

RESILIENT SOUTH CITY

RESILIENT
BAY AREA CHALLENGE BY
DESIGN

SOUTH SAN FRANCISCO, SAN MATEO COUNTY

Resilient by Design
Bay Area Challenge

Revision
31 May 2018



HASSELL+



A year-long collaborative design challenge bringing together local residents, public officials and local, national and international experts to develop innovative community-based solutions that will strengthen our region’s resilience to sea level rise, severe storms, flooding and earthquakes

9 counties
9 teams
9 sites
1 bay

_Address **multifaceted**, dynamic issues through **collaboration, coordination and connection**.
 _Prepare vulnerable communities for a resilient future by addressing our **shared history, ecological, economic, and social vulnerabilities** that still exist today.
 _**Integrate social and ecological systems** through rigorous research and a strong understanding of ecosystems, local community, and government challenges.
 _Integrate principles to **sustain biodiversity** and ecological functions.
 _Merge local, regional, and international knowledge with technical expertise toward **implementable and creative design-driven ideas**.
 _Acknowledge **place** and the First Nations

of the Bay Area.
 _Develop **equitable planning and development practices** where community members are true collaborators and participate as equal partners at every level of design formation.
 _**Leverage community knowledge** and integrate in design to improve and not displace community members.
 _Lead with race and systematically tackle social inequality and environmental degradation **while proactively engage diverse community members**, especially disadvantaged communities

HASSELL+

We as HASSELL+ understand water. We understand designing for water, living with water and the immense social potential that waterfront places offer communities when they are connected to them.

HASSELL, originating from Australia, as well as Deltares + Goudappel, originating from the Netherlands, are drawn to Resilient by Design through an acute understanding of the social, cultural, economic and ecological potential that research-led design can unlock for waterfront communities. We come together with our experienced Bay Area partners, Lotus Water + Page & Turnbull + Hatch + Idyllist + Brown and Caldwell, to unlock the potential of increasing resilience while also improving the daily lives of residents within these communities.



"IN THOSE DAYS, ONE WOULD HEAD FOR THE BEACH WITH HIS BATHING TRUNKS AND A TOWEL. NO LUNCH, NO SNACKS, NO BOTTLED WATER, ETC. JUST SALT WATER AND SUNSHINE"

Karl Rolih, past South City resident



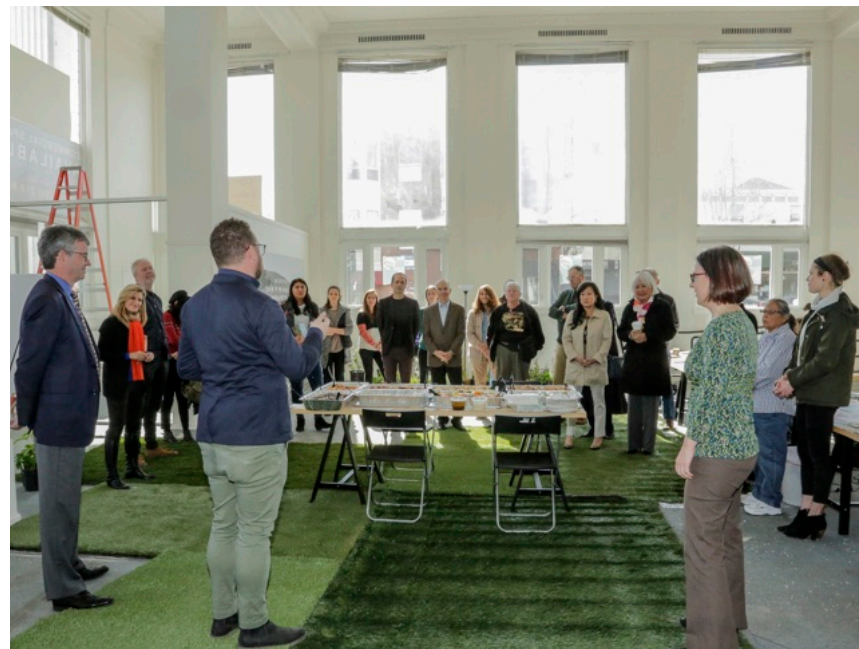
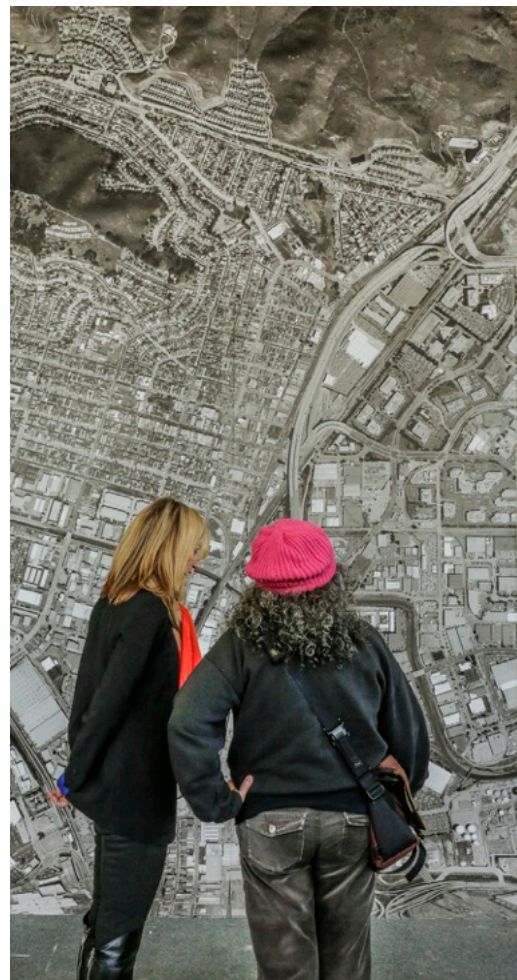


RESILIENT SOUTH CITY

Resilient South City is a design project aimed at strengthening South San Francisco's resilience to sea level rise and climate change.

As part of our commitment to working with the South San Francisco community, the Resilient South City team transformed a formerly-vacant storefront on Grand Avenue into a community meeting place, design hub, an educational center for the San Bruno Mountain Watch and the Youth Leadership Institute, and display space for photographs and stories from the South San Francisco Historical Society.

The space was open from March to May 2018 to residents and community groups to learn about the project, share personal stories, and provide feedback and ideas about what will make a resilient South City.



For so long, South San Francisco has been described as 'the industrial city'. We're asking locals, how do you want to describe the city in the future?

Resilient South City is a community-focused design project for the sustainable adaptation of Colma Creek and shoreline.

**WHERE HAVE YOU EXPERIENCED FLOODING?
WHAT DO YOU WANT MORE AND LESS OF IN
A FUTURE RESILIENT SOUTH CITY?**





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 ResilientSouthCity

 @HASSELLplus

 @HASSELLplus

WHAT IF...

**THIS LITTLE CITY, NEXT TO THE GATEWAY TO THE
WORLD'S MOST INNOVATIVE REGION, ENDED UP
LEADING THE WAY... TURNING VULNERABILITY INTO
RESILIENCY... CREATING A NETWORK OF LUSH GREEN
PUBLIC PLACES & RECONNECTING WITH THEIR BAY**



PART 1 –

DESIGN

1.1 BACKGROUND

CONTEXT

South San Francisco is a small city at the fringe of the Bay Area's largest city center.

The population of South San Francisco is small (only around 63,000 people) but rapidly growing and extremely diverse, with more than 40% born outside the United States. South San Francisco has major transport connections (including the 101 Highway, BART, and the adjacent international airport) and one of the world's largest clusters of biotech companies. But many of its residents meet several criteria as 'Communities of Concern' and there is significant vulnerability within the population, particularly around the downtown area.

However, the City retains a strong sense of identity, distinct from neighboring San Francisco, with historic industries on the Bay and diverse cultures of its downtown. The South San Francisco community is rightfully proud of its social and cultural

heritage and have great hopes for its future.

Colma Creek is a major drainage corridor through the area, incorporating the cities of South San Francisco, Colma and parts of Daly City and San Bruno. The lower sections of Colma Creek connect key places in South San Francisco including the BART station, sites for the new Civic Campus & PUC developments (under design), Orange Memorial Park, the Lindenville Industrial Precinct, the underside of the rail line, 101 Highway, and the South San Francisco Water Treatment Plant at the Bay's edge. The Creek corridor is a place of community meaning – a place where people can swim, fish, meet and move throughout South San Francisco.

Colma Creek has flooded regularly over the last several decades. Communities, businesses and infrastructure have been greatly affected by these floods and there is a sense of concern about the potential impacts of future flood events.

DID YOU KNOW?

40%

of the state's land drains its water into the San Francisco Bay**

**Source: Sustainable San Mateo Indicators Report (<http://www.sustainablesanmateo.org/home/indicators-report/environment/land-use/#sea-level-rise-and-flooding-projections>)



SAN MATEO COUNTY COULD EXPERIENCE UP TO 55 INCHES OF SEA LEVEL RISE BY 2100...

"AT JUST 36 INCHES OF SEA LEVEL RISE, AN ESTIMATED 10% OF SAN MATEO COUNTY'S POPULATION WILL BE DIRECTLY AFFECTED."

**Source: Sustainable San Mateo Indicators Report (<http://www.sustainablesanmateo.org/home/indicators-report/environment/land-use/#sea-level-rise-and-flooding-projections>)



"ON SATURDAY, WE RIDE TO THIS BAY FOR A SWIM... AS WE RETURN, WE RISE UP OVER THE FREEWAY, CAPTURE A VIEW OF SIGN HILL AND SAN BRUNO MOUNTAIN BEYOND. THE NURSERY BELOW BLOOMS WITH PLANTS GROWN FOR OUR TRANSFORMED CREEK"



1.2 REGIONAL RESEARCH INSIGHTS

THE BAY AREA IS HOME TO A DIVERSE RANGE OF CITIES & TOWNS BUT MANY OF THESE COMMUNITIES FACE THE SAME CHALLENGES

The first stage of the Resilient by Design project explored challenges and opportunities at the regional scale: the whole San Francisco Bay, including cities and neighborhoods, industry and infrastructure, ecological zones, water bodies and networks.

Through extensive research, mapping, analysis, site visits, stakeholder and community discussions, we began to observe a number of key issues that communities around the Bay Area are all facing. These issues informed our proposals for resilience across the whole region, as well as our specific design proposals for South San Francisco.



1 CREEKSIDE AND SHORELINE AREAS ARE VULNERABLE TO FLOODING, SEA-LEVEL RISE AND LIQUEFACTION

10,000

deaths caused by flooding in the Bay Area since 1900**

**Source: Sustainable San Mateo Indicators

Primarily, communities in low-lying shoreline and creek-side locations are at risk from sea-level rise and increased chances of storm and earthquake events. These are most often the communities that have already been hit by losses of employment opportunities, challenges with affordability, and are now finding themselves literally stranded between rising tides and stormwater.

These communities have the lowest access to public open space, the highest migrant populations and often are the most in need of initiatives to build physical and social resiliency.

2 RESTORATION PROJECTS NEED TO BETTER ENGAGE WITH AND EDUCATE LOCAL COMMUNITIES

23,000

football fields equivalent to area of shoreline restoration projects**

**Source: Sustainable San Mateo Indicators

The Baylands restoration projects are an extensive and impressive ecological asset for the Bay Area. There is, however, a disconnection between shoreline communities and the restoration which has created a challenge for engaging local communities in the conversation around adapting for sea-level rise.

Greater access to the shoreline, education uses, and places of genuine public ownership are needed to create a critical mass that care about the shoreline and are invested in this important conversation. This may require some innovative thinking around balancing restoration and protection of habitat while increasing public shoreline access and programming it to match the recreational choices of the Bay Area's diverse populations.

3 THERE ARE FEW PARKS AND LIMITED PUBLIC ACCESS AT THE SHORELINE

30 miles

of Hwy 101 in San Mateo County between the Bay and town centers**

**Source: Sustainable San Mateo Indicators

San Francisco Bay has been a focus of settlement for thousands of years - a place of sustenance, trade and industry. While gathering at the Bay's edge has been important for generations of people, it has become less public and less accessible over time.

Barriers such as the rail corridor, freeways, and large industry clusters have disconnected communities from the

shoreline. San Francisco Bay has some of the world's greatest urban parks - but the creation of new public spaces and parklands has become much less common over the last century. Public open space is critical to both livability and disaster response in the Bay Area - so new spaces and new connections need to be established for the benefit of communities and the region.

4 NEIGHBORHOOD PROJECTS ARE CRITICAL TO IMPROVING TRANSIT ACCESS, HEALTH OUTCOMES AND SOCIAL RESILIENCE

1800

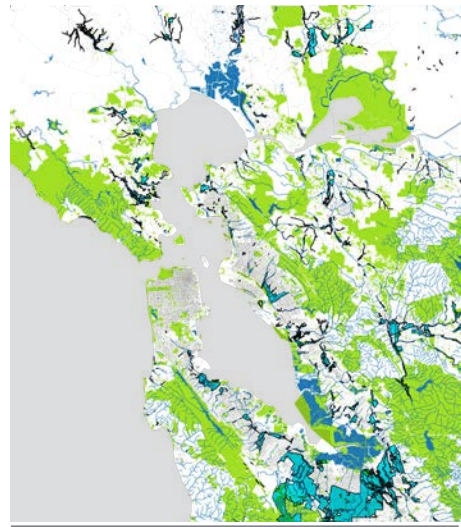
public schools in the Bay Area**

1 Million

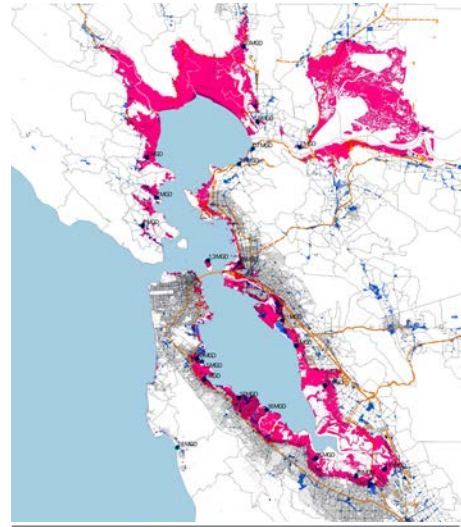
students**

Many regional projects have been considered and debated over the years. From filling parts of the bay to tidal barriers, new transportation networks and massive wetland restoration projects. However, the resilience of local communities depends very much on smaller scale interventions and enhancements - new pedestrian and cycle connections, small parks and main street revitalization projects.

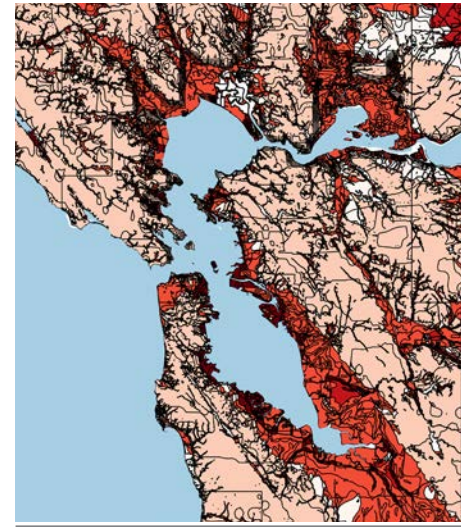
The success of inter-city transit infrastructure depends on projects enabling first/last mile access, as well as this access allowing for interchange between services (such as CalTrans to Ferry). Community resilience is often dependent on the quality of the services and amenities within walking distance of neighborhoods, as well as how these sites/services can adapt in times of emergency.



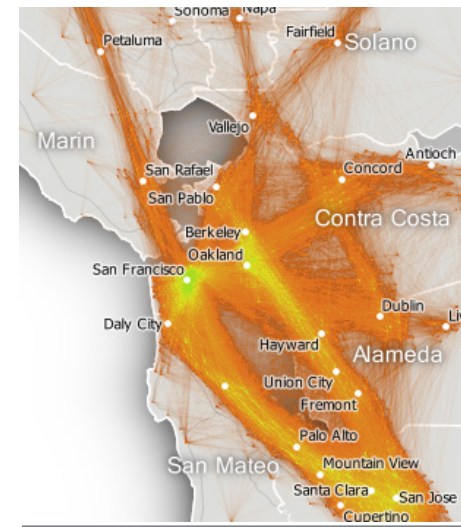
Creek Lines & Flooding



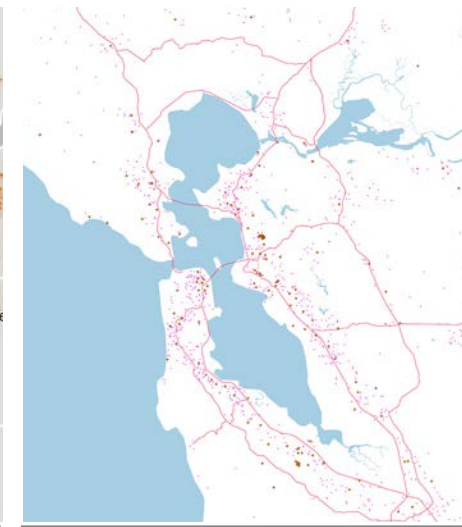
Sea-level Rise Impacts



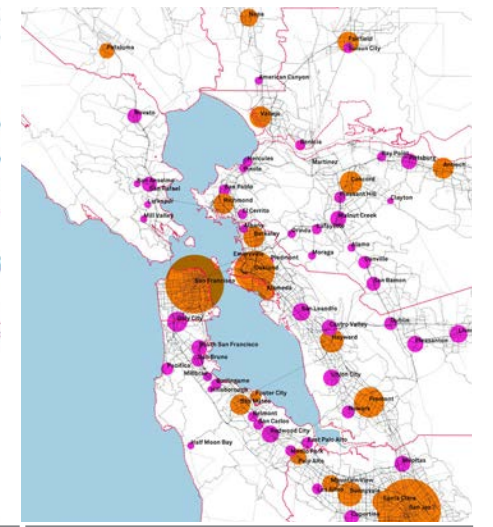
Liquefaction Hazard Zones



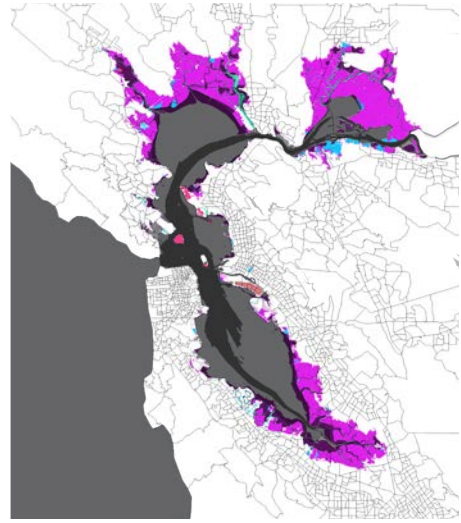
Transit Coverage



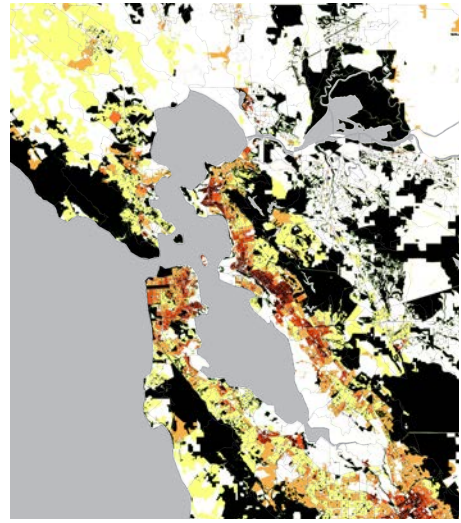
Neighborhoods/School & Libraries/Freeways



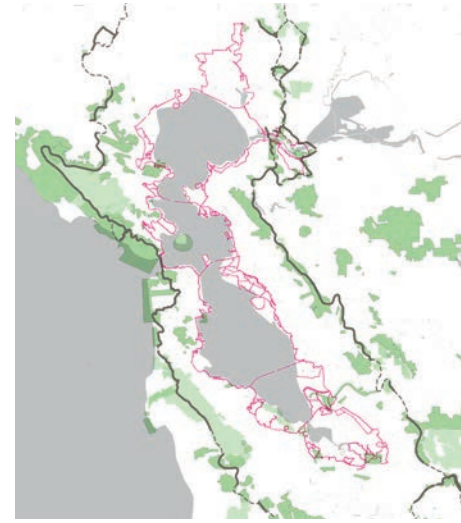
City Scale & Cultural Diversity



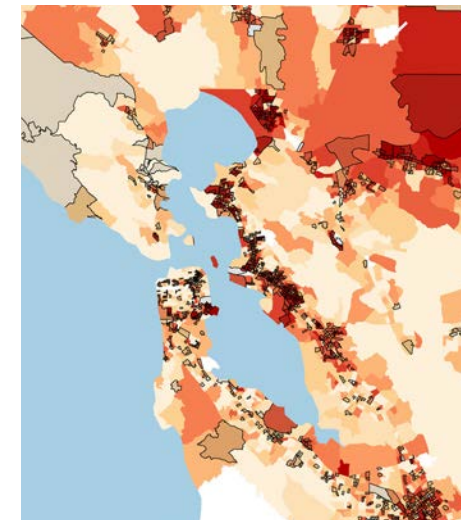
Baylands Restoration



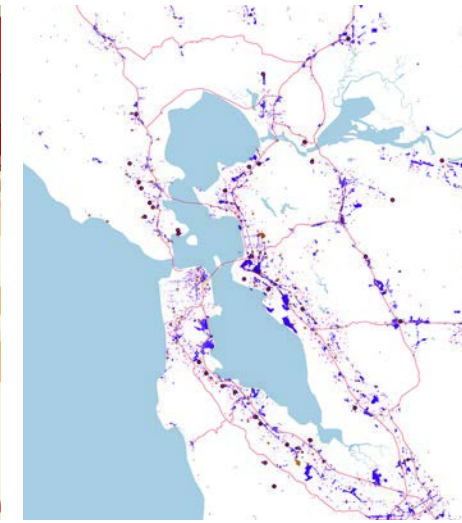
Communities of Concern



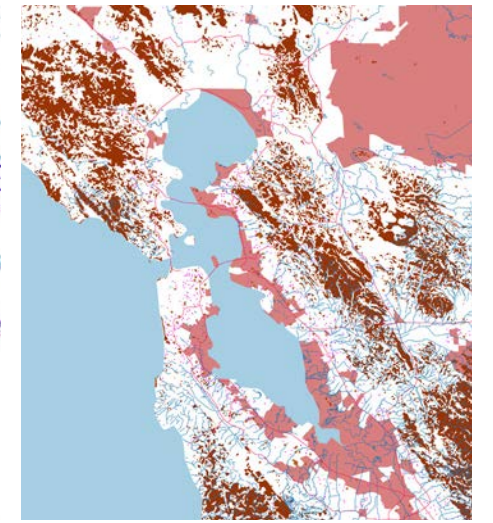
Ridge Trail & Bay Trail



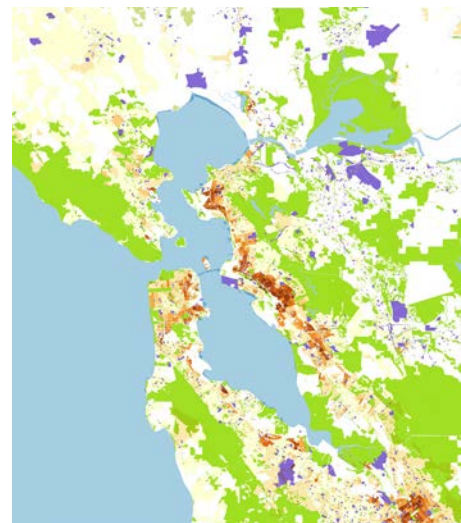
Unemployment



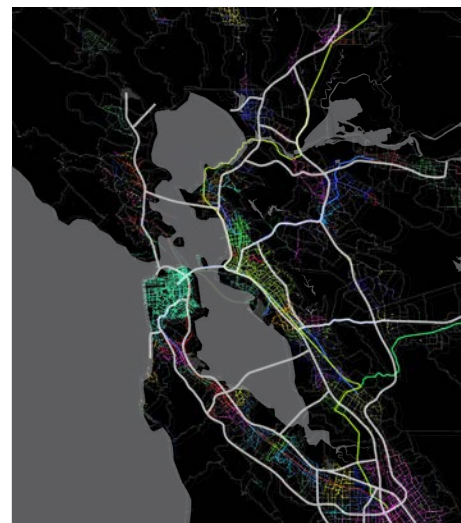
Commercial and Town Halls



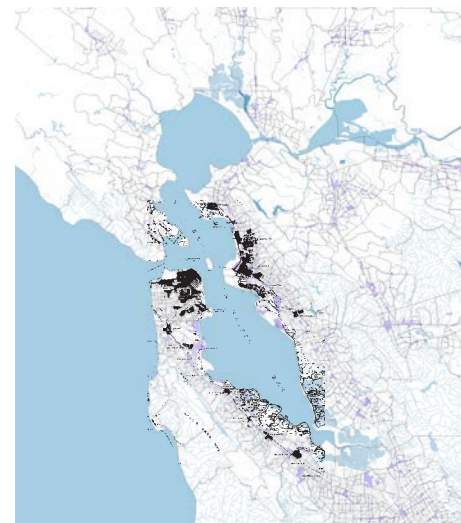
Groundwater Threats



Public Open Space/Community of Concern



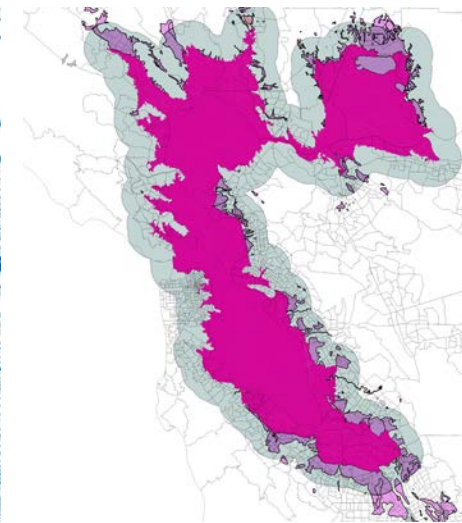
Freeway & Transit



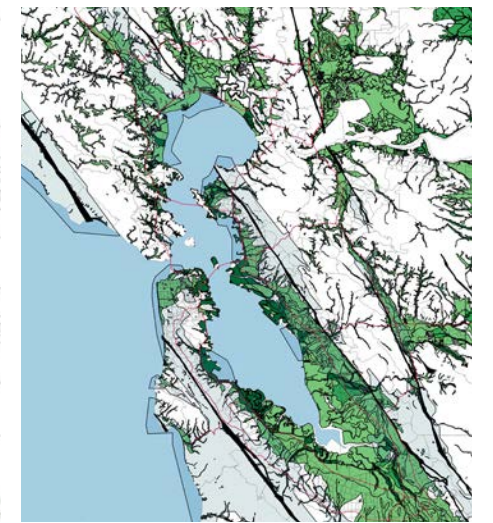
Ohlone Shoreline Sites



Water Bodies



Historic Baylands



Earthquake Hazard Zones

1.2 REGIONAL RESEARCH CONCEPT

OUR STRATEGY OF "COLLECT AND CONNECT" CREATES A RESILIENT, RESPONSIVE NETWORK FOR THE ENTIRE BAY AREA

A series of loops

Around the Bay, existing infrastructure - such as the Bay Trail, the Ridge Trail, rail & motorways - have formed a series of loops. These loops are becoming more and more congested and at risk of breaking. Risks of climate change (especially sea level rise) mean that these loops of infrastructure are also increasingly vulnerable to weather events. And within any such system, one break can cause the entire system to be disrupted.



