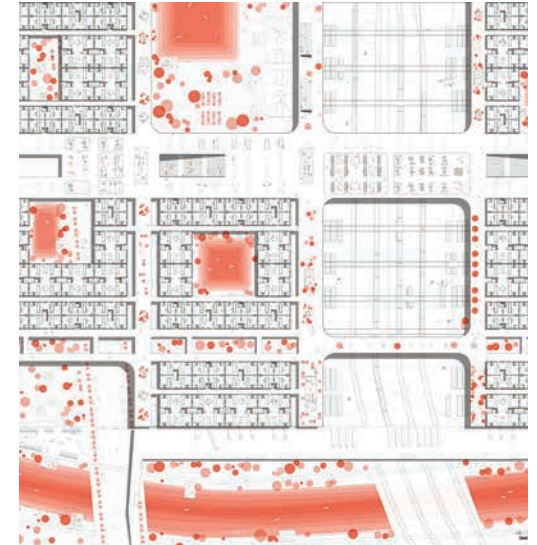
The legalization and development of the marijuana industry in California presents a unique opportunity to question how the growth, cultivation, and harvesting of this crop can be used to catalyze new forms of community and development. Agrarian Village utilizes marijuana and urban produce farming to bring together communities, reduce the local food desert, and build an economic base for flood protection. The proposal is phased to open up the watershed and create an active ecological ground plane that is later urbanized with a perforated platform of co-housing and urban farming. Merging ecology, industry, and community, Agrarian village enables the co-evolution of artificial and natural systems through time.



## Flowfillment

**Team: Natthakanya Intharasena , Namhi Kwun**

As same-day delivery continues to grow, there is an increasing pressure to locate logistics centers in closer proximity to the city's core. These massive buildings operate at the scale of urbanism and are difficult to integrate into local communities due to their size and relationship to distribution infrastructures. Flowfillment is a proposal to domesticate the logistical center by reconsidering how its shelving of goods could break down the scale of these large structures. Above this, a large platform for affordable housing is created and punctuated by a series of courtyards and gathering spaces. Below the lifted building, an ecological layer of wetlands enables the natural drainage and sediment accrual on site. Flowfillment asks how the time-based movement of goods and hydrology can be symbiotically considered through a layered section.



Phase 1



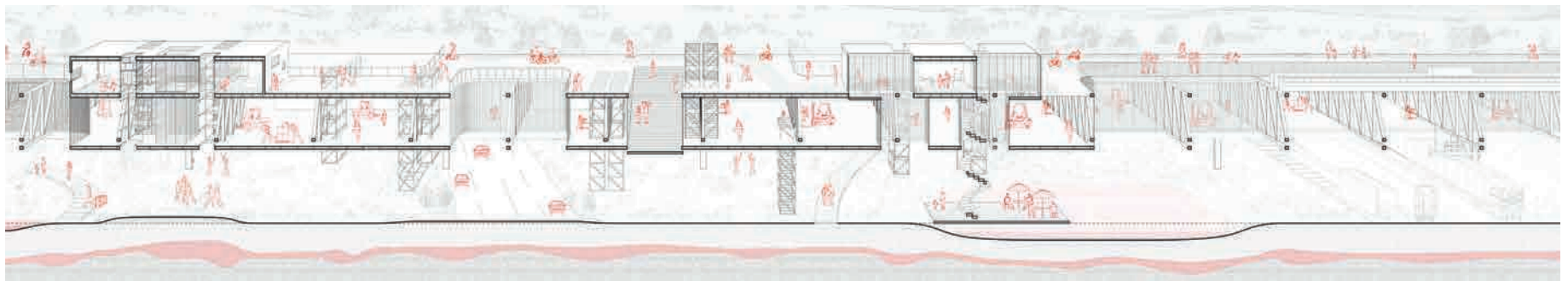
Phase 2



Phase 3



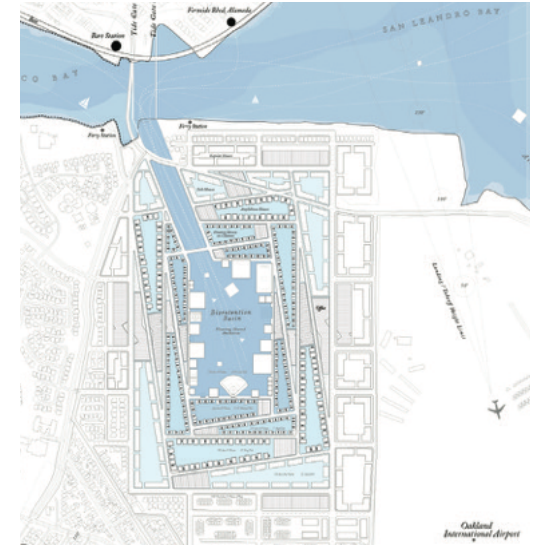
Phase 4



## Tecology

**Team: Karol Horr, Chang-Tse Sung**

The San Leandro Bay is a sub-bay to the larger Bay with a series of opportunistic 'pinch-points'. Tecology examines the use of tide gates to selectively mediate hydrology within the San Leandro Bay, alleviating the need for levees and instead activating a series of wetlands. The tide-gate's main pressure release operationalizes an existing golf course on Bay Farm Island. This site is positioned as a new tech campus, which is organized as a hybrid stepwell-dentention basin. The campus' amenities are situated in floating structures that are shared with the surrounding communities in a differential schedule. A series of affordable housing typologies are developed, each with a unique relationship to water. Tecology ask if new industries, ecologies, and housing can be hybridized into a new model of urbanism.



2018: Daily Tides



2018: King Tide



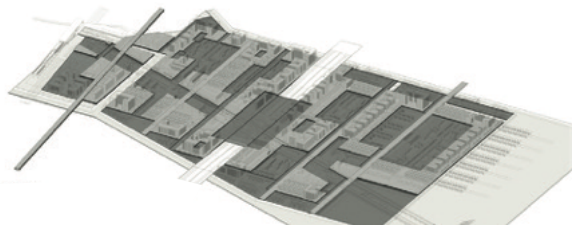
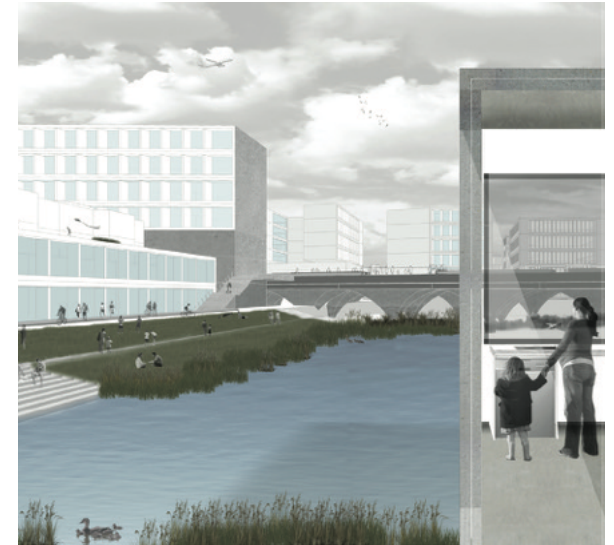
2050: 24" Sea Level Rise



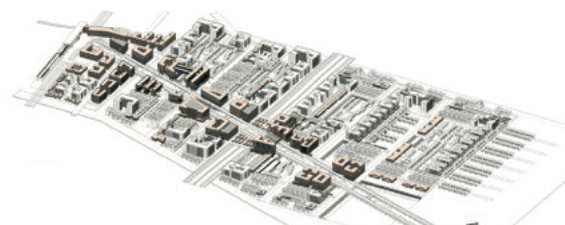
## Aerotropolis

**Team: Fathmath Isha , Fuyang Shan**

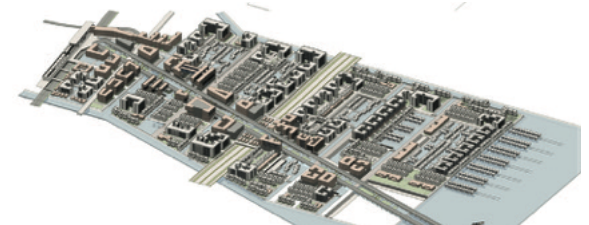
The Oakland Airport is already California’s fourth largest airport whose growth is dependent on the construction of a fifth runway. Due to space limitations currently on the airport site, Aerotropolis proposes the relocation of the airport’s front end services—waiting areas, restaurants, conference rooms, chapels, etc.—to the Oakland Coliseum site where it can be directly connected to the BART, I-880, and light rail connection. By doing so, Aerotropolis becomes an intermodal hub that shares its amenities with the surrounding (new and existing) neighborhoods. Organized through a loop that connects these various movement infrastructures, this armature also serves to mediate the hydrology on the site through a series of tide gates. This ecological rewiring collapses local and global flows with native hydrological fluctuations.



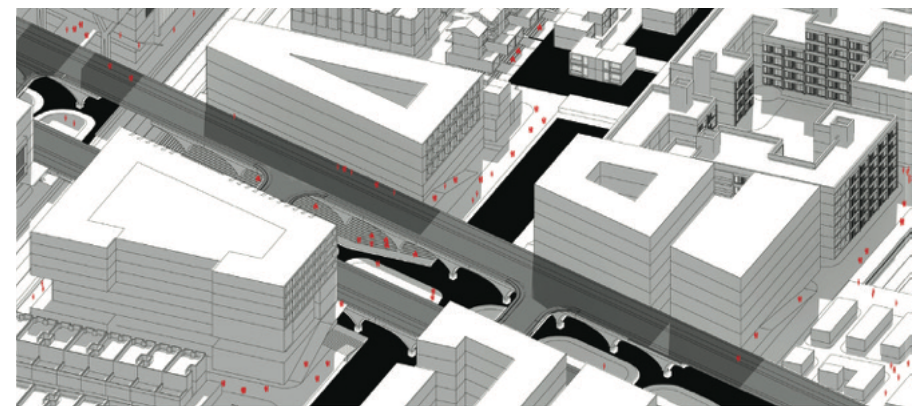
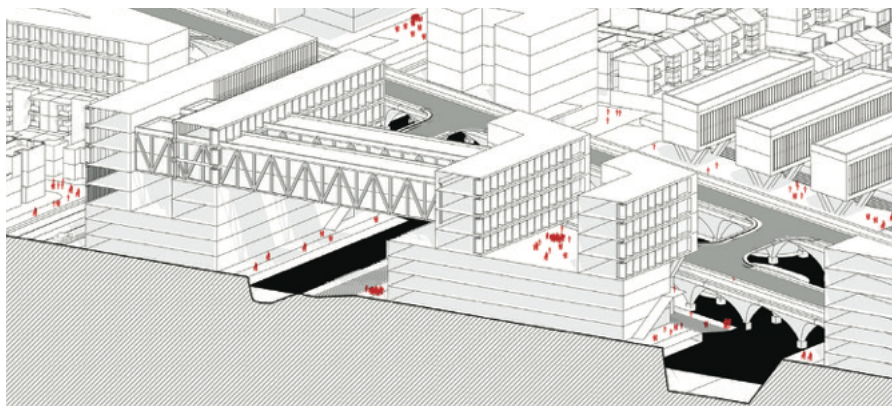
Phase 1 Development: Sediment Balance during the development to provide wet land to support new habitats.



Phase 2 Development: Distribute airport amenities into the city.



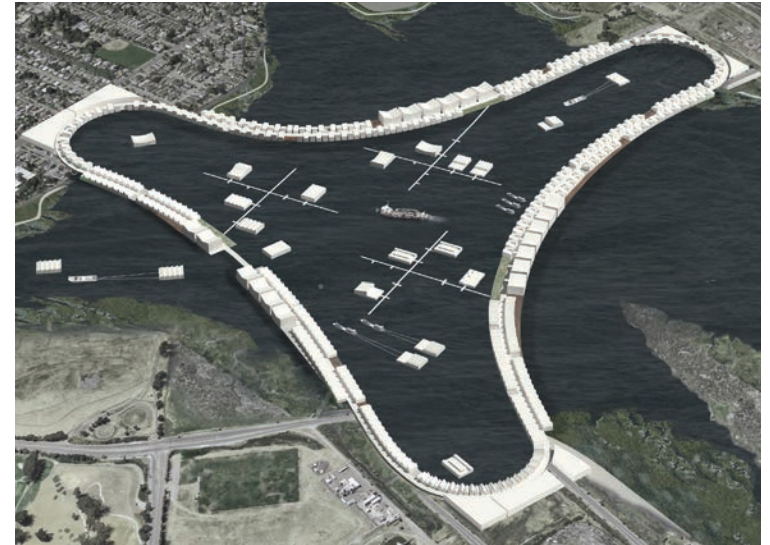
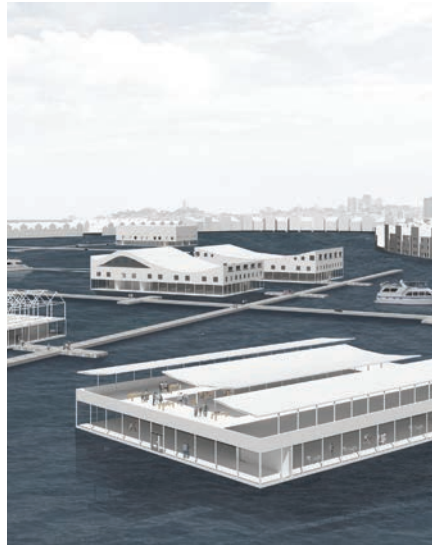
Phase 3 Development: Local growth to that integrates an intermodal transportation hub.



## A Neighborhood within Three Neighborhoods

**Team: Peter Lin, Jennifer Pandian**

The San Leandro Bay is a sub-bay to the larger Bay with a series of opportunistic 'pinch-points'. Tecology examines the use of tide gates to selectively mediate hydrology within the San Leandro Bay, alleviating the need for levees and instead activating a series of wetlands. The tide-gate's main pressure release operationalizes an existing golf course on Bay Farm Island. This site is positioned as a new tech campus, which is organized as a hybrid stepwell-detention basin. The campus' amenities are situated in floating structures that are shared with the surrounding communities in a differential schedule. A series of affordable housing typologies are developed, each with a unique relationship to water. Tecology ask if new industries, ecologies, and housing can be hybridized into a new model of urbanism.



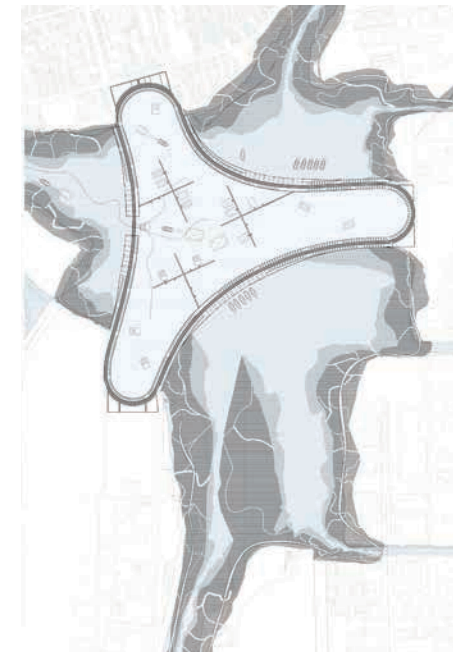
2020 Master Plan



2040 Master Plan



2060 Master Plan



2080 Master Plan

## California College of the Arts Researching Research Seminar

Professor Janette Kim

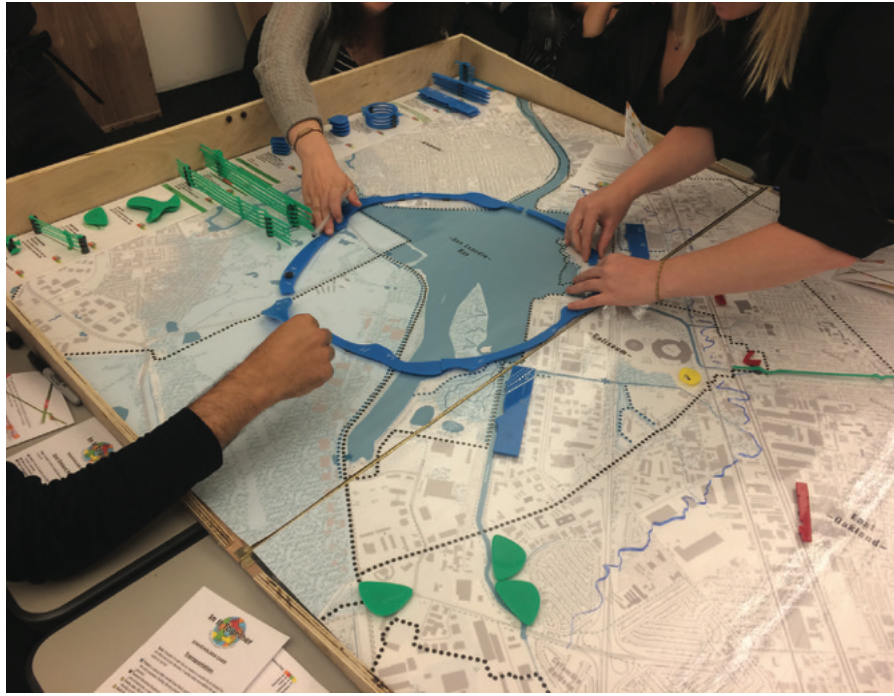
spring 2018

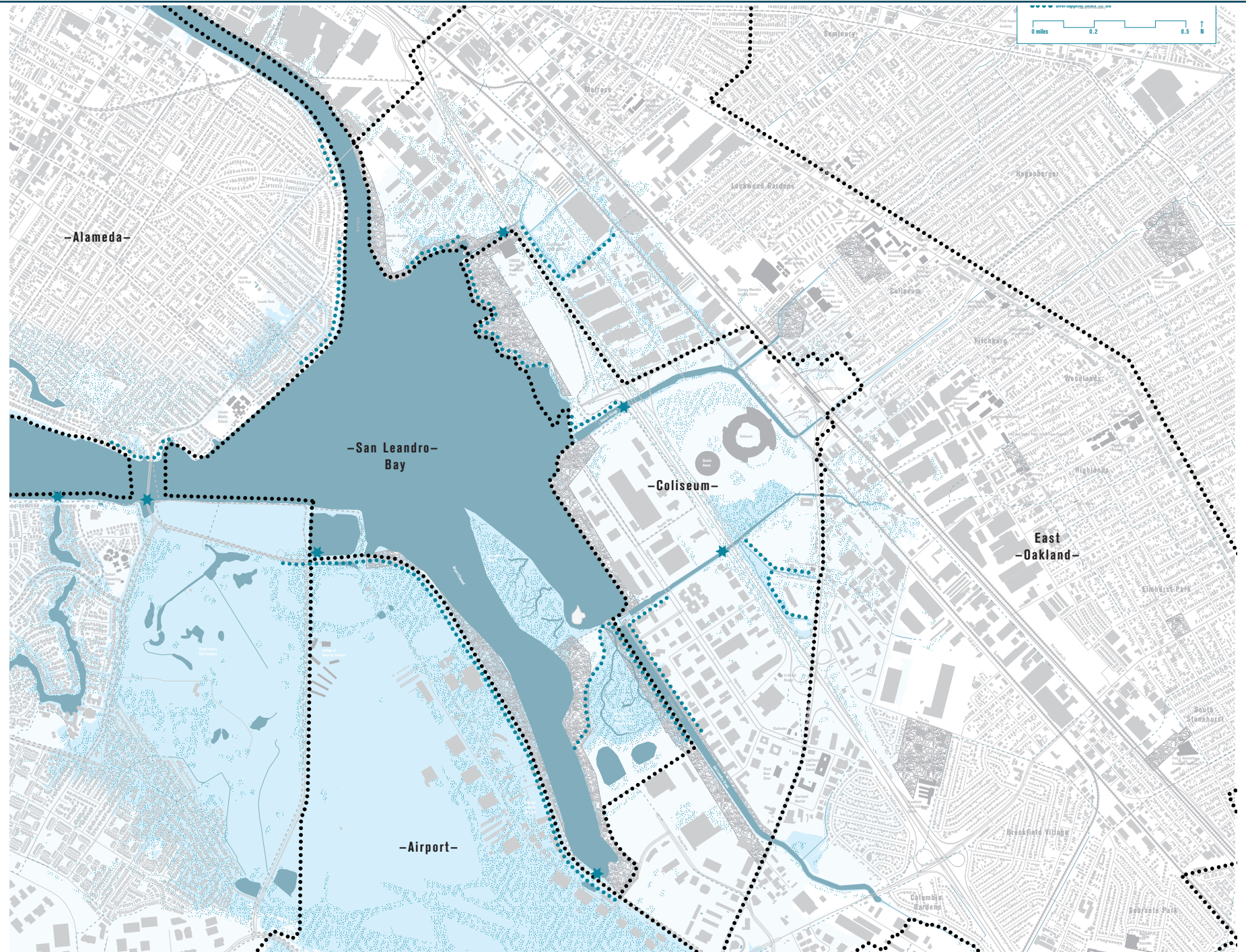
The complex and often invisible forces shaping cities today require that designers develop research strategies for understanding policy, markets, ecosystems, and publics. This seminar will critically examine research practices in architecture and urbanism to examine their ethical stance and their ability to comprehend diverse scales and conditions, from the particular to the systemic; from the sidewalk to Wall Street. Through this process, our aim is to spark ideas for their potential transformation and, ultimately, carve out opportunities for design practice that extend beyond existing models of client-driven work.

Students will apply and transform these research methods through direct involvement in the Resilient by Design (RBD) Challenge, a bay-wide initiative dedicated to building resilience to sea level rise and other climate-related risks. We will work in partnership with one of the ten teams selected to participate in RBD—the All Bay Collective (ABC), which is a team of architects, landscape architects, engineers, ecologists, policy makers, public advocates, and strategic thinkers that includes the CCA Urban Works Agency (UWA) as one of its core members—as well as local partners in the Oakland Coliseum neighborhood. Students will work collaboratively to create a board game that can serve as a public decision-making tool for RBD in East Oakland.

Students: Shahad Alamoudi, Marwan Barmasood, Georgia Came, Denisse Correa Guerra, Alli Foronda, Eric Fura, Francisco Garcia, Jessica Grinaker, Fathmath Isha, Lori Martinez, Jennifer Pandian and Sabrina Schrader.







**Appendix D**  
**University of California – Berkeley**  
**Student Design Work**

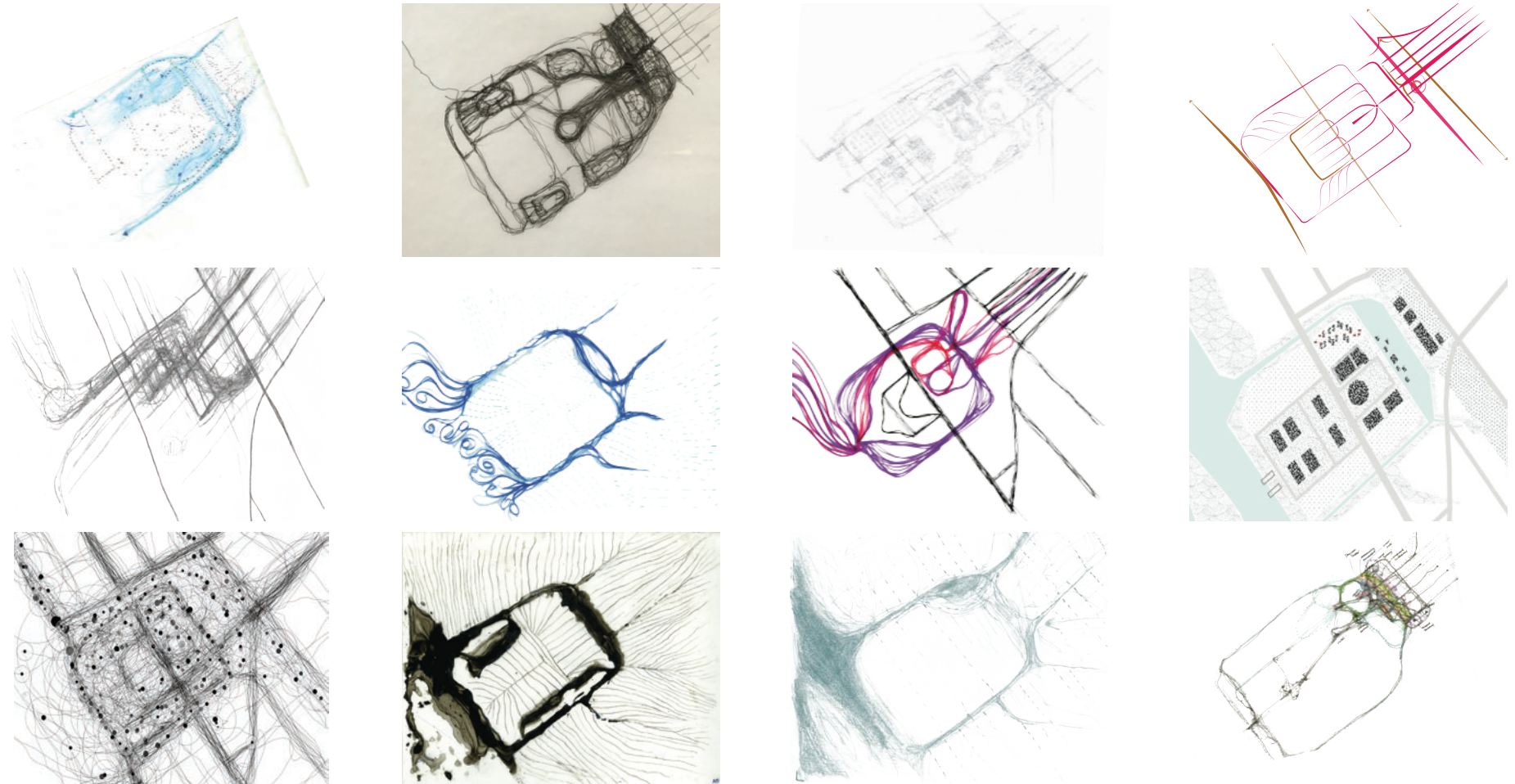


## UC Berkeley LDARCH202 : Site Planning Graduate Studio

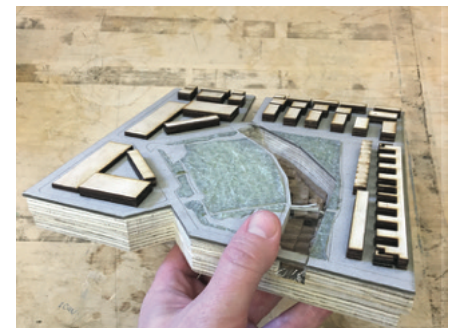
Instructor : Dr. Kristina Hill // Graduate Instructor : Nate Kauffman

This course brought graduate students in landscape architecture into the ABC Team's design phase to help test the basic premise of the Team's design for floodable development: how can landforms be altered to increase resilience to future flooding in a relatively flat landscape in coastal California? We wanted to see how much "work" could be accomplished by re-grading the sites to filter stormwater before it reaches the Bay, sequester contaminated soils, and provide a stable water surface for floating prefabricated buildings on shared decking. By starting with flows rather than forms, five teams of students identified elegant opportunities to use landforms to support the circulation of people and water in an adaptive coastal landscape. We explored the potential densities of housing that could float in these lagoons, and concluded that it is possible to develop high-quality urban districts in the tidal lagoons with a density of up to 100 units per acre. Similar floating buildings have been proven to work at an urban scale in the Netherlands. The original contribution of this graduate studio was to demonstrate that the cut-and-fill of the Oakland tidal lagoons and their adjacent landscape could also (1) act as a filter for pollutants in stormwater, (2) allow us to identify and isolate contaminated urban soils before they are re-mobilized by floods, and (3) provide a safe location for floating buildings during an earthquake - protected from liquefaction hazards and located far from tsunami danger zones. We found that the landforms would be likely to support a floodable urban district until sea levels and groundwater rise 6 feet, and possibly longer.

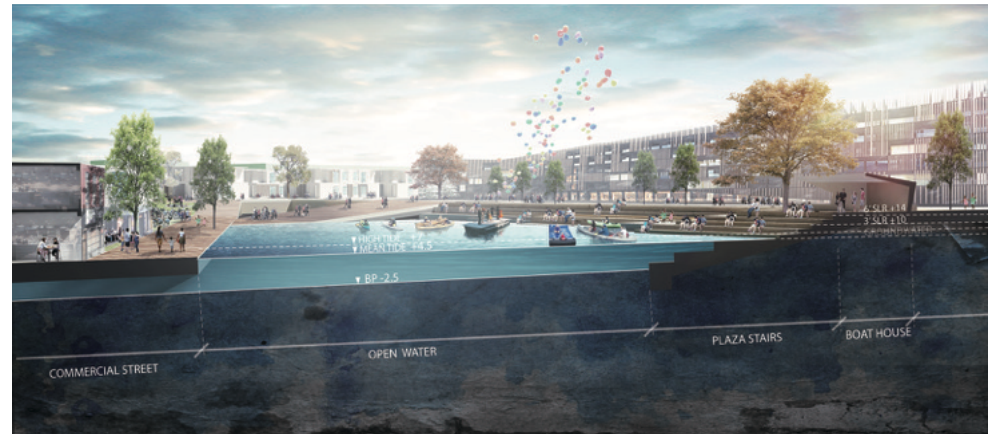
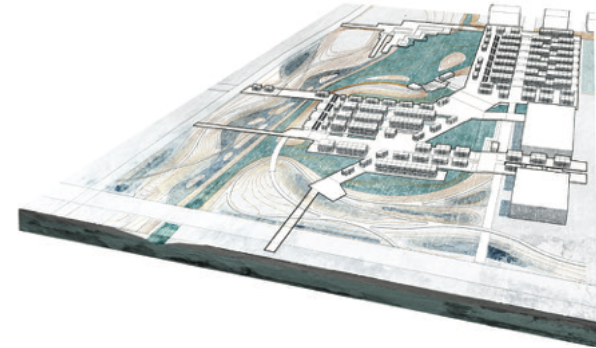
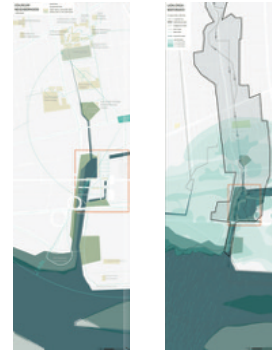
# Site Analysis // Mapping Flows



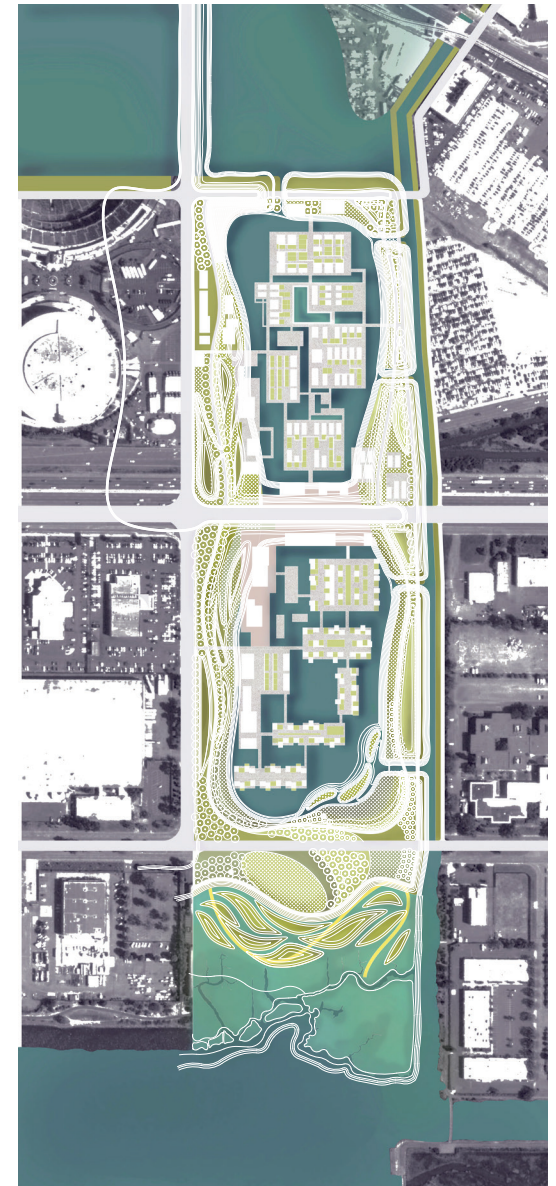
## Site Analysis // Modeling Landscape Armatures



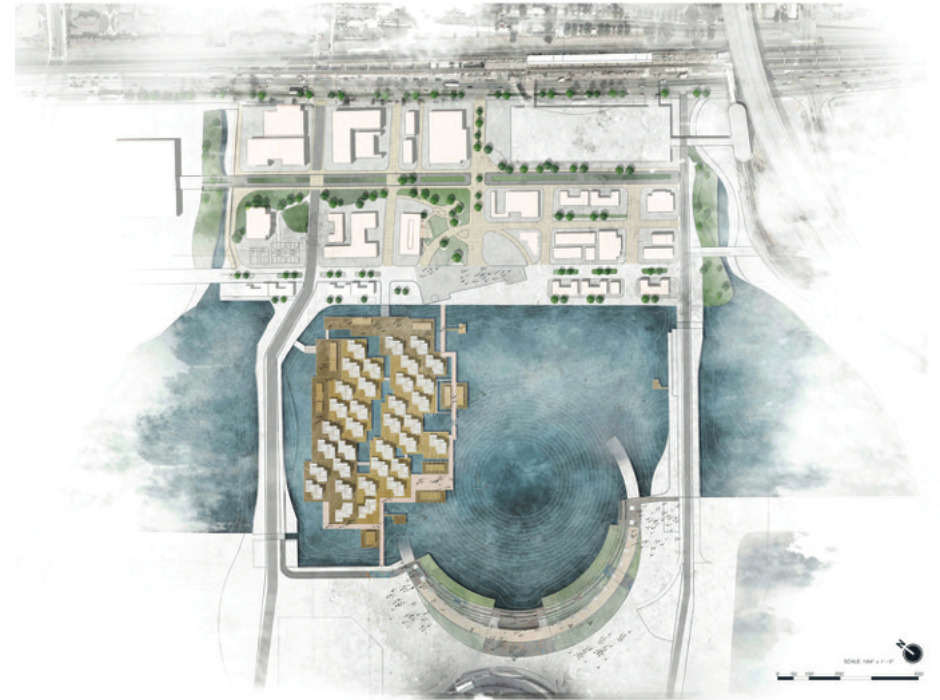
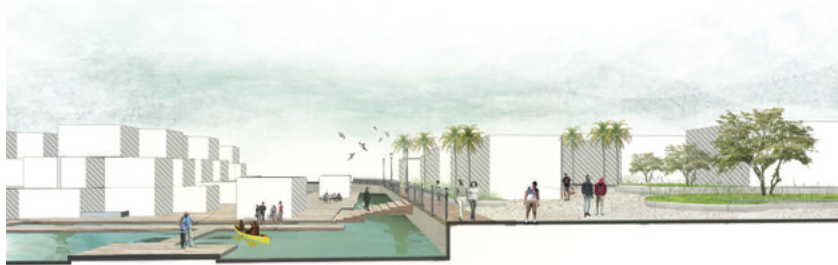
# Yu-Ling Chen + Daria Kieffer



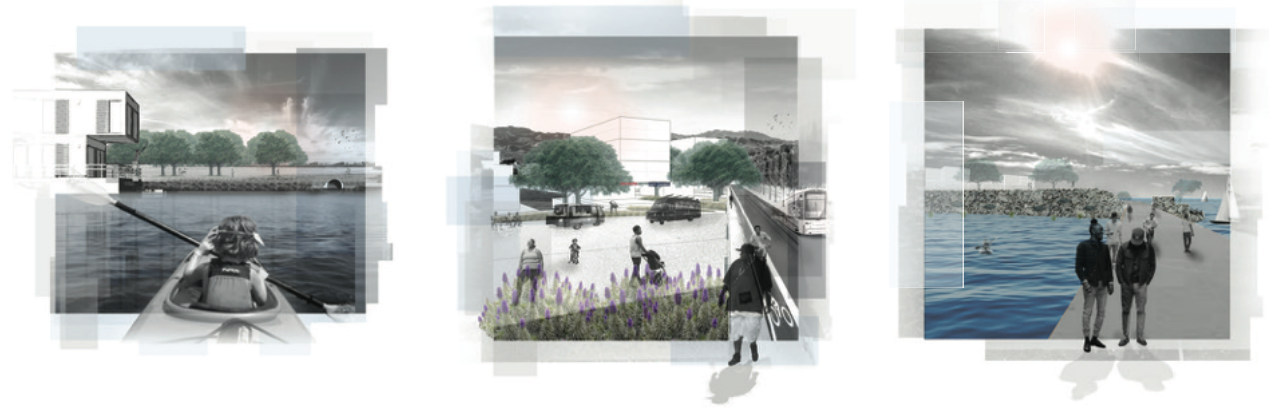
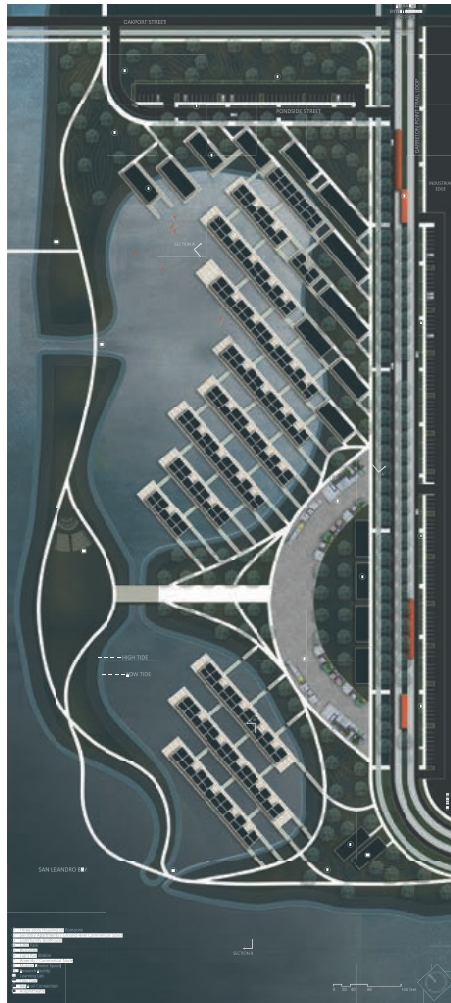
# Mingyao Wang // Weijia Zhou // Ruochen Wang



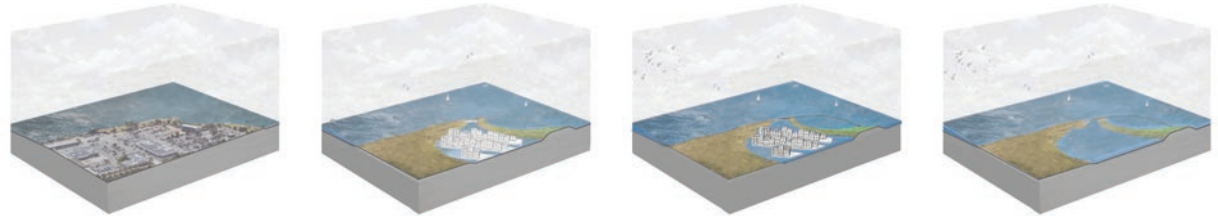
# Lucky Li // Siyu Hou // Michelle Wray // Hanqing Zhao



Grace Mitchell // Arturo Ortiz // Lizzie Sturr



TIDAL CITY TIMELINE:



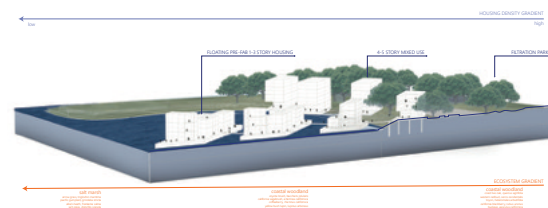
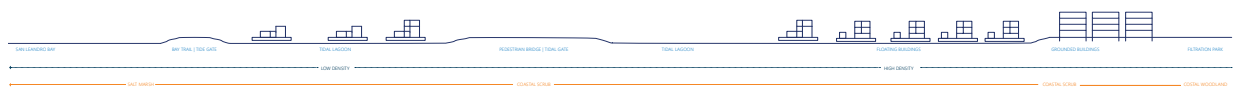
**Existing Conditions**  
Current use: Oakland Parks + Tree Division, Mixed Commercial/Industrial. Ground surface height 11', groundwater table 4.5'

**Proposed Design**  
Two connected tidal lagoons with tide gates. Pond depth at -2.5', ground surface height raised to 14' with cut from lagoon. 365 floating prefabricated housing units on pontoons.

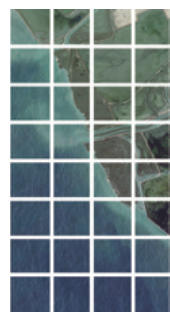
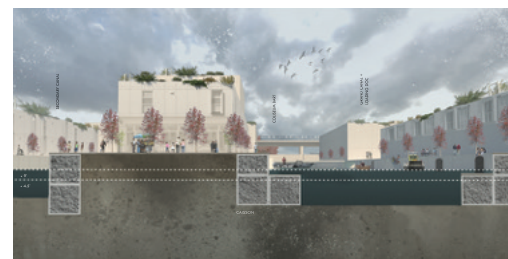
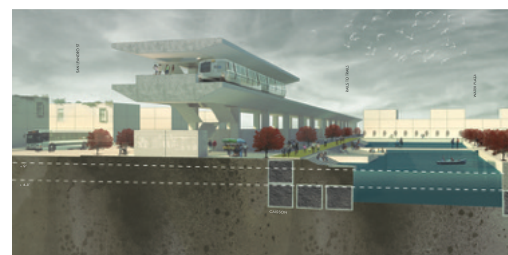
**Proposed Design +3' Sea Level Rise**  
Site designed to respond to 3' sea level rise. Tide gates have more control over daily fluctuations. Future site for relocation selected.

**Proposed Design +6' Sea Level Rise**  
Pontoons + housing + modular commercial units are removed and relocated to higher ground. Space functions as a habitat and recreation space.

TIDAL CITY GRADIENTS:



# Greta Aalborg // Sarah Abroff // Juanita Ballesteros



**Coliseum Neighborhood Waterbottle**

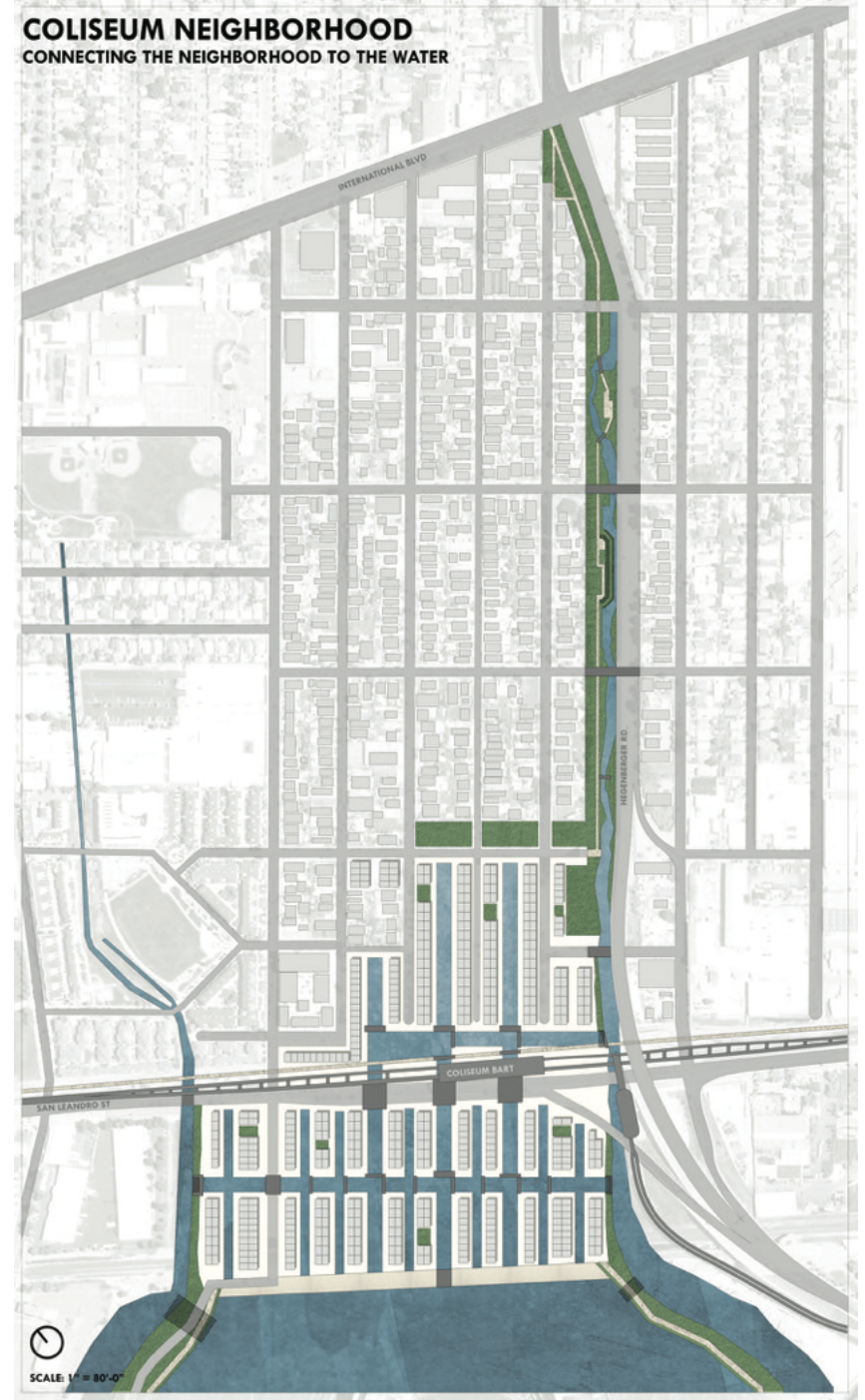
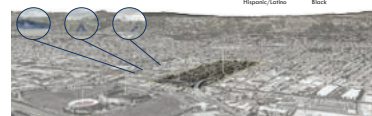
- 12' GW = 6' SLR
- 9' GW = 3' SLR
- 6' GW
- 1,400 Tides per Year



**Coliseum Neighborhood Demographics**

\$23,726	\$51,716
Average Income	Average Income
Community	Oakland

48% Hispanic/Latino 31% Black



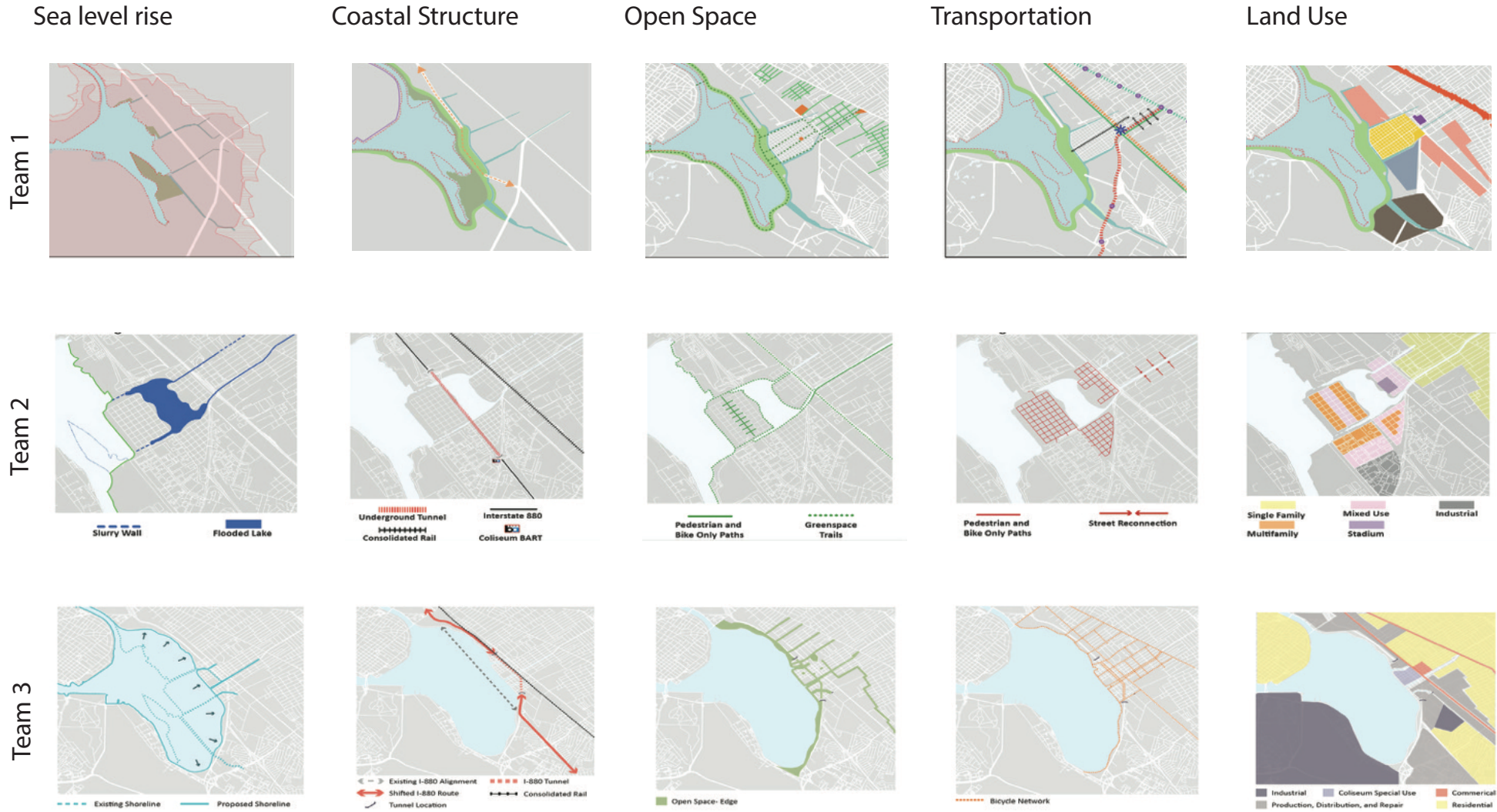


## UC Berkeley CP208: Coliseum San Leandro Bay Studio

Instructor : Professor Elizabeth MacDonald

This course brought graduate students in city planning into a parallel process with the ABC Team's design phase to first analyze the existing physical and social conditions of the Coliseum/San Leandro Bay site and then test various scenarios related to addressing both future sea level rise, the immediate needs of nearby East Oakland residents, and the question of whether or not sports facilities should remain. The goal was to develop interrelated planning and urban design strategies across multiple urban scales. Initially, six teams of students explored the area's physical and social history, environmental factors, physical and experiential urban form, demographics and community institutions, industrial and commercial fabric, and mobility infrastructure. Following this analysis, three teams of students explored separate approaches for addressing sea level rise, protecting vital transportation infrastructure, and strengthening residential neighborhoods. Each team developed overarching structural framework plans articulating key mobility, open space, and development strategies, and then explored detailed designs for the water's edge, tunneling the I-880 freeway, consolidating railroad corridors, street redesigns, new neighborhood public spaces, and areas of new development.