Freeways
CalTrans & Capital Corridor
BART Corridor

A diversity of collectors

Within the existing loop system, we propose the creation of a number of "collectors", new spaces for community gatherings/interactions, for capture and slow water flows, and for assembly during disasters. These are located at the Bay's edge and along ridge lines with key urban nodes in between. In collaboration with communities, we would design a suite of structures, facilities and programs for these spaces - from tool libraries to Resilience Education Centers, from sportsfields to market halls, these become the places where communities come together to learn, develop, and implement programs to build social and ecological resiliency.



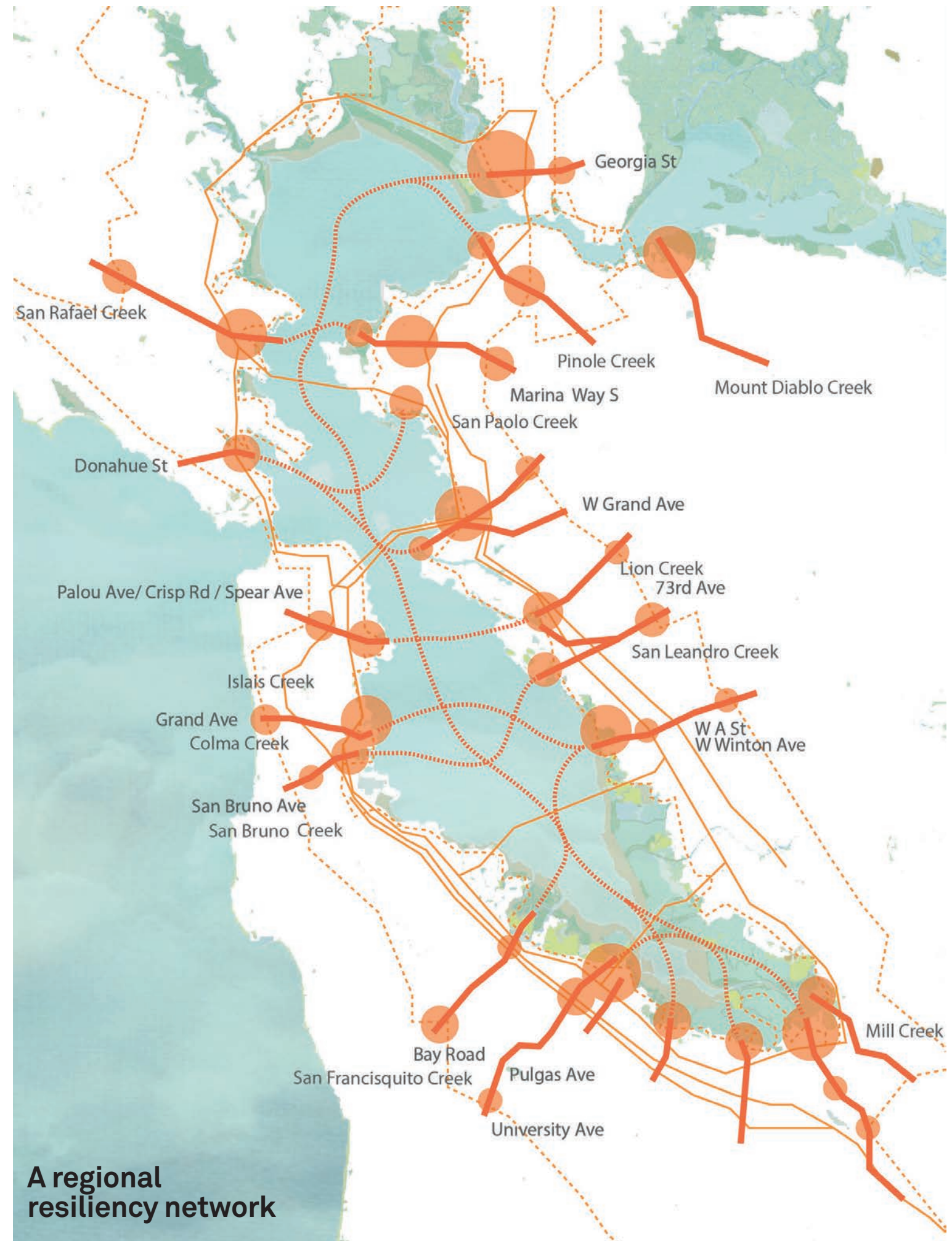
Town Squares
Community Parks
Waterfront public parks

A number of connectors

These spaces are then linked by a series of "connectors", primarily local streets and creek lines. These connectors provide better access to the waterfront and to the ridgetops, to public transportation, to retail, employment, and residential neighborhoods. Where these connectors meet the water would be ideal places for new ferry wharves, linking communities across the Bay and creating a greater focus on waterfront gathering, recreation, and activity. During emergencies, the connectors become critical "streets of retreat" from rising flood water to hillside flooding and forest fires.



Local creeks for restoration
Local main streets



A regional resiliency network

1.2 REGIONAL RESEARCH POTENTIAL IMPACT

There are between 25 and 40 potential applications of the Collect & Connect model. Creeks and Streets have potential to be transformed into linear corridors of water management and community gathering to transform the regional structure from a vulnerable loop to a resilient network. Through 'collecting and connecting' both water and communities, a polycentric regional system distributes amenity and strengthens the resiliency and lifestyle of smaller cities for the benefit of the whole Bay Area.

IMPROVE CENTERS OF COMMUNITY

Upgrading parks, squares, and public facilities in the heart of smaller vulnerable cities and neighborhoods is critical to building social resilience and preparing for disaster. Communities have become detached from the Bay with fewer spaces to gather and ill equipped with facilities that drawn people in on a daily basis. New destinations need to be implemented on the Bay to make people conscious of it during their daily lives.

CONNECT COMMUNITIES TO THE BAY

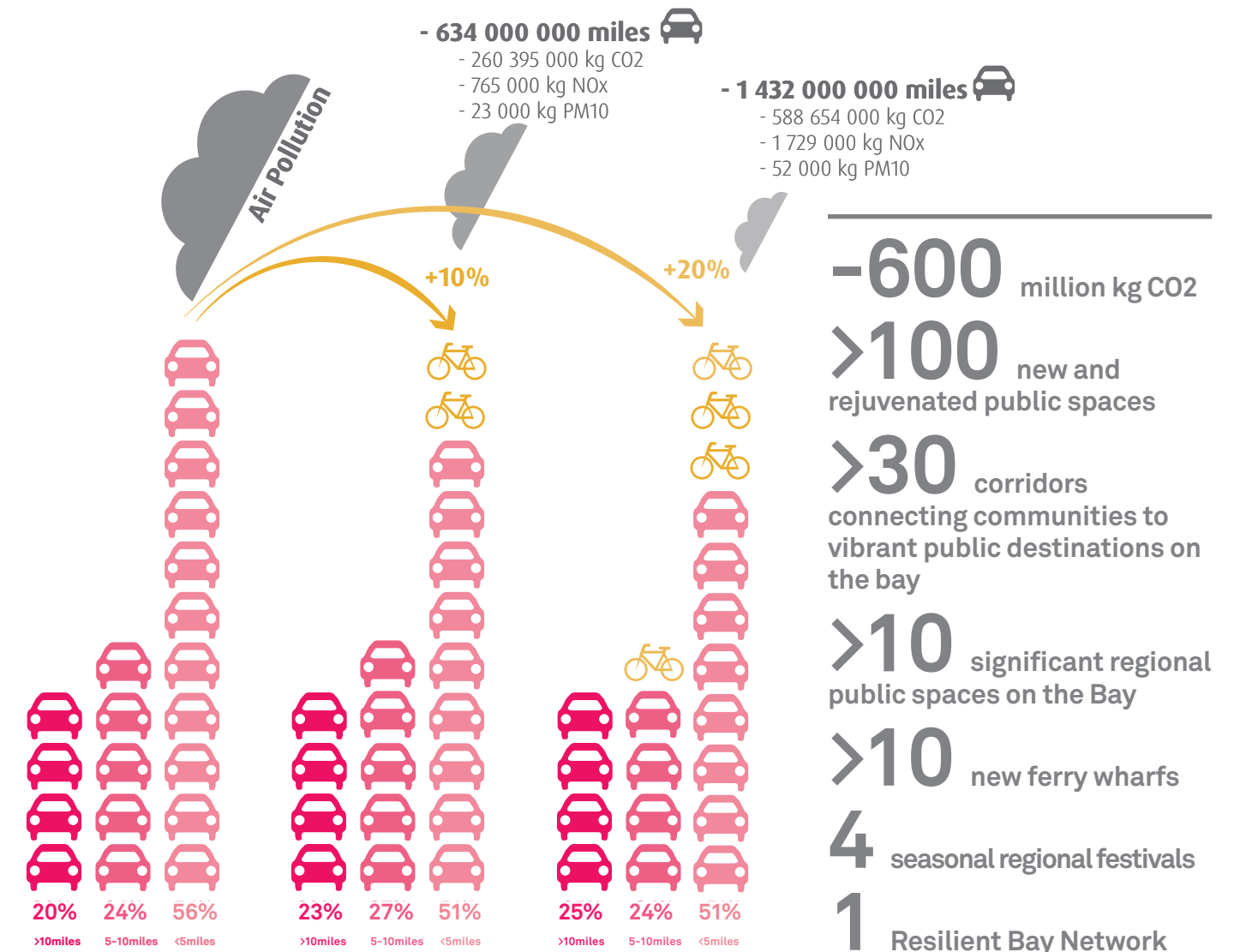
Creeks and streets are opportunities to create public corridors that take people and water towards the Bay. Once destinations are established at the Bay's edge, these corridors become critical in providing safe and convenient access for adjacent neighborhoods. They would also disrupt barriers such as the freeway and rail corridors to create a continuous path down to these destinations and the growing Bay Trail.

CROSS-BAY CONNECTIONS

Through ferry wharfs, small boat access, education programs and platforms to share knowledge, more cross-Bay connections can be established between communities. This is aimed at breaking down the social and economic silos established by the 'loops' of movement that most commuters have begun to associate with the bay area.

PROGRAMING & ENGAGEMENT AT THE BAY

Events and programming are critical to engaging communities at the Bay's edge when it comes to education and decision-making about rising sea levels. Once communities have better access and regular events to attend, the regional conversation about adapting to sea-level rise becomes more worthwhile since there are larger number of people are now invested in the issue.



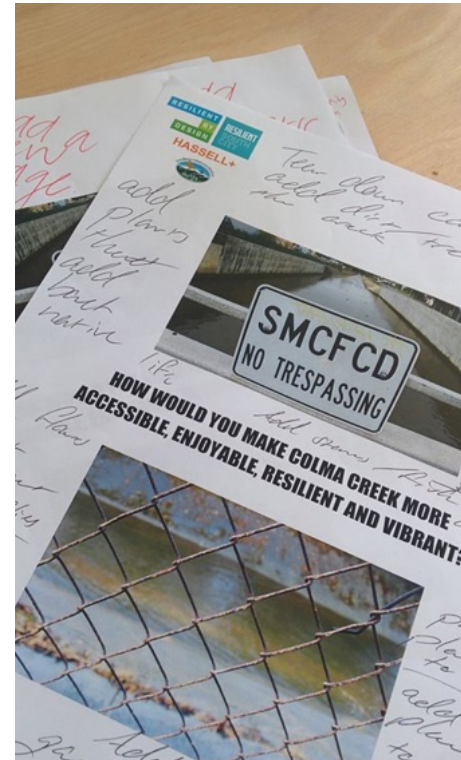
TURNING SOUTH CITY BACK TOWARDS THIS VALUABLE RESOURCE, RESTORING LOST ECOLOGIES AND RECONNECTING HUMAN AND NATURAL HABITATS TO/FROM THE BAY



1.3 COMMUNITY ENGAGEMENT SHOPFRONT

COMMUNITY MEMBERS CONTRIBUTED INSIGHTS AND INSPIRATION TO INFORM DESIGN PROPOSALS

A GREENER COLMA CREEK AND INCREASED PARKLAND COULD HELP TO MANAGE CURRENT AND FUTURE FLOODING



SHOPFRONT

Of all the research that can be done on a city and its people, nothing beats actually placing yourself right in the middle of it and fully engaging with the community on the ground level!

The South City Shopfront was our central way of engaging with the South San Francisco community, located in the heart of downtown on Grand Avenue. The Shopfront was a welcoming space where everyone was encouraged to come in and talk about their city, their visions and ideas - and how we can work together to achieve resilience.

The Shopfront was open Monday through Friday (with the occasional Saturday) ready to engage with anyone who wandered into the 100 year old bank building we occupied. It was divided into 6 sections: Your Voice, Your Neighbors, Your Future, Your History, Your City, and Your Resources. Each section had an activity for the community to participate with and we can learn from.

YOUR VOICE

Your Voice was an area where we asked a simple question: if you could change Sign Hill to say something other than South San The INDUSTRIAL City, what would it be?

The community was encouraged to write their response on a chalkboard plank and take a Polaroid with them standing in front of a photo of Sign Hill. The responses were generally optimistic and aspirational - a positive view of what South San Francisco might evolve into.

This space allowed people to have a opinion and have a conversation about how their city was viewed.

YOUR NEIGHBORS

Your Neighbors was dedicated to South City's other "residents" that are unable to voice their views on the future.

Provided by the San Bruno Mountain Watch, we had various native plants from the San Bruno Mountain and photos of other little native critters of the area. People walked around and learned about the beautifully diverse region in which South City was founded on.

We also designed plant cards for every native plant in the area with some fun facts about them that people could take home. The different kinds of plants showed the community diversity of the area and just how resilient their other neighbors already are.

YOUR FUTURE

Your Future focused on potential outcomes of sea level rise and flooding if nothing was to be done about it.

We had generated 360 degree views of areas around the creek in a flood scenario. This made the discussion of sea level rise more tangible because it took our 2d flood maps and turned them into a 3d experience through the use of augmented goggles.

YOUR HISTORY

We partnered up with South San Francisco Historical Society to create the Your History section of the Shopfront.

We were able to borrow some historical maps and photographs of South City to display for people to have a glimpse into the past. We also acquired quotes and stories of past residents and their relation to the creek decades ago. It was great to be able to see the progression of South City and how the watershed has changed as the city grew.

YOUR RESOURCE

We had also acquired various books from our partners at the San Bruno Mountain Watch and the Historical Society that were laid out in the Your Resource section. This area was dedicated for people to come in and read more about the topics that were being discussed.

YOUR CITY

Our biggest attraction was our massive aerial photo of South San Francisco.

This area was called Your City and it was where we got most of our insight and engaging conversation. Due to the size of the image, it drew in many locals coming in wondering what and who had taken over the bank that had been vacant for years.

Once they heard a little bit about our project, they opened up to us with stories from their past and their experience with Colma Creek. We asked the community to give us their input of where they had seen flooding, any positive or negative things

about the area, and any other additional thoughts or ideas of what they will like to see be done. This information was color coded with different colored post-its that were written on by the community members themselves.

People knew about the flooding in the area but did not know about the project we are working on. Over time as our presence became well known in the area, the conversations started to shift from us explaining who were and what we were doing to more engaging and informed discussion on what can be done and where we could find the most potential for change.

1.3 COMMUNITY ENGAGEMENT

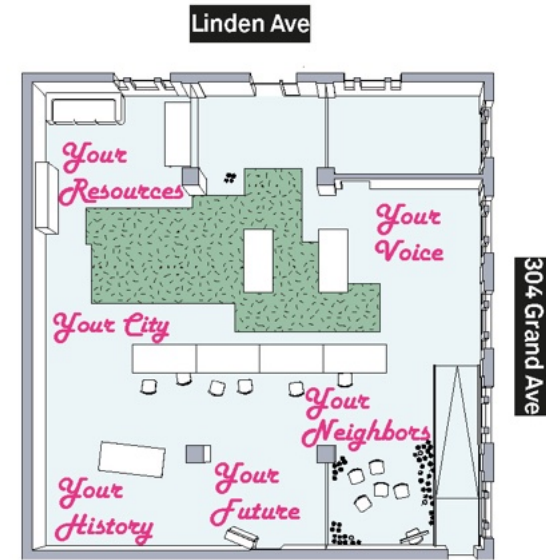
A GREENER COLMA CREEK AND INCREASED PARKLAND COULD HELP TO MANAGE CURRENT AND FUTURE FLOODING



RESILIENT SOUTH CITY

OPEN! MON-FRI 11AM-5PM

RESILIENT BAY AREA CHALLENGE BY DESIGN



SSF YLI

The Shopfront also hosted the South San Francisco High's Youth Leadership Institute. Every Friday, students would discuss various topics ranging from commuting mapping, biking, water disaster, and responding to disaster.

These meetings allowed the youth of the city to have a voice and give us their input that allowed us to pinpoint what topics were important to them. By working together we were able to help each other have a better understanding of each other and the important roles we each play in this project and in the city.

FACEBOOK - RESILIENT SOUTH CITY

As successful as the Shopfront was, we understood that we weren't reaching everyone that would be interested in our project due to the hours we operated there.

We also created a virtual presence on Facebook that allowed us to reach more people. We would post photos and ask questions to get a broader range of views and feedback. Our goal was to be as transparent as possible so whether or not one could physically make it to the Shopfront, there was still a virtual platform for them to have their voices heard.

PARKS ALIVE! STREETS ALIVE! / FARMERS MARKET

South San Francisco participated in the annual San Mateo County 'Parks Alive! Streets Alive!'. This event celebrates parks, vibrant public spaces, and being active. This occurred in parallel with their first Farmers Market of the season in Orange Memorial Park (which is an area of focus for this project).

We were invited to have a booth there to reach more members of the community in a different setting. Although it was a chilly Saturday morning, there was so much warmth felt from the people that we engaged with. We had our most current proposal, an aerial photo of South City, and native plants to be given away which were once again provided by the San Bruno Mountain Watch.

The event allowed us to show more fine tuned images of the ideas that we had been discussing. The project which had taken all of the insights from discussions held in Shopfront led to a proposal with the concerns and input of the community in mind. We also had an aerial photo of South City where after discussing the project with the community members we asked them to put a sticker on where they would



like to see more recreational activities. We encouraged them to put their input near Colma Creek to give us a better idea on what kinds of recreational amenities they were most interested in being implemented.

Lastly we had native plants and plants cards to give away to anyone who was interested in having a more resilient garden. We related these plants back to our project telling the community members about how well these plants do during floods and droughts and asked them to imagine a park covered with these native plants next to the creek instead of the current concrete edge that restricts all visual and physical connectivity.

The event was a great opportunity to get more specific feedback on our proposal. The response was overwhelmingly positive with most people in favor of more green spaces and a better, safer connection to the shoreline. Going from the Shopfront to the event allowed for people that weren't able to visit during our business hours to come and engage on a Saturday while enjoying the festivities and farmers market.



BOARDGAME

The goal of the board game was to create a fun and interactive way for the community to engage in the topics of sea level rises, flood mitigation, and restoring local ecology, while giving them hypothetical power to make urban planning decisions that will improve and protect their city.

Each player is an Engaged Community Planner with 4 tasks that they must complete. These tasks were to establish a school, retail, pocket parks, and bridges in their designated districts. These can be done when the player lands on a City Hall Annex square. Besides these 4 tasks, there are Street Trees tiles that can be placed in each district that help with flood mitigation and district moral. As the player moves clockwise on the perimeter of the boardscape, there are Event Cards that a player may land on. These events may affect just the individual player's district or the entire boardscape. They vary on impact from sea level rises and storm surges to Creek Clean Up and Green Space Grants.

While choosing the locations of the amenities tiles, Each player must be mindful of the increasing sea level and watch out for storm surges/flooding. As potentially devastating as these events can be, by building more street trees and pocket parks, it helps mitigate flooding and increases the mental health of the community. The darker colored tiles are seen as more valuable to incentivise building adjacent and connecting with the creek. Amenities built on darker tiles also acquire an additional point.

The Resilient City Boardgame was intended to be a new avenue in which to discuss issues of climate change and what can be done about it that would benefit all parties affected. The game was played by the South San Francisco High's Youth Leadership Institute group and other interested community members.

1.3 COMMUNITY ENGAGEMENT

SOCIAL MEDIA PROVIDES AN "INSTANT" WAY FOR NEWCOMERS TO BECOME ENGAGED. IT ALSO OFFERS AN GLIMPSE INTO WHAT IS IMPORTANT TO RESIDENTS OF SOUTH CITY

California Ponyfoot is part of Walking path idea today!
Come on down to The same area of South City cover photo
Hummingbird Sage is not What would South City
Another #ColmaCreekGreenTeam member is Richard introduces the green

Happy April! Keep an Stop by and share
Map of Comments from Bike The Creek???? Join Grew up in South After all this rain

Have you seen flooding
The Bay Laurel is A view of the

Setting up for our Today students from South
Illegal dumping, feral cat, Taking feedback and ideas

Here's Linden and Canal San Mateo County Supervisor Yesterday, Emergency Operations Manager, Opening The Resilient South A 1987 map of Parcel Map of South
We're opening our community It's no longer the What does South City We're working with San California Sagebrush is another A Map of Comments
fetime Post Organic Reach 2,288
Resilient South City Thanks to our friend, Focus of today's discussion We want to see Go check out this
360 Video of Colma Wilson Fung prepares to

- "We want to see the world as it is and as it could be"
- "Stop by and share your story about South San Francisco"
- "We're opening our community shopfront at 304 Grand Ave this Tues 20th Feb @12noon. Come along! Meet the Resilient by Design team, City and County of San Mateo - Government officials to kick-off this exciting project aiming to transform Colma Creek & the Shoreline!"
- "The same area of Sierra Point circa 1926"
- "We're working with San Bruno Mountain Watch / Mission Blue Nursery on classes for South City High Students to learn about plants native to Colma Creek. Drop into the shopfront to learn how restoration can help manage flooding and improve community access & amenity"
- "Linden Ave/Colma Creek Future Flood 360. Our mapping shows this area vulnerable to increased fluvial flooding and sea-level rise. Comment & share your thoughts!"
- "A 1987 map of South City businesses"
- "What would South City be without a park?"
- "What does South City mean to you? Stop by our shopfront (weekdays 11-5) to have a chance to rewrite Sign Hill and get your Polaroid taken!"
- "Wilson Fung prepares to beta test his South City Floods Game."
- "Yesterday, Emergency Operations Manager, Ken Anderson paid a visit to the shopfront and shared his detailed knowledge of flood zones. "Before the water hits Colma Creek and the streets around there, I hear (police) reports of manhole covers popping further uphill. Then, we know it's coming."
- "The Bay Laurel is able to tolerate serpentine or clay soils, making it one of the few garden trees able to do that. This adaptable #ColmaCreekGreenTeam member sure is resilient and smells great!"
- "Today students from South San Francisco High School came in to the shopfront to share some great ideas on how to make Colma Creek more resilient and enjoyable!"
- "Bike The Creek???? Join us at the South City Parks and Rec Streets Alive celebration and get a free Lime Bike ride on Colma Creek. The event is in Orange Memorial Park 9am-1pm this Saturday, May 5th, Cinco de Mayo. See you there! http://www.ssf.net/departments/parks-recreation/events"

Type
 Video
 Link
 Photo
 Status
 360 Photo
 Invitation

Resilient South City is with Historical Society of South San Francisco at Oyster Point Marina/Park.
Published by Peter Swaerengen · May 15 at 7:36pm · South San Francisco, CA ·

Swim meet on the Bay!

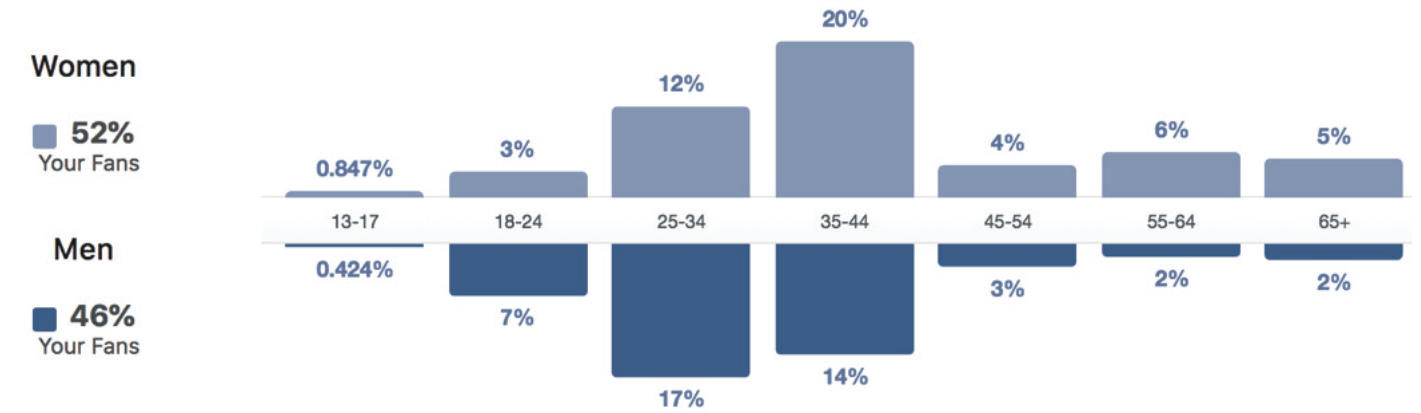
3,235 people reached

Resilient South City added an event.
May 4 at 6:24pm ·

Bike The Creek????
Join us at the South City Parks and Rec Streets Alive celebration and get a free Lime Bike ride on Colma Creek. The event is in Orange Memorial Park 9am-1pm this Saturday, May 5th, Cinco de Mayo. See you there! http://www.ssf.net/departments/parks-recreation/events

MAY 5 Bike the Creek!
Sat 9 AM · Resilient South City · South San ...
You like Resilient South City

LIKE MANY AT-RISK COMMUNITIES, SOUTH CITY RESIDENTS ARE NOT EQUALLY ACTIVE IN SOCIAL MEDIA



Resilient South City
South San Francisco Resilience Planning
48 views

San Mateo Avenue (Sample 1)
Spruce Avenue (Sample 1)
Orange Memorial Park (Sam...
Bottom of Cemetery (Sample...
Linden Avenue (Sample 1)
Colma Creek Headwaters (S...
SF Bay Trail (Sample 1)
Edge of San Bruno Mountain

Bottom of Cemetery (Sample 1)
Date & Time: 4/27/18 (2:2 pm)
Weather: Clear skies and sunny
Landscape Description: Canal at the base of a sloping lawn at Cypress Lawn cemetery, surrounded by thick hedges.
Salinity (µS/cm): 1342
TDS (µm): 871
Temperature (Degrees...): 12.2
Nitrate (mg/L): 20
pH: 9
Calcium (mg/L): 160

ENGAGEMENT BY (APP) DESIGN

We created online surveys to gain an understanding of social media literacy and activity. We quickly discovered, however, that first we needed a theme or message, related to resilience, which mattered to residents, that would provide motivation for them to give us feedback and observations. Expecting Facebook, Twitter, and Instagram to provide serve as a proxy in data collection, and a way to get the word out about the shopfront on Grand Ave. Instead we found the reverse to be true. Residents visited the shopfront out of curiosity. After explaining our purpose, we suggested they visit the Facebook page, Resilient South City.

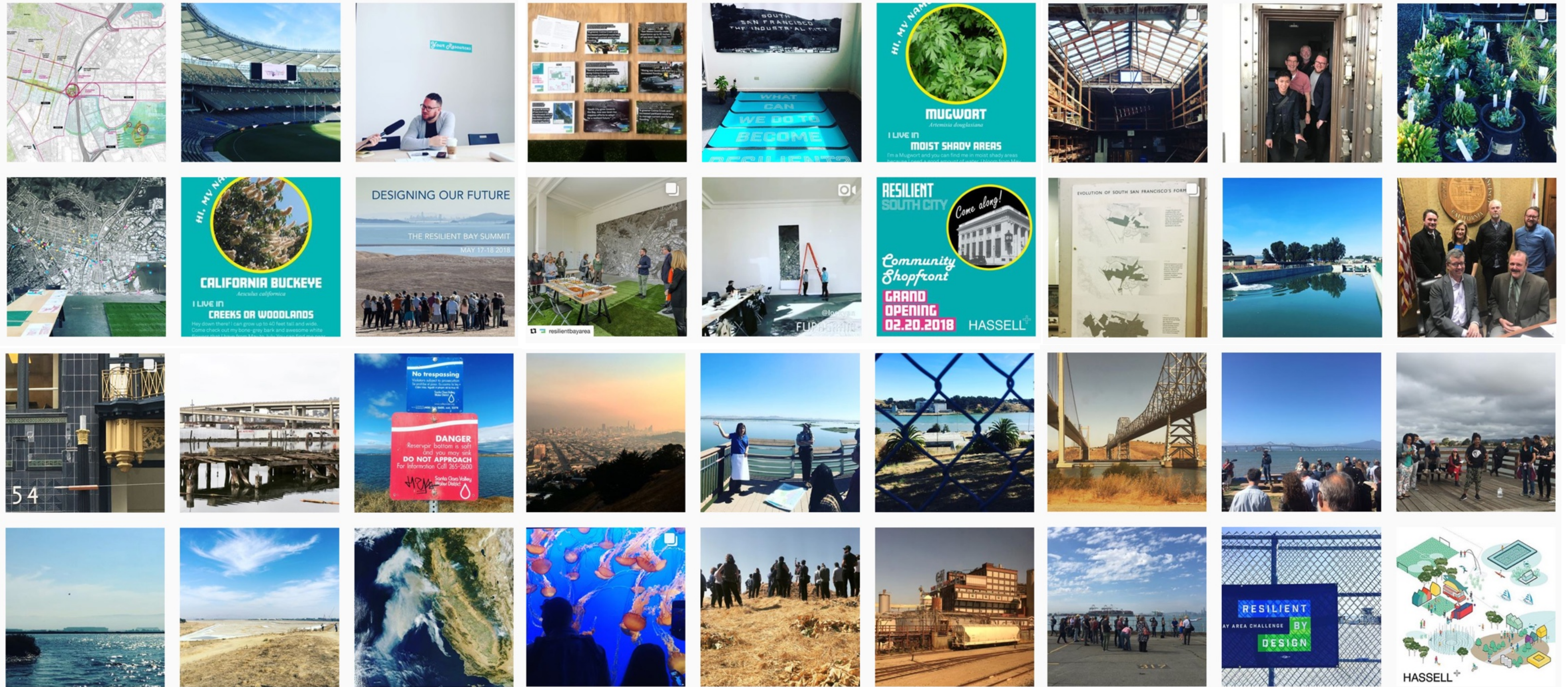
SHARED NARRATIVE

On reflection, we decided that even though our potential online reach would be greater than the number of visitors we could expect, or attendees to events, the permanent record of conversations, topics, and responses forms a documentary and shared narrative that belongs to the community. Feedback in the shopfront was captured in colored paper notes, mentioned previously, and also duplicated on browsable online map. City officials recognize the ongoing value of these comments and observations.

FUTURE PLATFORMS

South City has a need that will not be inherently met by existing social media platforms, alone. Together with the Youth Leadership Institute, students from local high schools, performed actual water quality samples, under the guidance of our team and utilizing a customized mobile map tool to share their observations. If the shopfront is a model, future digital platforms that connect people to themes of resiliency, climate justice, displacement, and planning, may depend on physical presence to be engaging. Technology tools can enable residents to become "citizen scientists" and leverage their own expertise to inform public decisions and influence community leadership.

1.3 COMMUNITY ENGAGEMENT INSTAGRAM



RECHARGE RESERVOIRS ARE A UNIQUE OPPORTUNITY TO CAPTURE WATER & RECHARGE THE AQUIFER... BUT ALSO TO CREATE INSPIRING PLACES THAT RECONNECT THE CHILDREN OF SOUTH CITY TO THE BEAUTY OF NATURE IN THEIR OWN BACKYARDS



1.4 ANALYSIS

ANALYSIS ACROSS THE ENTIRE WATERSHED LEADS TO ACTIONS & INSIGHTS INFLUENCING THE VULNERABLE LOWER CREEK

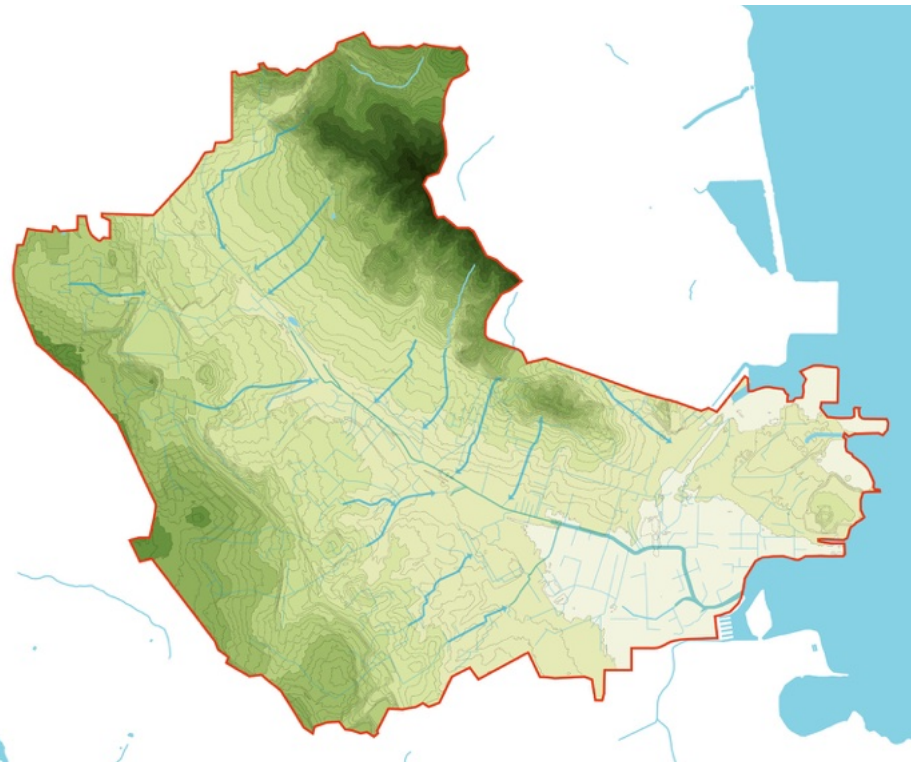
HISTORIC TOPOGRAPHY, HYDROLOGY & GEOLOGY

The Colma formation is located between San Bruno Mountain and the San Andreas Fault, draining an area of 16.64 square miles into Colma Creek as a single waterway at the center of the valley. At the turn of the last century, South San Francisco (what is now known as the downtown area) was established next to marshland and a micro delta where Colma Creek met the Bay. In the 20th century, the City grew over that valuable natural system with industrial land creating "The Industrial City" and the associated road and rail infrastructure severing the City's connection to the Bay.

Since the establishment of the Colma Creek Flood Control Zone in 1964, data shows that the urbanisation of the watershed saw peak flow within the creek steadily increased. At the same time, pumping of the groundwater has led to levels steadily falling. The establishment of the Flood Control Zone in response to regular flooding in the sections of the creek downstream from Orange Memorial Park led to Colma Creek being culverted over a number of projects up until 2006. Currently several sections of the creek are now restrained by concrete flood control walls raised above street level.

The Daly City General Plan makes note of the unusual ground water conditions in this area:

"The Westside Basin underlies parts of San Francisco and northern San Mateo counties. The basin extends from Golden Gate Park in the north and past the San Francisco Airport in the south. The basin extends to the west beneath the Pacific Ocean at least as far as the San Andreas Fault and to the east an unknown distance beneath San Francisco Bay. The Westside Basin is a buried valley, where the walls and floor of the valley are formed by rock with a mixture of coarse and fine-grained sediments as much as 3,700 feet thick in parts of the basin fill. The coarse-grained sediments consist of sand and gravel and the fine-grained sediments consist of silt and clay. Sand and gravel can transmit substantial quantities of water to wells, whereas silt and



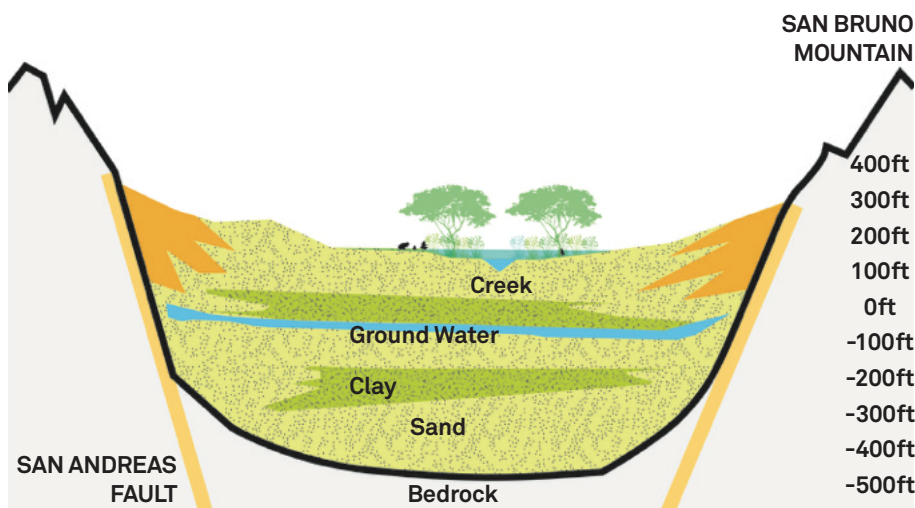
Elevation and Stream Analysis



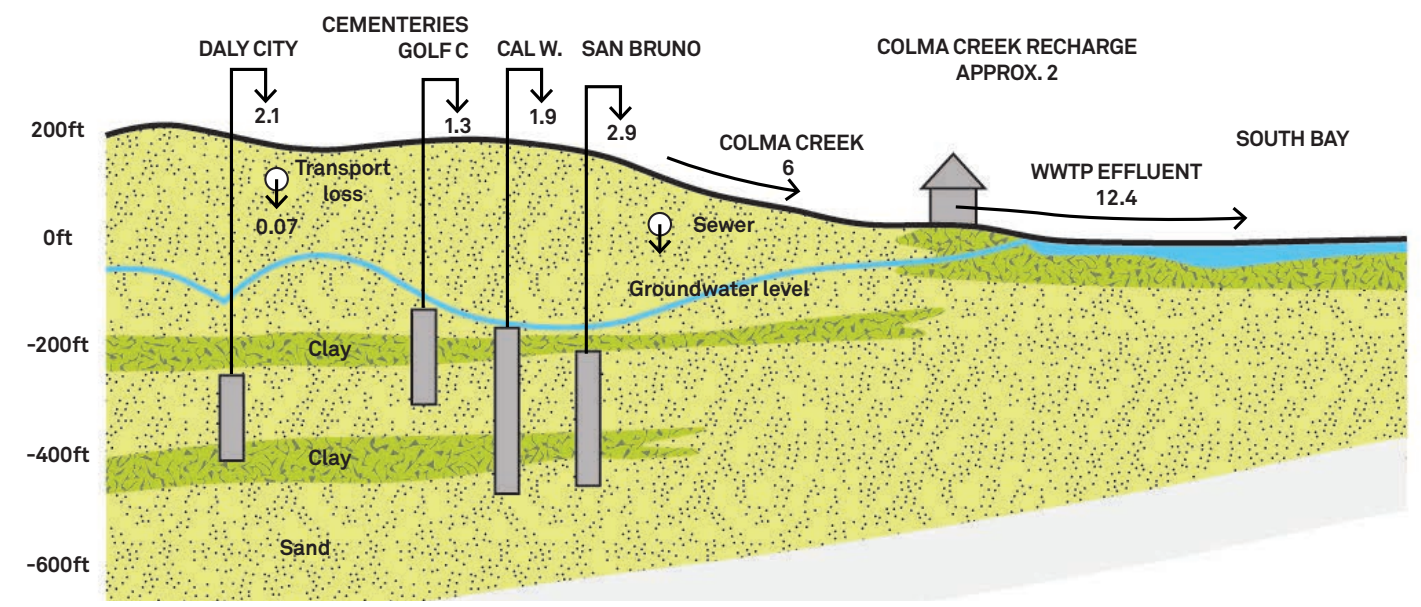
Historical Hydrology Analysis

clay impede the movement of groundwater. Where silt and clay deposit form semi-continuous beds, they can effectively isolate the water table from underlying aquifer. Groundwater in the shallow water table aquifer is referred to as "unconfined" and the underlying aquifer separated from the water table by continuous and semi-continuous fine-grained silt and clay strata are referred to as "confined." Both unconfined and confined conditions occur in the Westside Basin"

South San Francisco's historic ecologies were diverse and valuable but have been lost over the last 120 years of urban development. The lost marshland at one end of Colma creek seems near impossible to restore, while the San Bruno Mountain at the other has already come a long way.



Geological Cross Section Analysis



Geological Cross Section Analysis



1.4 ANALYSIS

THE GRADUAL GROWTH OF THE CITY OVER THE MARSHLAND & COLMA CREEK...