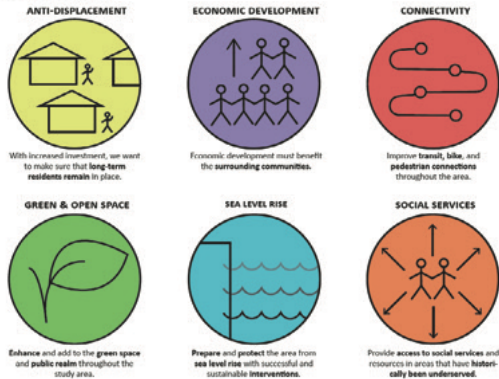
# Framework Plans // 3 Teams



# Team Goals // Adapting an Urban District to Sea Level Rise

## Team 1

### Team 1 Goals



1. protect long-term residents from displacement
2. investments at Coliseum site must benefit surrounding communities
3. add ped/bike connectivity
4. add open space
5. prepare for sea level rise with sustainable interventions
6. provide better access to social services

## Team 2

### Protecting the Coliseum Area: A Whole Lot of Lake

**Vision**  
Fortify the existing community through responsible development and adaptation

#### Guiding Principles and Primary Strategies

**Enhance Connections**  
Remove barriers between the existing community and the shoreline by tunneling the freeway and consolidating rail lines.  
Expand the network of public transportation and bike/pedestrian routes to connect new and existing neighborhoods.  
Reconnect communities through Hegenberger by stitching the street grid back together.

**Prepare for Rising Water**  
Build a horizontal levee to isolate the community from rising sea level by up to 10 feet.  
Engineer a reservoir to collect rising groundwater and increased runoff from rain at higher elevations.  
Develop a slurry wall system to prevent the leaching of toxins into the bay and other water systems from contaminated soils.

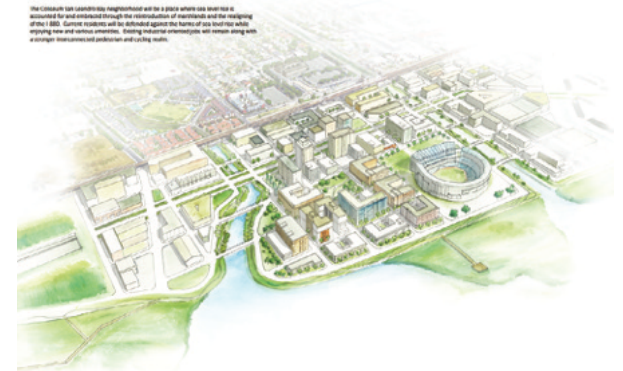
**Build Responsibly**  
Ensure new development does not disrupt existing neighborhoods and fits into the urban fabric.  
Only build on land that is safe from rising waters.  
Focus on mixed-income and mixed-use development to generate vibrant street life and provide neighborhood amenities while supplying housing for all.  
Use development to help finance the major infrastructure projects necessary to protect the area.

48" Sea Level Rise Scenario

1. enhance connections for bikes, pedestrians
  - tunnel the freeway
  - build paths to Bay
  - re-connect across Hegenberger
2. prepare for sea level rise
  - build a horizontal levee
  - collect rainwater at higher elevations
  - use slurry walls to protect from groundwater contamination
3. build responsibly
  - don't disrupt existing neighborhoods
  - avoid flood-prone areas
  - use development to help finance infrastructure

## Team 3

### Embrace the Bay

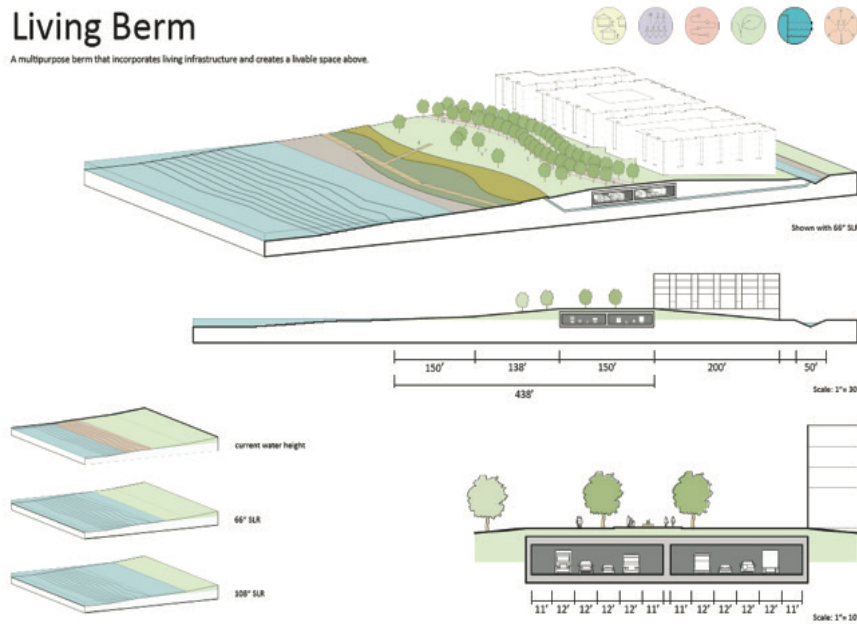


1. expand marshes
  - habitat, parks, and protective lands
2. strengthen community
  - jobs, community assets, fresh food
3. connect transportation routes
  - move I-880 inland, create bike and pedestrian routes, connect neighborhoods to waterfront
4. grow jobs and industry
  - grow industrial jobs, add more production/distribution/repair industries, and add commercial space for food access

# Team 1: Cody Aarons, Phoenix Alfaro, Abby Brown, Jesse Brown, Dagin Faulkner, Diego Rentería

## Living Berm

A multipurpose berm that incorporates living infrastructure and creates a livable space above.



## Streetscape Improvements

The pedestrian experience on neighborhood streets is characterized by narrow sidewalks in disrepair, vehicles parked on sidewalks, and few street trees or vegetation. Streets can be redesigned to accommodate wider sidewalks and more street trees without removing on-street parking.



**Green:** Residential streets between San Leandro Avenue and International Boulevard are prime targets for improvements. Roadways will be no wider than 30 feet & sidewalks will be widened to at least 11 feet, with six-foot wide pedestrian zones along with planting zones at least five feet wide to increase the buffer between pedestrians and the street. The widespread planting of trees will return nature to the neighborhood, reduce the heat island effect, better connect pedestrians to new activity and commercial zones, and improve the pedestrian experience.

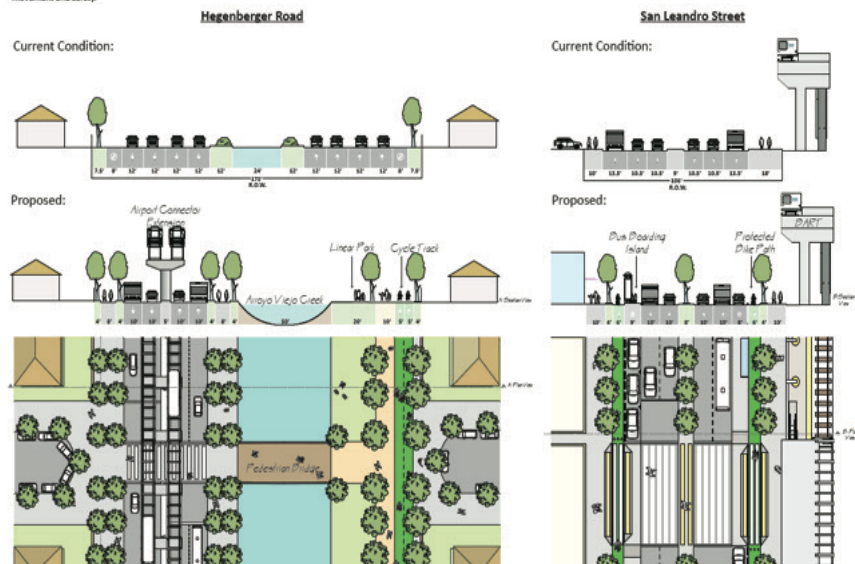
**Red:** Some residential streets or alleys between San Leandro Avenue and International Boulevard are too narrow to plant street trees and expand sidewalks. Cars are parked over sidewalks on both sides, forcing pedestrians to walk on the roadway. Street surfaces are in poor condition, which is a limit to mobility, particularly to people with disabilities. Sidewalks and streets will be repaired and repaved.

**Black:** Industrial streets will be repaved and existing sidewalks will be redone; no new sidewalks will be installed. These streets are designed to handle heavy truck traffic and many lack sidewalks, which are used for public parking. These streets vary greatly in width.

Photographs taken Tuesday 28 April 2016, 9-4p.

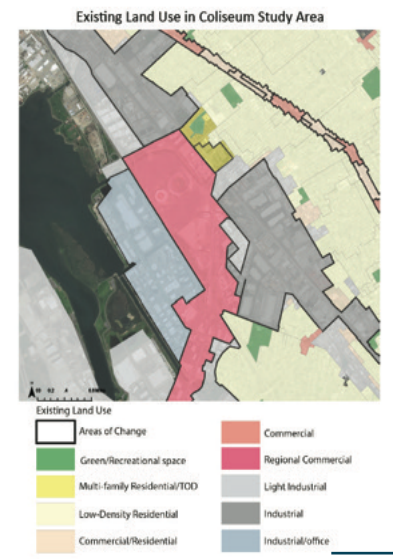
## Street Transformations

Throughout the study area the movement of vehicular traffic is prioritized over all other modes. Below illustrates Hegenberger Rd. and San Leandro St. re-configured for multi-modal use with an emphasis on pedestrian movement and safety.



## Land Use & Development

Below are our areas of proposed change (existing conditions can be seen on the right). We focus on two main areas: Coliseum Village and the Coliseum Concourse.



# Team 2: Enzo Cabili, Joshua Ekstedt, Alex Lee, Jared Nolan, Jessie Wang

## ADDRESSING WATER



With climate change effects the area is expected to receive a greater sheer number of liters per year. The area will need to address water coming from all four sides: Above, below, the ocean and the hills.

### Flood-able Parks

**1 RETENTION**

Floodable parks in the hills will help retain water higher up in the watershed and will put less pressure on the site itself to deal with all of the water at once. We recommend five parks (one per watershed). Interventions higher up, can minimize the flow of water down to the site by up to 50%.

### Lake

**2 COLLECTION**

The lake in the middle of the site will collect the water coming down from the hills and store the groundwater coming up with sea level rise. The lake will have several fountains to regulate the nitrogen levels in the lake to assure a sustainable environment for wildlife.

### Sand beds with Goosebeak Pipe

**3 DRAINAGE**

Historically, many creeks did not go all the way down to the ocean and went underground when meeting a sand bed. This technique will prevent an overflow of creeks onto our new neighborhoods. As part of this drainage intervention the goosebeak pipe will drain and pump out water into the bay directly if there is an astronomical water intake in the area between the sand bed and the slurry wall.

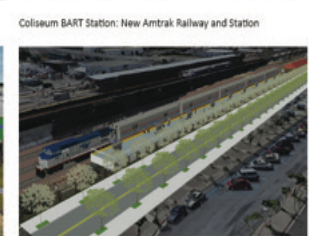
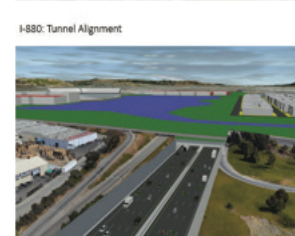
### Horizontal Levy and Slurry Wall

**4 PROTECTION**

The Levy will help keep the rising sea levels from submerging valuable land in the site. The gradual 1 inch height increase every 30 feet will prepare the area for a 50 ft surge (300 ft total length). At the end of the levy there is a Slurry wall which will help keep salt water intrusion happen from below ground with the rise in the water table.

## Relocating Regional Transportation

The major regional linkages in the Coliseum neighborhood are I-880, the Union Pacific rail, the Amtrak Rail, Hegenberger Road, and the BART Line. Important as they are, I-880, Amtrak, and Union Pacific are significant barriers to local traffic, and therefore need to be relocated while minimizing the impact to regional transportation.



For 1.15 miles alongside the lake and the new development, I-880 will be in a cut and cover tunnel, 32 feet below ground. This will remove I-880 as a barrier to local and pedestrian travel as well as shielding the community from air and noise pollution.

Amtrak will be moved to the existing Union Pacific rail alignment and the existing Amtrak rail will be removed. There will now be a combined Amtrak and BART Station at the Coliseum Station. Thanks to the removal of the Amtrak rail and the tunneling of I-880, Hegenberger Rd. will be brought down to grade in the two locations where it is currently elevated.

## Connecting the Neighborhood to the Waterfront

The existing neighborhoods surrounding the San Leandro Bay face barriers to the waterfront in the form of wide arterial streets and vast parking lots. Turning these roadways into multimodal pedestrian and bicycle paths will introduce greenspace in a residential area that lacks greenspace amenities.

### Hegenberger Road Redesign

**Existing Condition**

**Proposed Condition**

### Waterfront Paths

**Proposed Waterfront Lake Path**

**Proposed Waterfront Creek Path**

**The Problems**  
The existing residential neighborhood is disconnected from the waterfront. Hegenberger Road is a barrier within the existing neighborhood. It contains four lanes of fast moving traffic, a central canal, and very few cross streets (most abutting streets end in cul de sacs).

**The Solution**  
Remove some traffic from Hegenberger Road and create a linear park along the canal that extends to the new lake and connects with the waterfront

## Westlake Neighborhood Streetscape



### Waterfront Streets

### Residential Streets

### Bus Corridors

The waterfront streets are two-way streets that allow automobiles to quickly circumvent the neighborhood instead of driving through.

The residential streets have wide sidewalks and an abundance of greenery. Narrow lanes and street parking slows automobile traffic.

The bus corridors facilitate transit near the bike/ped corridor with bus only lanes and level boarding platforms. A two-way cycle track allows for quick bicycle trips outside of the bike/ped corridor.

# Team 3: Leslie Aguayo, Dorry Funaki, Abby Granbery, Shu Pan, Stella Yip

## Sea Level Rise

The Coliseum San Leandro Bay area is at a particularly high risk for sea level rise. Built on in-fill marshland, the study area is low lying and already experiencing flooding. This inundation will affect major transportation networks (I-880, Amtrak, Freight, and the Oakland Airport), industrial lands, distribution centers, and some residential. This approach embraces the shifting shoreline and envisions a future with a vastly different approach to the coast in this area. These shoreline scenarios maintain that the **Oakland Airport will be protected**, and the surrounding industrial land will be restored marshlands. This new coast line influences all the subsequent plans.



## Major Transportation Networks

### Proposed Network

### Existing Network

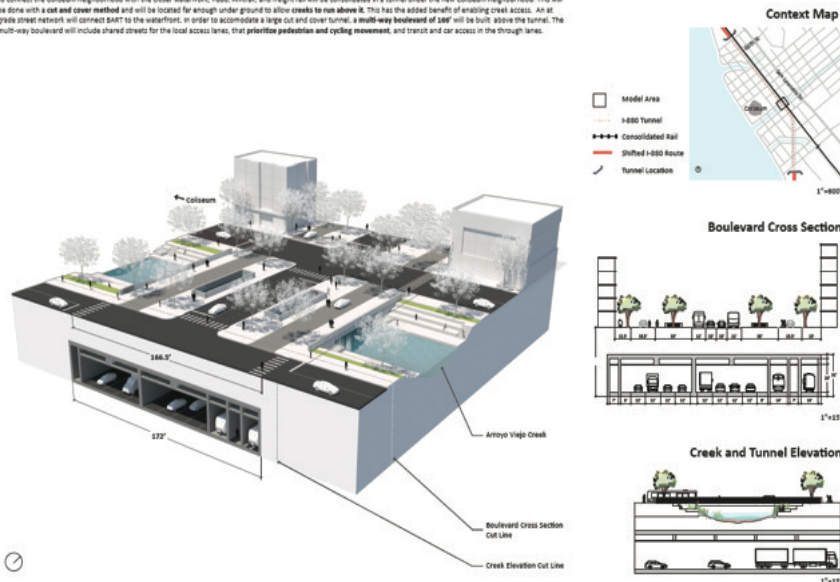


### Reconfigure, consolidate & preserve networks:

- **Re-configure at grade I-880 Freeway** and move underground to a tunnel east of existing I-880 freeway.
- **Consolidate** the at grade **Union Pacific & Amtrak rail lines** and route underground in the tunnel with the I-880 freeway.
- **Preserve Elevated BART track** and station and keep in the same location.
- **Preserve Elevated Airport Connector** and keep in the same location.
- **Preserve San Leandro Street** in the same location but also **reconfigure** with more locally serving cross streets.

## Consolidate I-880 and Rail Underground

To connect the Coliseum neighborhood with the closer waterfront, I-880, Amtrak, and freight rail will be consolidated in a tunnel under the new Coliseum neighborhood. This will be done with a **cut and cover method** and will be located far enough underground to allow creeks to flow above it. This has the added benefit of avoiding creek access. An at-grade street network will connect BART to the waterfront, in order to accommodate a large cut and cover tunnel, a **multi-way boulevard of 180'** will be built above the tunnel. The multi-way boulevard will include shared streets for the local access lanes, that **prioritize pedestrian and cycling movement**, and transit and car access in the through lanes.



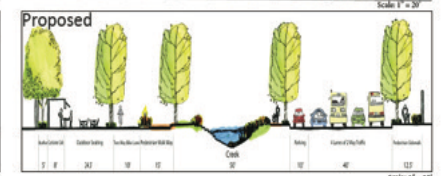
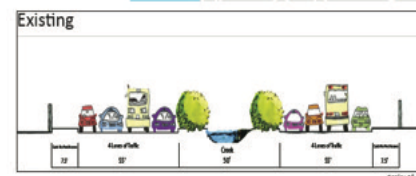
## Hegenberger Rd



### Existing



### Proposed



## University of California, Berkeley Units of Time Studio

Professor Nicholas de Monchaux  
Spring 2018

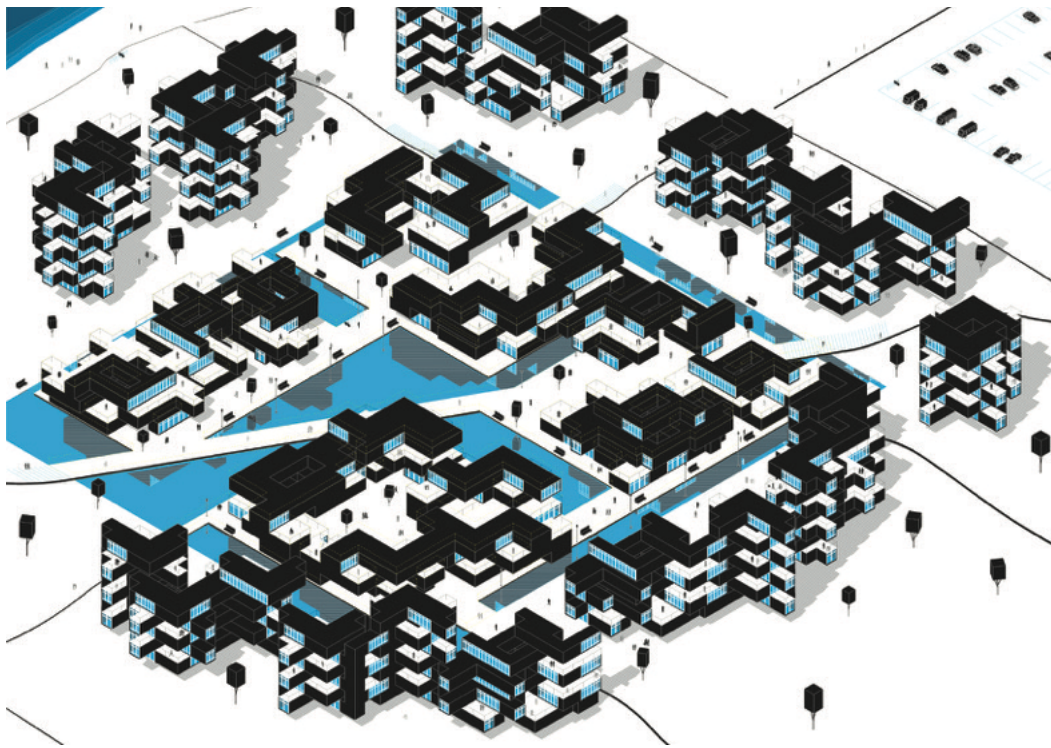
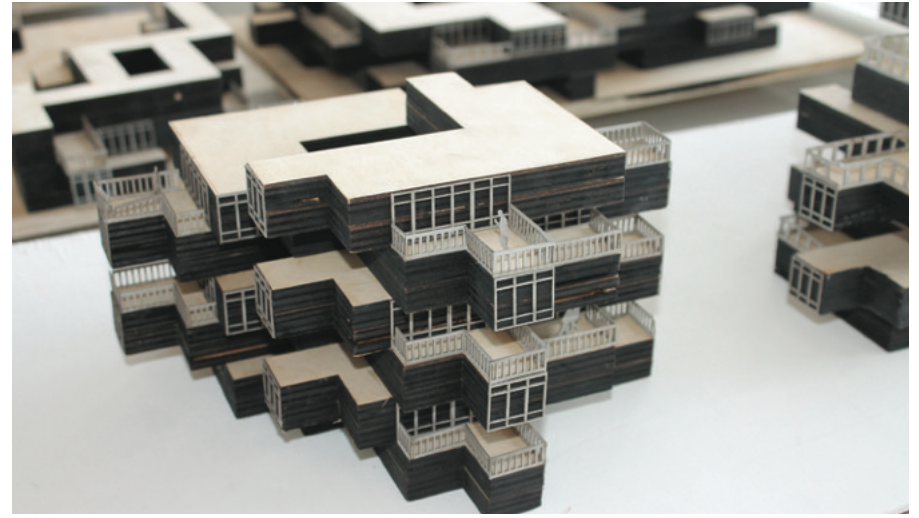
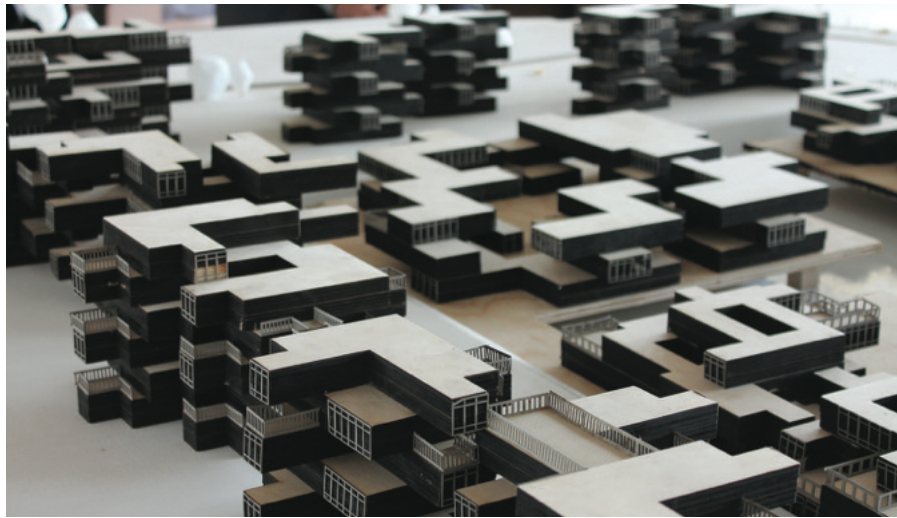
A final-year undergraduate studio, this course and its students researched one of the most difficult, and interesting questions faced by our team, and our profession: how to draw change and uncertainty. In particular, how to represent the predictable uncertainties that climate change brings to our cities and landscapes.

The studio addressed one piece of a much larger design problem — prototyping modular, floating, communities we propose for the bay's tidal edge edge — and used it to explore these questions of representation and making.