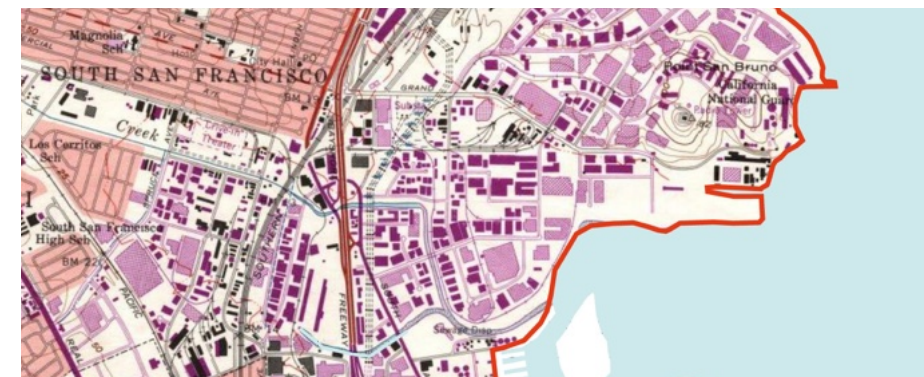
1947



1957

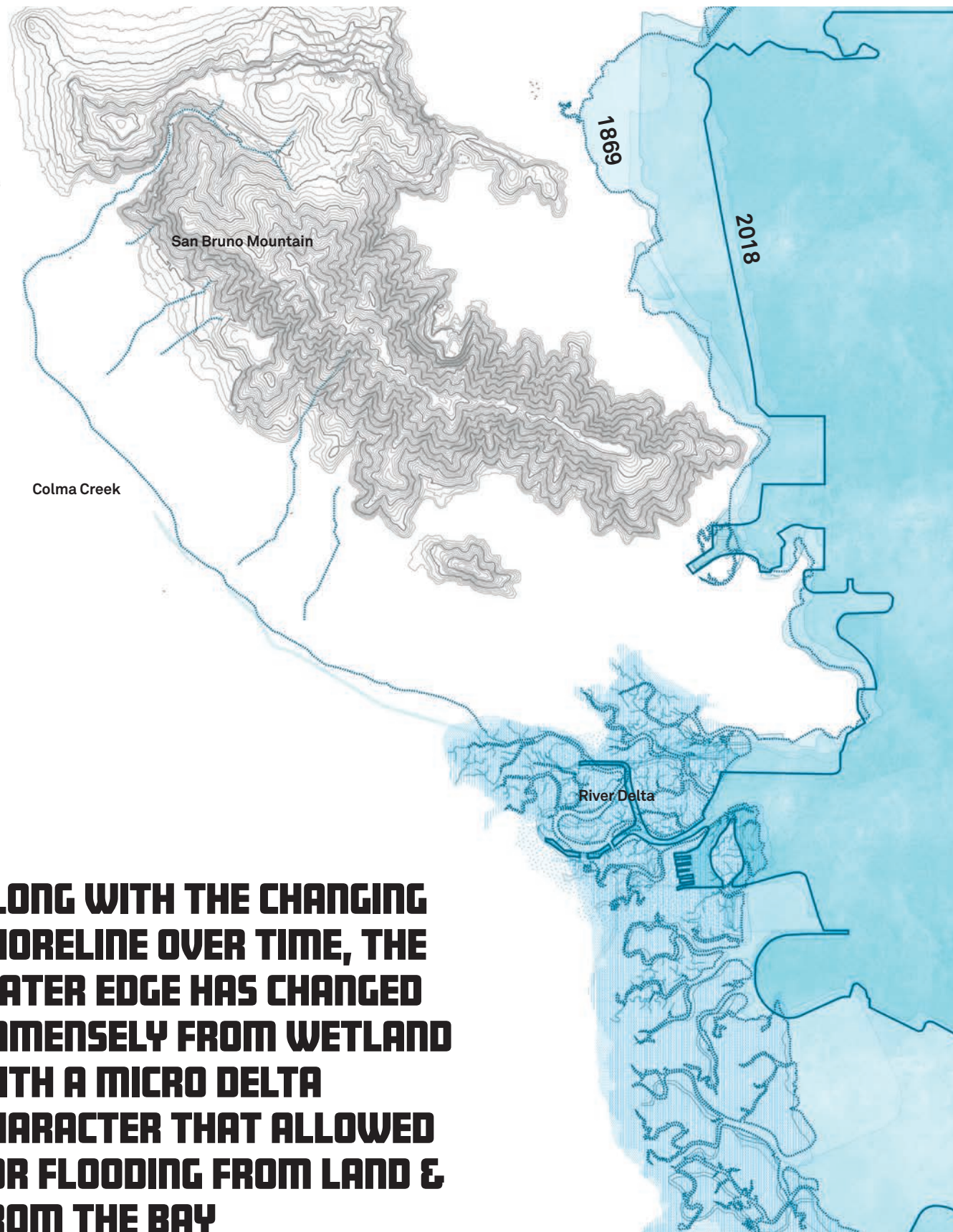


1968

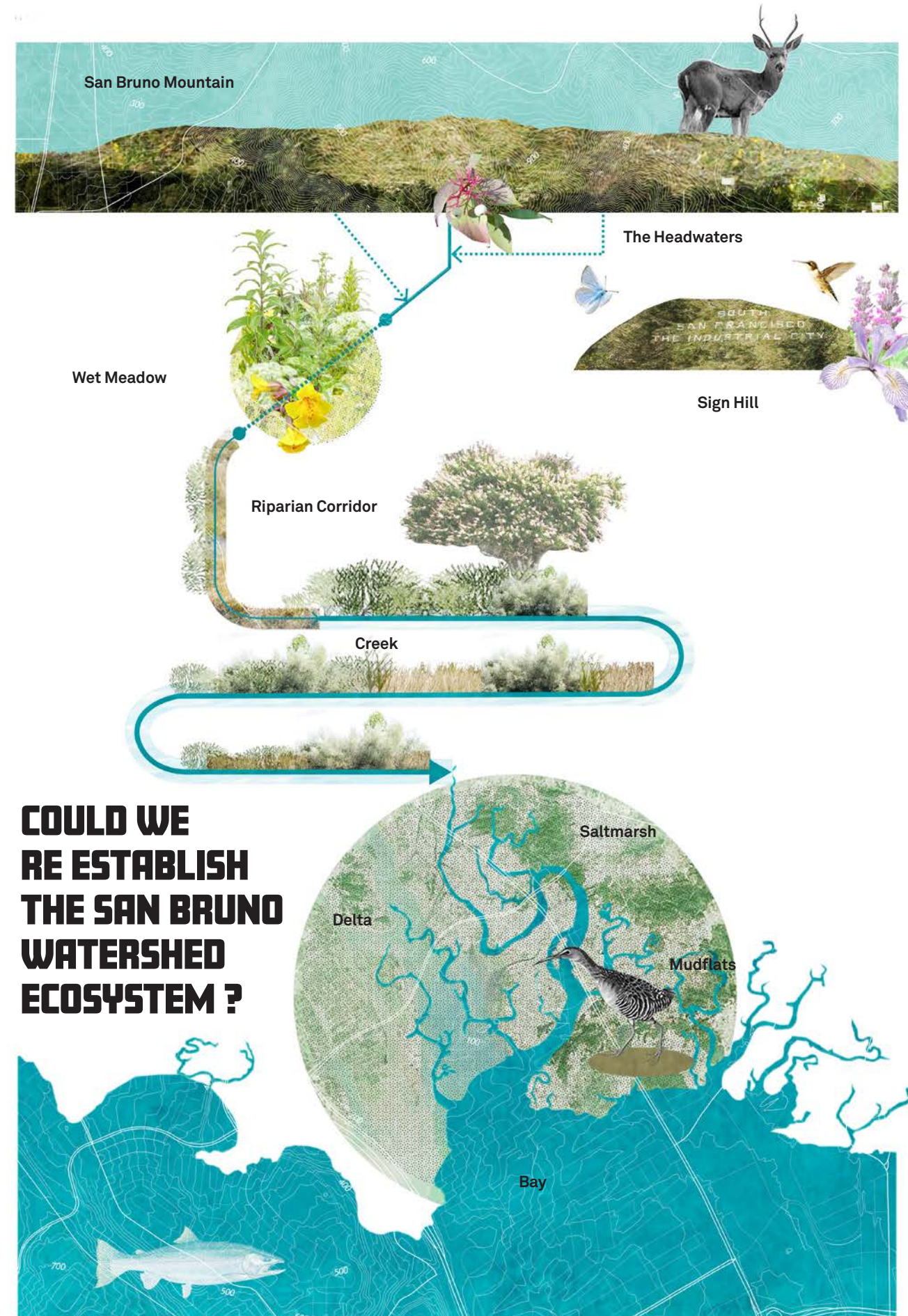


1980

THE CHANGING BAY EDGE...



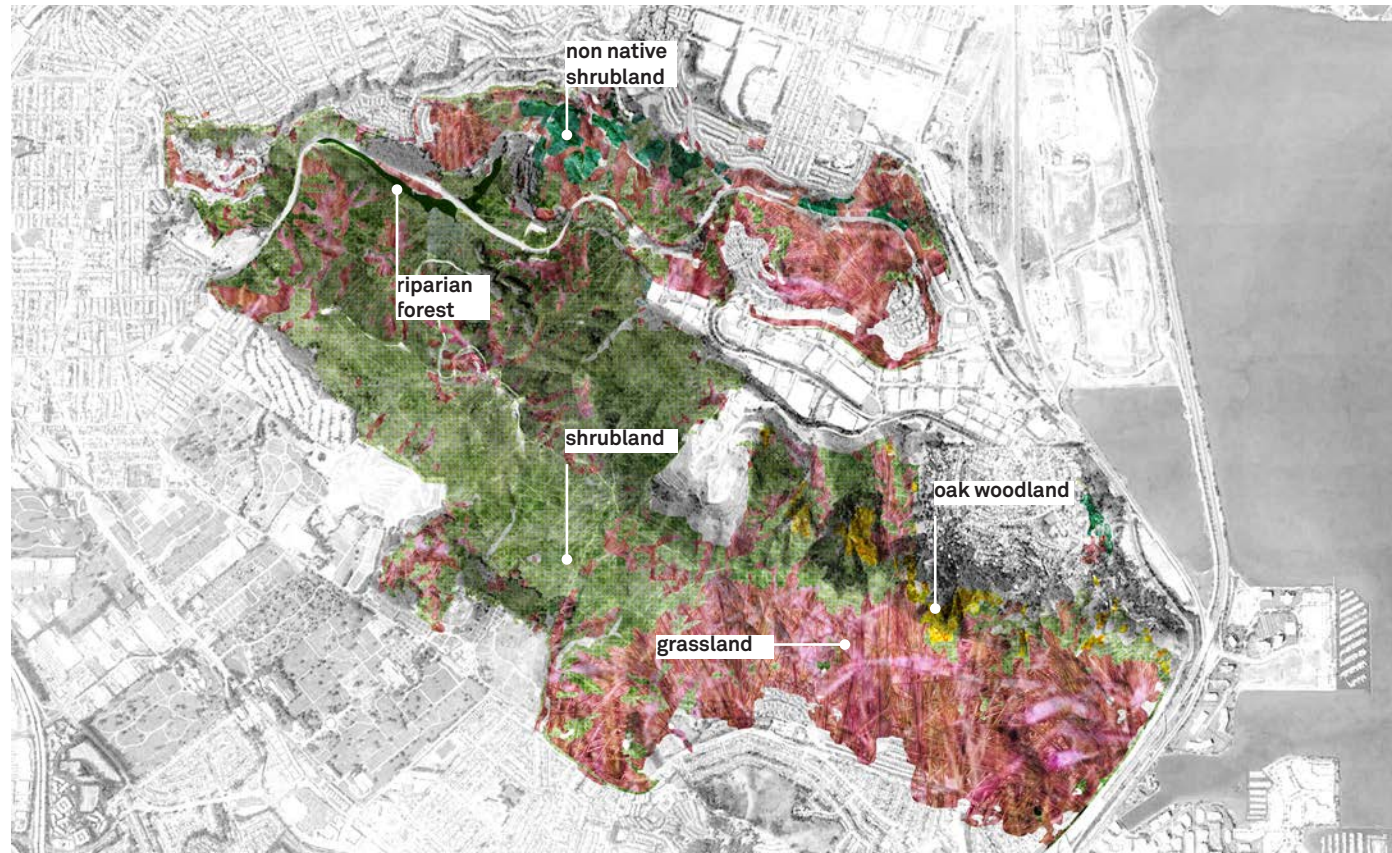
ALONG WITH THE CHANGING SHORELINE OVER TIME, THE WATER EDGE HAS CHANGED IMMENSELY FROM WETLAND WITH A MICRO DELTA CHARACTER THAT ALLOWED FOR FLOODING FROM LAND & FROM THE BAY



COULD WE RE ESTABLISH THE SAN BRUNO WATERSHED ECOSYSTEM?

SAN BRUNO MOUNTAIN IS A 'BOTANICAL TREASURE'

ELIZABETH MCCLINTOCK



'San Bruno Mountain Watch have done extensive research and restoration work on the native ecologies of the mountain. This work has become an inspiration for this project and has led to continuing this research. The extension of these principals down the watershed to the shoreline would re-establish sustainable landscape along Colma Creek and also create a connection between mountain, City and Bay.'

Source - <https://parks.smcgov.org>



Valley Needlegrass Grassland



Coastal Terrace Prairie



Valley Wild Rye Grassland



Coast Live Oak Woodland



Northern Coastal Scrub



Central Coast Riparian Scrub



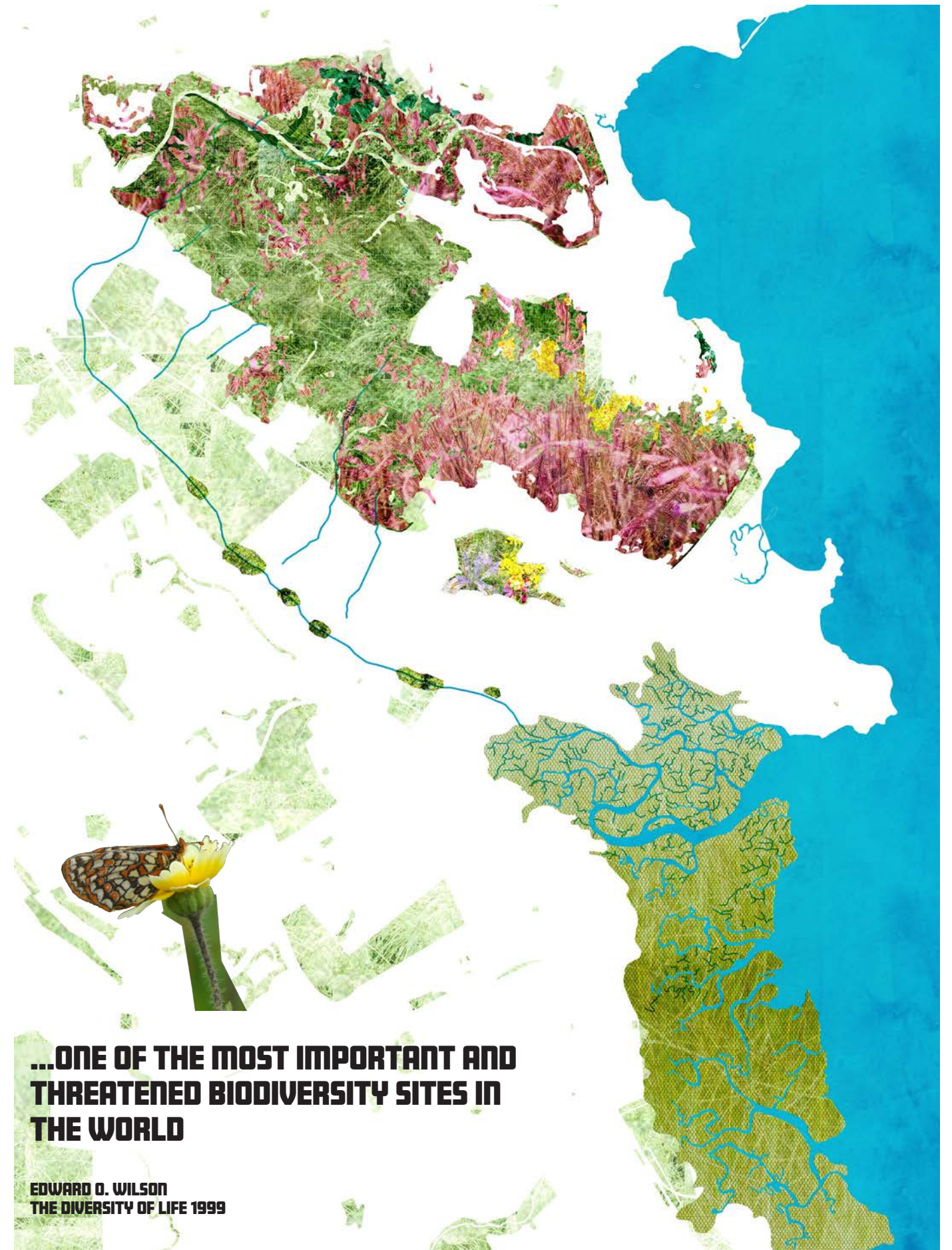
Coast Live Oak Woodland



Northern Coastal Scrub



Central Coast Riparian Scrub



...ONE OF THE MOST IMPORTANT AND THREATENED BIODIVERSITY SITES IN THE WORLD

EDWARD O. WILSON
THE DIVERSITY OF LIFE 1999

SAN BRUNO WATERSHED

A UNIQUE ASSEMBLAGE OF PLANTS AND ANIMALS

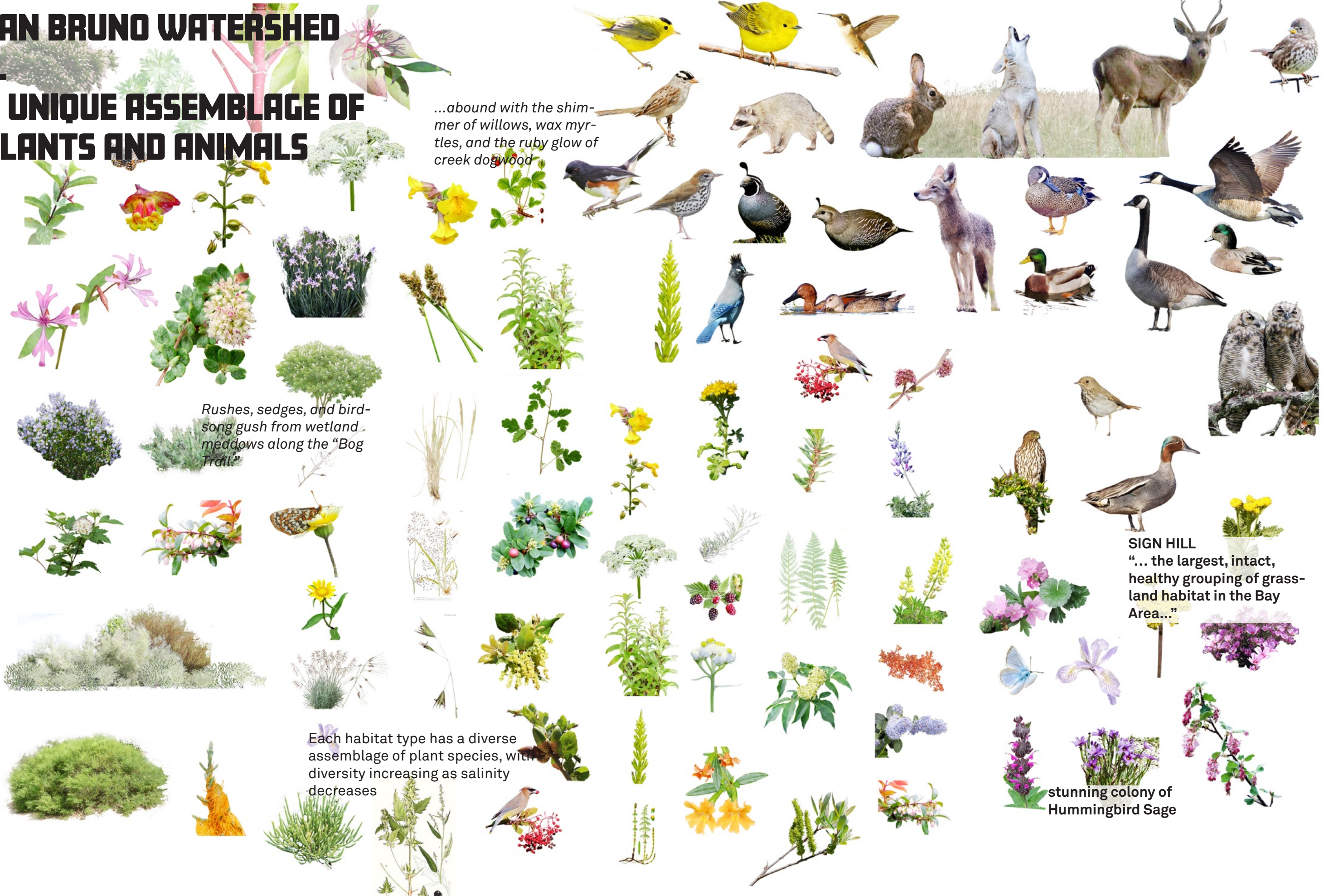
...abound with the shimmer of willows, wax myrtles, and the ruby glow of creek dogwood

Rushes, sedges, and bird-song gush from wetland meadows along the "Bog Trail."

Each habitat type has a diverse assemblage of plant species, with diversity increasing as salinity decreases

SIGN HILL
 "... the largest, intact, healthy grouping of grass-land habitat in the Bay Area..."

stunning colony of Hummingbird Sage

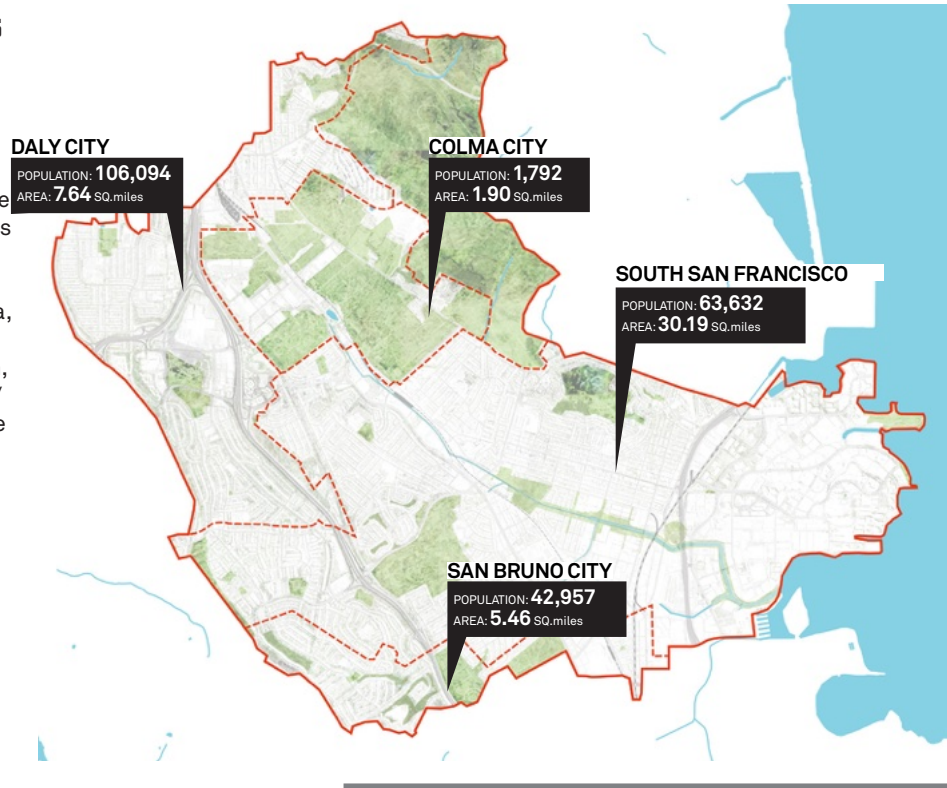


1.4 ANALYSIS

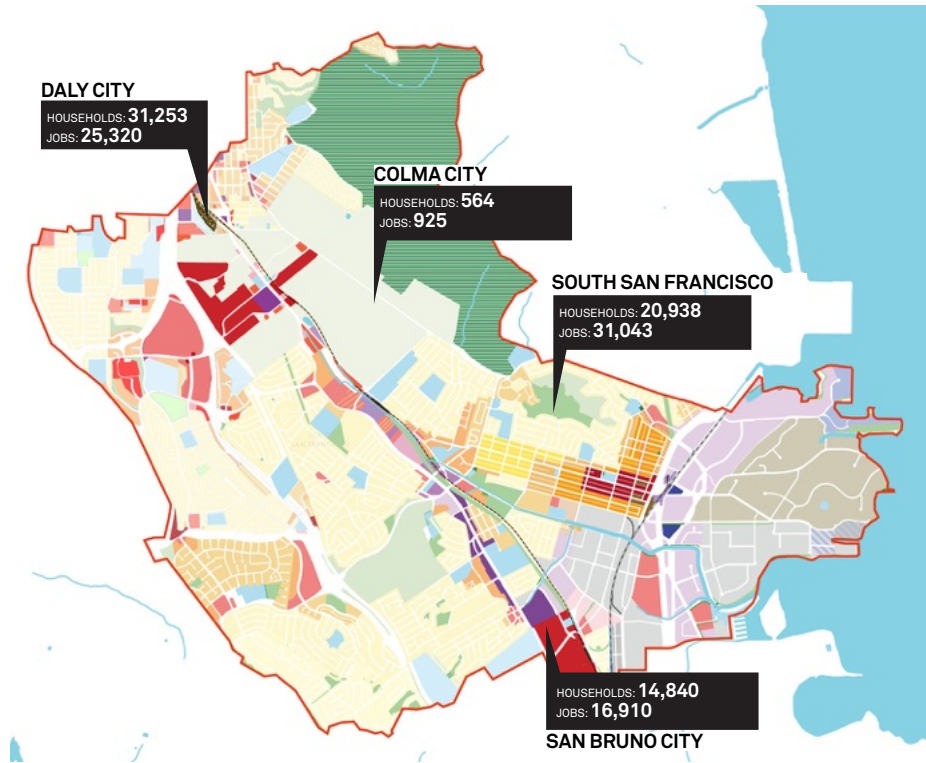
CURRENT POPULATION AND DEMOGRAPHICS

South San Francisco's Population had grown to an estimated 63,632 people by mid-2016, and there's evidence that it continues to grow rapidly. The MTC land use models predict a 25% growth in households between 2010-2040 and 50% growth in jobs. South City typifies the Bay Area's ability to attract people to move to the area, with almost 43% of South City residents born outside the USA. A diverse population, it includes 36.6% Asian and 34% Hispanic/Latino which is almost 50% higher than the Bay Area average for both groups. Close to 60% of families speak a language other than English in the home

Almost 20% of the population is of school age and around 43% are between the ages of 15 and 49. 8% of South San Francisco residents live below the poverty line, with 16% of the population (over 25) not having graduated high-school.



Colma Creek Watershed City Boundaries



Land Use Analysis

DID YOU KNOW?

- 42.9% Born outside USA
- 49.6% 15-49 years old
- 36.6% Asian
- 34.0% Hispanic/Latino

LAND USE, TRANSIT & EMPLOYMENT

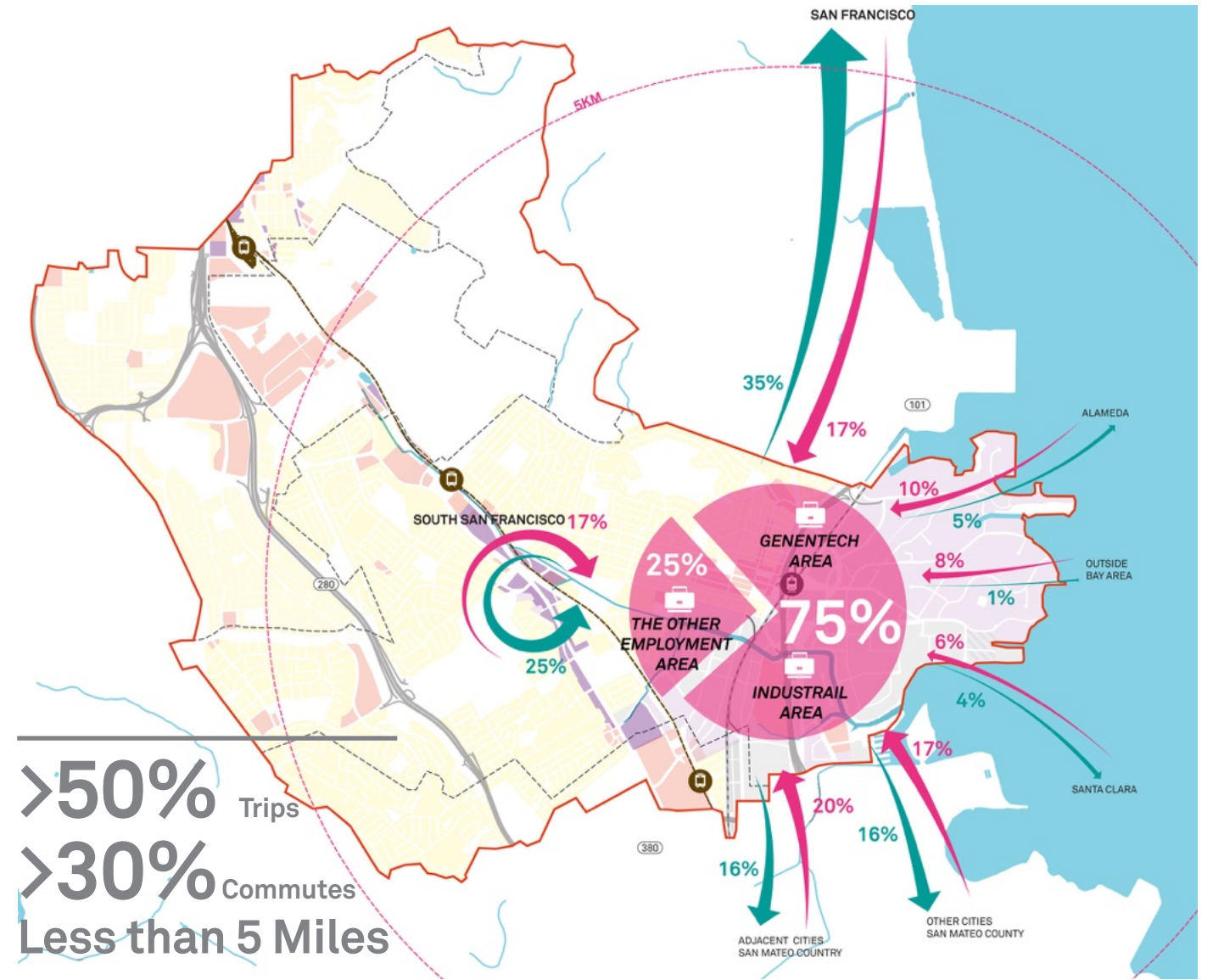
Land Use within South San Francisco is divided east and west of the 101 Highway. To the west are the predominantly residential neighborhoods whilst adjacent to the highway and to its east lie the industrial and commercial employment lands.