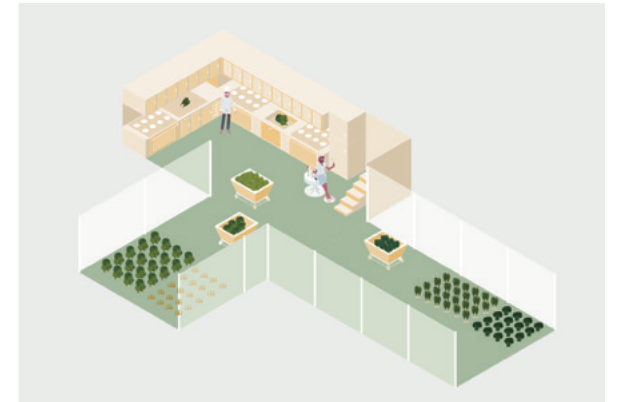
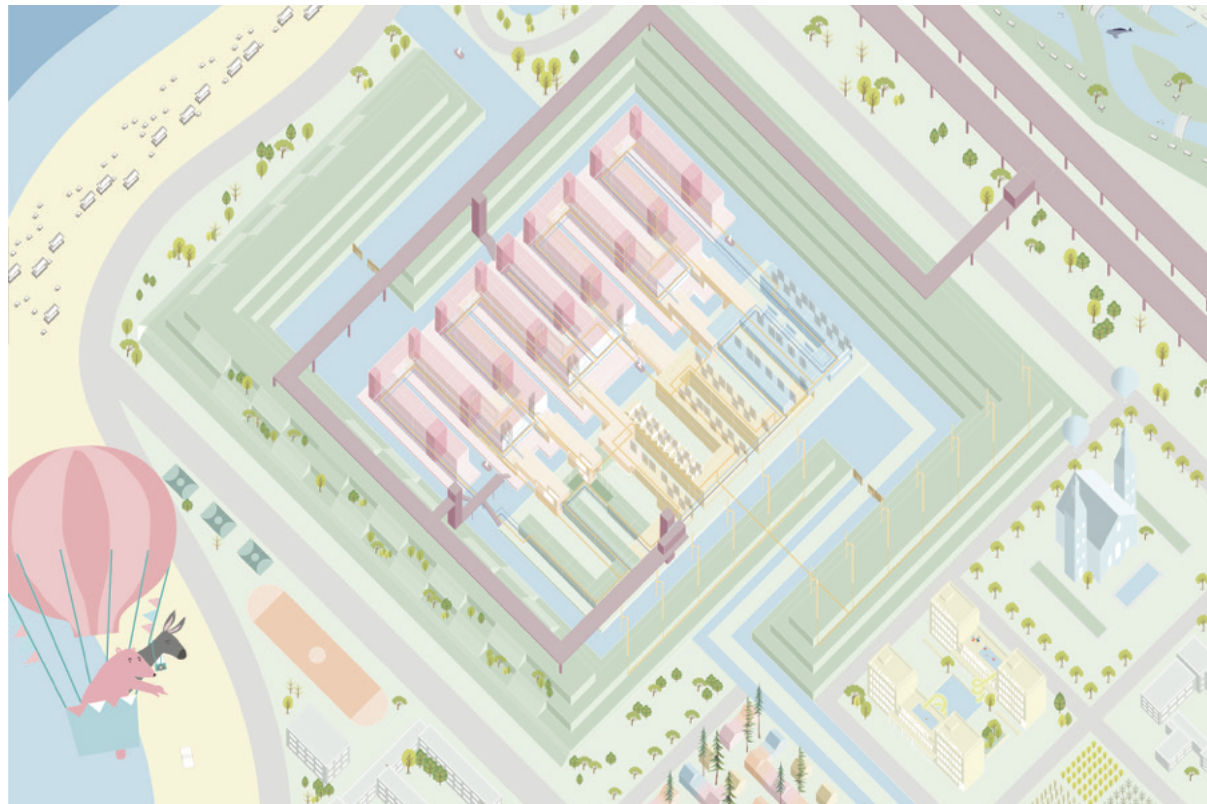
Students started the semester making and moving model housing units around the studio (using machines inspired by Berkeley alum Rube Goldberg), and through the space of drawing to produce aggregated design proposals. These ideas were developed further through models and diagrams to produce final proposals.

*Students: Adam Cardenas, Yue Dai, Brenda Delgado, Allyssa Dichosa, Maynessa Dichosa, Alice Gu, Siqi Guo, Sok in Ho, Jeanette Hong, David Locon, Mathek Pathak, Stephanie Valasek, Ningxin Wei, Yuhan Zhang, Tiara Zhao, Sventa Zornya.*



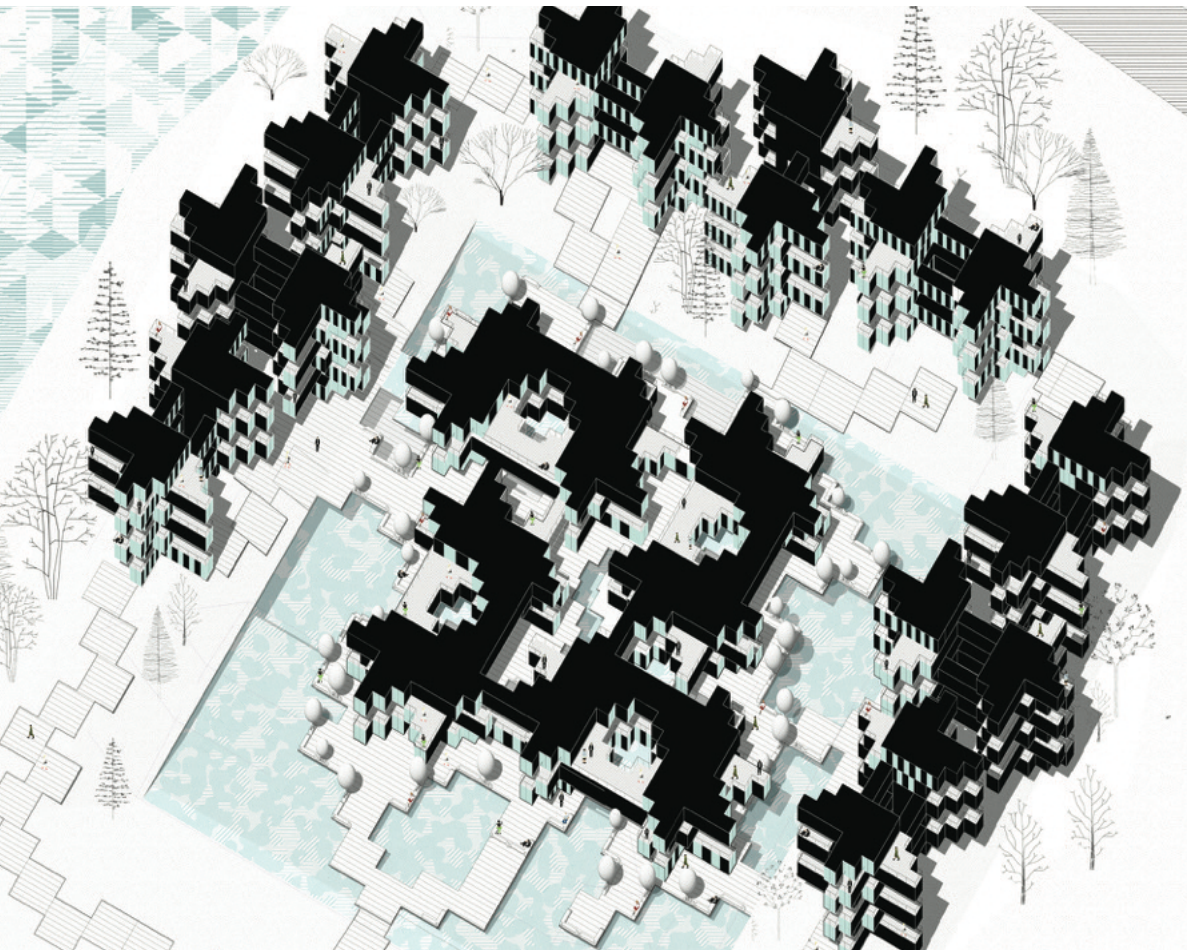


Stephanie Valasek and Mathek Pathak

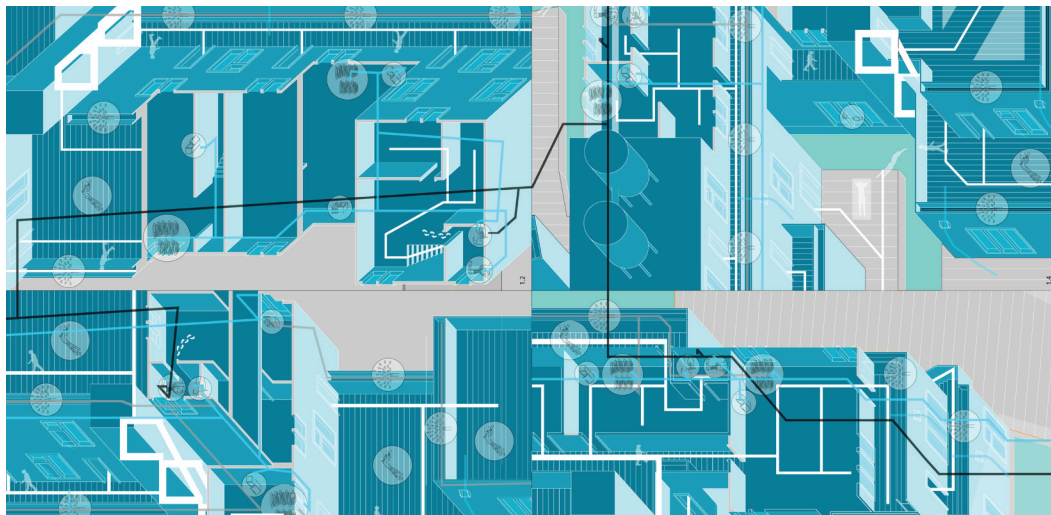
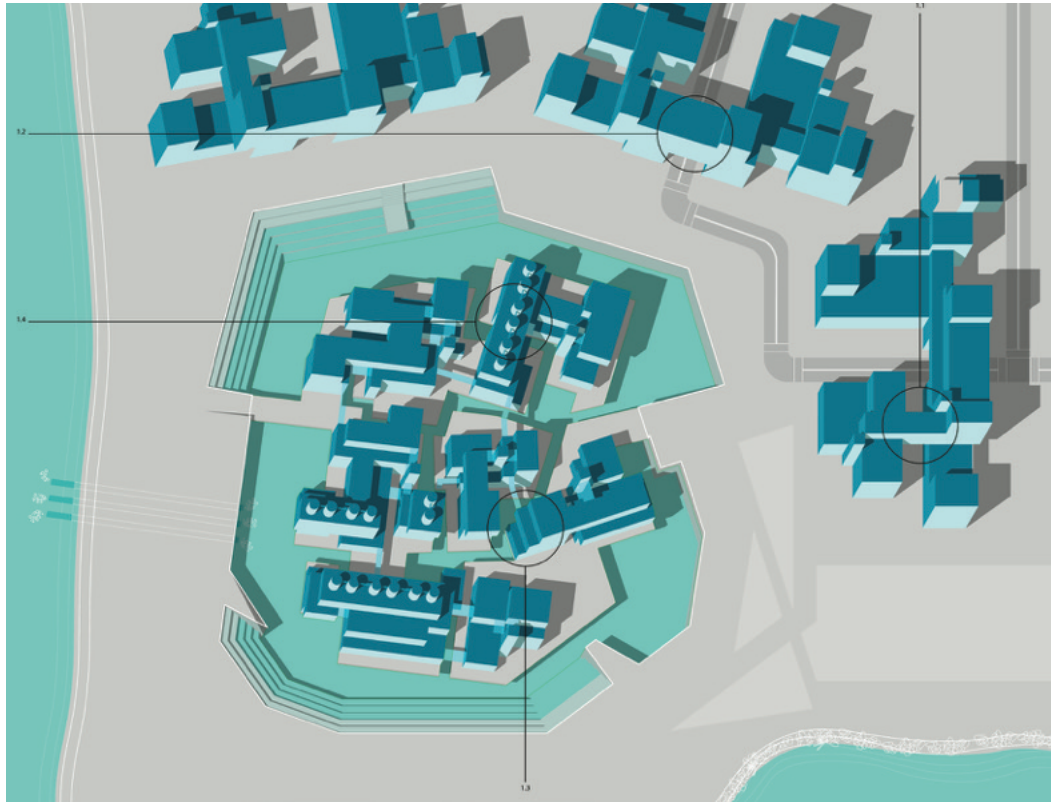


Yue Dai and Siqi Guo

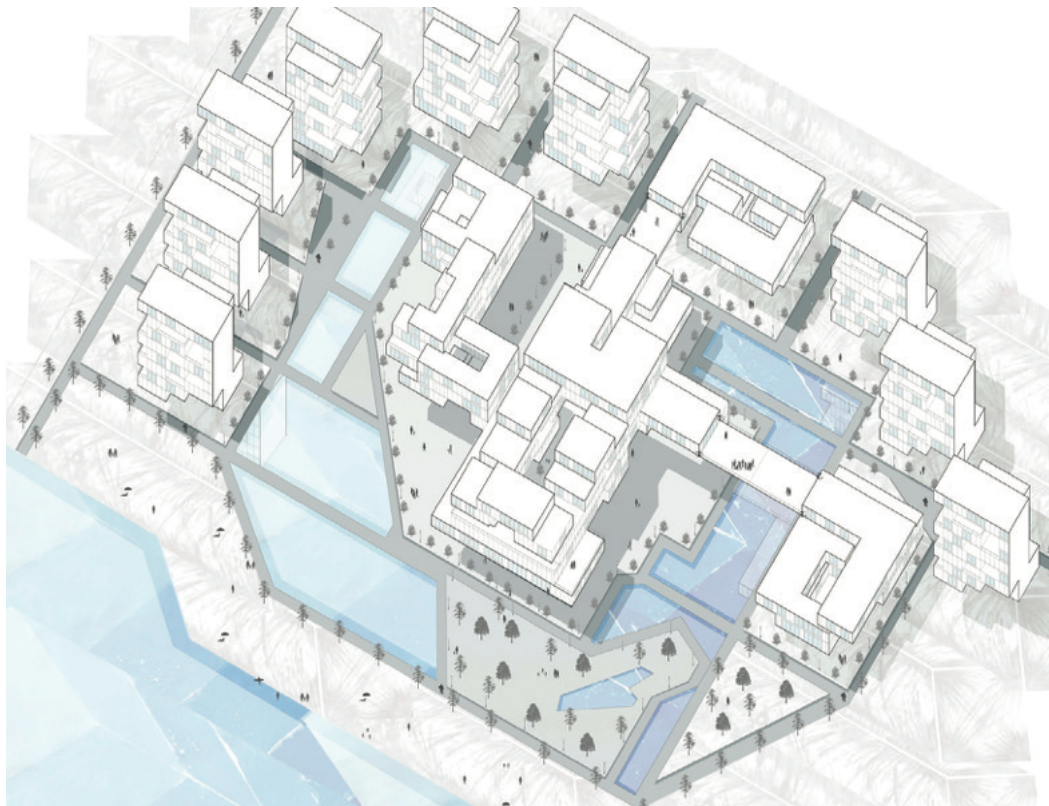
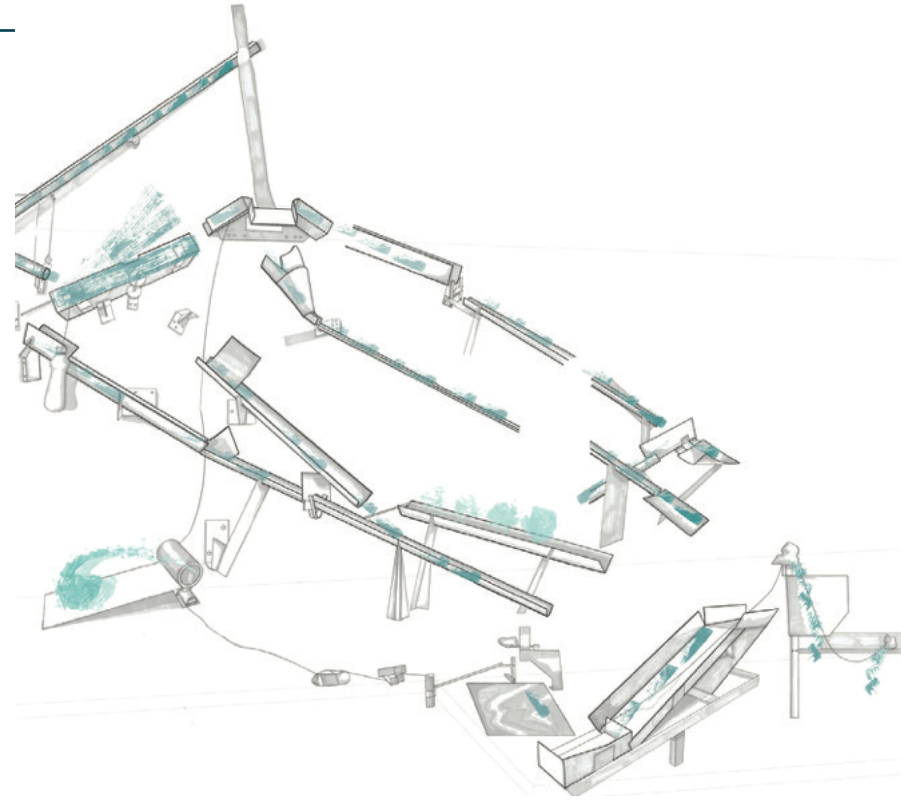
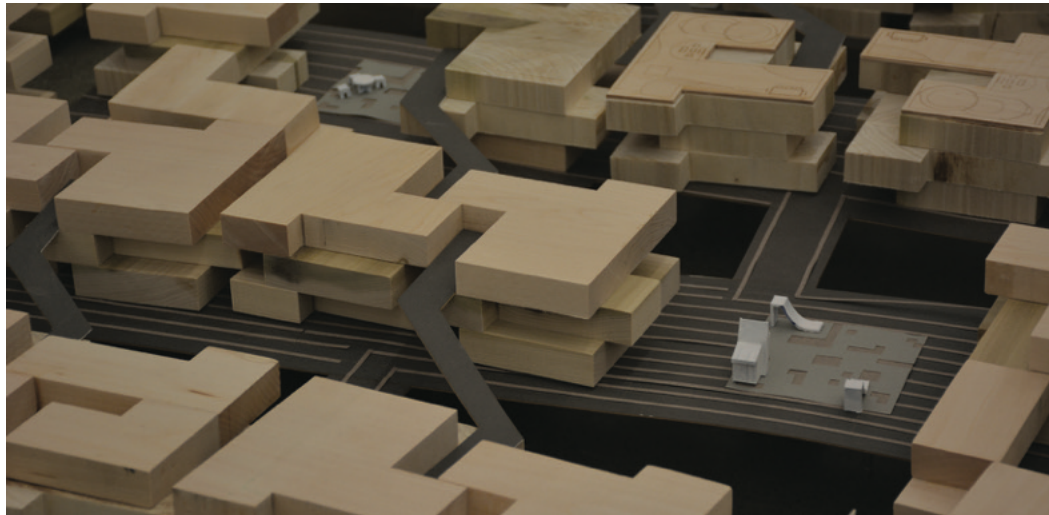




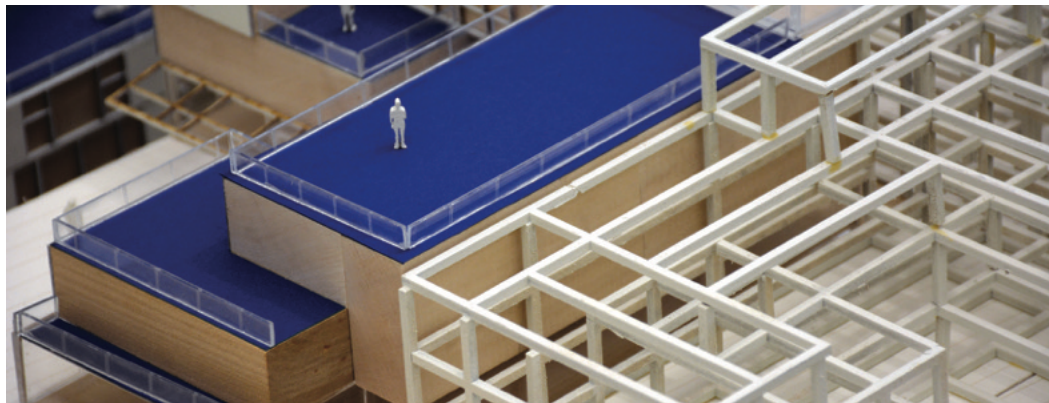
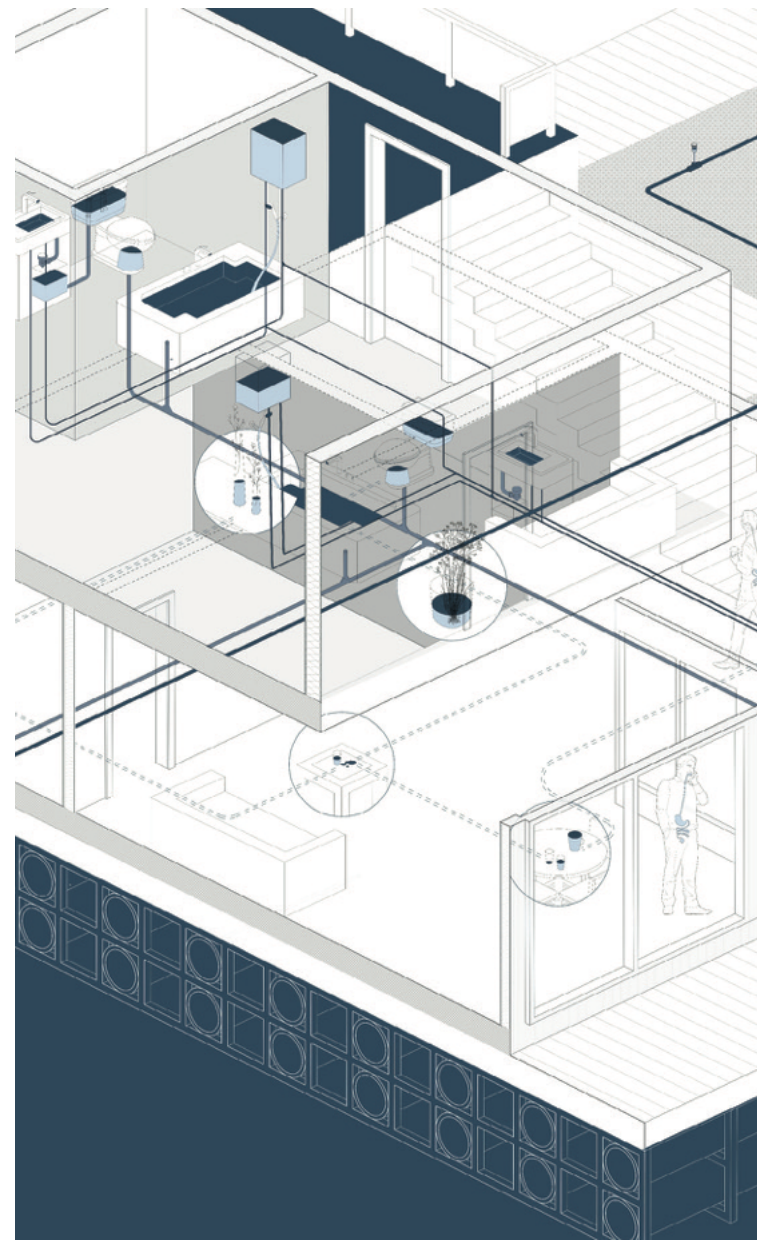
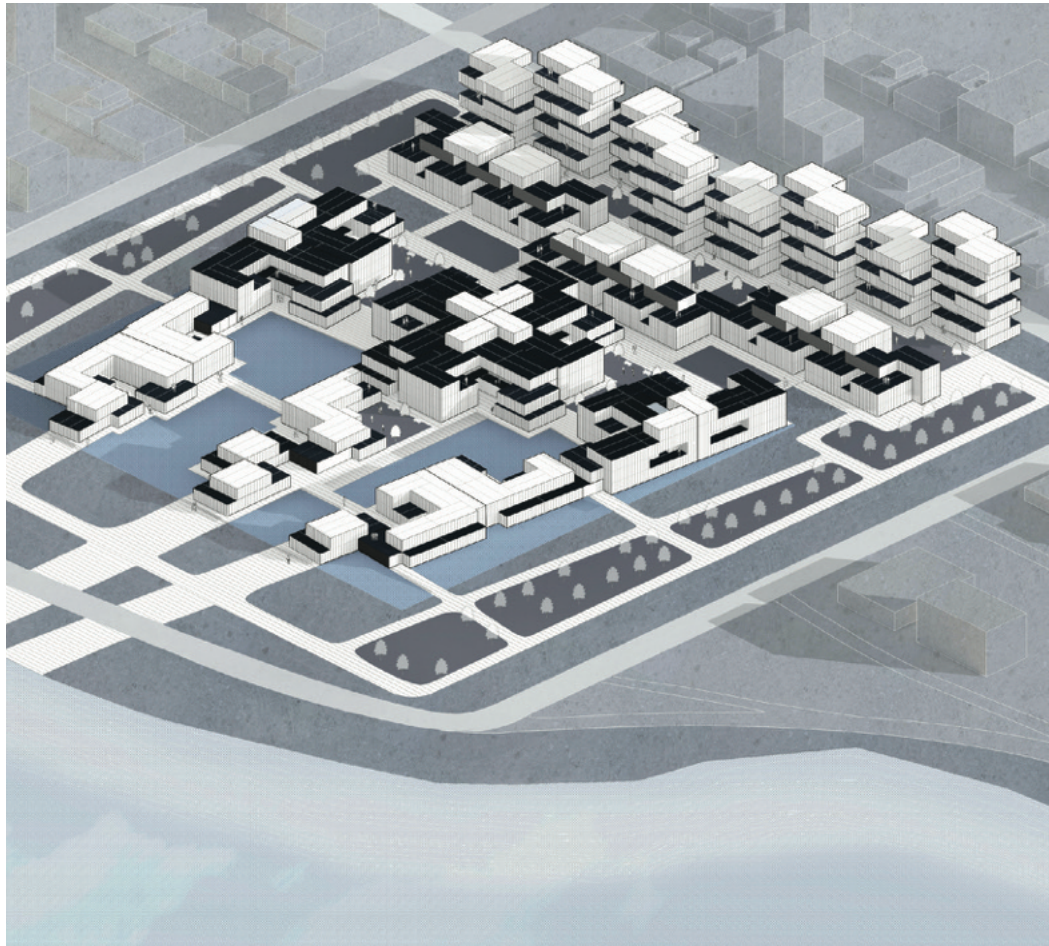
Brenda Delgado and Jeanette Hong



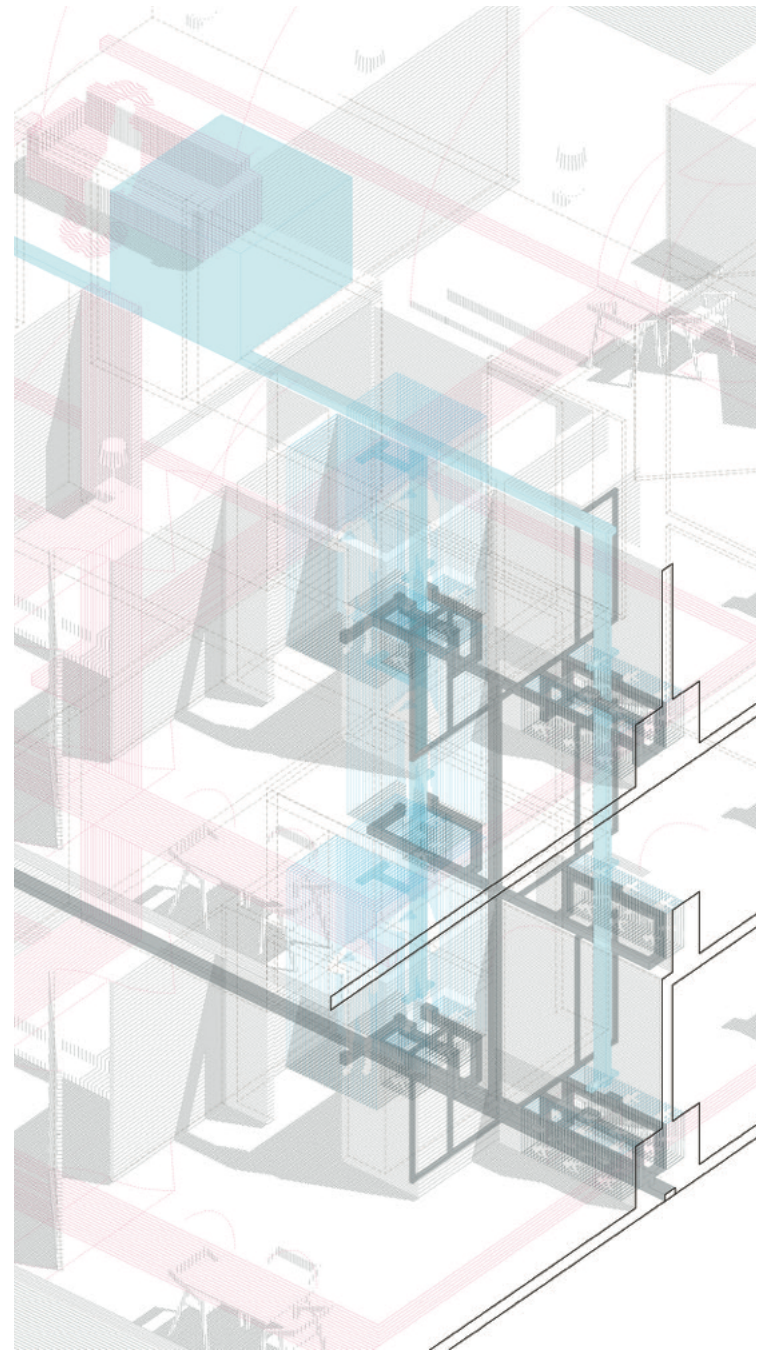
Adam Cardenas and David Locon



Alyssa Dichosa and Maynessa Dichosa



Sok In Ho and Ningxin Wei



Yuhan Zhang and Sveta Zornya



**Appendix E**  
**In It Together Game Instructions**



## THE GAME

**Background:** Imagine that seas have risen 3-6 feet above today's level, but no efforts have been made to adapt. Homes are flooding with polluted groundwater, sewers are backing up, and many industrial businesses will need to be abandoned. The Oakland Airport and Oakland Coliseum are almost completely submerged, I-880 and Amtrak are no longer functioning in this area, and the BART station is inaccessible. Due to these losses, the local municipal tax base and investment capability is declining. These enormous threats also add to challenges communities face every day, such as access to affordable housing, stable jobs, and a healthy environment. What can we do instead? How can we make our communities more resilient?

**Objectives:** 8 Players—called Stakeholders—represent diverse communities and agencies in the Estuary. Each Stakeholder has unique Goals that build long-term resilience and meet immediate-term needs. Players can decide whether to play competitively and/or cooperatively at any point throughout the game, to reach one of three possible outcomes:

- **Win-Lose:** If you accomplish all of your selected goals, you win!
- **Win-Win:** If Stakeholders together score all available "Collective Resilience Points," you *all* win!
- **Lose-Lose:** If floods reach 66," and all zones have unprotected buildings or infrastructure, you all lose.

# RULES

**Stakeholders:** Pick a Stakeholder Card, which defines your Goals. You can be the City of Oakland, East Oakland Residents, Alameda, the Airport, Developers, Transportation, wildlife or Utilities. You are encouraged to choose an identity that's different from your real-world one and to get into character.

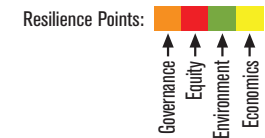
**Adaptation Pieces:** You can complete Goals and score Collective Resilience Points by purchasing as many Adaptation Pieces as you'd like and placing them on the board. A piece can go:

- Anywhere it fits into any vacant (white) site in any Zone.
- In a non-vacant site only with permission from the Stakeholder who has jurisdiction over that Zone, for any cost or favor you can negotiate.

**Currency:** You will start the game with 5 Coins, and get 5 more at the start of each round.

**Voting:** Some Adaptation Pieces require a majority vote among all Stakeholders before they can be used. You all have 1 vote each per proposal.

**Flooding:** The board shows anticipated flooding due to Sea Level Rise and rising Groundwater. If a flood reaches unprotected buildings or infrastructure that you are responsible for protecting, pay 3 Coins to the bank. Remove 1 Collective Resilient Point per category for every Zone that is adversely affected.



## PROTECT

### Tide Gate



4 coins



A set of four one-way gates. Place at 36" SLR Overtopping Sites to protect-adjacent areas from **SLR up to 36"** (not Groundwater Flooding).

### Pump



2 coins



4 mechanical water pumps. Use this anywhere to protect the area inside this circle from **Groundwater Flooding**. Must pay 2 Gold Bars per round for maintenance and energy costs.

### Levee



4 coins



A grey infrastructure embankment. Place at 66" SLR Overtopping Sites to protect inland from **SLR up to 66"** (not Groundwater Flooding).

### Tidal Pond



4 coins



A set of four ponds. Place next to waterway to protect any other structures (e.g. landscape, building, or infrastructure) paired with it against **Groundwater Flooding and SLR up to 66"**

### Living Levee



4 coins



A 28-acre landscape and embankment. Place at 66" SLR Overtopping Sites to protect inland from **SLR up to 66"** (not Groundwater Flooding).

### Waterproof Existing Homes



4 coins



Waterproof Existing Buildings in 1 city block, thus supporting **Affordable Housing/Ownership (20)**

### Living Levee Loop



28 coins



A ring of parks and levees equivalent to 9 Living Levees.

### Managed Retreat Program



2 coins




Relocates Tenants/Owners (20 units) from 1 city block to an area outside of the neighborhood unless paired with new affordable housing.

see also:  
880 Tunnel (Connect)

**CONNECT**

**880 Tunnel:** **8 coins**  
+ majority vote  
0 1 1 2



Buried Highway in a tunnel w/ filtration system to improve air quality.

**Bike Grid:** **2 coins**  
0 1 1 0



Bike Path and Bike Share system, supports **Entrepreneurship (2)** and **Jobs (10)**.

**Greenway:** **2 coins**  
0 1 1 0



Green path or boardwalk for bikes and pedestrians, creates **Jobs (10)**.

**GROW**

**Urban Park:** **4 coins**  
0 2 1 0



8-acre recreational landscape, creates **Jobs (10)** and reduces rainwater runoff.

**Wildlife Habitat:** **4 coins**  
0 0 2 0



8-acre wildlife refuge, such as a wetland; get 1 extra Environmental Resilience Point if it's by a waterway

**Rain Garden/  
Green Infrastructure:** **2 coins**  
0 1 1 0



4-acre landscape network for water capture and treatment, creates **Jobs (20)**

**Urban Agriculture:** **2 coins**  
0 2 1 0



4-acre farm, supports **Entrepreneurship (2)**, creates **Jobs (20)**

• See also: Living Levee + Estuary Park Loop (Protect)

**CREATE JOBS**

**Stadium** **8 coins**  
0 1 0 1



New sports stadium, creates **Jobs (80)**

**Aerotropolis** **8 coins**  
0 1 0 1



Satellite Airport terminal, creates **Jobs (120)**. Place next to AirBART station.

**Unicorn Tech Campus** **8 coins**  
0 1 0 1



Company Headquarters, creates **Jobs (120)**

**Logistics Warehouse** **4 coins**  
0 1 0 1



Facility for shipping/storage, creates **Jobs (20)**

See also: Greenway (Connect) + Urban Park + Rain Garden/Green Infrastructure + Urban Agriculture (Grow) + all (Entrepreneurship)

**Build Housing (Market Rate)**

**Medium Density Housing** **2 coins**  
0 1 0 0



4-5 story **Housing (20 units)**

**High Density Housing** **4 coins**  
0 2 0 0



8-10 story **Housing (40 units)**

**SUPPORT ENTREPRENEURSHIP**

**Microgrid:** **2 coins**  
0 2 1 1



Local energy system with solar and wind power sources, supports **Entrepreneurship (5)**, and creates **Jobs (10)**

**Schools/Job Training:** **2 coins**  
0 2 0 0



Supports **Entrepreneurship (5)**, and creates **Jobs (20)**

**Retail/Grocery Store:** **2 coins**  
0 1 2 1



Supports **Entrepreneurship (5)**, and creates **Jobs (20)**

**Small Business Incubator:** **2 coins**  
0 2 0 1



Start-up assistance, supports **Entrepreneurship (5)**, and creates **Jobs (20)**

See also Urban Agriculture (Grow)

**SUPPORT AFFORDABLE HOUSING AND LOCAL OWNERSHIP**

**Accessory Dwelling Units:**

2 coins  
+ majority vote  
0 1 0 0



New housing added to existing units, to provide additional income source and support **Affordable/Ownership** (10)

**Community Land Trust: 4 coins**

Community Land Trust 4 2 0 0

Collectively owned land with **Affordable/Ownership** (20) units.

**Mandatory Inclusionary Zoning Policy:**

2 coins  
+ majority vote  
0 1 0 -1



Requires future investors (in the area defined by this policy) to pay an additional 1 gold bar per 10 units to create 5 new **Affordable/Owner-Occupied** (1/2x) units

**Tenant Protection Policy:**

2 coins  
0 2 0 -1



Doubles existing and future **Affordable/Ownership** (2x) units (in the area defined by this policy).

see also: Retrofit/Waterproof + Managed Retreat

**FORM ALLIANCES**

**Public Benefits Zoning Policy:**

2 coins  
+ majority vote  
4 2 0 0



Any time a player places a piece in this zone, the Stakeholder who has jurisdiction over that Zone gets 1 coin.

**Eco-District:**

2 coins  
+ majority vote  
2 1 2 1



District-scale energy network, allows each player in this district to purchase 2 Microgrids for the price of 1.

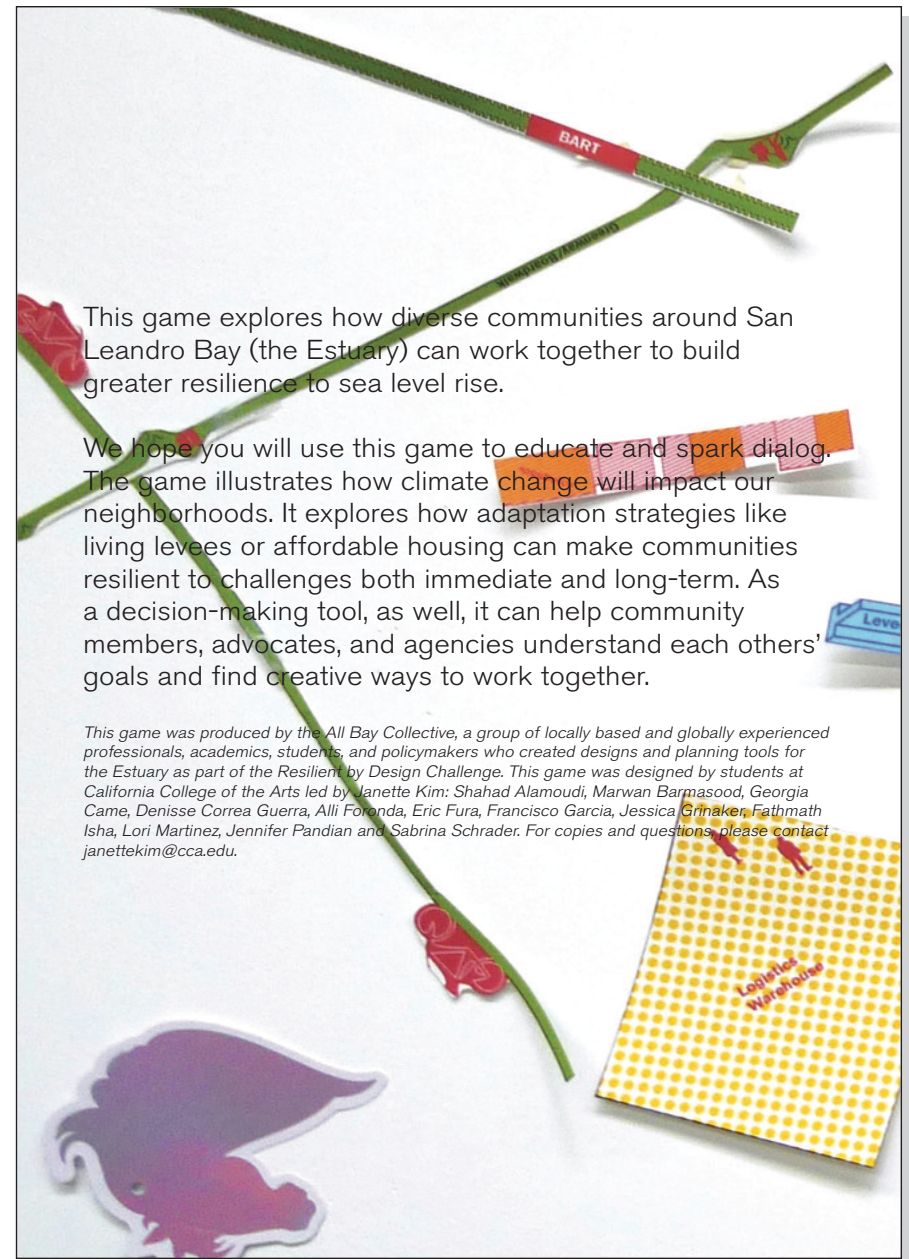
**Collective Ownership**

2 coins  
+ majority vote  
2 0 0 0

Any time two players invest in an adaptation piece together, they earn 1 resilience point.

**Other:**

Any player can propose any policy at any time.



*This game was produced by the All Bay Collective, a group of locally based and globally experienced professionals, academics, students, and policymakers who created designs and planning tools for the Estuary as part of the Resilient by Design Challenge. This game was designed by students at California College of the Arts led by Janette Kim: Shahad Alamoudi, Marwan Barmasood, Georgia Came, Denisse Correa Guerra, Alli Fomonda, Eric Fura, Francisco Garcia, Jessica Grnaker, Fathmath Isha, Lori Martinez, Jennifer Pandian and Sabrina Schrader. For copies and questions, please contact janettekim@cca.edu.*



## STAKEHOLDER CARD

### The City of Oakland

**Goals:** Complete 2 to win! (You are required to complete the pre-checked box, but others are at your discretion). If another player accomplishes the same goal, it counts for you too!

- Protect** (or relocate) all buildings in the Coliseum and East Oakland Zones from up to 66" of sea level rise and groundwater flooding.
- Grow** any new landscape (20 acres) in the East Oakland Zone to improve air quality.
- Create Jobs** (120 jobs) and tax income by building 1 big destination facility (e.g. Stadium, Aertropolis, Tech Campus) in the Coliseum Zone.
- Build Housing** (40 units) within Coliseum and East Oakland Zones.
- Form Alliances**, and get re-elected (receive majority vote of all other Stakeholders on your re-election in Round 2)

#### **Zone: Coliseum Zone**

You have jurisdiction over this zone. Another Stakeholder can only place an Adaptation Piece in an occupied site in your zone with your permission, and for any cost or favor you can negotiate.



## STAKEHOLDER CARD

### East Oakland Residents

**Goals:** (Complete 3 to win!) If another player accomplishes the same goal, it counts for you too!

- Connect** 1 school, the shoreline and the BART Station using bike lanes, green infrastructure, or greenway.
- Grow** any new landscape (20 acres) in the East Oakland Zone to improve air quality.
- Support Entrepreneurship** (15 entrepreneurs) and access to fresh food by building 3 grocery store/retail stores.
- Support Entrepreneurship** (25 entrepreneurs) anywhere on the board.
- Support Affordable Housing and Local Ownership** (50 households)

#### **Zone: East Oakland Zone**

You have jurisdiction over this zone. Another Stakeholder can only place an Adaptation Piece in an occupied site in your zone with your permission, and for any cost or favor you can negotiate.

**Appendix F**  
**Community Resilience Investment**  
**Decision Making Tool**

### Community Resilience Investment Decision-Making Tool Criteria and Indicators

Abbr.	Criteria	Indicator
<b>Governance</b>		
G1	Multi-Stakeholder and Community Collaboration	<ul style="list-style-type: none"> <li>▶ Increase in proactive collaborative activities between public sector entities, community-based organizations, and private sector actors partnering on implementation</li> <li>▶ Increase in meaningful public opportunities to engage in these collaborative activities early and often</li> </ul>
<b>Socioeconomic and Racial Equity</b>		
S1	Diverse Employment	<ul style="list-style-type: none"> <li>▶ Increase in job availability through new local employment centers</li> <li>▶ Increase in workforce training and education opportunities</li> <li>▶ Increase in transportation linkages to regional job centers and opportunities</li> <li>▶ Increase in legally mandated local hire requirements</li> </ul>
S2	Diverse Housing	<ul style="list-style-type: none"> <li>▶ Protection of existing housing</li> <li>▶ Protection plus addition of new housing</li> <li>▶ Increase in affordable housing</li> </ul>
S3	Mobility	<ul style="list-style-type: none"> <li>▶ Increase in active transportation pathways (bike and ped)</li> <li>▶ Increase in amount of multi-modal hubs</li> <li>▶ Improved access neighborhood-to-shoreline access</li> </ul>
S4	Public Health	<ul style="list-style-type: none"> <li>▶ Increase in land available for community gardens and urban agricultures</li> <li>▶ Improvement in air quality</li> <li>▶ Improvement in water quality</li> </ul>
<b>Environmental</b>		
E1	Flood Resilience	<ul style="list-style-type: none"> <li>▶ Increase in built area protected from flooding</li> </ul>
E2	Parks, Open Space and Green Infrastructure	<ul style="list-style-type: none"> <li>▶ Increase in parks and open space</li> <li>▶ Increase in tree canopy coverage</li> </ul>
E3	Water Quality	<ul style="list-style-type: none"> <li>▶ Decreased exposure of pollutant sources to flood water</li> </ul>
E4	Air Quality and Greenhouse Gas Emissions	<ul style="list-style-type: none"> <li>▶ Increase in tree canopy coverage</li> <li>▶ Decrease in airborne pollutant source</li> </ul>
E5	Connected and Protected Habitat	<ul style="list-style-type: none"> <li>▶ Increase in habitat protected</li> <li>▶ Increase in estuary habitat</li> </ul>
<b>Economic</b>		
F1	Economic Risk and Impact	<ul style="list-style-type: none"> <li>▶ Decreased exposure of homes, businesses, jobs, and infrastructures to flooding</li> </ul>
F2	Community Benefits	<ul style="list-style-type: none"> <li>▶ Presence of public benefits zoning</li> </ul>

# **Appendix G**

## **ABC Equity Checklist**

## ABC Equity Checklist

This template provides a tool for communities, local government, agencies and private developers to negotiate tangible community benefits (such as local jobs, affordable housing, improved air quality, neighborhood improvements) for each public and private investment. These benefits implemented incrementally with each investment can build a more resilient, equitable and prosperous community.

What are the priorities?	What are the community's desired benefits to address priorities? <sup>i</sup>	How will benefits be measured?
Food	<ul style="list-style-type: none"> <li>- neighborhood markets and gardens with affordable, healthy, local food</li> </ul>	
Education	<ul style="list-style-type: none"> <li>- neighborhood school improvements</li> <li>- educational opportunities</li> </ul>	
Cultural Fabric	<ul style="list-style-type: none"> <li>- protect or develop cultural institutions important to the community (cultural centers, businesses, churches, heritage)</li> </ul>	
Capacity	<ul style="list-style-type: none"> <li>- capacity building (training, tools and resources) in the community to adapt to and benefit from change</li> </ul>	

<sup>i</sup> Adapted from "Living Conditions" in the frameworks by the Bay Area Regional Health Inequities Framework and the Public Health Institute and Center for Climate Change and Health (see page 75, 77 of RBD Briefing Book).

<sup>i</sup> See "A Bay Area Agenda for Investment without Displacement" (Asian Pacific Environmental Network (APEN), Causa Justa/Just Cause, Council of Community Housing Organizations (CCHO), PolicyLink, Public Advocates, Urban Habitat).