Further complicating this, the employment & commuting patterns illustrate a low level of live-work within the area as well as a relatively low public transit patronage. This could be because jobs are increasing faster

than households. The booming biotech companies located east of South San Francisco's downtown brings a growing employment base to the area from around the bay. Unfortunately the composition of the rail corridor, highway and industrial properties of Lindenville keep these live and work populations relatively separate. This appears to be exacerbated by the lack of east-west connectivity

Although serviced by BART, CalTrans and the Ferry, South City exemplifies the challenge of last mile connectivity as between these unintegrated service which

are spread east-west across the City. Although 75% of commuters work in Lindenville or east of 101, the transit users in this group are only 10%. Better connectivity is needed between these major employers and the CalTrans/ Downtown, with Colma Creek's resilience upgrades having the potential to be part of the solution.



Commuting: OUT (Blue) & IN (Pink)

>50% Trips
>30% Commutes
Less than 5 Miles

1.4 ANALYSIS

MOBILITY / MODES / EMISSIONS

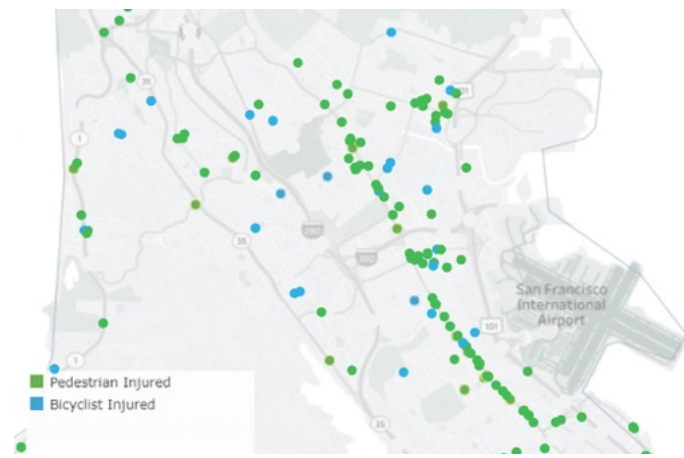
Commuter flow data indicates that of people who live and work within South San Francisco, over 6,000 people work on the East while living West of the 101. Most commutes are by car, and drivers driving alone. Those on the west side have a very low percentage of commuting by transit with only 1.5% of people cycling. People who use BART SSF station travel to the station by car, taxi/drop off or walk. Only in the heart of South City's downtown (around Grand Ave) are active mobility modal choices more common.

Average travel time to work is 24 minutes for South City residents (2006-2010 Census data). Almost 60% of people living in South City have a commute of less than 30 minutes. This compares favourably to the regional average of 31 minutes, and to the average of San Mateo County (28 minutes). Over 50% of all trips in South San Francisco are 5 miles or less, indicating a high potential for growth in walking and cycling.

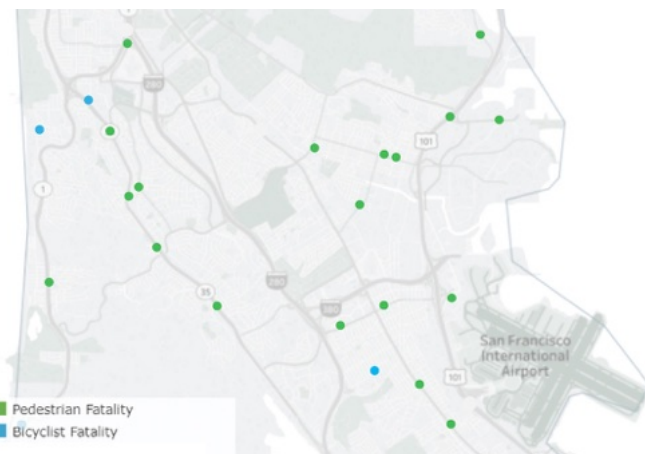
Total number of trips is estimated to increase by 22% by 2040. The County has ambitions for cycling and transit use to increase by 50%, and to restrict vehicle trips to an increase of 15-20%. That being said, there is little existing infrastructure to support cycling. There are no bike repair shops in South San Francisco which can hinder the potential of a bike-oriented community. This gap could be filled and bring more jobs and a new industry to the area. Routes can be created to form a network that serves commuting travel within South City by active modes, first and last mile travel to and from BART/Caltrain/Ferry, access to services, schools and parks. Colma Creek has great potential to become a major connector, linking the city and transit nodes east-west. This should be linked to other connectors for a more diverse system. Connecting to the east side, especially to Genentech could add tremendously to the cycling culture.

The recent success of Limebike indicates a potential for cycling infrastructure to be well utilized. Limebikes are particularly well used after high schools finish for the day, in connecting kids back to the mall and main street retailers and restaurants.

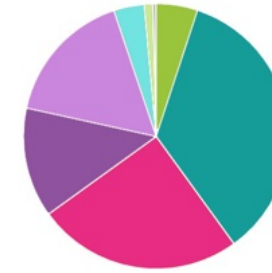
Creating a bike-oriented culture and a safe and attractive routes could also increase the use of cycling within youth demographic from 5% to 25%. This could have a positive impact on their health and happiness. If 1,000 kids rode their bikes to school everyday, it could equal health benefits equivalent to \$3 million dollars a year.



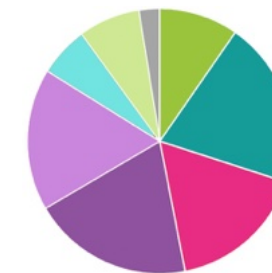
Injuries (2006-2016)



Fatal Accidents (2006-2016)

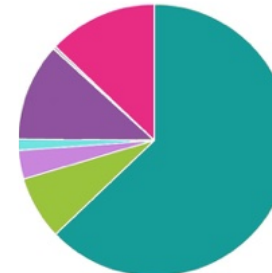


Where do people from South San Francisco work? (2006-2010)

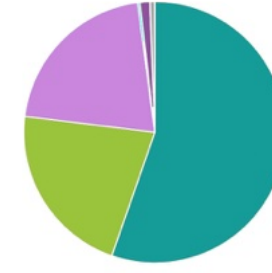


Where do workers in South San Francisco live? (2006-2010)

- Alameda
- San Francisco City
- South San Francisco
- Adjacent Cities San Mateo County
- Other Cities San Mateo County
- Santa Clara
- Other counties Bay Area
- Outside Bay Area

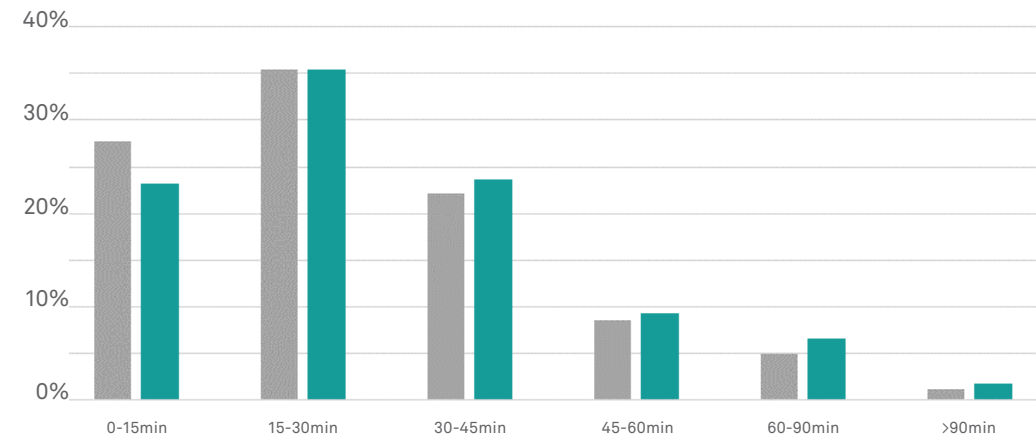


Mode choice to work commuters who live and work in South San Francisco (2006-2010)



Mode choice to work commuters who live in SSF and work in South San Francisco (2006-2010)

- Drive alone
- Carpool
- Transit
- Bicycle
- Walked
- Other



Average Travel Time to Work South San Francisco - CTPP census data

- 2005-2009
- 2012-2016

1.4 ANALYSIS

PUBLIC OPEN SPACE, RECREATION & HEALTH

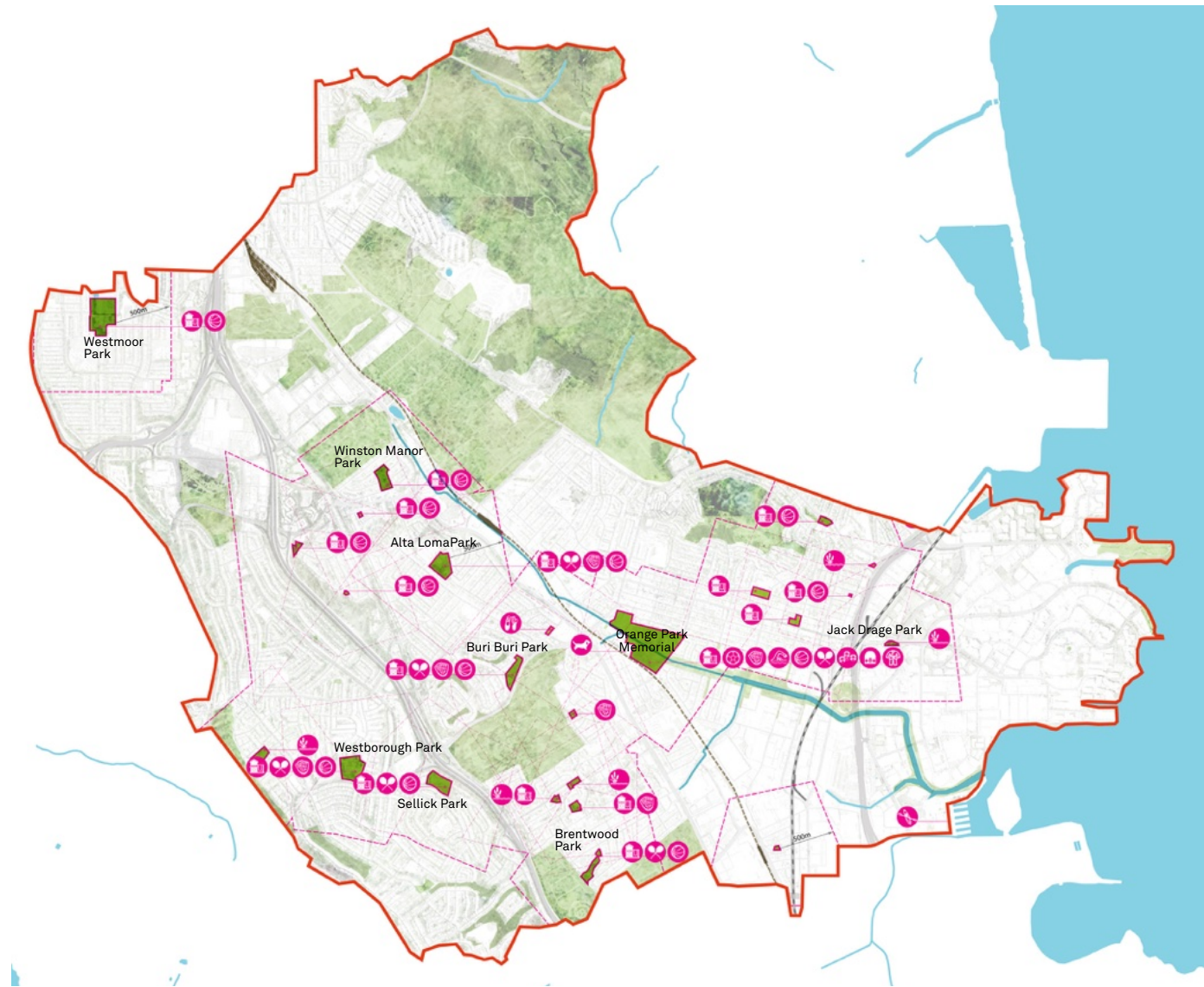
South San Franciscans do not have adequate open space to support the demand for athletic fields. Both South San Francisco and El Camino High Schools make their fields available for use on the weekends for community teams, but there is still a need for more parks.

At the same time, youth obesity is a significant issue for the City, with it ranking several points above the San Mateo County average.

A survey of open space and sports facilities shows that Orange Memorial Park hosts most of its athletic events in that one central location. This comes with its own advantages and disadvantages. It creates a significant community hub next to the creek and accessible for all, but it means that neighborhoods have a shortage of open space with walking distance.

The recreational facilities within South City could also better reflect the demographics and recreational preferences. There is far from enough soccer fields in the City, something which our research indicates is a

common deficiency in many Bay Area cities. High sports participation is definitely an opportunity for building community and social resilience.



LAND USE ANALYSIS



Orange Memorial Park

	SOUTH SAN FRANCISCO	MILPITAS	REDWOOD CITY	SAN BRUNO
BASEBALL	6	6	15	8
POPULATION RATIO	1:11,000	1:10,000	1:5,500	1:5,500
SOFTBALL	1	4	7	5
POPULATION RATIO	1:65,000	1:17,200	1:11,500	1:8,500
FOOTBALL	0	1	2	1
POPULATION RATIO	0	1:68,000	1:39,500	1:42,165
SOCCER	1	3	22	4
POPULATION RATIO	1:65,500	1:23,000	1:3,500	1:10,500
TENNIS	15	19	14	4
POPULATION RATIO	1:4,500	1:3,500	1:5,500	1:10,500
BASKETBALL	13	0	3	2
POPULATION RATIO	1:5,000	0	1:26,500	1:21,000
BOCCE	1	0	2	0



VULNERABILITIES: SHORELINE & COLMA CREEK

Lower Colma Creek and the shoreline area between Genentech’s campus and the Airport are the most at-risk areas of the watershed. The most recently released FEMA maps, although under dispute, highlight an area that has experienced significant flooding over the last half a century. A funnel-shaped zone of flood risk has been designated along lower Colma creek, through the Lindenville Industrial Precinct, across industrial sites east of 101 (adjacent to Genentech and the R&D zones) and encompassing the South San Francisco Water Quality Control Plant, the Sam Trans depot and the northern edge of SFO Airport

On top of this storm water threat, this same area faces significant risk from sea-level rise. Scenarios from 2 foot up to 6 feet show varying levels of risk across these sites that sit directly on the former marshland and micro-delta that joined Colma Creek to the Bay at the turn of the century. The further

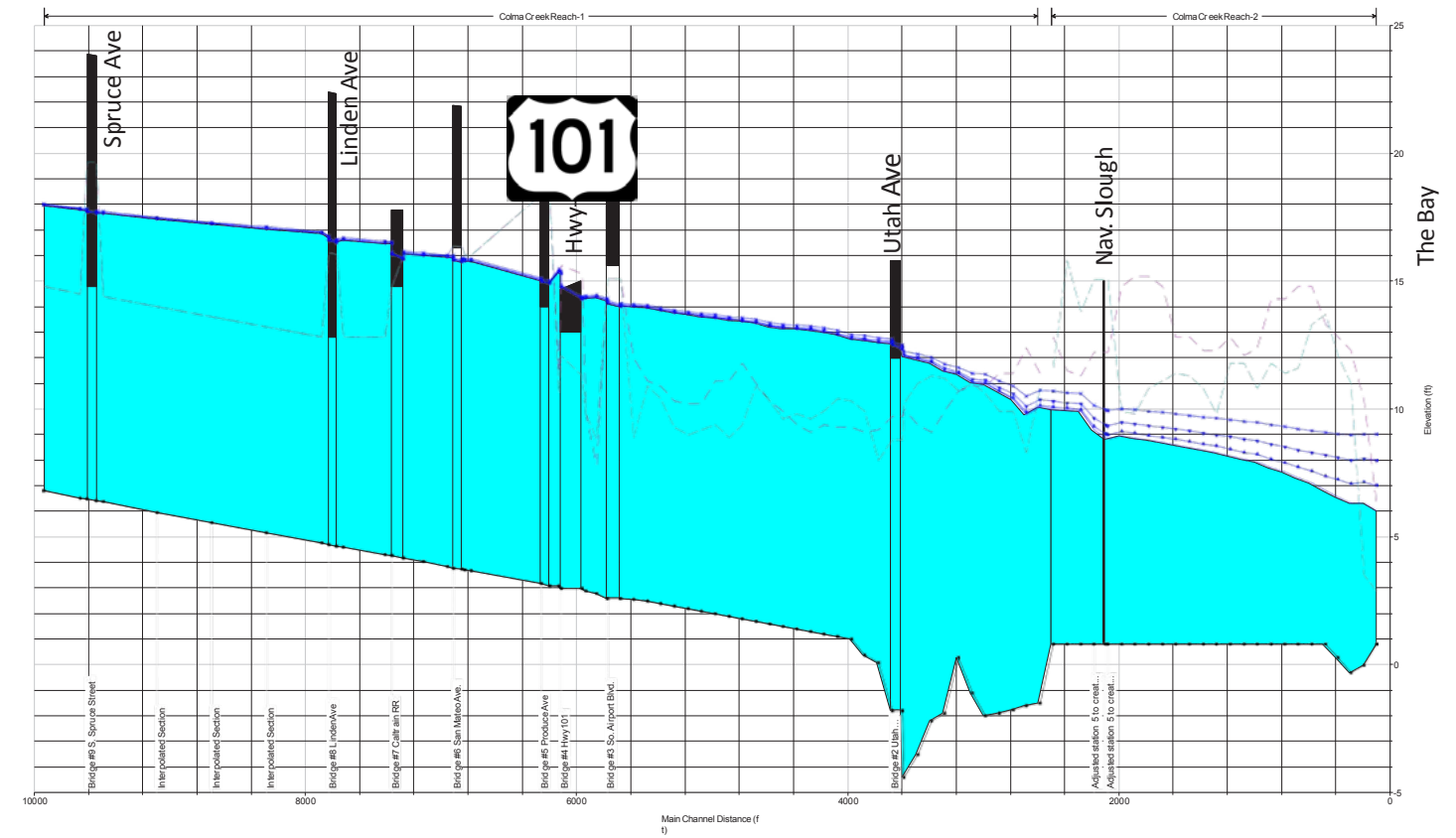
consequence of which is the nature of soils along this corridor from that water system leading to the liquefaction hazard zone covering the same sites.

Sam Trans island has been consistently shown in modeling as one of the most vulnerable sites and we were contacted by consultants applying for grant funding for risk assessment on this site and have offered support to this process.

The combination of the rail corridor, Highway 101, the various highway exits and the surrounding large industrial lots results in very poor east-west access within South City and particularly adjacent to Colma Creek. The street network shows few crossings of the rail corridor as well as few crossings of 101. South of the canal even worse than north. The same lack of connections can be seen on the bicycle network plan and this leads to poor access to the Bay. Further, it also leads to poor access to the Caltrain and between the downtown, with its retail offerings, and east

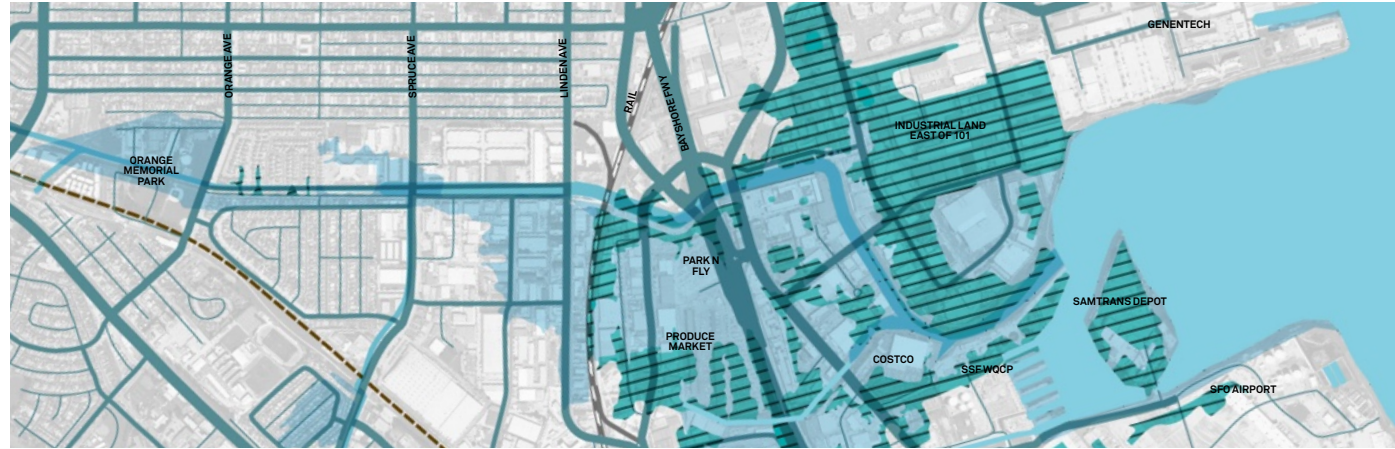
of 101, the major employment center.

There is real potential for more capacity for stormwater in this east-west corridor to not only provide for extreme storm events, but to also provide better access to the CalTrans, to East of 101 and to the Bay. Transformation of some of this area has already been considered with lots north of the canal, adjacent to the downtown, previously marked in the general plan as suitable for infill development and some sites adjacent to the creek identified as a redevelopment zone. A study of industrial land uses and land values shows that even some sites that flood within this area (Park N Fly) have a significant business and land value despite what would seem to be businesses not built around value-add. Another constraint is the social importance that the industrial employment base plays to the town, with only fractional jobs within the biotech hub being taken by local residents from South City.

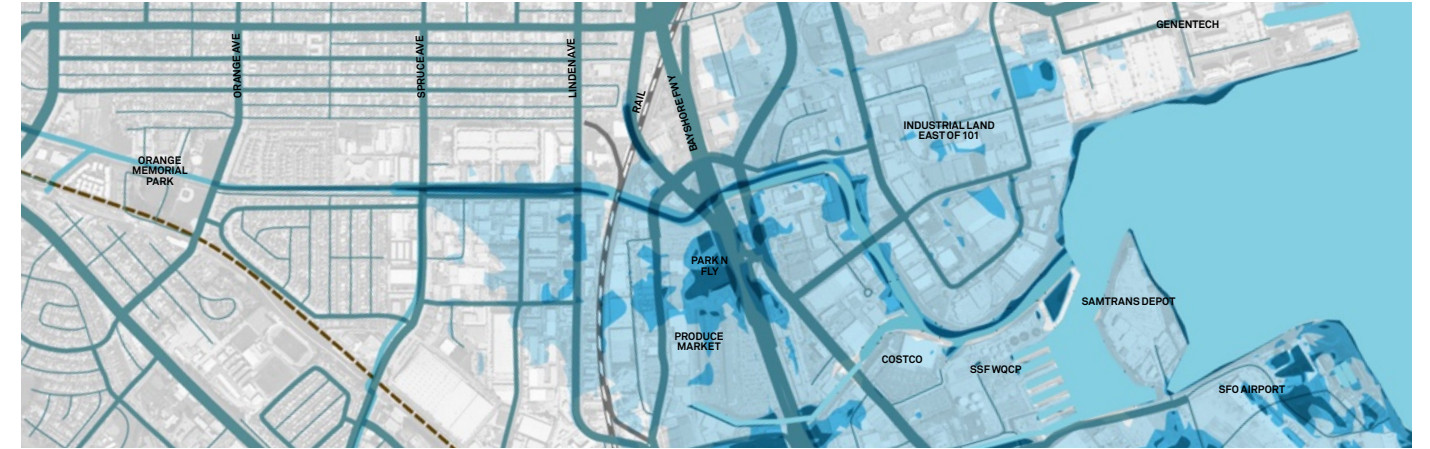


Creek Model at 100yr Flow (w/ 1',2', & 3' SLR dotted)
Adapting data from 2015 Moffat & Nichol Resiliency Study

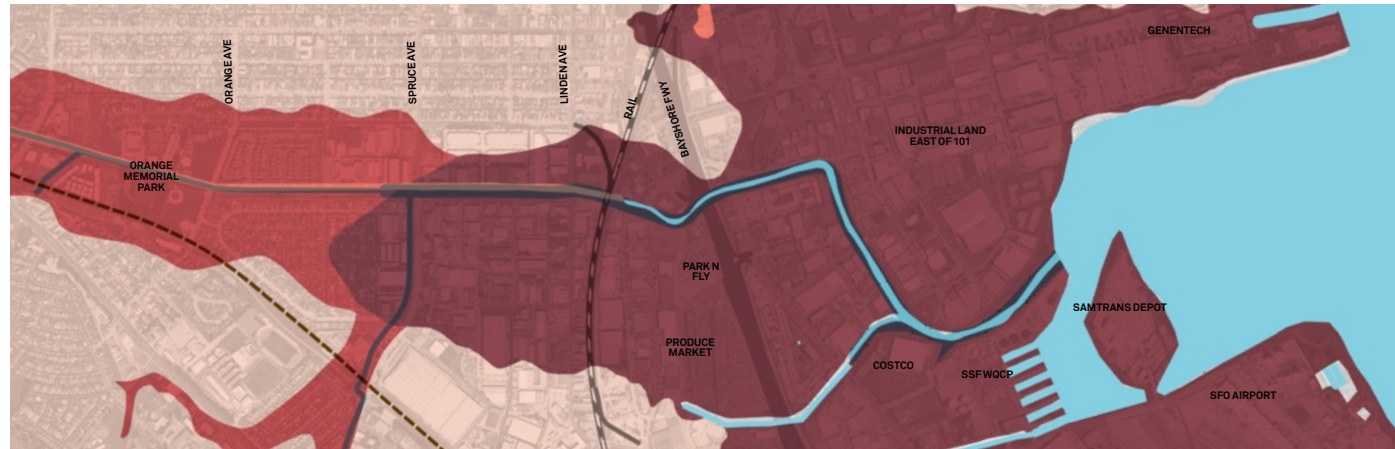
1.4 ANALYSIS



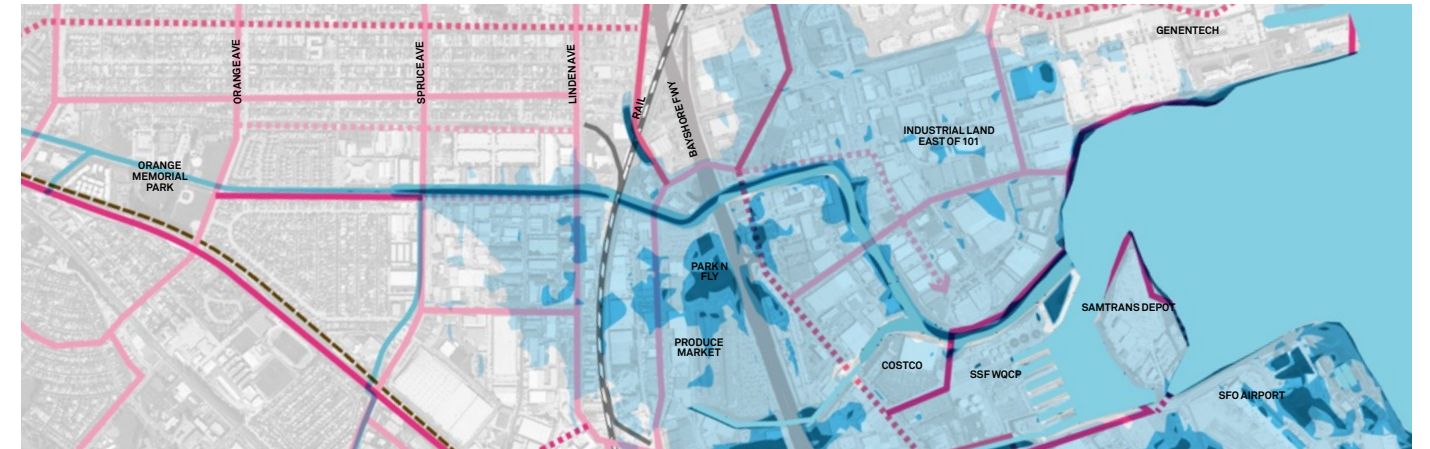
FEMA Flood Zone



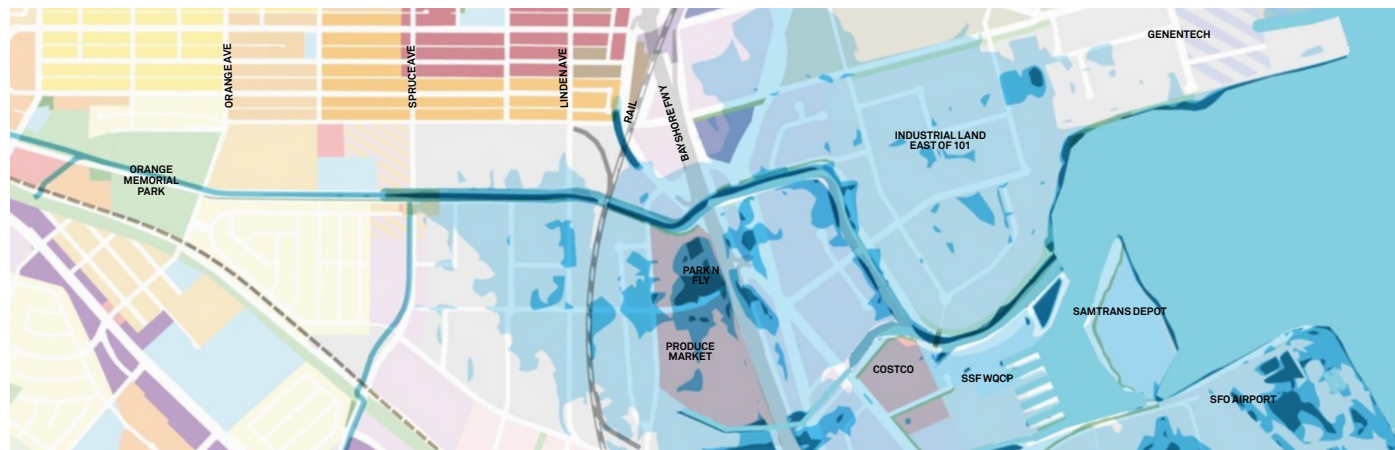
Streets (with SLR)



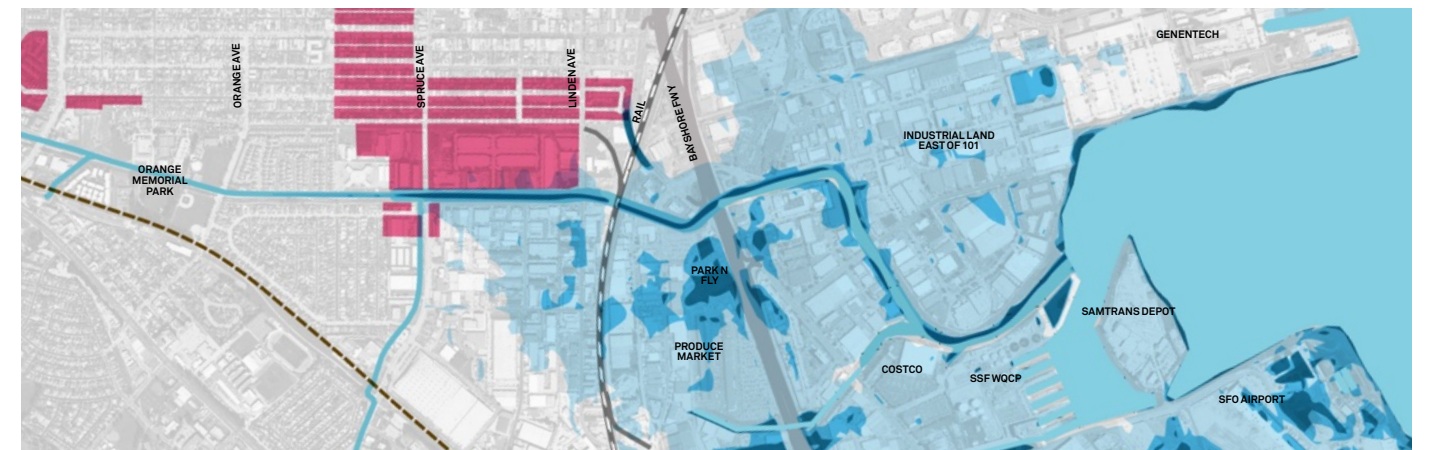
Liquefaction Hazard Zone



Bicycle Network (with SLR)



60 inches SLR +100 Yr Flood Event



Sites for Infill Development (with SLR)

SAN MATEO COUNTY HAS MORE PROPERTY AT RISK FROM SEA LEVEL RISE THAN ANY OTHER COUNTY IN THE BAY AREA* THE COUNTY COULD EXPERIENCE UP TO 55 INCHES OF SEA LEVEL RISE BY 2100.**

*Source: San Mateo County Office of Sustainability (<http://www.smcsustainability.org/climate-change/seachange/>)

**Source: Sustainable San Mateo Indicators Report



1.5 DESIGN OBJECTIVES

A SERIES OF OVERLAID OBJECTIVES TO DRIVE MULTI-BENEFIT PROJECTS FOR BUILDING RESILIENCE & LIVABILITY

1 REDUCE FLOODING

2 PROTECT AGAINST SEA-LEVEL RISE

3 INCREASE GREEN SPACE FOR AMENITY & RECREATION

4 INCREASE ACCESS TO THE SHORELINE & INCREASE ACTIVE-MOBILITY AND ADD FIRST AND LAST MILE ACCESS TO TRANSIT HUBS

5 INCREASE EDUCATION AND ENGAGEMENT AROUND WATER MANAGEMENT & SEA-LEVEL RISE

6 REDUCE STORM-WATER RUNOFF, IMPROVE WATER QUALITY, INCREASE STORAGE/REUSE

7 IMPROVE GROUND WATER CONDITION & REDUCE RISK OF SUBSIDENCE

8 ECOLOGICAL RESTORATION & BIODIVERSITY

9 INCREASE SOCIAL RESILIENCY & LOCAL PREPAREDNESS FOR DISASTERS



1.6 DESIGN CONCEPT

Public Open space is critical to resilience. Cities no longer create new open spaces as they did in the past. Our research has indicated that open spaces provides for the maximum number of our project objectives and is an important tool for building more resilience (not to mention livability) in our cities.

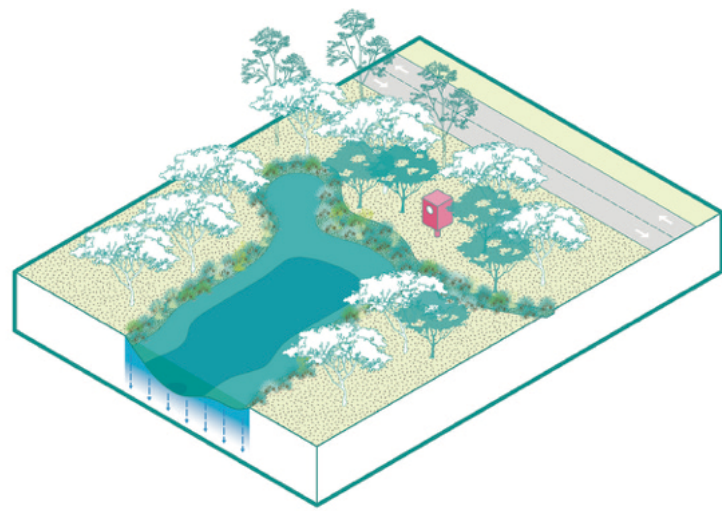
connect communities, and enhance the abilities of those communities to respond to disaster.

We must call on all available green, open and public (or semi-public) land order to deliver on this goal.

A new approach is needed in order to develop multi-benefit public open spaces that manage water, restore native ecologies, support and

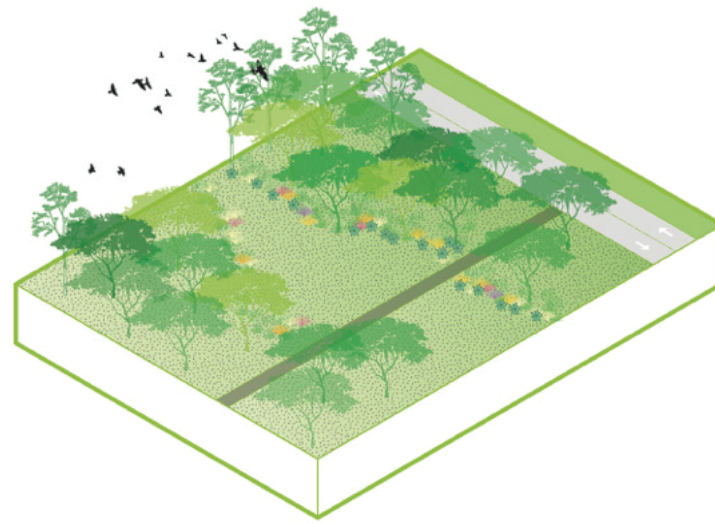
PUBLIC OPEN SPACE = RESILIENCE

WATER



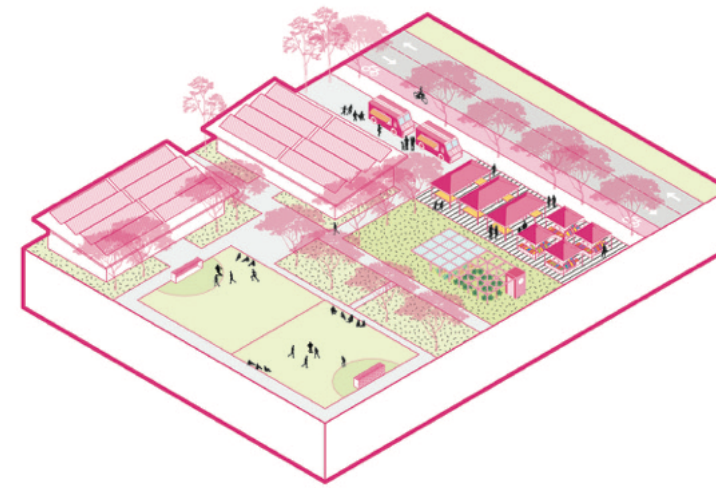
Public open space is critical to managing water. Aside from being 'green infrastructure' to reduce urban runoff and reduce urban heat, it is also a critical early warning mechanism for flooding, by providing open green inundation areas which give visible signs to the community that flood waters are rising

ECOLOGY



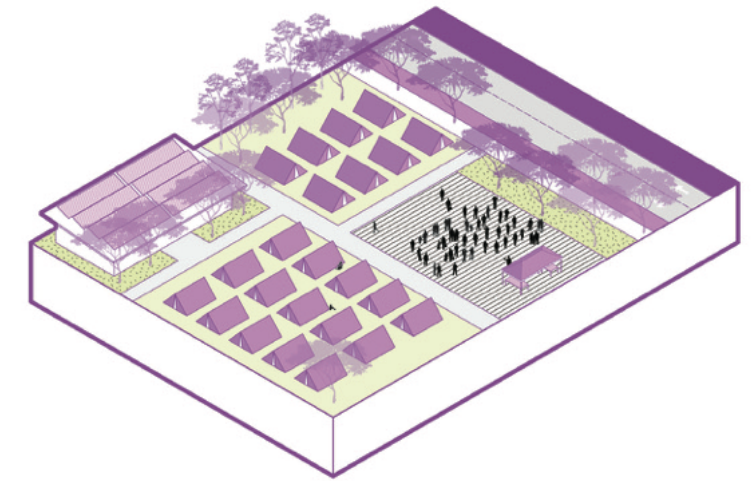
Public open space planted with natives from the historic Colma Creek watershed will support the biodiversity needed to create resilient landscapes. These landscapes will require less maintenance and be more resilient to extreme weather events

COMMUNITY



Public open space is where communities gather. Social resiliency is built by communities knowing one another and these spaces, and the facilities that we build within them, are key to this. We also need these places to host community events, like markets and local sporting events. They support healthy communities to live healthy lifestyles together.

EMERGENCY



History shows us that public open space is extremely important in allowing communities to gather, organise and rebuild in times of disasters. They can and have become centers of shelter as well as temporary hospitals and schools after major earthquakes or fires.

"OUR STREET NOW HAS FROGS! IT'S AS IF THERE WAS A RIVER BENEATH THE STREET THAT HAS BEEN OPENED-UP. ITS GREENER... MUCH COOLER... AND WE RIDE OUR BIKES UP TO SCHOOL & DOWN TO BASEBALL PRACTICE"



1.7 RESILIENT SOUTH CITY - WATERSHED

COLLECT & CONNECT - A RESILIENT OPEN SPACE NETWORK

The Resilient South City project identifies sites and measures across the entire Colma Creek watershed that can build resilience related to Water, Ecology, Community & Emergency. Through adaptation projects at a range of green space across the creek's catchment (Mountain, Cemeteries, Schools and Parks) as well as new 'slow streets' for mobility and water, a resilience network will be established across South City and neighboring areas within the Colma Creek Watershed.

NEW COLMA CREEK (CONNECTING FROM ORANGE MEMORIAL PARK TO THE BAY)

The primary objectives of the Colma Creek project are to reduce the impacts of reoccurring flooding (from annual to 100 yr events) as well as protect against sea-level rise, increase amenity and recreation opportunities while re-establishing continuous public access to the shoreline. The project focuses on the section of the creek between Orange Memorial Park and the SSF WQCP.



1.7 RESILIENT SOUTH CITY - WATERSHED

WATER

A number of key sites across the watershed have been identified as typologies of opportunity for meeting the project objectives relating to water & resiliency. These include opportunities for water capture, infiltration or treatment/reuse as well as simply slowing the flow and improving the quality of runoff into Colma creek and Bay.

Recharge Reservoirs will be created at the base of San Bruno Mountain for the collection of storm water running off the mountain in a location with unique geological opportunities to create passive infiltration. Similar reservoirs could be created at the bottom of the cemeteries and golf course to treat runoff of fertilizers and reuse water for irrigation. Schools, halfway down the watershed, will capture water for treatment and reuse on site. Drainage streets running down the hill to the creek will be adapted with green infrastructure, opening up pipes into

swales and slowing the flow of water into the creek to reduce peak flow.

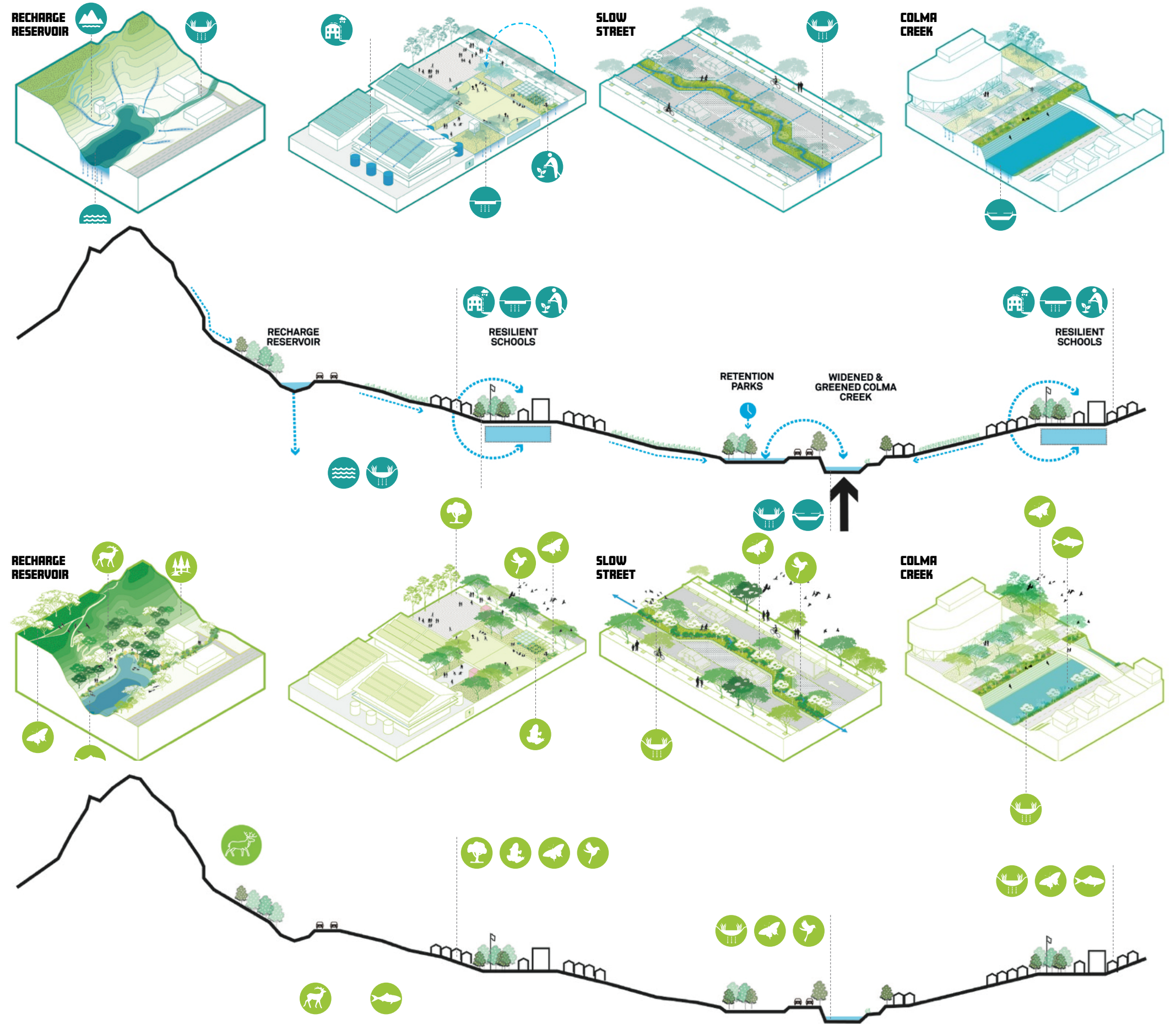
Colma creek will be widened to increase capacity allowing for concrete walls at it's edges to be removed. Storm water from streets will first discharge into new parks created on either side of the creek for infiltration and/or overflow into the creek, reducing peak flow.

ECOLOGY

Restoration of native ecologies should extend from the mountain down the creek, and up from the tidal zones of the shoreline. Native plants are more resilient and will attract native species, building biodiversity across the watershed and reducing irrigation needs.

Mountain restoration projects have been very successful to-date. The Recharge Reservoirs would enhance biodiversity by retaining some water within the gully areas and reforesting edges and the lower mountain at these points. Increased native plants at the schools could accompany education programs related to local biodiversity, while green infrastructure within Slow Streets would act as ecological corridors between mountain, parks, schools and the creek Restoring Colma Creek with native planting will reconnect species from the shoreline up to orange park. Fish will, once again, will swim up the creek corridor

and during flood events will access the parks as larger sources of food.



1.7 RESILIENT SOUTH CITY - WATERSHED

COMMUNITY

In response to the shortage of open space across the City, increased resilience is reliant on creating new parks and utilizing existing community open areas.