<sup>ii</sup> See Greenlining's "Mobility Equity Framework"

# **Appendix H Plans Reviewed and Abbreviations**

Plan	Abbreviation	Lead Stakeholder(s)
<b>BART Transit-Oriented Development Program Overview (2017)</b>	BART TOD	Bay Area Rapid Transit (BART)
<b>BART Adaptation Strategy for Sea-Level rise in the San Francisco Bay Area (2012)</b>	BART Adaptation Strategy	BART
<b>BART Sustainability Action Plan (2017)</b>	BART SAP	BART
<b>Caltrans Climate Change Vulnerability Assessments – District 4 (2018)</b>	Caltrans VA	Caltrans
<b>Interstate 880 Corridor System Management Plan (2010)</b>	I-880 MP	Caltrans
<b>Transformative Climate Communities Grant Application (2017); planning process (2018 onward) will create East Oakland Neighborhood Initiative</b>	TCC	CBOs; City of Oakland
<b>City of Alameda General Plan</b>	AGP	City of Alameda
<b>City of Alameda General Plan, Housing Element</b>	AGP Housing	City of Alameda
<b>City of Alameda General Plan, Safety and Noise Element</b>	AGP Safety & Noise	City of Alameda
<b>Central Estuary Area Plan</b>	Central Estuary AP	City of Oakland
<b>City of Oakland Economic Development Strategy 2018-2020</b>	Oakland Econ Dev	City of Oakland
<b>City of Oakland Energy and Climate Action Plan (2012; 2018 administrative update)</b>	ECAP	City of Oakland
<b>City of Oakland General Plan</b>	OGP	City of Oakland
<b>City of Oakland General Plan, Bicycle Master Plan (2007, updates in 2012 and 2014)</b>	OGP Bicycle	City of Oakland
<b>City of Oakland General Plan, Estuary Policy Plan</b>	OGP Estuary	City of Oakland
<b>City of Oakland General Plan, Housing Element (2015-2023)</b>	OGP Housing	City of Oakland

Plan	Abbreviation	Lead Stakeholder(s)
<b>City of Oakland General Plan, Land Use and Transportation Element (1998)</b>	OGP LUT	City of Oakland
<b>City of Oakland General Plan, Open Space, Conservation, and Recreation section (1996)</b>	OGP Open Space	City of Oakland
<b>City of Oakland General Plan, Pedestrian Plan Update (2017)</b>	OGP Ped	City of Oakland
<b>City of Oakland General Plan, Safety Element (2004; amended 2012)</b>	OGP Safety	City of Oakland
<b>City of Oakland Hazard Mitigation Plan</b>	HMP	City of Oakland
<b>City of Oakland Housing Equity Roadmap</b>	Equity Roadmap	City of Oakland
<b>Coliseum Area Specific Plan</b>	Coliseum SP	City of Oakland
<b>International Boulevard Transit-Oriented Development Plan (2011)</b>	Intl Blvd TOD	City of Oakland
<b>Resilient Oakland (2016)</b>	Resilient Oakland	City of Oakland; community-based organizations (CBOs)
<b>San Leandro Creek Trail Master Plan</b>	SL Creek Trail MP	City of San Leandro
<b>Adapting to Rising Tides, Transportation Vulnerability and Risk Assessment Pilot Project (2011)</b>	Rising Tides	Federal Highway Administration (FHWA); Metropolitan Transportation Commission (MTC); California Department of Transportation (Caltrans); Bay Area Rapid Transit (BART)
<b>Climate Change and Extreme Weather Adaptation Options for Transportation Assets in the Bay Area Pilot Project (2014)</b>	CCEWAO	MTC
<b>Oakland International Airport Master Plan (2006)</b>	Airport MP	Port of Oakland
<b>Healthy Development Guidelines (in progress)</b>	Healthy Development Guidelines	East Oakland Building Healthy Communities
<b>Alameda Climate Action and Adaptation Plan (in progress)</b>	ACAAP	City of Alameda



# **Appendix I**

## **Priority Issues, Plans, and Projects**

Issue	Existing Plans and Proposed Projects (proposed projects in bold)
<b>Neighborhood flooding/SLR</b>	<ul style="list-style-type: none"> <li>- OGP Safety</li> <li>- AGP Safety &amp; Noise</li> <li>- ECAP</li> <li>- Resilient Oakland</li> <li>- Rising Tides</li> <li>- CCEWAO                             <ul style="list-style-type: none"> <li>- <b>Damon Slough living levee</b></li> </ul> </li> <li>- Coliseum SP                             <ul style="list-style-type: none"> <li>- <b>Damon Slough living levee</b></li> <li>- <b>Elmhurst Creek connection to Damon Slough (earthen channel) and/or outlet to San Leandro Bay (underground culvert)</b></li> <li>- <b>EBMUD sewer main realignment</b></li> <li>- <b>Levee improvements</b></li> </ul> </li> <li>- HMP</li> <li>- TCC</li> <li>- ACAAP</li> </ul>
<b>I-880 flooding/SLR</b>	<ul style="list-style-type: none"> <li>- I-880 MP</li> <li>- Caltrans VA</li> <li>- Rising Tides</li> <li>- CCEWAO</li> </ul>
<b>BART Coliseum station and traction power flooding/SLR</b>	<ul style="list-style-type: none"> <li>- Rising Tides</li> <li>- CCEWAO – see neighborhood flooding strategies</li> <li>- Coliseum SP – see neighborhood flooding strategies</li> <li>- BART Adaptation Strategy</li> <li>- BART SAP</li> </ul>
<b>Oakland Airport flooding/SLR</b>	<ul style="list-style-type: none"> <li>- Airport MP</li> <li>- Rising Tides</li> <li>- CCEWAO</li> <li>- HMP                             <ul style="list-style-type: none"> <li>- Airport perimeter dike</li> <li>- Old Earhart Road floodwall improvements</li> </ul> </li> </ul>

Issue	Existing Plans and Proposed Projects (proposed projects in bold)
Coliseum Arena Complex flooding/SLR	<ul style="list-style-type: none"> <li>- CCEWAO               <ul style="list-style-type: none"> <li>- <b>Damon Slough living levee</b></li> </ul> </li> <li>- Coliseum SP               <ul style="list-style-type: none"> <li>- <b>Damon Slough living levee</b></li> <li>- <b>Elmhurst Creek connection to Damon Slough (earthen channel) and/or outlet to San Leandro Bay (underground culvert)</b></li> <li>- <b>EBMUD sewer main realignment</b></li> <li>- <b>Levee improvements</b></li> </ul> </li> </ul>
Oakland Coliseum Capitol Corridor/Amtrak Station flooding/SLR	<ul style="list-style-type: none"> <li>- CCEWAO – see neighborhood flooding strategies</li> <li>- Coliseum SP – see neighborhood flooding strategies</li> </ul>
Union Pacific rail mainline flooding/SLR	<ul style="list-style-type: none"> <li>- CCEWAO – see neighborhood flooding strategies</li> </ul>
Flood-prone channelization	<ul style="list-style-type: none"> <li>- OGP, OSCR               <ul style="list-style-type: none"> <li>- <b>Reducing creekside erosion and maintaining vegetation</b></li> </ul> </li> <li>- CCEWAO               <ul style="list-style-type: none"> <li>- <b>Damon Slough living levee</b></li> </ul> </li> <li>- Coliseum SP               <ul style="list-style-type: none"> <li>- <b>Damon Slough living levee</b></li> <li>- <b>Elmhurst Creek connection to Damon Slough (earthen channel) and/or outlet to San Leandro Bay (underground culvert)</b></li> </ul> </li> </ul>
Earthquake and liquefaction	<ul style="list-style-type: none"> <li>- HMP               <ul style="list-style-type: none"> <li>- <b>Earthquake Brace + Bolt Program (Residential Mitigation)</b></li> <li>- <b>Safer Housing for Oakland Soft Story Apartment Retrofit Program</b></li> <li>- <b>Earthquake Safe Homes Program</b></li> </ul> </li> <li>- Resilient Oakland</li> </ul>
Drought	<ul style="list-style-type: none"> <li>- HMP</li> <li>- Resilient Oakland</li> <li>- ACAAP</li> </ul>
Extreme Heat	<ul style="list-style-type: none"> <li>- HMP</li> <li>- Resilient Oakland</li> <li>- ACAAP</li> </ul>
Fire	<ul style="list-style-type: none"> <li>- HMP</li> <li>- Resilient Oakland</li> </ul>

Issue	Existing Plans and Proposed Projects (proposed projects in bold)
Over-reliance on fossil fuel energy sources	<ul style="list-style-type: none"> <li>- Resilient Oakland</li> <li>- Additional efforts:                             <ul style="list-style-type: none"> <li>- <b>East Bay Community Energy</b></li> </ul> </li> </ul>
I-880 mainline congestion	<ul style="list-style-type: none"> <li>- I-880 MP                             <ul style="list-style-type: none"> <li>- <b>I-880 intersection improvements</b></li> </ul> </li> <li>- Coliseum SP                             <ul style="list-style-type: none"> <li>- <b>Enhanced I-880 “Collector”</b></li> </ul> </li> </ul>
BART Coliseum station	<ul style="list-style-type: none"> <li>- BART TOD                             <ul style="list-style-type: none"> <li>- <b>Coliseum BART TOD and intermodal connection center</b></li> </ul> </li> <li>- OGP LUT</li> <li>- Coliseum SP                             <ul style="list-style-type: none"> <li>- <b>Elevated concourse for BART and Amtrak</b></li> </ul> </li> </ul>
Oakland Airport long-term land shortage and operational continuity	<ul style="list-style-type: none"> <li>- Airport MP                             <ul style="list-style-type: none"> <li>- <b>Expanded passenger terminal</b></li> <li>- <b>Airside expansion and improvements</b></li> </ul> </li> </ul>
Transport access inequity**	<ul style="list-style-type: none"> <li>- OGP Ped</li> <li>- Intl Blvd TOD                             <ul style="list-style-type: none"> <li>- <b>Intl Blvd TOD and BRT system</b></li> </ul> </li> <li>- TCC</li> <li>- ACAAP</li> <li>- Healthy Development Guidelines</li> </ul>
Low walkability scores, limited pedestrian connections, and safety concerns**	<ul style="list-style-type: none"> <li>- OGP Ped</li> <li>- Coliseum SP                             <ul style="list-style-type: none"> <li>- <b>Coliseum Way channel overcrossing replacement</b></li> <li>- <b>Bike and ped facilities on Edgewater Drive, 66th Avenue, Loop Road, Coliseum Way, and Hegenberger Road</b></li> <li>- <b>BART to Bay Trail alignment</b></li> <li>- <b>BART concourse ped enhancements</b></li> </ul> </li> <li>- TCC</li> <li>- ACAAP</li> <li>- Healthy Development Guidelines</li> </ul>

Issue	Existing Plans and Proposed Projects (proposed projects in bold)
<b>Limited bicycle connections and safety concerns**</b>	<ul style="list-style-type: none"> <li>- OGP Bicycle               <ul style="list-style-type: none"> <li>- <b>San Leandro St – 66th Ave to 75th Ave</b></li> <li>- <b>Hegenberger Rd – International Blvd to San Leandro St</b></li> <li>- <b>San Leandro St – 75th St to San Leandro border</b></li> <li>- <b>Coliseum BART to Bay Trail connector from San Leandro St to Oakport Rd</b></li> <li>- <b>East Bay Greenway from Fruitvale Ave to San Leandro border</b></li> </ul> </li> <li>- Coliseum SP               <ul style="list-style-type: none"> <li>- <b>Coliseum Way channel overcrossing replacement</b></li> <li>- <b>Bike and ped facilities on Edgewater Drive, 66th Avenue, Loop Road, Coliseum Way, and Hegenberger Road</b></li> <li>- <b>BART to Bay Trail alignment</b></li> <li>- <b>BART concourse bike enhancements</b></li> </ul> </li> <li>- TCC</li> <li>- ACAAP</li> <li>- Healthy Development Guidelines</li> <li>- East Oakland Collective bicycle plan</li> </ul>
<b>Local vehicular congestion</b>	<ul style="list-style-type: none"> <li>- Coliseum SP               <ul style="list-style-type: none"> <li>- <b>Loop Road local/freeway traffic separation</b></li> <li>- <b>Enhanced I-880 “Collector”</b></li> <li>- <b>Modifications to Coliseum street grid</b></li> </ul> </li> <li>- OGP LUT</li> <li>- AGP</li> </ul>

Issue	Existing Plans and Proposed Projects (proposed projects in bold)
<p><b>Limited access to open space and recreation areas</b></p>	<ul style="list-style-type: none"> <li>- OGP Open Space                             <ul style="list-style-type: none"> <li>- <b>Reducing creekside erosion and maintaining vegetation</b></li> <li>- <b>Better linking MLK shoreline and central East Oakland</b></li> <li>- <b>Public plaza at Coliseum BART</b></li> <li>- <b>Coliseum Gardens Park improvements</b></li> </ul> </li> <li>- OGP Estuary                             <ul style="list-style-type: none"> <li>- <b>Extending regional shoreline to Damon Slough</b></li> </ul> </li> <li>- Resilient Oakland</li> <li>- SL Creek Trail MP                             <ul style="list-style-type: none"> <li>- <b>Segment one landscaping and pavement repair</b></li> </ul> </li> <li>- Central Estuary AP                             <ul style="list-style-type: none"> <li>- <b>Tidewater Avenue and Lesser Street improvements to enhance access to MLK shoreline</b></li> </ul> </li> <li>- Coliseum SP</li> <li>- TCC</li> <li>- ACAAP</li> <li>- Healthy Development Guidelines</li> <li>- Additional initiatives:                             <ul style="list-style-type: none"> <li>- <b>Two ABAG Priority Conservation Areas: (1) East Bay Greenway; (2) Oakland Recreational Trails</b></li> </ul> </li> </ul>
<p><b>Threatened endangered species and habitat</b></p>	<ul style="list-style-type: none"> <li>- U.S. Fish and Wildlife Service</li> <li>- ACAAP</li> <li>- Airport MP</li> </ul>
<p><b>Bay Area trail discontinuity</b></p>	<p>NEED TO ADD BAY TRAILS information (do they have a plan?)</p> <ul style="list-style-type: none"> <li>- Additional initiatives:                             <ul style="list-style-type: none"> <li>- <b>Two ABAG Priority Conservation Areas: (1) East Bay Greenway; (2) Oakland Recreational Trails</b></li> </ul> </li> </ul>
<p><b>Lack of tree canopy and green infrastructure</b></p>	<ul style="list-style-type: none"> <li>- Resilient Oakland</li> <li>- Additional efforts:                             <ul style="list-style-type: none"> <li>- <b>Oakland green infrastructure plan (in development, FY19)</b></li> </ul> </li> <li>- TCC</li> <li>- ACAAP</li> </ul>
<p><b>I-880 air emissions**</b></p>	<ul style="list-style-type: none"> <li>- I-880 MP</li> <li>- TCC</li> </ul>

Issue	Existing Plans and Proposed Projects (proposed projects in bold)
<b>Poor local air quality**</b>	<ul style="list-style-type: none"> <li>- Intl Blvd TOD               <ul style="list-style-type: none"> <li>- <b>International Blvd TOD and BRT system</b></li> </ul> </li> <li>- TCC</li> <li>- ACAAP</li> <li>- Healthy Development Guidelines</li> <li>- Coliseum SP               <ul style="list-style-type: none"> <li>- <b>New buildings designed to achieve CalGreen Tier One standards and reflect LEED guidelines</b></li> </ul> </li> </ul>
<b>Food desert**</b>	<ul style="list-style-type: none"> <li>- Healthy Development Guidelines</li> <li>- ACAAP</li> <li>- Coliseum SP               <ul style="list-style-type: none"> <li>- <b>Provision of areas for community gardening</b></li> </ul> </li> </ul>
<b>Polluted creeks and bay</b>	<ul style="list-style-type: none"> <li>- Resilient Oakland</li> <li>- ACAAP</li> <li>- Additional efforts:               <ul style="list-style-type: none"> <li>- <b>Oakland green infrastructure plan (in development, FY19)</b></li> </ul> </li> </ul>
<b>Gentrification and displacement**</b>	<ul style="list-style-type: none"> <li>- TCC</li> <li>- ACAAP</li> <li>- Healthy Development Guidelines</li> <li>- ECAP</li> <li>- Equity Roadmap</li> <li>- Coliseum SP</li> <li>- Ongoing efforts               <ul style="list-style-type: none"> <li>- <b>Oakland Community Land Trust</b></li> <li>- <b>Black Culture Hub</b></li> </ul> </li> </ul>

Issue	Existing Plans and Proposed Projects (proposed projects in bold)
<p><b>Housing unaffordability**</b></p>	<ul style="list-style-type: none"> <li>- AGP Housing</li> <li>- OGP Housing</li> <li>- OGP LUT</li> <li>- Equity Roadmap</li> <li>- Resilient Oakland (2016)</li> <li>- Intl Blvd TOD</li> <li>- Resilient Oakland</li> <li>- Coliseum SP                             <ul style="list-style-type: none"> <li>- <b>Planned Coliseum area development includes goal of 5000 residential units</b></li> <li>- <b>Eight (8) housing opportunity sites in Coliseum project area (formerly owned by Oakland Redevelopment Agency)</b></li> </ul> </li> <li>- BART TOD                             <ul style="list-style-type: none"> <li>- <b>BART TOD program for Coliseum phase one: 110 units proposed; 50 percent affordable</b></li> </ul> </li> <li>- Is there a San Leandro master plan that was reviewed?</li> <li>- TCC</li> <li>- ACAAP</li> <li>- Healthy Development Guidelines</li> <li>- Additional initiatives:                             <ul style="list-style-type: none"> <li>- <b>ABAG Priority Development Area (Coliseum BART)</b></li> </ul> </li> </ul>
<p><b>Blighted properties</b></p>	<ul style="list-style-type: none"> <li>- Resilient Oakland</li> <li>- Additional efforts:                             <ul style="list-style-type: none"> <li>- <b>Oakland gap-funding for purchase and rehabilitation</b></li> <li>- <b>Oakland "From Blight to Homes" program</b></li> </ul> </li> </ul>
<p><b>Conflicts between residential and industrial uses</b></p>	<ul style="list-style-type: none"> <li>- OGP LUT</li> </ul>

Issue	Existing Plans and Proposed Projects (proposed projects in bold)
<b>Lack of large-scale economic drivers</b>	<ul style="list-style-type: none"> <li>- Coliseum SP               <ul style="list-style-type: none"> <li>- <b>5170 residential units</b></li> <li>- <b>470k SF retail</b></li> <li>- <b>84k SF office</b></li> <li>- <b>7.4m SF high-intensity campus/ office</b></li> <li>- <b>875 hotel rooms</b></li> <li>- <b>285k SF industrial/ logistics</b></li> <li>- <b>25ac parks</b></li> </ul> </li> <li>- Oakland Econ Dev               <ul style="list-style-type: none"> <li>- <b>Coliseum site development</b></li> </ul> </li> <li>- OGP LUT               <ul style="list-style-type: none"> <li>- <b>Coliseum site development</b></li> <li>- <b>NEED TO DETERMINE</b></li> </ul> </li> <li>- OGP Housing               <ul style="list-style-type: none"> <li>- <b>Coliseum site development</b></li> </ul> </li> <li>- Additional initiatives:               <ul style="list-style-type: none"> <li>- <b>ABAG Priority Development Area (Coliseum BART)</b></li> </ul> </li> </ul>
<b>Lack of community-led investment and economic pathways**</b>	<ul style="list-style-type: none"> <li>- Resilient Oakland</li> <li>- TCC</li> <li>- ACAAP</li> <li>- Healthy Development Guidelines</li> <li>- Additional initiatives:               <ul style="list-style-type: none"> <li>- <b>Black Cultural Zone (EastSide Arts Alliance)</b></li> <li>- <b>East Oakland Collective economic development plan (planning in progress)</b></li> <li>- <b>East Bay Community Energy (existing)</b></li> <li>- <b>ABAG Priority Development Area (Coliseum BART)</b></li> </ul> </li> </ul>



# **Appendix J**

## **Funding Opportunities**

Stakeholder(s)	Funding Source	Description
<b>Bay Area Council Foundation</b>	California Resilience Challenge	Grants for up to 10 diverse and replicable climate change resilience projects, with a goal of bringing these projects to shovel-readiness by the end of 2019. Focal areas include sea level rise, flood, drought, fire, and extreme heat. Fundraising ongoing, but PG&E provided a \$1 million shareholder-funded contribution to the Bay Area Council Foundation to jump-start efforts. RFPs to be released at Global Climate Action Summit in San Francisco in September 2018.
<b>Community Partners, Federal Reserve Bank of San Francisco, Low Income Investment Fund, Natural Resources Defense Council.</b>	Enterprise Strong, Prosperous, and Resilient Communities Challenge (SPARCC)	Through grant funding, technical assistance, and a learning network, SPARCC is propelling innovative local groups to execute on their visions for creating more equitable, prosperous, and resilient regions. SPARCC will advance local efforts to create neighborhood and systems-level change through five strategies: data collection and analysis, capital deployment, learning network, policy reform, and communications and influence. In addition, SPARCC aims to share what is learned from the sites for other cities and regions seeking to achieve similar goals.
<b>Partners for Places</b>	Regular grant program; Equity Pilot grant program	Provides partnership investments between \$25,000 and \$75,000 for one-year projects, or \$50,000 and \$150,000 for two-year projects. Goal is to build partnerships between local government sustainability offices and place-based foundations. Round 12 (currently ongoing) supports the creation of adaptation/resilience plans, in addition to community-focused sustainability, climate action, and comprehensive plans. Additionally, the invitation-only Equity Pilot grant (P4P-E) is designed to bolster collaboration between municipal sustainability staff and community leaders to increase equity.
<b>City of Oakland</b>	Measure KK (passed 2016)	\$600 million measure bond measure to fund local infrastructure projects and affordable housing
<b>San Francisco Bay Restoration Authority</b>	Measure AA (passed 2016)	\$12 per year parcel tax (estimated \$500 million over 20 years) to fund projects that reduce trash, pollution, and harmful toxins; improve water quality; restore habitat for fish, birds, and wildlife, protect communities from floods, and increase shoreline public access. Focused on Priority Conservation Areas, of which there are two in the plan area: (1) East Bay Greenway and (2) Oakland Recreational Trails

Stakeholder(s)	Funding Source	Description
<b>Association of Bay Area Governments (ABAG)</b>	Priority Development Area (PDA) Planning Grant Program	Funds Specific Plans that result in intensified land uses around public transit hubs and bus and rail corridors in the nine-county San Francisco Bay Area. Must be a Priority Development Area to apply. Latest round passed March 2018.
<b>ABAG</b>	PDA Technical Assistance Program	Provides customized consultant assistance to complete discrete projects that allow a city to overcome specific policy or planning challenges to the adoption or implementation of PDA plans. Must be a Priority Development Area to apply. Latest round passed March 2018.
<b>Metropolitan Transportation Commission</b>	One Bay Area Grant	<p>BAG includes both a regional program and a county program that:</p> <ul style="list-style-type: none"> <li>- Targets project investments in Priority Development Areas, or PDAs</li> <li>- Rewards cities and counties that approve new housing construction and accept allocations through the Regional Housing Need Allocation (RHNA) process</li> </ul> <p>Cities and counties can use these OBAG funds to invest in:</p> <ul style="list-style-type: none"> <li>- Local street and road maintenance</li> <li>- Streetscape enhancements</li> <li>- Bicycle and pedestrian improvements</li> <li>- Transportation planning</li> <li>- Safe Routes to School projects</li> <li>- Priority Conservation Areas (link is external)</li> </ul>
<b>California Department of Parks and Recreation</b>	Habitat Conservation Fund	Allocates approximately \$2 million each year to cities, counties, and districts. The program requires a 50% match. Eligible projects include: nature interpretation programs to bring urban residents into park and wildlife areas, protection of various plant and animal species, and acquisition and development of wildlife corridors and trails.
<b>California Department of Parks and Recreation</b>	Land and Water Conservation Fund (LWCF) grants	Funds the acquisition or development of land to create new outdoor recreation opportunities for the health and wellness of Californians. Current call for applications due September 19, 2018.
<b>California Department of Parks and Recreation</b>	Recreational Trails Program (RTP)	Provides funds annually for recreational trails and trails-related projects. The RTP is administered at the federal level by the Federal Highway Administration (FHWA). It is administered at the state level by the California Department of Parks and Recreation (DPR) and the Department of Transportation (Caltrans) Active Transportation Program (ATP). The annual non-motorized component for California is \$1.7 million.

Stakeholder(s)	Funding Source	Description
<b>U.S. Environmental Protection Agency</b>	Brownfields Program	Provides funds to empower states, communities, tribes, and nonprofits to prevent, inventory, assess, clean up, and reuse brownfield sites. EPA provides brownfields funding for three types of grants: Brownfields Assessment Grants, Brownfields Revolving Loan Fund (RLF) Grants, and Brownfields Cleanup Grants. EPA also offers Area-Wide Planning Grants to communities to research, plan and develop implementation strategies for cleaning up and revitalizing a specific area affected by one or more Brownfields sites.
<b>U.S. Department of Housing and Urban Development</b>	Community Development Block Grant Program	Provides communities with resources to address a wide range of unique community development needs. Per ABAG, jurisdictions have successfully used CDBG funds to retrofit housing for low-income owners.
<b>U.S. Federal Emergency Management Agency</b>	Pre-disaster Mitigation Grant Program (PDM)	Awards planning and project grants and provides opportunities for raising public awareness about reducing future losses before disaster strikes. Mitigation planning is a key process used to break the cycle of disaster damage, reconstruction, and repeated damage. PDM grants are funded annually by Congressional appropriations and are awarded on a nationally competitive basis.
<b>Alameda County</b>	Alameda County Measure BB (passed 2014)	Measure BB is projected to generate approximately \$8 billion in revenues from April 2015 to March 2045 for transportation improvements for Alameda County. Priorities are to Expand BART, bus, ferry and rail services; Keep fares affordable for youth, seniors and people with disabilities; Provide traffic relief by improving local streets and roads and highway corridors; Improve air quality and provide clean transportation by expanding bicycle and pedestrian paths and the regional rail network; Create good jobs within Alameda County by requiring local contracting and supporting community developments that improve access to jobs and schools.
<b>Alameda County</b>	Housing general obligation bond (passed 2016)	This Measure will raise 580 million dollars for affordable housing across Alameda County. All funds are dedicated to affordable housing needs in Alameda County. Includes both homeowner programs and rental housing programs.
<b>City of Oakland</b>	Affordable Housing trust fund	Provide loans and grants for the development of rental and owner occupied affordable housing.

Stakeholder(s)	Funding Source	Description
<b>Metropolitan Transportation Commission</b>	Regional Measure 3 (June 2018)	If approved by a majority of voters in Alameda, Contra Costa, Marin, Napa, San Francisco, San Mateo, Santa Clara, Solano and Sonoma counties, toll revenues would be used to finance a \$4.45 billion slate of highway and transit improvements in the toll bridge corridors and their approach routes. Includes \$150 million to be put toward Bay Trail and Safe Routes to Transit.
<b>California Climate Investments</b>	Various Cap and Trade-funded programs	<p>Proposed budget for FY2018-19 includes \$1.25 billion in funding for California Climate Investments. Funds numerous initiatives and relevant programs include:</p> <p><b>Transportation &amp; Sustainable Communities</b></p> <ul style="list-style-type: none"> <li>- Active Transportation*</li> <li>- Affordable Housing &amp; Sustainable Communities*</li> <li>- Community Air Protection*</li> <li>- Climate Change Research</li> <li>- Low Carbon Transit Operations*</li> <li>- Low Carbon Transportation</li> <li>- Transit &amp; Intercity Rail Capital*</li> <li>- Transformative Climate Communities</li> </ul> <p><b>Clean Energy &amp; Energy Efficiency</b></p> <ul style="list-style-type: none"> <li>- Low-Income Weatherization*</li> <li>- Water-Energy Efficiency*</li> </ul> <p><b>Natural Resources &amp; Waste Diversion Programs</b></p> <ul style="list-style-type: none"> <li>- Climate Ready Program and Climate Adaptation*</li> <li>- Urban Greening*</li> <li>- Waste Diversion (GGRF)*</li> <li>- Wetlands &amp; Watershed Restoration (GGRP)*</li> </ul> <p>*Detailed elsewhere in this table</p>
<b>California Coastal Conservancy</b>	Climate Ready Program grants	The California State Coastal Conservancy's Climate Ready Program is soliciting proposals for projects that use nature-based solutions to adapt to impacts of climate change. These grants seek to encourage local governments and non-governmental organizations to take action to prepare for a changing climate by advancing planning and implementation of projects that lessen the impacts of climate change, especially within disadvantaged communities. The State Coastal Conservancy has \$3.8 million available for Climate Ready grants. There are no set minimum or maximum grant amounts, but the Conservancy anticipates funding 5-10 projects.

Stakeholder(s)	Funding Source	Description
<b>Active Transportation Resource Center</b>	Active Transportation Program	<p>The ATP can fund many different project types to further the goals of the program. Planning, infrastructure or non-infrastructure projects like education, encouragement and enforcement activities are eligible in the general ATP. Only certain project types that have a quantifiable greenhouse gas reduction are eligible as part of California Climate Investments, such as construction of:</p> <ul style="list-style-type: none"> <li>- New bicycle paths or lanes</li> <li>- New pedestrian facilities</li> <li>- New or expanded bike share</li> </ul>
<b>California Strategic Growth Council / California Housing and Community Development</b>	Affordable Housing and Sustainable Communities (AHSC) program	<p>AHSC provides funding for affordable housing developments and related infrastructure, as well as sustainable transportation infrastructure, transportation-related amenities, and programs that encourage residents to walk, bike, and use transit. Some examples of what these investments can look like include housing construction or renovation; new transit vehicles; new or repaired sidewalks, bike lanes and paths; and improvements to transit stops and station areas.</p> <p>Represents 20% of California Climate Investments Program funds continuously appropriated annually. Project min. \$1 million; max. \$20 million.</p>
<b>California Air Resources Board</b>	Community Air Protection Program (AB 617)	<p>\$250 million in Greenhouse Gas Reduction Funds allocated to achieve early action emission reductions in the communities most burdened by air pollution. Targeting engine replacement, repower, and infrastructure projects in disadvantaged and low-income areas that support the goals of AB 617, which calls for community monitoring and action plans to reduce smog-forming and toxic emissions.</p>
<b>California Department of Transportation (Caltrans)</b>	Low Carbon Transit Operations Program	<p>Provides operating and capital assistance for transit agencies to reduce GHG emissions and improve mobility, with a priority on serving disadvantaged communities. Supports new or expanded bus, ferry, rail services, or transit facilities, and may include equipment acquisition, fueling, maintenance, fare reduction, voucher programs, ticket integration, bike rack additions, conversion of fleets to hybrid and/or zero emission technology, and other costs to operate those services or facilities.</p>

Stakeholder(s)	Funding Source	Description
<b>Caltrans</b>	Transit and Intercity Rail Capital Program (TIRCP)	Provides grants from the Greenhouse Gas Reduction Fund to fund transformative capital improvements that will modernize California's intercity, commuter, and urban rail systems, and bus and ferry transit systems to reduce emissions of greenhouse gases by reducing congestion and vehicle miles traveled throughout California. The goal of the TIRCP is to provide monies to fund transformative capital improvements that modernize California's intercity rail, bus, ferry and rail transit systems. Latest funding round passed on January 12, 2018.
<b>California Department of Community Services &amp; Development</b>	Low-Income Weatherization Program (LIWP)	LIWP installs solar photovoltaics (PV), solar hot water heaters, and energy efficiency measures in eligible low income single family and multi-family dwellings in disadvantaged communities to reduce GHG emissions and save energy.
<b>California Department of Water Resources</b>	Water-Energy Grant Program	<p>Provides funds to implement water efficiency programs or projects that reduce greenhouse gas emissions, and reduce water and energy use. Programs/projects include:</p> <ul style="list-style-type: none"> <li>- Commercial Water Efficiency or Institutional Water Efficiency Programs</li> <li>- Residential Water Efficiency Programs that benefit Disadvantaged Communities</li> <li>- Projects that reduce greenhouse gas, reduce water and reduce energy use</li> </ul> <p>There are no open solicitations at this time.</p>
<b>California Natural Resources Agency</b>	Urban Greening Grant Program.	Funds projects that reduce greenhouse gases by sequestering carbon, decreasing energy consumption and reducing vehicle miles traveled, while also transforming the built environment into places that are more sustainable, enjoyable, and effective in creating healthy and vibrant communities. These projects will establish and enhance parks and open space, using natural solutions to improving air and water quality and reducing energy consumption, and creating more walkable and bike-able trails. Latest funding round passed on April 11, 2018.

Stakeholder(s)	Funding Source	Description
<b>CalRecycle</b>	Greenhouse Gas Reduction Fund Grant and Loan Programs (GGRF)	Provides financial incentives in the form of grants and loans for capital investments in infrastructure for aerobic composting, anaerobic digestion and recycling and manufacturing facilities that will reduce greenhouse gas emissions. A priority is to realize environmental and economic benefits in disadvantaged and low-income communities.
<b>California Department of Fish and Wildlife</b>	Greenhouse Gas Reduction Program	Funds projects that provide carbon sequestration benefits, including restoration of wetlands, coastal watersheds and mountain meadows. In addition to furthering the goals of AB 32, these types of projects are integral to developing a more sustainable water management system statewide.

**Appendix K**  
**Federal and State**  
**Grant and Loan Programs**

# Federal & State Grant and Loan Programs

The following two tables outline major federal and state grants that could be used for resilience projects. For each program, there is a brief explanation of what it funds and/or finances, a description of how it is used in practice, key restrictions and regulations associated with the program, and an assigned broader resilience category from four topical areas examined in this document: 1) Capacity Building Programs 2) Coastal Protection/Flood Control 3) Water Supply/Wastewater Management and 4) Heat and Air Pollution Risk Management. The matrices identify if the program is only grants, only loans, or both. The federal matrix is organized alphabetically by administering agency.

The second table, State Grants & Loans for Resilience Projects, does not include any sources that are originated from federal appropriations discussed in Table 1. Furthermore, for state programs, funding is presented as the *source* of funding rather than the specific programs. For example, SB1, the Road Repair and Accountability Act of 2017, funds many different State programs but is presented here as SB1 with an explanation of where the funds come from (i.e. increases in vehicle and fuel fees and taxes).

**Table 1. Federal Grants & Loans for Resilience Projects**

Financing / Funding Tool	Explanation	Use & Examples	Restrictions & Regulations	Resilience Category(ies)
<b>Continuing Authority Program (ACE)<sup>1</sup></b>	A program to implement legislation that authorizes the Corps of Engineers to undertake specific types of water resources projects without the need for individual project authorization from Congress.	Use: Water resources projects.  Examples: shoreline erosion protection on public works sites and hurricane and storm damage reduction projects. <sup>2</sup>	Each type of project is subject to federal maximums. Funding is available for both feasibility planning and implementation.  The purposes are limited to what is expressly allowed by law.	Coastal Protection/Flood Control
<b>Flood Plain Management Services (ACE)<sup>3</sup></b>	Technical services and planning guidance for flood plain management.	Use: Assistance on determining flood formation, timing, depths, frequency and flood loss potential.  Examples: stormwater management, flood proofing, and hurricane evacuation.	100% federal expense unless requestor is a federal agency or private party.	Coastal Protection/Flood Control; Capacity Building Programs

<sup>1</sup> U.S. Army Corps of Engineers, "Continuing Authorities Program."

<sup>2</sup> Section 205 funds focus on flood control; section 103 focuses on beach erosion and reduction of damage due to hurricane and storms.

<sup>3</sup> U.S. Army Corps of Engineers, "Flood Plain Management Services."

Financing / Funding Tool	Explanation	Use & Examples	Restrictions & Regulations	Resilience Category(ies)
<b>Planning Assistance to States (ACE)</b> <sup>4</sup>	Funding for assistance to develop comprehensive plans for water conservation and related land resources.	Use: Plans addressing water resource issues.  Examples: water supply and demand, conservation, wetlands restoration, flood damage reduction, and coastal zone protection.	Cost sharing on a 50% federal – 50% non-federal basis.	Coastal Protection/Flood Control; Water Supply/Wastewater Management
<b>Property-Assessed Clean Energy</b> <sup>5</sup>	Funding for energy efficiency and renewable energy projects for residential and commercial privately-owned properties.	Use:  Examples:	PACE debt obligations are tied to the property rather than the property owner; can transfer if property is sold.  The loans are repaid by the property owner over time, typically a 10-20 year period.	Heat and Air Pollution Risk Management
<b>Water Infrastructure Finance and Innovation Program (EPA)</b> <sup>6</sup>	A federal program that supports water and wastewater infrastructure projects.	Use: Water and wastewater infrastructure; includes drought prevention.  Examples:	Can fund planning and preliminary design as well as construction, rehabilitation, and acquisition of property; WIFIA can fund up to 49% of project; federal share cannot be greater than 80% of eligible costs. <sup>7</sup>	Coastal Protection/Flood Control; Water Supply/Wastewater Management
<b>Brownfield Grant Programs (EPA)</b> <sup>8</sup>	For assessment, clean up, and reuse projects at contaminated properties.	Use: Projects include cleanup, revitalization of areas affected by brownfields, and planning and environmental assessments. <sup>9</sup>  Examples:	The three programs have an estimated \$50 million in funds for fiscal year 2018 subject to availability; 25% of the funds are expected to go towards sites with petroleum contamination. Each of the three programs has its own application guidelines and grant maximums (ranging between \$200,000 and \$1M per proposal).	Heat and Air Pollution Risk Management; Capacity Building Programs

<sup>4</sup> U.S. Army Corps of Engineers, "Planning Assistance to States."

<sup>5</sup> Department of Energy, "Property Assessed Clean Energy Programs."

<sup>6</sup> US EPA, "Learn About the WIFIA Program."

<sup>7</sup> For large communities (population greater than 25,000), project must be at minimum \$20 million; for small communities, must be minimum \$5 million. US EPA.US EPA.US EPA.US EPA.

<sup>8</sup> US EPA, "FY 2018 Brownfields Assessment, Revolving Loan Fund, and Cleanup Grant Guidelines."

<sup>9</sup> Grants have historically also funded workforce development and job training for residents of affected areas to learn environmental field-related skills.

Financing / Funding Tool	Explanation	Use & Examples	Restrictions & Regulations	Resilience Category(ies)
<p><b>Clean Water Act Section 319(h) (Nonpoint Source Pollution Control Program) (EPA)</b></p>	<p>Funds nonpoint source pollution management.</p>	<p>Use: Can fund technical and financial assistance, education and training, demonstration projects, technology transfer, and/or project monitoring.</p> <p>Examples:</p>	<p>319 funds have a strong focus on mitigating effects from agricultural sources; the second most common project source category is urban stormwater runoff.<sup>10</sup></p>	<p>Water Supply/Wastewater Management</p>
<p><b>Wetland Program Development Grants (WPDGs) (EPA)<sup>11</sup></b></p>	<p>Funds projects that increase state/tribal/local governments' capacity to improve wetland quality and increase quantity through restoration and conservation.</p>	<p>Use:</p> <p>Examples: Projects include research, experiments, training, surveying and studies related to water pollution, and demonstrations.</p>	<p>Proposals should address one or more of the Core Elements identified by the EPA that support a comprehensive wetland program 1) monitoring and assessment 2) voluntary restoration and protection 3) regulatory approaches 4) wetland-specific water quality standards.</p>	<p>Water Supply/Wastewater Management; Capacity Building Programs</p>
<p><b>Water Pollution Control Grants (Section 106) (EPA)<sup>12</sup></b></p>	<p>Supports projects that improve water quality management with an overarching goal of approaching watershed protection from the state-wide and basin-wide level.</p>	<p>Use: monitoring and assessment of water quality, water quality standards development, identification of impaired waters, management of national pollutant discharge elimination system permits, compliance and enforcement, protection of source water, and outreach and education program management.</p> <p>Examples:</p>	<p>Allocations are generated annually amounting to approximately \$18.5 million.<sup>13</sup> Funds are allocated to states in part based on extent of the pollution problem.<sup>14</sup> State applicants must have established methods to analyze data on navigable waters and provide the EPA with water quality inventory data.</p>	<p>Water Supply/Wastewater Management; Capacity Building Programs</p>

<sup>10</sup> Between 2008 and 2013, agriculture sources accounted for the majority of projects (nearly 2,000) and urban stormwater runoff was second (just over 1,500 projects). EPA, "National Nonpoint Source Program."

<sup>11</sup> EPA, "Wetland Program Development Grants."

<sup>12</sup> EPA, "Learn About the Water Pollution Control (Section 106) Grant Program."

<sup>13</sup> Additional funds are appropriated by Congress to support Monitoring Initiative Grants under Section 106 of the Clean Water Act

<sup>14</sup> If funding is the same as the previous year, state allotments remain the same.

Financing / Funding Tool	Explanation	Use & Examples	Restrictions & Regulations	Resilience Category(ies)
<b>5 Star Wetland and Urban Water Grants (EPA, Urban Waters Federal Partnership)<sup>15</sup></b>	Focused on projects that support wetland, riparian, in-stream and/or coastal habitat restoration as well as the development of local partnerships, community benefits and education and training programs.	Use: water monitoring, source water protection, stormwater management, stormwater runoff pollution management, urban tree canopy restoration.  Examples:	The 2017 program funded \$2.5 million for over 65 projects. Grant awardees committed \$5.2 million in local support.	Coastal Protection/Flood Control; Heat and Air Pollution Risk Management; Water Supply/Wastewater Management; Capacity Building Programs
<b>SF Bay Water Quality Improvement Fund (EPA)<sup>16</sup></b>	Overall goal of the program is to support restoration and protection projects along the San Francisco Bay.	Use: wetlands restoration, water quality restoration, reduction of urban runoff / greening urban development.  Examples:	2017 funding anticipated was \$4 million <sup>17</sup> with awards ranging between \$500,000 and \$2M. The Request for Proposals sought projections with a typical duration of 4 years. Proposers must match 50% of the total cost. <sup>18</sup>	Coastal Protection/Flood Control; Water Supply/Wastewater Management
<b>Pre-Disaster Mitigation Grant Program (FEMA)<sup>19</sup></b>	To support projects that reduce risk and decrease the need for future federal disaster recovery support.	Use: mitigation projects such as property acquisition and structure demolition/relocation, structure elevation, flood risk reduction projects, and wildfire mitigation.  Examples:	Grant recipients are responsible for at least 25% of project's costs. Must have a FEMA-approved hazard mitigation plan to be awarded funding.	Coastal Protection/Flood Control; Heat and Air Pollution Risk Management; Water Supply/Wastewater Management
<b>Hazard Mitigation Grant Program (FEMA)<sup>20</sup></b>	Primary goal is to help rebuild communities with increased resilience after a disaster.	Use: Long-term solutions that will decrease future damage in case of a major event.  Examples:	Available after major disaster declaration; amount of funding based on federal assistance for disaster recovery for the declared disaster. Project's potential savings must be greater than implementation costs. FEMA provides up to 75% of project costs.	Coastal Protection/Flood Control; Heat and Air Pollution Risk Management; Water Supply/Wastewater Management

<sup>15</sup> EPA, "The Five Star and Urban Waters Restoration Grant Program - 2017"; National Fish and Wildlife Foundation, "Five Star and Urban Waters Restoration Grant Program."

<sup>16</sup> EPA, "SF Bay Water Quality Improvement Fund."

<sup>17</sup> Funded under the authority of Section 320 of the Clean Water Act

<sup>18</sup> US EPA Region 9, "San Francisco Bay Water Quality Improvement Fund: Request for Proposals."

<sup>19</sup> FEMA, "Hazard Mitigation Assistance Guidance: Hazard Mitigation Grant Program, Pre-Disaster Mitigation Program, and Flood Mitigation Assistance Program"; FEMA, "FY2017 Pre-Disaster Mitigation (PDM) Grant Program Fact Sheet."

<sup>20</sup> HA Advisors, "Finance Guide for Resilient by Design Bay Area Challenge Design Teams." NHA Advisors, "Finance Guide for Resilient by Design Bay Area Challenge Design Teams."

Financing / Funding Tool	Explanation	Use & Examples	Restrictions & Regulations	Resilience Category(ies)
<p><b>Flood Mitigation Assistance Program (FEMA)</b><sup>21</sup></p>	<p>To support projects that reduce or eliminate flood damage risk to structures insured by the NFIP; prioritizes repetitive loss properties and severe repetitive loss properties.<sup>22</sup></p>	<p>Use: support flood mitigation projects such as localized flood reduction projects, acquisition and elevation of properties, and floodplain and stream restoration.</p> <p>Examples:</p>	<p>State allocation of funding is determined by percentage of NFIP policies. Grant recipients are responsible for at least 25% of project's costs.<sup>23</sup> Must have a FEMA-approved hazard mitigation plan to be awarded funding.</p>	<p>Coastal Protection/Flood Control; Heat and Air Pollution Risk Management; Water Supply/Wastewater Management</p>
<p><b>Federal Transportation Funding for Regional Transportation &amp; Air Quality Management (FHWA, FTA)</b></p>	<p>Congress distributes federal transportation dollars to metropolitan planning organizations in order to support projects outlined in Regional Transportation Plans. Additionally, the FHWA manages the Congestion Mitigation and Air Quality improvement program (CMAQ) to fund transportation related environmental projects.</p>	<p>Use: Transportation planning (including public transit, bicycle and pedestrian projects, roads, and highway projects)</p> <p>Examples: The Bay Area receives roughly \$150 million annually, which is distributed by the Metropolitan Transportation Commission (MTC) to support priorities outlined in Plan Bay Area, which include housing and transportation-oriented goals<sup>24</sup></p>	<p>The level of funding and the associated regulations are determined by Congress. The most recent federal Transportation Bill is the Fixing America's Surface Transportation (FAST) Act, passed in 2015 with funding through 2020. The funds have different requirements of how they can be spent.<sup>25</sup></p>	<p>Heat and Air Pollution Risk Management; Capacity Building Programs</p>
<p><b>Regional Resiliency Assessment Program (Homeland Security)</b><sup>26</sup></p>	<p>Cooperative and voluntary assessment led by the Office of Infrastructure Protection to improve resilience of critical infrastructure that could have regional or national consequences.</p>	<p>Use: energy, transportation systems, commercial facilities, and food and agriculture.</p> <p>Examples:</p>	<p>The projects typically consist of a year-long data collection and analysis phase with continual technical assistance to improve resilience beyond that. Capacity building workshops and assessments, such as first responder capability assessments, can be incorporated.</p>	<p>Coastal Protection/Flood Control; Heat and Air Pollution Risk Management; Water Supply/Wastewater Management; Capacity Building Programs</p>

<sup>21</sup> NHA Advisors; FEMA, "Hazard Mitigation Assistance Guidance: Hazard Mitigation Grant Program, Pre-Disaster Mitigation Program, and Flood Mitigation Assistance Program"; FEMA, "FY2017 Flood Mitigation Assistance (FMA) Grant Program."

<sup>22</sup> The Biggert-Waters Flood Insurance Reform Act of 2012 consolidated the former Repetitive Flood Claims and Severe Repetitive Loss grants into the Flood Mitigation Program

<sup>23</sup> This amount can be reduced to 10% if State also has a FEMA-approved mitigation plan that demonstrates actions to reduce number of severe repetitive loss properties.

<sup>24</sup> This money does not include the roughly \$420 million received from Federal Transit Administration funds which are dedicated to transit fleet capital and operations

<sup>25</sup> Metropolitan Transportation Commission, "Federal Funding."

<sup>26</sup> U.S. Department of Homeland Security, "Homeland Security Regional Resiliency Assessment Program."

Financing / Funding Tool	Explanation	Use & Examples	Restrictions & Regulations	Resilience Category(ies)
<b>Capacity Building for Community Development and Affordable Housing Grants (HUD)</b> <sup>27</sup>	A fund dedicated to three non-profit organizations to support community development corporations and community housing development organizations.	Use: affordable housing and community development programs for low and moderate-income people and families.  Examples:	Limited applicability in that applicant must be one of the three identified organizations.	Capacity Building Programs
<b>LEAD Programs (HUD)</b> <sup>28</sup>	HUD administers several programs to identify and remediate lead based paint hazards for privately owned homes.	Use: Lead-Based Paint Hazard Control Grant Program (LBPHC; open to all jurisdictions), Lead Hazard Reduction Program (LHRD; targeted to urban jurisdictions), and the Lead Technical Studies Grant Program (for research on effectiveness of methods).  Examples:	Each program has different match requirements. <sup>29</sup>	Heat and Air Pollution Risk Management
<b>Choice Neighborhoods (Implementation and Planning) Grants (HUD)</b> <sup>30</sup>	Oriented towards supporting communities and improving neighborhoods in distressed HUD housing areas.	Use: replacing distressed public and assisted housing with higher quality mixed income housing 2) support the community through improvements in employment, health programs and education and 3) invest in neighborhood assets.  Examples:	Restricted to areas that have HUD-assisted housing.	Capacity Building Programs

<sup>27</sup> U.S. Department of Housing and Urban Development, "FY2017 Capacity Building for Community Development and Affordable Housing Grants (Section 4)."

<sup>28</sup> U.S. Department of Housing and Urban Development, "The Lead Technical Studies Grant Program - HUD"; U.S. Department of Housing and Urban Development, "The Lead-Based Paint Hazard Control and Lead Hazard Reduction Grant Programs - HUD."

<sup>29</sup> Lead Technical Studies Grant Program does not require a match; Lead-Based Paint Hazard Control Grant Program requires 10% match; Lead Hazard Reduction Program requires 25% match

<sup>30</sup> U.S. Department of Housing and Urban Development, "HUD Public and Indian Housing Choice Neighborhoods Planning Grants Program."

Financing / Funding Tool	Explanation	Use & Examples	Restrictions & Regulations	Resilience Category(ies)
<p><b>Community Development Block Grants (HUD)</b><sup>31</sup></p>	<p>Supports a wide range of projects oriented towards providing community resources including housing and economic opportunities.</p>	<p>Use: relocation and demolition, public infrastructure and services, energy conservation projects, job creation, residential rehabilitation.<sup>32</sup></p> <p>Examples:</p>	<p>There is typically around \$3 billion appropriated to CDBG grants annually. There are a number of specific programs within CDBG, including Section 108 Loan Guarantee Program, the CDBG Disaster Recovery Program (focused on low-income areas in declared-disaster regions), and the Brownfields Economic Development Initiative. No requirement for local government matching.</p>	<p>Coastal Protection/Flood Control; Heat and Air Pollution Risk Management; Water Supply/Wastewater Management; Capacity Building Programs</p>
<p><b>Coastal Resilience Grants (NOAA)</b><sup>33</sup></p>	<p>Help coastal communities and habitats both prepare for extreme weather events and climate change as well as recover from disasters.</p>	<p>Use: FY2018 project solicitation focused on building resilience through habitat restoration.</p> <p>Examples:</p>	<p>Proposals may request \$75,000 to \$2 million of federal funds.</p>	<p>Coastal Protection/Flood Control</p>
<p><b>Office of Coastal Management Grants and Cooperative Agreements (NOAA)</b><sup>34,35</sup></p>	<p>Authorized by the Coastal Zone Management Act to protect, restore and responsibly develop coastal resources and communities.</p>	<p>Use: managing development in high risk areas, protection of natural resources, access to public recreation, and prioritizing coastal-dependent land uses.</p> <p>Examples:</p>	<p>In fiscal 2017, the allocation amounted to roughly \$70M in funds. Section 306 (administrative grants) and 306A (Coastal Resource Improvement Program Grants) funds require one-to-one match; Section 309 (Coastal Zone Enhancement Program Grants) funds do not require a match.</p>	<p>Coastal Protection/Flood Control</p>

<sup>31</sup> U.S. Department of Housing and Urban Development, “Community Development Block Grant Program - CDBG.”

<sup>32</sup> U.S. Department of Housing and Urban Development, “State CDBG Program Eligibility Requirements.”

<sup>33</sup> National Oceanic and Atmospheric Administration, “NOAA Coastal Resilience Grants Program.”

<sup>34</sup> National Oceanic and Atmospheric Administration, “About the National Coastal Zone Management Program.”

<sup>35</sup> National Oceanic and Atmospheric Administration, “Memorandum for: Commonwealth, State, and Territorial Coastal Program Managers.”