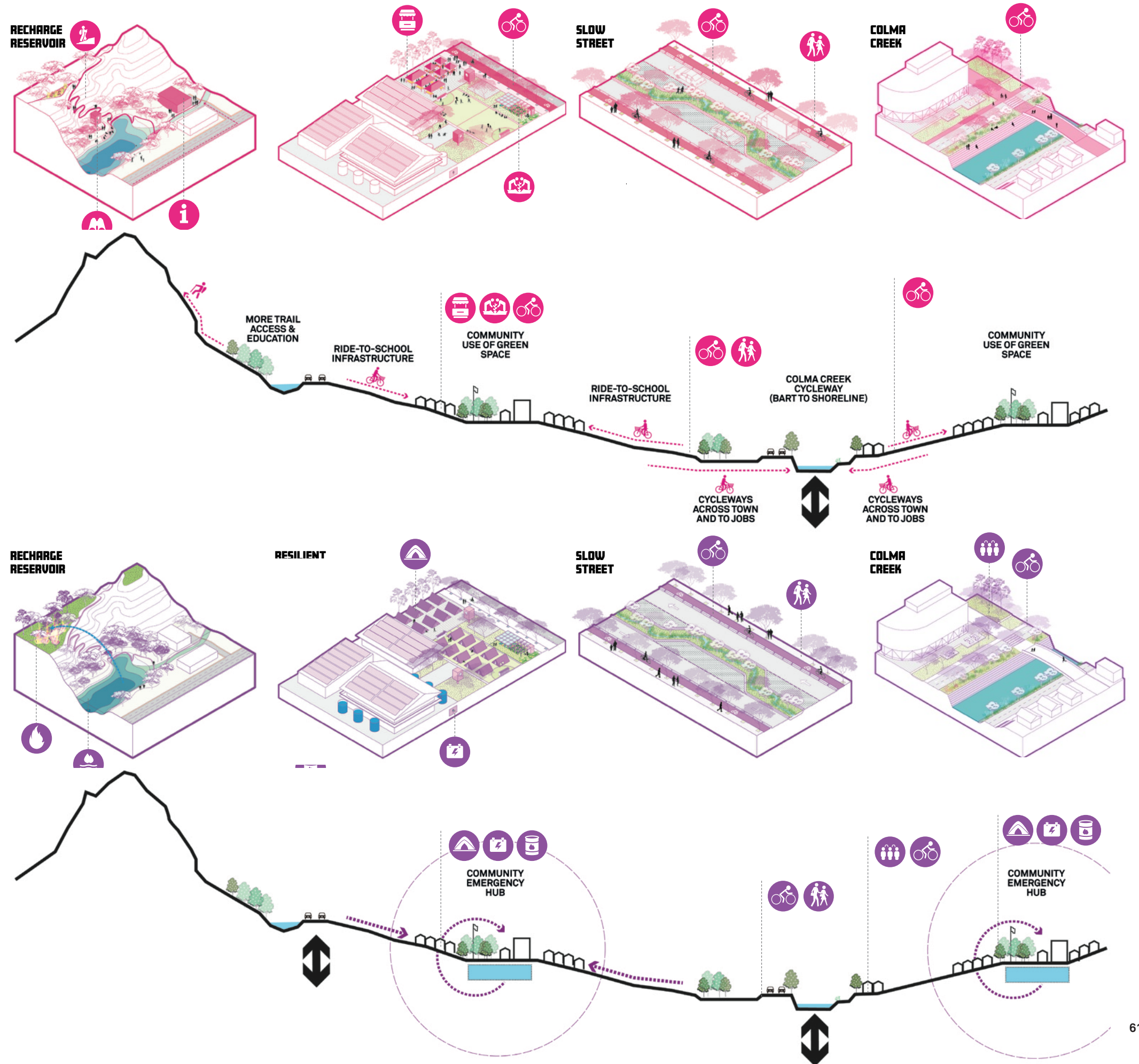
School yards will be opened-up for play for neighborhood children as well as markets and other community events like weekend sports. Neighbors will meet and connect with those within the walking catchment of their school. Slow streets will provide safe routes for cycling to school as well as rising to the canal which will connect walkers, runners and cyclists to jobs East of 101 and the Bay. Health will improve across the City as a result.

The mountain will be accessed at the reservoirs for education programs and hiking. The City reconnected with the Mountain and with the Bay

EMERGENCY

Schools will become hubs for emergency. Points of refuge with water, energy, food and facilities needed to house displaced communities, or even just as temporary points of gathering and information distribution. Through increased community access to schools, communities will become more connected and more able to self-organize in these times of disaster, knowing where older and more vulnerable member of their community live and being able to help them

Colma Creek corridor will act as an East-West connector to egress points, linking BART with Caltrain and with Ferries at the shore.




1.7 RESILIENT SOUTH CITY - WATERSHED (SCHOOLS)

SCHOOL CAPACITY

We have made initial calculations of the water usage for each school, as well as the storm water catchment, water usage, potential cistern size and savings by treating and recycling runoff.

estimates of likely emergency shelter capacity for schools within their City. This is the beginnings of a comprehensive sustainability and emergency response network across the entire watershed.

We have also coordinated with the South San Francisco fire department to include

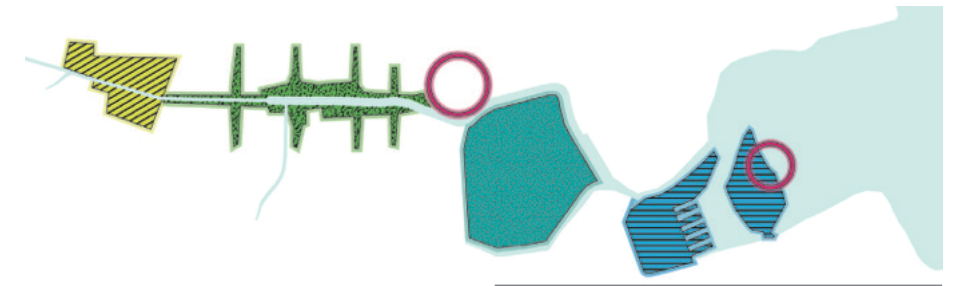
School	Type	Est. Shelter Capacity (people)	Watershed Area (sf)	Imper-vous Portion	Avg Run-off Coeff	Building GSF	Onsite Irrigated Area (sf)	Adjacent Irrigated Area (sf)	Include adjacent	Total Irrigated Area (sf)	GSF per occupant		No. of Employees	No. of Transients	Student Pop per Hassel Info	Student Pop to Use in Calcs	Cistern Size					
											Employees	Transient					Length (ft)	Width (ft)	Depth (ft)	Volume (cf)	Volume (gal)	Volume (ac-ft)
Alta Loma Middle School	Middle		4,430,230	67%	0.64	62,956	266,514	267,004	No	266,514	1700	145	37	434	746	746	50	25	10	93,500		2.1
Baden High	High	150	39,619,700	67%	0.64	80,463	73,103	194,891	YES	267,994	2100	150	38	536	86	536	50	25	10	93,500		2.1
Buri Buri Elementary	Elementary	100	5,616,890	67%	0.64	13,794	62,176	-	No	62,176	1300	140	11	99	625	625	50	25	10	93,500		2.1
El Camino High	High 	500	18,233,400	67%	0.64	178,012	320,617	13,714,803	No	320,617	2100	150	85	1,187	1,430	1,430	50	25	10	93,500		2.1
Junipero Serra	Elementary		12,333,800	67%	0.64	50,992	64,735	-	No	64,735	1300	140	39	364	321	364	50	25	10	93,500		2.1
Los Cerritos	Elementary	100	1,068,810	67%	0.64	46,815	51,655	616,505	No	51,655	1300	140	36	334	301	334	50	25	10	93,500		2.1
Martin Elementary	Elementary	100	9,964,300	67%	0.64	56,156	23,265	60,292	No	23,265	1300	140	43	401	439	439	25	25	10	46,750		1.1
Monte Verde Elementary School	Elementary		-	67%	0.64	-	-	-	No	-	1300	140			547							
Parkway Heights Middle School	Middle	100	-	67%	0.64	-	-	-	No	-	1700	145			557							
Ponderosa Elementary	Elementary	100	14,166,500	67%	0.64	43,710	185,463	6,780,604	No	185,463	1300	140	34	312	442	442	50	25	10	93,500		2.1
Roger Williams Elementary (Academy)	Elementary		3,050,340	67%	0.64	11,205	2,034	-	No	2,034	1300	140	9	80	-	80	10	10	10	7,480	55,950	0.2
Rollingwood Elementary	Elementary		9,737,870	67%	0.64	44,851	320,545	-	No	320,545	1300	140	35	320	-	320	100	25	10	187,000		4.3
Skyline Elementary	Elementary		-	67%	0.64	-	-	-	No	-	1300	140			403							
South San Francisco High	High 	500	8,586,460	67%	0.64	114,719	239,159	-	No	239,159	2100	150	55	765	1,403	1,403	100	25	10	187,000		4.3
Spruce Elementary	Elementary	100	-	67%	0.64	-	-	0	No	-	1300	140			685							
Sunshine Gardens Elementary	Elementary	100	10,445,000	67%	0.64	65,666	33,782	328,546	No	33,782	1300	140	51	469	405	469	25	25	10	46,750		1.1
Westborough Middle School	Middle	200	-	67%	0.64	-	-	0	No	-	1700	145			640							
TOTAL		2,050	137,253,300			769,339	1,643,048	21,962,645		1,837,939			473	5,301		7,188	610	285	120			26



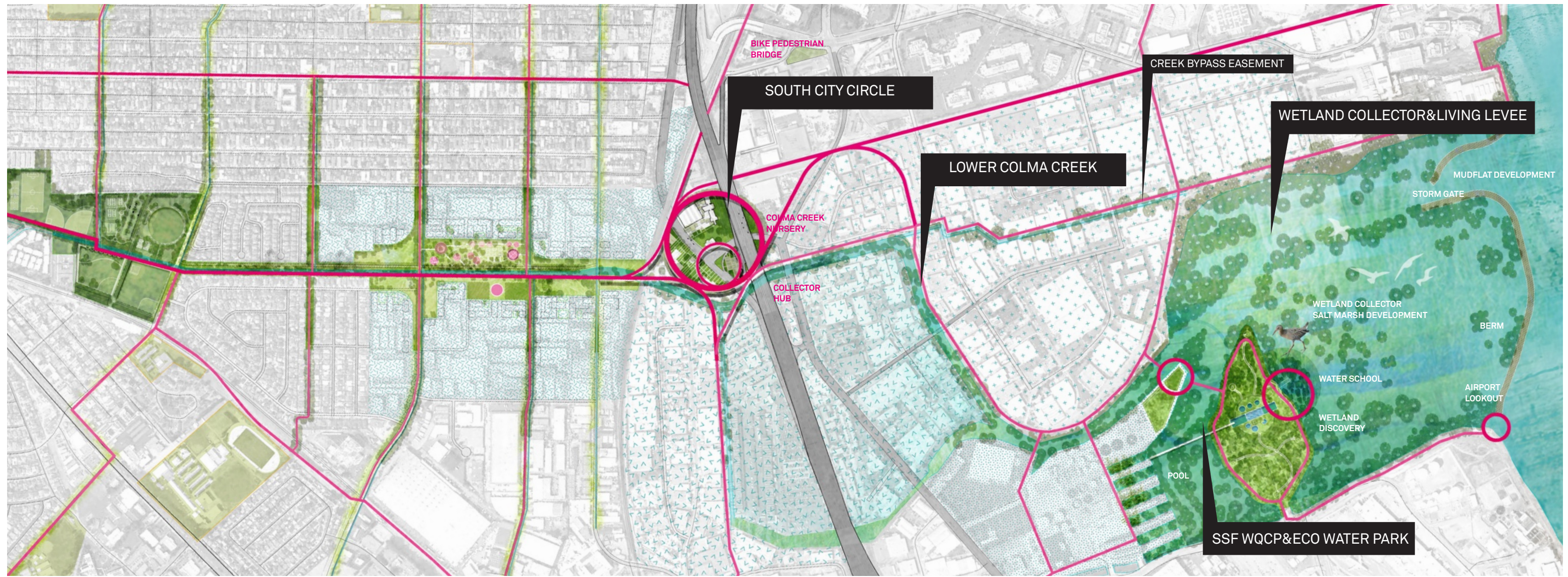
**1.7 RESILIENT SOUTH CITY
- COLMA CREEK**

**A CONTINUOUS GREEN CORRIDOR OF
PARKLANDS AND PUBLIC ACCESS...
CONNECTING RESIDENTS FROM PARK-
TO-PARK, FROM POOL-TO-POOL**

Our master plan for Colma Creek looks to connect a series of different projects for new and improved public spaces while restoring the lost ecologies of this natural connection to the bay shore. Our project creates both a new public destination on the Bay as well as a continuous safe route to access it.



Colma Creek Concept



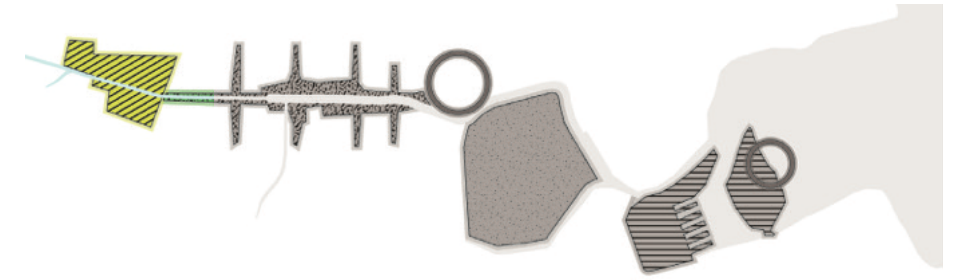
Colma Creek Master Plan



1.8 KEY PROJECTS



Orange Memorial Park Master Plan



+70 acre feet

increased detention capacity

+5

sporting facilities within the new parkland area of 35 acres

DESIGN PROPOSAL

Completing the existing master plan for Orange Memorial Park while extending the current water quality project to include flood mitigation by adding capacity to below ground storage tanks and also lowering playing fields for inundation to mitigate downstream flooding. Increase native plant population

ESTIMATED IMPACT

Increased detention of up to 70 acre feet while also adding 5 sporting facilities within the new parkland area of 35 acres.

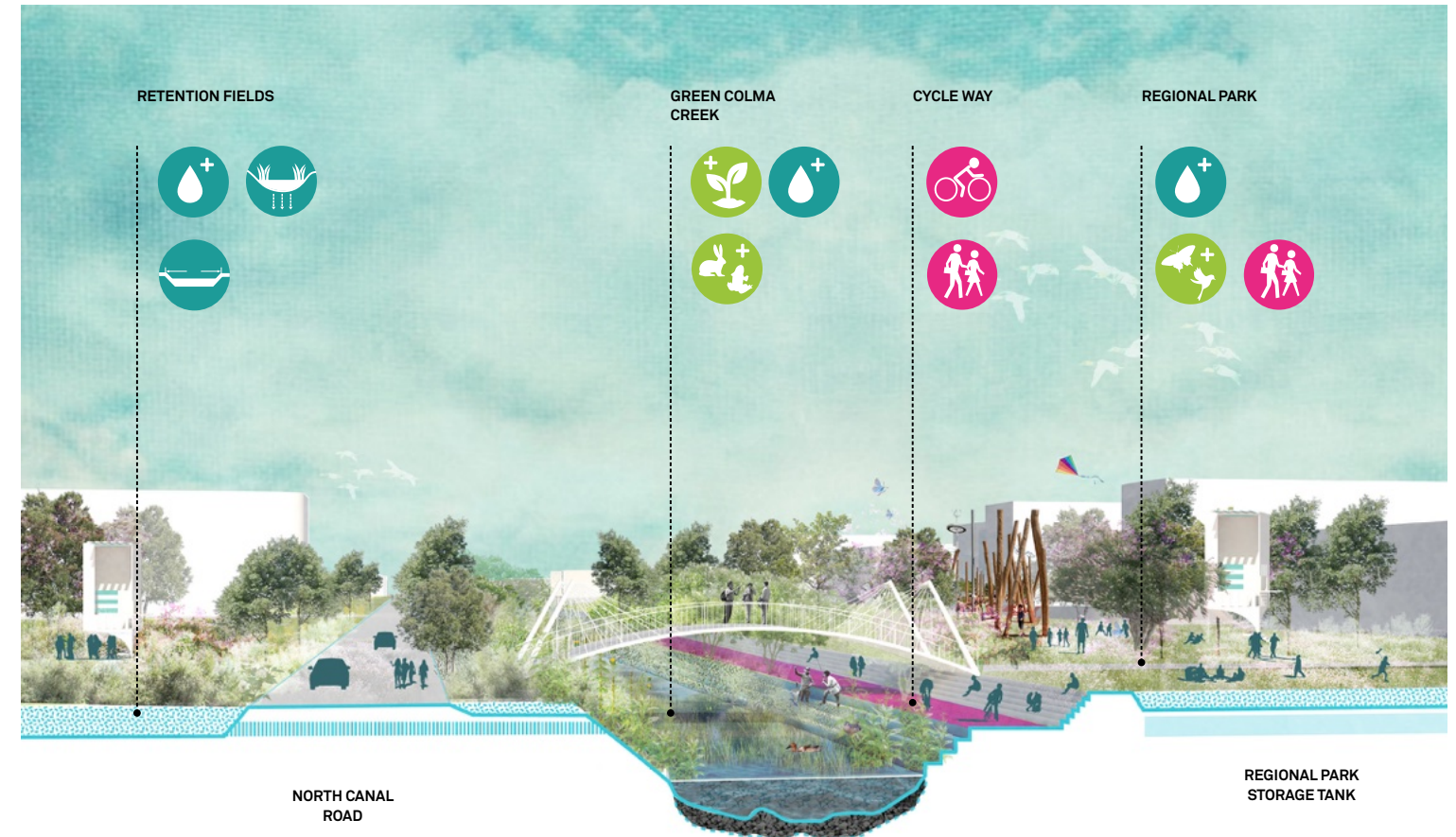
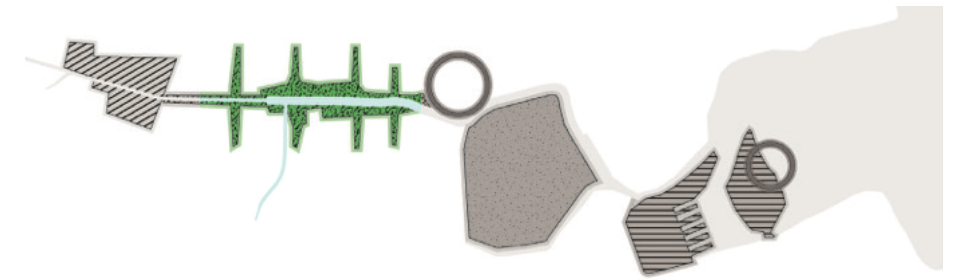
PHASING

Staged excavation of each quadrant of the park with excavated material used in construction of living levee at shoreline

1.8 KEY PROJECTS



Creek-side Parks Master Plan



+43 acres

new recreational parkspace

+1.1 miles

continuous green bike/pedestrian access

+90 acre feet

water detention area

DESIGN PROPOSAL

Increased capacity within Colma creek by widening channel, lowering adjacent access paths to include additional area within the channel.

New water retention/detention parks created adjacent to Colma Creek through land acquisitions, rezoning, and contributions associated with new development.

ESTIMATED IMPACT

Creation of additional peak flow capacity to reduce flooding directly adjacent to the creek segment in small and mid-size storm events (<25-year) and provide for increased ability manage upstream flow connections, continuous safe ped/cycle access from Orange Ave to Linden (.8 miles)
Extending recreational greenspace from Orange Memorial Park along side the creek

to Linden St. creating a Colma Creek Linear Park that adds an additional 43 acres of recreational parkspace.

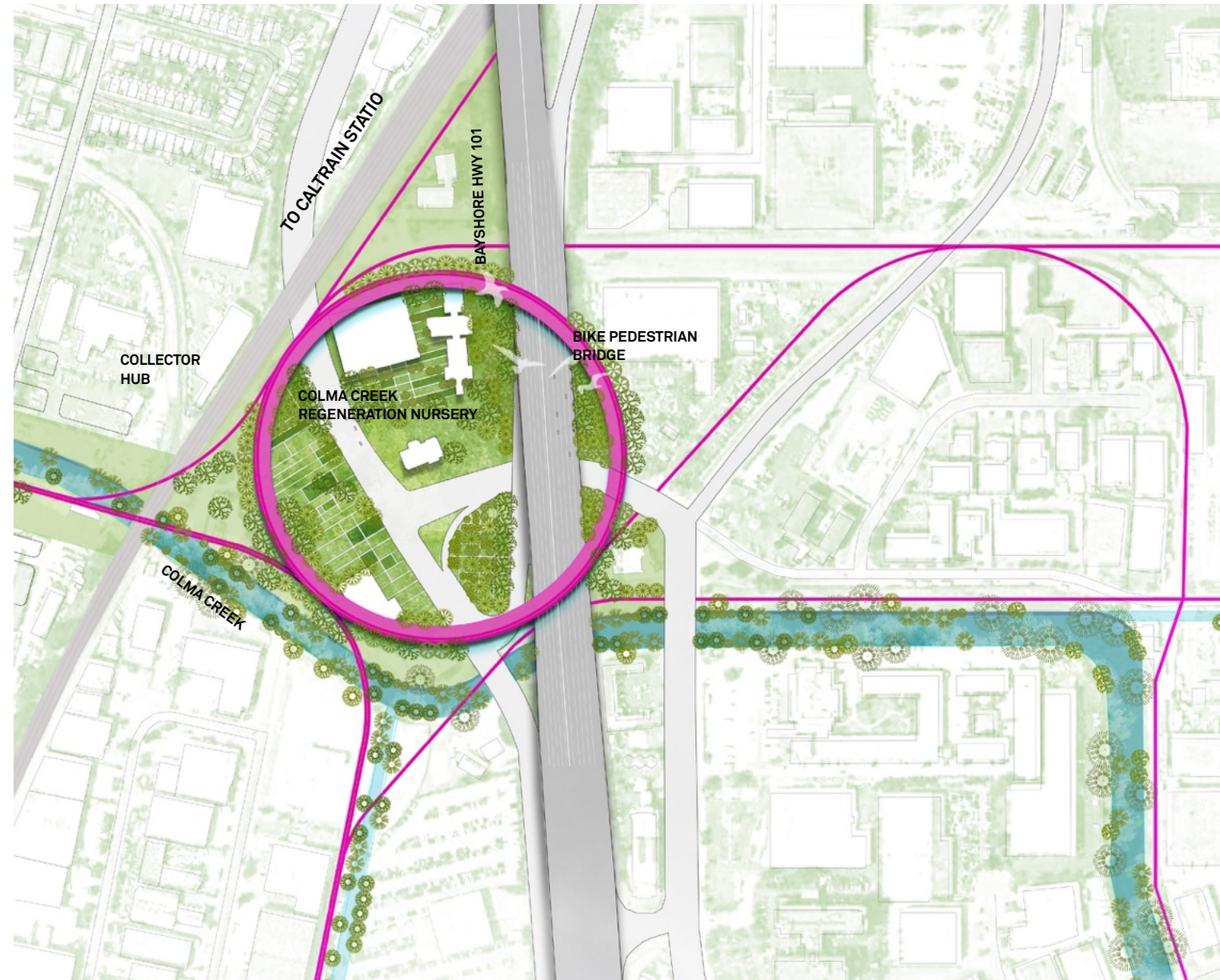
PHASING

Lowering of Sister Cities Park & conversion of South Canal Rd could be delivered concurrently. New pedestrian/cycle bridges in later stages.