Financing / Funding Tool	Explanation	Use & Examples	Restrictions & Regulations	Resilience Category(ies)
<b>National Sea Grant College Program (NOAA)</b> <sup>36</sup>	Focused on supporting a sustainable ocean, coastal, and Great Lakes aquaculture sector through technology, research and education, and resilient design.	Use: projects that increase aquaculture production  Examples:	Maximum of \$750,000. Expected to have between \$7M-\$11.5M for fiscal years 2018-2020. Non-federal matching funds must meet at minimum 50% for each year of requested funding.	Coastal Protection/Flood Control; Water Supply/Waster Water Management
<b>North American Wetlands Conservation Act Grants (U.S. Fish and Wildlife Service)</b> <sup>37</sup>	Funds projects focused on supporting bird populations and their wetland habitats.	Use: Projects are funded through the Standard Grants or Small Grants program (for projects up to \$100,000). <sup>38</sup>  Examples:	Funding is provided for projects in Canada, Mexico, and the United States. Grants must be matched at minimum of one-to-one. In 2017, \$21.9 million was approved for wetland conservation projects with local matches of over \$45 million. <sup>39</sup>	Coastal Protection/Flood Control; Water Supply/Waster Water Management
<b>National Coastal Wetlands Conservation Grant Program (U.S. Fish and Wildlife Service)</b> <sup>40</sup>	Acquisition, restoration, and enhancement of wetlands and associated uplands.	Use: acquisition of wetlands, protection of wildlife habitat, and saltmarsh restoration.  Examples:	Grants can be up to \$1 million. In 2017, grants amounted to over \$17 million to 20 projects with local contributions amounting to over \$20 million.	Coastal Protection/Flood Control; Water Supply/Waster Water Management
<b>Rural Development (USDA)</b> <sup>41</sup>	Focused on: housing and community facilities, business and cooperative programs, and rural utilities programs.	Use: water and waste collection and treatment systems, renewable energy investments, and affordable housing rehabilitation.  Examples:	Location must be a rural area with small population (typically with a max of 35,000- 50,000 population).	Water Supply/Waster Water Management

<sup>36</sup> National Oceanic and Atmospheric Administration, "Sea Grant Funding Opportunities"; Department of Health and Human Services, "NOAA National Sea Grant College Program 2018 Ocean, Coastal and Great Lakes National Aquaculture Initiative Department of Commerce."

<sup>37</sup> U.S. Fish and Wildlife Service, "North American Wetlands Conservation Act."

<sup>38</sup> Project partners often include recreational and conservation organizations, including ranches and sporting clubs aiming to support the hunting, fishing and outdoor recreation industry.

<sup>39</sup> U. S. Fish and Wildlife Service, "Secretary Zinke Announces Boost to Wetland, Waterfowl Conservation, Access to Public Lands Through Conservation Grants, Federal Duck Stamp Funds."

<sup>40</sup> U.S. Fish and Wildlife Service, "National Coastal Wetlands Conservation Grant Program."

<sup>41</sup> United States Department of Agriculture, "USDA Rural Development Summary of Major Programs."

## Table 2. California Grants & Loans

Financing / Funding Tool	Explanation	Use & Examples	Restrictions & Regulations	Resilience Category(ies)
California Capital Access Program (CalCAP)	Administered by the California Pollution Control Financing Authority (CPCFA) to address small business financing	Use: to support small businesses that traditionally have difficulty getting financing; CalCAP can provide up to 100% coverage for loan defaults <sup>42</sup>  Examples:	Maximum loan size is \$1.5M. <sup>43</sup>	Coastal Protection/Flood Control; Heat and Air Pollution Risk Management; Water Supply/Wastewater Management
California Recycle Underutilized Sites (CALReUse)	Administered by the California Pollution Control Financing Authority (CPCFA) to support brownfield redevelopment	Use: to clean contaminated lands and support reuse <sup>44</sup>  Examples:	Can provide up to \$300,000 for general projects or up to \$500,000 for housing projects.	Coastal Protection/Flood Control; Heat and Air Pollution Risk Management; Water Supply/Wastewater Management
Cap and Trade	California is the only state in the country to administer a cap-and trade program. Proceeds go into the Greenhouse Gas Reduction Fund, which supports many programs throughout the state (some of which are allocated annual appropriations).	Use: Programs that reduce greenhouse gas emissions  Example: The Affordable Housing and Sustainable Communities (AHSC) program receives 20% continuous appropriation to support development that encourages transit usage and active transportation modes by building housing in infill areas with high transit accessibility. As of 2017, the AHSC program funding to date amounted to \$915 million. <sup>45</sup>	Each Greenhouse Gas Reduction Fund grant has its own application requirements but overall, projects must contribute towards the State's overall greenhouse gas reduction goals. Since funding is reliant on Cap and Trade proceeds, the amount can vary year over year. 2017 Greenhouse Gas Reduction Funds totaled \$9201M and 2018 appropriations amount to \$1.6B. <sup>46</sup>	Coastal Protection/Flood Control; Heat and Air Pollution Risk Management; Water Supply/Wastewater Management; Capacity Building Programs
Highway users tax account: CA Natural Resources Agency		Use: mitigation of environmental effects of transportation facilities  Example:		

<sup>42</sup> <http://www.treasurer.ca.gov/cpcfca/calcap/annual/2016.pdf>

<sup>43</sup> Loans available to business with 100 or fewer employees. Michael Papanian, "California Biomass Collaborative Forum."

<sup>44</sup> <http://www.treasurer.ca.gov/cpcfca/calreusel/faq.pdf>;

<sup>45</sup> California Air Resources Board, "California Climate Investments: Appropriations from the Greenhouse Gas Reduction Fund."

<sup>46</sup> California Air Resources Board, "Greenhouse Gas Reduction Fund Appropriations by Fiscal Year (As of December 15, 2017)."

Financing / Funding Tool	Explanation	Use & Examples	Restrictions & Regulations	Resilience Category(ies)
Proposition 1 (2014) <sup>47</sup>	Passed in 2014, Proposition 1 authorized roughly \$7.5 billion in general obligation bonds to fund water projects.	Use: 20 different programs are funded with Proposition 1 funds that fall under the following general categories: water pollution control, flood and stormwater management, watershed protection, water efficiency and recycling, and groundwater sustainability <sup>48</sup>  Example:	Guidelines vary by program.	Coastal Protection/Flood Control; Heat and Air Pollution Risk Management; Water Supply/Wastewater Management
Proposition 84				
Revolving Fund: Clean Water State Revolving Fund	First established by the 1987 amendments to the Clean Water Act, the Clean Water State Revolving Fund is a partnership with the EPA and State Water Resources Control Board. <sup>49</sup> Funding comes both from federal and state funds (including Proposition 1).	Use: to protect or improve public health and / or water quality. <sup>50</sup>  Examples: \$25B low-interest loan for nearly 16,000 acres of forestland in Mendocino County watersheds to support watershed protection and enhancement <sup>51</sup>	The CWSRF does not have a maximum financing limit and offers low-interest 30-year loans. While both public and private sector entities can apply, nearly all projects to date (96%) have funded publicly owned wastewater infrastructure. <sup>52</sup>	Coastal Protection/Flood Control; Water Supply/Wastewater Management
Revolving Fund: Infrastructure State Revolving Fund	Administered by the Governor's Office of Business and Economic Development. Financing repayments can be provided by a variety of sources including: utility revenues, general fund revenues, property assessments, Mello-Roos taxes, and other special taxes.	Use: funds both infrastructure projects and economic expansion projects; : infrastructure projects can relate to: drainage, water supply and treatment, flood control, wastewater treatment, environmental mitigation; economic expansion projects relate to facilities for industrial, utility, commercial, educational, cultural or social purposes  Examples:	The Infrastructure State Revolving Fund offers loans ranging from \$50,000 to \$25 million with maturities lasting up to the expected life of the asset with a maximum of 30 years.	Coastal Protection/Flood Control; Water Supply/Wastewater Management

<sup>47</sup> California Environmental Protection Agency State Water Resources Control Board, "Financial Assistance Funding - Grants and Loans: Proposition 1."

<sup>48</sup> California Natural Resources Agency, "Prop. 1 Programs."

<sup>49</sup> <https://www.epa.gov/cwsrf/learn-about-clean-water-state-revolving-fund-cwsrf>;

[https://www.waterboards.ca.gov/board\\_decisions/adopted\\_orders/resolutions/2017/cwsrf\\_iup\\_sfy2017\\_18\\_final.pdf](https://www.waterboards.ca.gov/board_decisions/adopted_orders/resolutions/2017/cwsrf_iup_sfy2017_18_final.pdf)

<sup>50</sup> [https://www.waterboards.ca.gov/board\\_decisions/adopted\\_orders/resolutions/2017/cwsrf\\_iup\\_sfy2017\\_18\\_final.pdf](https://www.waterboards.ca.gov/board_decisions/adopted_orders/resolutions/2017/cwsrf_iup_sfy2017_18_final.pdf)

<sup>51</sup> Presentation: An Introduction to the California Clean Water State Revolving Fund

<sup>52</sup> [https://www.waterboards.ca.gov/board\\_decisions/adopted\\_orders/resolutions/2017/cwsrf\\_iup\\_sfy2017\\_18\\_final.pdf](https://www.waterboards.ca.gov/board_decisions/adopted_orders/resolutions/2017/cwsrf_iup_sfy2017_18_final.pdf)

Financing / Funding Tool	Explanation	Use & Examples	Restrictions & Regulations	Resilience Category(ies)
Revolving Fund: Drinking Water State Revolving Fund	First established by the 1996 amendments to the Safe Drinking Water Act, the Drinking Water State Revolving Fund is a partnership with the EPA and State Water Resources Control Board. <sup>53</sup> Funding comes both from federal and state funds (including Proposition 1). <sup>54</sup>	Use: drinking water and water capacity projects including treatment systems, distribution systems, water meters  Examples:	Funding available for public and privately-owned water systems. Repayment term is 20 years or up to 30/useful life if the water systems serve disadvantaged communities. <sup>55</sup>	Coastal Protection/Flood Control; Water Supply/Wastewater Management
SB1 <sup>56</sup>	The Road Repair and Accountability Act of 2017 (SB1) increases state revenues for the State’s transportation system roughly \$5.2 billion annually over the next ten years from increases in fuel and vehicles taxes and fees. The funds will go towards projects that decrease congestion, improve trade corridors, improve transit, and support active transportation. <sup>57</sup>	Use: local and regional planning grants (including specific adaptation planning grants) <sup>58</sup> , university transportation research, commuter and intercity rail projects, and road maintenance and rehabilitation, among others. Additionally, \$5 million will be dedicated annually to workforce development  Examples:	State maintained infrastructure will receive half of the grants, while the remainder will fund local transit agencies and roads as well as pedestrian and bicycle infrastructure.	Heat and Air Pollution Risk Management; Capacity Building Programs
SB445 (2014) <sup>59</sup>	Funds projects remediate harm or threat of harm to the environment and / or human health and safety from surface or groundwater contamination	Use: Eligible projects may include site assessment, identification of the source, or clean up  Examples:	No match requirements or funding request limits. The program has an annual appropriation of \$19.5M.	Water Supply/Wastewater Management

<sup>53</sup> [https://www.waterboards.ca.gov/board\\_decisions/adopted\\_orders/resolutions/2017/cwsrf\\_iup\\_sfy2017\\_18\\_final.pdf](https://www.waterboards.ca.gov/board_decisions/adopted_orders/resolutions/2017/cwsrf_iup_sfy2017_18_final.pdf)

<sup>54</sup> [https://www.waterboards.ca.gov/drinking\\_water/services/funding/documents/annualrpts/dwsrf\\_annual\\_report\\_1516.pdf](https://www.waterboards.ca.gov/drinking_water/services/funding/documents/annualrpts/dwsrf_annual_report_1516.pdf)

<sup>55</sup> [https://www.waterboards.ca.gov/drinking\\_water/services/funding/dwsrf\\_basics.shtml](https://www.waterboards.ca.gov/drinking_water/services/funding/dwsrf_basics.shtml)

<sup>56</sup> There is a proposed ballot initiative for the 2018 election that would require a majority voter approval for any levy, increase, or extension on gas or diesel fuel taxes. If approved, this initiative would eliminate SB1 funding sources.

<sup>57</sup> Legislative Analyst’s Office, “Overview of the 2017 Transportation Funding Package.”

<sup>58</sup> <http://www.dot.ca.gov/hq/tpp/grants.html>

<sup>59</sup> California Environmental Protection Agency State Water Resources Control Board, “Site Cleanup Subaccount Program.”

Financing / Funding Tool	Explanation	Use & Examples	Restrictions & Regulations	Resilience Category(ies)
SB5 (To be submitted to voters in June 2018 election) <sup>60</sup>	If approved, would authorize \$4 billion in general obligation bonds for parks, water, and flood control infrastructure	Use: groundwater remediation, safe drinking water provision, habitat preservation, coastal watershed protection, and park construction and rehabilitation  Examples:	This fund is pending voter approval.	Coastal Protection/Flood Control; Heat and Air Pollution Risk Management; Water Supply/Wastewater Management
Timber Regulation and Forest Restoration Fund (TRFRF)	Administered by CAL-Fire, the Department of Fish and Wildlife, and the California State Water Resource Control Board. TRFRF collects a 1% assessment on wood products. <sup>61</sup>	Use: forest restoration, data management, ecological performance assessment development, support the goals of the California Urban Forestry Act and the California Forest Improvement Program; TRFRF is also tasked with maintaining a minimum \$4 million reserve. In 2016-17, about 1/5 <sup>th</sup> of the budget for the Timber Regulation and Forest Restoration Program was budgeted for local assistance grants.  Examples: CFIP is the largest program to receive funding from TRFRF, and is administered by CAL-FIRE. California Forest Improvement Program provides funds to forest landowners to support reforestation, healthy forest management, planning, and resource management, including: funds to plant, thin, and prune trees, to conserve land, and to improve fish and wildlife habitat. <sup>62</sup>	CFIP requires landowners own at minimum 20 acres of forestland and no more than 5,000 acres (however smaller landowners can join together to submit a combined application). <sup>63</sup>	Heat and Air Pollution Risk Management

<sup>60</sup> California State Senate Majority Caucus, "Legislature Sends Landmark Parks, Water, and Flood Control Bond to Governor's Desk."

<sup>61</sup> [http://resources.ca.gov/docs/forestry/AB-1492\\_Annual\\_Report\\_2016\\_to\\_Legislature\\_FINAL.pdf](http://resources.ca.gov/docs/forestry/AB-1492_Annual_Report_2016_to_Legislature_FINAL.pdf)

<sup>62</sup> <http://www.lao.ca.gov/Publications/Report/3558>; [http://calfire.ca.gov/resource\\_mgt/downloads/CFIP/CFIP\\_UsersGuide\\_2012Version\\_031212\\_FINAL.pdf](http://calfire.ca.gov/resource_mgt/downloads/CFIP/CFIP_UsersGuide_2012Version_031212_FINAL.pdf)

<sup>63</sup> [http://calfire.ca.gov/resource\\_mgt/downloads/CFIP/CFIP%20User's%20Guide%202017.pdf](http://calfire.ca.gov/resource_mgt/downloads/CFIP/CFIP%20User's%20Guide%202017.pdf)



# **Appendix L**

## **Governance and Regulatory Tables**

Agency with Jurisdiction	Regulation(s)	Required Authorization
<b>Creek and Floodplain Restoration and Enhancement</b>		
<b>San Francisco Bay Regional Water Quality Board (RWQB)</b>	Clean Water Act, Sections 401 and 402  California Porter-Cologne Water Quality Control Act	401 Water Quality Certification or Waste Discharge Requirements, National Pollutant Discharge Elimination System (NPDES) general permit for discharge of stormwater from construction sites
<b>U.S. Army Corps of Engineers (USACE)</b>	Federal Clean Water Act Section 404  Rivers and Harbors Act Section 10, Section 14, 408  National Environmental Policy Act (NEPA)	Permits for dredge and fill activities below ordinary high water mark in waters of the United States; Permits for alteration of Federal levees, Federal action requires NEPA compliance
<b>National Oceanic and Atmospheric Administration Fisheries (NOAA Fisheries; also known as the National Marine Fisheries Service[NMFS])</b>	Magnuson-Stevens Fishery Conservation and Management Act  Endangered Species Act (ESA)	Consultation for work within Essential Fish Habitat, Authorization for “take” of steelhead under ESA Section 7 through consultation with NOAA Fisheries
<b>U.S. Fish and Wildlife Service (USFWS)</b>	ESA	Authorization for “take” of terrestrial species under ESA section 7 through consultation with USFWS
<b>California Department of Fish and Wildlife (CDFW)</b>	California Endangered Species Act (CESA)  California Fish and Game Code 2081  California Fish and Game Code Section 1602	Authorization for “take” under Section 2081 of CFGC determined through consultation with CDFW, Streambed Alteration Agreement for activities in bed/bank of jurisdictional stream
<b>State Office of Historic Preservation</b>	National Historic Preservation Act State Office of Historic Preservation requirements California Public Resources Code Section 106	Authorization under Section 106 of the National Historic Preservation Act
<b>San Francisco Bay Conservation and Development Commission (BCDC)</b>	California McAteer-Petris Act  Federal Coastal Zone Management Act	Permits for consistency with the San Francisco Bay (Bay) Plan and Bay Plan policies that guide future uses of the Bay and shoreline areas.
<b>California State Lands Commission</b>	Surface and Submerged Lands Lease	Authorization if located on state aquatic lands
<b>Bay Area Air Quality Management District</b>	Authority to Construct/ Permit to Operate	Permit to operate a facility or equipment that may emit pollutants from a stationary source into the atmosphere
<b>Alameda County</b>	Local plans and regulations	Permitting for activities in unincorporated Alameda county or County right-of-way, near watercourses, or encroach on District flood control facilities.

Agency with Jurisdiction	Regulation(s)	Required Authorization
<b>City of Oakland</b>	Local plans and regulations	Permitting entity for work on City land or public right-of-way, or impacts natural habitat.
<b>California Department of Transportation (Caltrans)</b>	Section 660 of California Streets and Highways Code	Encroachment permit for activities in the state highway right-of-way
<b>Bicycle and Pedestrian Connectivity</b>		
<b>San Francisco Bay Regional Water Quality Board</b>	Clean Water Act, Sections 401 and 402 California Porter-Cologne Water Quality Control Act	Waste Discharge Requirements, National Pollutant Discharge Elimination System (NPDES) general permit for discharge of stormwater from construction sites
<b>State Office of Historic Preservation</b>	National Historic Preservation Act State Office of Historic Preservation requirements California Public Resources Code Section 106	Authorization under Section 106 of the National Historic Preservation Act
<b>San Francisco Bay Conservation and Development Commission</b>	California McAteer-Petris Act Federal Coastal Zone Management Act	Permits for consistency with the Bay Plan and Bay Plan policies that guide future uses of the Bay and shoreline areas.
<b>Bay Area Air Quality Management District</b>	Authority to Construct/ Permit to Operate	Permit to operate a facility or equipment that may emit pollutants from a stationary source into the atmosphere
<b>Alameda County</b>	Local plans and regulations	Permitting for activities in unincorporated Alameda county or County right-of-way, near watercourses, or encroach on District flood control facilities.
<b>City of Oakland</b>	Local plans and regulations	Permitting entity for work on City land or public right-of-way, or impacts natural habitat.
<b>California Department of Transportation</b>	Section 660 of California Streets and Highways Code	Encroachment permit for activities in the state highway right-of-way
<b>Port of Oakland</b>	City of Oakland Charter, Section 707 Port	Development Permit is issued for alteration of property within the Port Area.
<b>Bay Shoreline Restoration and Enhancement</b>		
<b>San Francisco Bay Regional Water Quality Board</b>	Clean Water Act, Sections 401 and 402 California Porter-Cologne Water Quality Control Act	401 Water Quality Certification or Waste Discharge Requirements, National Pollutant Discharge Elimination System (NPDES) general permit for discharge of stormwater from construction sites

Agency with Jurisdiction	Regulation(s)	Required Authorization
<b>U.S. Army Corps of Engineers</b>	Federal Clean Water Act Section 404 Rivers and Harbors Act Section 10, Section 14, 408 National Environmental Policy Act (NEPA)	Permits for dredge and fill activities below ordinary high water mark in waters of the United States; Permits for alteration of Federal levees, Federal action requires NEPA compliance
<b>NOAA Fisheries (NMFS)</b>	Magnuson-Stevens Fishery Conservation and Management Act Marine Mammal Protection Act Endangered Species Act	Consultation for work within Essential Fish Habitat, Authorization for Incidental "take" of marine mammals, Authorization for "take" of steelhead under ESA Section 7 through consultation with NOAA Fisheries
<b>U.S. Fish and Wildlife Service</b>	Endangered Species Act	Authorization for "take" of terrestrial species under ESA Section 7 through consultation with USFWS
<b>California Department of Fish and Wildlife</b>	California Endangered Species Act California Fish and Game Code 2081 California Fish and Game Code Section 1602	Authorization for "take" under Section 2081 of CFGC determined through consultation with CDFW, Streambed Alteration Agreement for activities in bed/bank of jurisdictional stream
<b>State Office of Historic Preservation</b>	National Historic Preservation Act State Office of Historic Preservation requirements California Public Resources Code Section 106	Authorization under Section 106 of the National Historic Preservation Act
<b>San Francisco Bay Conservation and Development Commission</b>	California McAteer-Petris Act Federal Coastal Zone Management Act	Permits for consistency with the Bay Plan and Bay Plan policies that guide future uses of the Bay and shoreline areas.
<b>California State Lands Commission</b>	Surface and Submerged Lands Lease	Authorization if located on state aquatic lands
<b>Bay Area Air Quality Management District</b>	Authority to Construct/ Permit to Operate	Permit to operate a facility or equipment that may emit pollutants from a stationary source into the atmosphere
<b>Alameda County</b>	Local plans and regulations	Permitting for activities in unincorporated Alameda county or County right-of-way, near watercourses, or encroach on District flood control facilities.
<b>City of Oakland</b>	Local plans and regulations	Permitting entity for work on City land or public right-of-way, or impacts natural habitat.
<b>California Department of Transportation</b>	Section 660 of California Streets and Highways Code	Encroachment permit for activities in the state highway right-of-way

Agency with Jurisdiction	Regulation(s)	Required Authorization
<b>Port of Oakland</b>	City of Oakland Charter, Section 707 Port	Development Permit is issued for alteration of property within the Port Area.
<b>Tidal Cities</b>		
<b>San Francisco Bay Regional Water Quality Board</b>	Clean Water Act, Sections 401 and 402 California Porter-Cologne Water Quality Control Act	401 Water Quality Certification or Waste Discharge Requirements, National Pollutant Discharge Elimination System (NPDES) general permit for discharge of stormwater from construction sites
<b>U.S. Army Corps of Engineers</b>	Federal Clean Water Act Section 404 Rivers and Harbors Act Section 10, Section 14, 408 National Environmental Policy Act (NEPA)	Permits for dredge and fill activities below ordinary high water mark in waters of the United States; Permits for alteration of Federal levees, Section 408 Federal action requires NEPA compliance
<b>NOAA Fisheries (NMFS)</b>	Magnuson-Stevens Fishery Conservation and Management Act Marine Mammal Protection Act Endangered Species Act	Consultation for work within Essential Fish Habitat, Authorization for Incidental “take” of marine mammals, Authorization for “take” of steelhead under ESA Section 7 through consultation with NOAA Fisheries
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<b>California Department of Fish and Wildlife</b>	California Endangered Species Act California Fish and Game Code 2081 California Fish and Game Code Section 1602	Authorization for “take” under section 2081 of CFGC determined through consultation with CDFW, Streambed Alteration Agreement for activities in bed/bank of jurisdictional stream
<b>State Office of Historic Preservation</b>	National Historic Preservation Act State Office of Historic Preservation requirements California Public Resources Code Section 106	Authorization under Section 106 of the National Historic Preservation Act
<b>San Francisco Bay Conservation and Development Commission</b>	California McAteer-Petris Act Federal Coastal Zone Management Act	Permits for consistency with the Bay Plan and Bay Plan policies that guide future uses of the Bay and shoreline areas.
<b>California State Lands Commission</b>	Surface and Submerged Lands Lease	Authorization if located on state aquatic lands
<b>Bay Area Air Quality Management District</b>	Authority to Construct/ Permit to Operate	Permit to operate a facility or equipment that may emit pollutants from a stationary source into the atmosphere

Agency with Jurisdiction	Regulation(s)	Required Authorization
<b>Alameda County</b>	Local plans and regulations	Permitting for activities in unincorporated Alameda county or County right-of-way, near watercourses, or encroach on District flood control facilities.
<b>City of Oakland</b>	Local plans and regulations	Permitting entity for work on City land or public right-of-way, or impacts natural habitat.
<b>I-880 Realignment Study</b>		
<b>California Department of Transportation</b>		Caltrans owns and operates Interstate 880 and the project would require undergoing the Caltrans process
<b>San Francisco Bay Regional Water Quality Board</b>	Clean Water Act, Sections 401 and 402 California Porter-Cologne Water Quality Control Act	401 Water Quality Certification or Waste Discharge Requirements, National Pollutant Discharge Elimination System (NPDES) general permit for discharge of stormwater from construction sites
<b>U.S. Army Corps of Engineers</b>	Federal Clean Water Act Section 404 National Environmental Policy Act (NEPA)	Permits for dredge and fill activities below ordinary high water mark in waters of the United States; Federal action requires NEPA compliance
<b>NOAA Fisheries (NMFS)</b>	Magnuson-Stevens Fishery Conservation and Management Act Endangered Species Act	Consultation for work within Essential Fish Habitat, Authorization for “take” of steelhead under ESA Section 7 through consultation with NOAA Fisheries
<b>U.S. Fish and Wildlife Service</b>	Endangered Species Act	Authorization for “take” of terrestrial species under ESA Section 7 through consultation with USFWS
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Agency with Jurisdiction	Regulation(s)	Required Authorization
<b>State Office of Historic Preservation</b>	National Historic Preservation Act State Office of Historic Preservation requirements California Public Resources Code Section 106	Authorization under Section 106 of the National Historic Preservation Act
<b>San Francisco Bay Conservation and Development Commission</b>	California McAteer-Petris Act Federal Coastal Zone Management Act	Permits for consistency with the Bay Plan and Bay Plan policies that guide future uses of the Bay and shoreline areas.
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