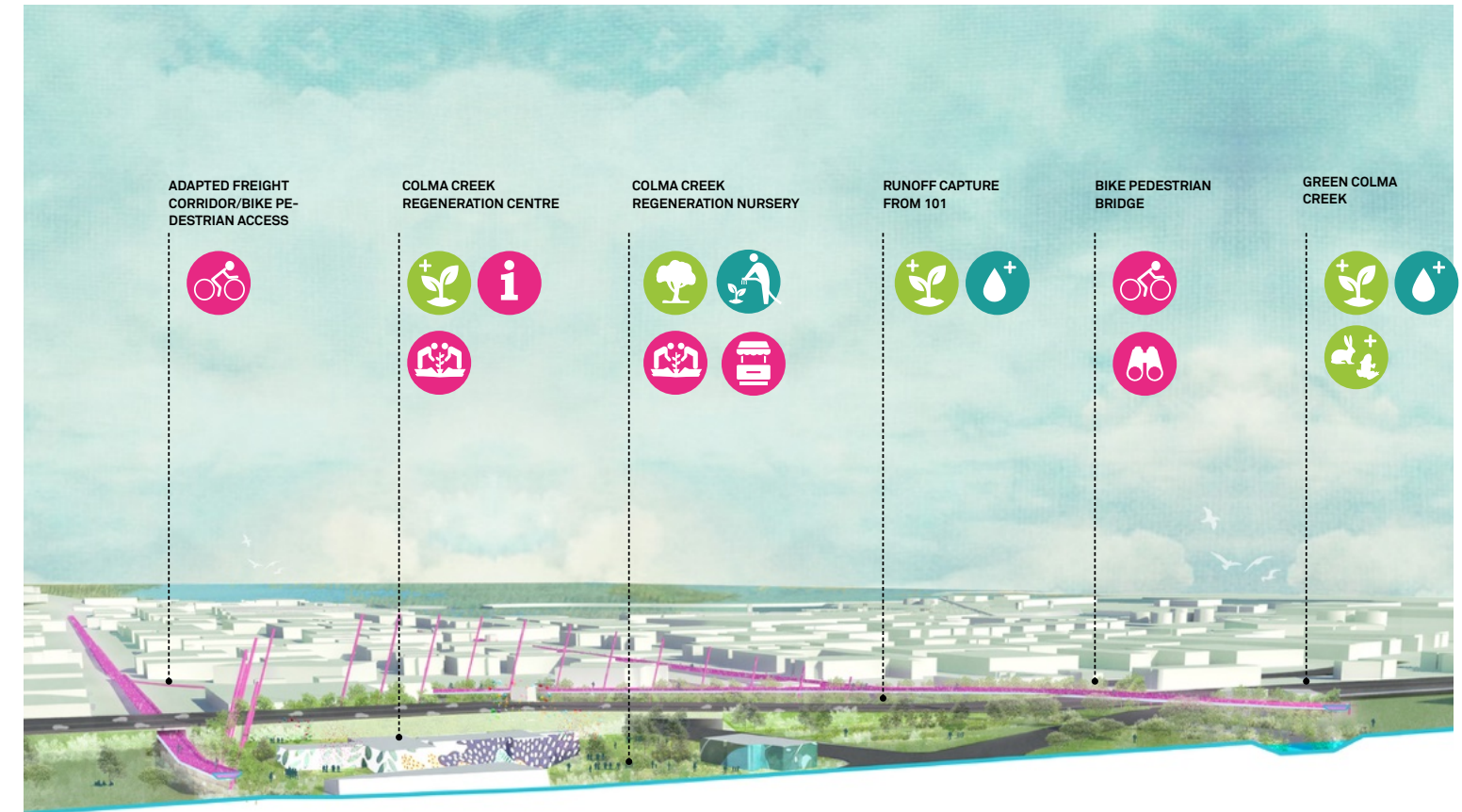
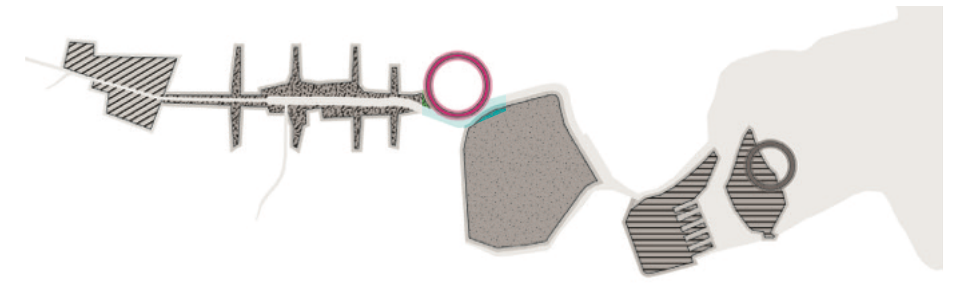
Designed for staged delivery of parks within an overall master plan. Large lots provide for a relatively quick process and for each stage to add space.



1.8 KEY PROJECTS



'The Circle' Master Plan



+10 acre feet

water detention capacity

+6 acres

new public nursery

+0.8 miles

continuous green bike/pedestrian access

DESIGN PROPOSAL

A pedestrian and cycle bridge connecting from Colma Creek (at Linden) over the rail corridor to Caltrain (that will have improved service after electrification), over Produce Ave/Hwy 101/Airport Blvd to lower Colma Creek, as well as under the 101 on the former freight rail line. Green area created below for a new natives nursery providing both flood detention and 101 runoff treatment, lighting and landscaping designed as a gateway to South City

ESTIMATED IMPACT

Increased access to Caltrain as well as safe and continuous access east-west between downtown and major employers (0.1 miles) for > 5,000 residents living east of 101 and working on the west side. Up to 10 acre-feet of detention to reduce flooding from Colma Creek using a bypass directly from the Creek under Hwy 101 via a culvert.

Additional runoff collected from HWY 101 to assist with flood attenuation, but primarily as a water quality project that can share space with the floodable space. This project will be part of an overall adaptive management strategy for large flooding events and will assist as an individual project during small events (e.g., <10-year)

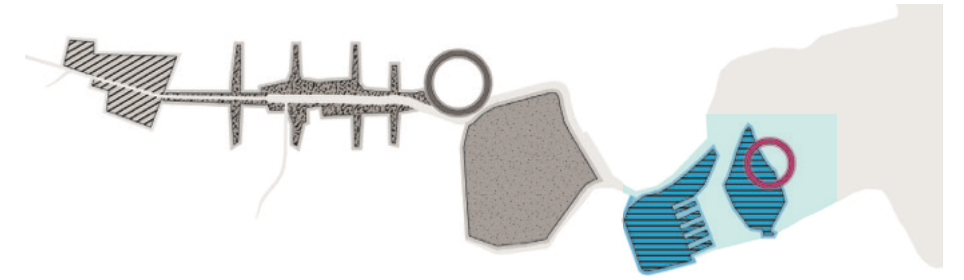
PHASING

Hardscape removed and converted to softscape. Temporary access over rail corridor to station as first priority for access

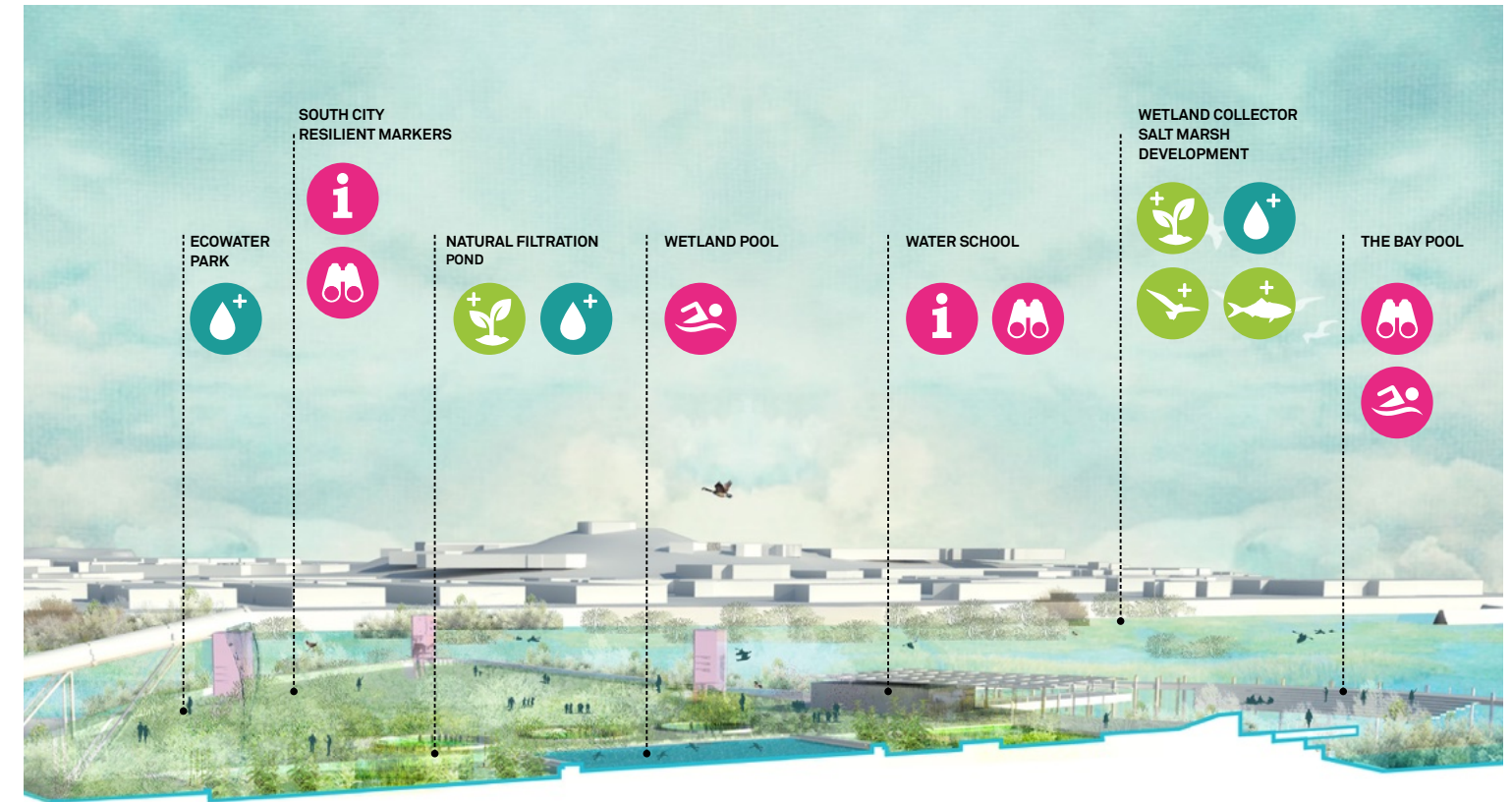
THE SOUTH CITY CIRCLE IS A GATEWAY TO THE CITY FOR ALL MODES OF TRANSPORT. IT IS A STATEMENT OF COMMUNITY PRIORITIES; ACCESS TO THE BAY ALONG WITH GREEN SPACE & NATIVE PLANTS ALONG THE CREEK



1.8 KEY PROJECTS



WQCP & Eco Water Park Master Plan



+12.4 acres

natural treatment zones

+23.5 acres

new recreational parkland

DESIGN PROPOSAL

Additional natural treatment areas at the shoreline of the WQCP as well as restoration of the SamTrans depot for creation of a public park for recreation and education associated with water quality, in partnership with commercial facilities.

ESTIMATED IMPACT

Creation of 12.4 acres of natural treatment zones adjacent to WQCP, as well as extended treatment wetland habitat in 23.5 acres of new recreational parkland.

PHASING

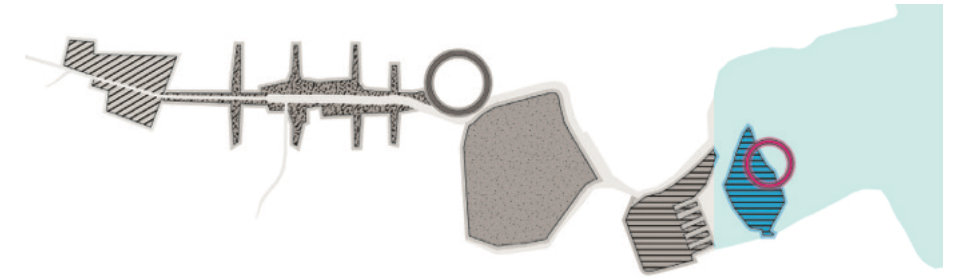
Initial habitat creation and ecological treatment within the disused wharf fingers, before expansion of restoration efforts to SamTrans site.

"IN THOSE DAYS, ONE WOULD HEAD FOR THE BEACH WITH HIS BATHING TRUNKS AND A TOWEL. NO LUNCH, NO SNACKS, NO BOTTLED WATER, ETC. JUST SALT WATER AND SUNSHINE"

Karl Rolih, past South City resident



1.8 KEY PROJECTS



Living Levee & Wetland Collector



300 acres

habitat restoration and water recreation

+1.2 miles

shoreline access

DESIGN PROPOSAL

Creation of a new 'living levee' tidal barrier, creating a 'wetland collector' area for habitat restoration and recreation, also capable of detaining storm water during king tides of long-term sea-level rise scenarios.

ESTIMATED IMPACT

Protection from 60 inches of SLR along with detention for 1,900 acre-feet of stormwater to contain the 50-year event (within a 12-hour maximum tidal period) within a 300-acre area for habitat restoration and water recreation.

PHASING

36 inches SLR at outer edges of Collector. Partial barriers then built to understand sediment build-up patterns. Final barrier and tidal control is then built.



PART 2 –

DELIVERY
ROADMAP
& NEXT
STEPS

PROJECTS OVERVIEW

Objectives		Project	Design Proposal	Benefits					Project Impact	Phasing & Alternatives					Delivery									
				Flood mitigation	Sea-level rise protection	Water quality	Water Storage & Rescue	Habitat Restoration	Serves Disadvantaged Community & Access in Emergency	Est. Impact	Note on Project Impacts	Key Stakeholders	Stakeholders with Assets at Risk	Stakeholders with financial benefit	Disadvantaged communities associated with the site	Project Sponsors (Individuals/entities that are responsible for overseeing and guiding implementation)	Project Champions (Individuals/entities that are committed to advancing the proposal, and can influence implementation)	Phasing	Alternative A	Alternative B	Funding mechanisms (draw from Funding table)	Governance obstacles (draw from Governance table)	Agency approval needed(draw from Governance table)	
Colma Creek		Orange Park	Completing the existing master plan for Orange Memorial Park while extending the current water quality project to include flood mitigation by adding capacity to below ground storage tanks and also lowering playing fields for inundation to mitigate against downstream flooding. Increase native plant population.	-	X	X	-	X	-	Increased detention of up to 70 acre feet while also adding 4 sporting facilities within the new parkland area of 35 acres.	Enhance the ability to manage flooding during smaller storm events by creating up stream detention capacity. This increase detention also has water quality benefits and is part of the larger adaptive management strategy of the hydromodification of the upper watershed of Colma Creek.	SSF Parks&Rec, RWQCB, CalTrans, SM County Flood Control, BCDC, EPA, SSF DPW	SSF Parks&Rec	Adjacent Property Owners	Growing Downtown Residential Population	SSF Parks&Rec, San Mateo County Flood Control District	City of South San Francisco (for the Water Quality portions of OMP)	Staged excavation of each quadrant of the park with excavated material used in construction of living levee at shoreline.	Lowering of only passive recreational areas, baseball and soccer fields retained above the common inundation area.				Need to identify who is responsible for operations and maintenance obligations and who pays for it. There will also be concerns about the risk tolerance of the Flood Control District. All improvements will need to comply with TMDL requirements.	Regional Water Quality Control Board, South San Francisco Recreation and Park, Department of Public Works and Flood Control District.
		Greened & Expanded Colma Creek	Increased capacity created within Colma creek by widening channel, lowering adjacent access paths to include additional area within channel.	X	X	X	X	X	X	Creation of additional peak flow capacity to reduce flooding directly adjacent to this creek segment in small and mid-size storm events (<25-year) and provide for increased ability manage upstream flow connections, continuous safe ped/cycle access from Orange Ave to Linden (1.1 miles)	Create sufficient capacity for the 10-year storm flow between Spruce Avenue and Highway 101 by widening the creek section by 20% and significant reduction of 25-year storm flow flooding in this segment.	RWQCB, CalTrans, SM County Flood Control, BCDC, EPA	Caltrans, private property owners	Adjacent Property Owners	Industrial Land Employment Base, Growing Downtown Residential Population	SSF Parks&Rec, San Mateo County Flood Control District	Colma Creek Advisory Council	Lowering of Sister Cities Park & conversion of South Canal Rd could be delivered concurrently. New pedestrian/cycle bridges in later stages.	Expanded hardscape creek with walls removed.		Public land, funded with support of grants related to water quality, cycling & flood mitigation.	Need to identify who is responsible for operations and maintenance obligations and who pays for it. There will also be concerns about the risk tolerance of the Flood Control District. All improvements will need to comply with TMDL requirements.	Regional Water Quality Control Board, South San Francisco Recreation and Park, Department of Public Works Army Corps of Engineers and Flood Control District.	
		New Creek-side Parks	New water retention/detention parks created adjacent to Colma Creek through land acquisitions, rezoning, and contributions associated with new development.	X	X	X	X	X	X	Extending recreational green space from Orange Memorial Park along side the creek to Linden St. creating a Colma Creek Linear Park that adds an additional 43 acres of recreational parkspace.	Enhance the ability to manage flooding during smaller storm events by creating up to 18 ac-ft detention capacity, which will primarily manage tributary flows entering the creek along this segment from the North, however this detention could also be used to divert flows from the creek if upstream detention was constrained physically.	Land Owners, SSF Planning, SSF Parks&Rec	Private property owners, Flood control district	Adjacent Property Owners	Industrial Land Employment Base, Growing Downtown Residential Population	SSF Parks&Rec, San Mateo County Flood Control District	SSF Planning	Designed for staged delivery of parks within an overall master plan. Large lots provide for a relatively quick process and for each stage to add space of a usable scale.						
		The Circle	A pedestrian and cycle bridge connecting from Colma Creek (at Linden) over the rail corridor to Caltrain, over Produce Ave/Hwy 101/Airport Blvd to lower Colma Creek, as well as under the 101 on the former freight rail line. Green area created below for a new natives nursery providing both flood detention and 101 runoff treatment, lighting and landscaping designed as a gateway to South City.	X	X	-	-	X	X	Increased access to Caltrain as well as safe and continuous access east-west between downtown and major employers (0.8miles). Up to 10 acre-feet of detention to reduce flooding under Hwy 101 via a culvert. Additional runoff collected from HWY 101 to assist with flood attenuation, but primarily as a water quality project that can share space with the floodable space. This project will be part of an overall adaptive management strategy for large flooding events and will assist as an individual project during small events (e.g. <10-year)	Improve quality of stormwater runoff from major freeway, as well as reducing flows during small storms, from Hwy 101 to Colma Creek through a vegetated surface treatment facility.	CalTrans, Adjacent Land Owners, Major Employers East of 101, WETA	CalTrans (101 & Produce Ramp), Adjacent Land Owners (Park & Fly, Produce Market, Adjacent Industrial Businesses), City of South San Francisco (San Mateo Avenue & Airport Blvd)	Adjacent Property Owners	Industrial Land Employment Base, Growing Downtown Residential Population	SSF Parks&Rec, San Mateo County Flood Control District	CalTrans	Hardscape removed and converted to softscape. Temporary access over rail corridor to station as first priority for access.	Connecting access over rail corridor before diverting to existing freight alignment under 101.	Connecting under rail corridor with widened canal before connecting to existing freight corridor under 101.				Caltrans, regional water quality control board if you are trying to get TMDL credit for treatment of stormwater. Army Corps of Engineers, Flood Control district, DPW
		Creek Bypass Easements	Diversion overflow through new linear parkway easement in two locations: at the edge of produce market site re-connecting Colma Creek to Navigable Slough, and at the right angle in lower Colma creek connecting under Harbor Way and Littlefield Avenue to the Bay.	X	-	-	-	-	X	Diversion of up to 900 cfs peak flow to navigable slough and 500 cfs through the downstream easement, both historical reaches of the Colma Creek Delta. Project alone significantly reduce flooding within adjacent properties and provide additional creek capacity to assist in flood reduction mitigation of upstream projects. Resolve smaller storm events within these reached (<25-year events) and significantly reduce the extent and depth of flooding during larger storm events (50/100-year events).	Diversion of 1,400 cfs into new bypass channels reduces flow within the underside section between Utah Ave and Hwy-101 to its capacity to convey up to the 10-year storm 100% within the channel.	Adjacent Land Owners, SM County Flood Control, CalTrans	Produce Market & Park N Fly Site, East-side industrial Properties	Adjacent Property Owners	Industrial Land Employment Base	San Mateo County Flood Control District	San Mateo County Flood Control District & FEMA	Produce market bypass delivered first to relieve flooding pressure on that site and at the edge of 101.						
		Lower Colma Creek Restoration & Public Access	Adaptation of existing walled edge with softened edge including restoration planting and pedestrian/cycle paths.	-	-	X	X	X	X	Continuous new public access with 2.2 miles of new access way, as well as 2.2 miles (x2) of restored native habitat on both canal edges	Long-term adaptive management strategy of softening the edges of downstream section of the creek and targeted parcel abandonment provides creek capacity and reduces downstream constraints of the creek, which allows for greater upstream cap	Adjacent Land Owners, BCDC, EPA, California Coastal Conservancy	East-side Industrial Properties	Adjacent Property Owners	Industrial Land Employment Base	San Mateo County Flood Control District	SSF Planning	Potential water's edge planting stages before reworking of levee wall into bermed walkway.						
		WQCP Upgrades & Eco Water Park	Additional natural treatment areas at the shoreline of the WQCP as well as restoration of the SamTrans depot for creation of a public park for recreation and education associated with water quality, in partnership with commercial facilities.	X	-	X	X	X	X	X	Creation of 12.4 acres of natural treatment zones adjacent to WQCP, as well as extended treatment wetland habitat in 23.5 acres of new recreational parkland	This is based on 7:1 ratio of naturalized treatment space related to SSF WWTP average daily flow, however it does not consider the adjacent cities that use the discharge, which do not have capacity for nutrient removal.	SSF WQCP SamTrans, BCDC, SFO, EPA, California Coastal Conservancy	SamTrans, SFO	SSF WQCP, Adjacent Property Owners	South City Residential Population	SSF Public Works	Regional Water Quality Control Board, Coastal Conservancy, SFEI, San Mateo County, SFO	Initial habitat creation and ecological treatment within the disused wharf fingers, before expansion of restoration efforts to SamTrans site.					Regional Board, BCDC
		SLR 'Living Levee' & Wetland Collector	Creation of a new 'living levee' tidal barrier, creating a 'wetland collector' area for habitat restoration and recreation, also capable of detaining storm water during king tides of long-term sea-level rise scenarios.	X	X	X	X	X	X	X	Protection from 60 inches of SLR along with detention for 1,900 acre-feet of stormwater to contain the 50-year event (within a 12-hour maximum tidal period) within a 300-acre area for habitat restoration and water recreation		BCDC, SFO, EPA, California Coastal Conservancy	SFO, SSF WQCP, SamTrans, Industrial Land Owners	Adjacent Property Owners	Industrial Land Employment Base	San Mateo County Flood Control District	SFO, San Mateo County	36 inches SLR at outer edges of Collector. Partial barriers then built to understand sediment build-up patterns. Final barrier and tidal control then built.	Potential sea-level rise protections created at edge of SamTrans Island and Colma Creek outlet.				BCDC
	Resilient South City (Watershed)		Recharge Reservoirs	Retention ponds created at the base of San Bruno Mountain along Hillside Blvd to provide for passive recharge of the aquifer in specific course soil locations. New ecological education centers and mountain access trails located at edge of reservoirs.	X	X	X	X	X	-	Potential capture for large amount of water for aquifer recharge across 3 new education and mountain access points		SM County Parks, County Health Department Groundwater Protection Program, Cal Water and SFPUC	Cal Water and SFPUC (if you count groundwater as an asset)	Adjacent Property Owners	South City Residential Population	CalWater, SSF Public Works	San Mateo County Parks						County Health Department Groundwater Protection Program
			Resilient Schools	Upgraded water retention/treatment/reuse infrastructure, solar power, bike storage and urban agriculture created at schools. Upgrades to sports fields for use by community sporting teams on weekends and increased access by local community.	X	X	-	X	X	X	Storage and runoff reduction of 26 acre-feet for flood attenuation. Annual treatment and reuse of water across the school district offsetting 561 acre-feet of potable water use providing for 21% reduction of school potable water demand. Additionally, auxiliary cistern and treatment systems built in place to provide 96 hours of emergency water supply for the school tributary area (drainage/walking/social). 127 acres of new community use open space	Potential annual capture/treatment/reuse of 300-600 ac-ft of water across the school district, providing for 15-25% reduction of school water requirements.	SSFUSD, SSF Public Works, FEMA	SSFUSD	SSFUSD	South City Residential Population	SSFUSD, City of South San Francisco and San Mateo County	SSFUSD						School District, County Health Department, Office of Emergency Services
		Slow Water/Mobility Streets	Streets with existing stormwater infrastructure adapted to green bioswale and cycleways connecting to Colma Creek, slowing runoff and increasing infiltration while native planting provides for increased amenity and improved water quality.	X	X	-	X	X	X	20 miles of new linear habitat and cycleway within the city. Slow-water streets provide multiple benefits by allowing for infiltration, supporting vegetation, and general hydromodification of Colma Creek watershed.		SSF Public Works, FEMA	SSF Public Works	Adjacent Property Owners, SSF Public Works	South City Residential Population	SSF Public Works	CCAG						South San Francisco Public Works, CCAG	
	Adapted Freight Corridor Linear Parks	Adapting former freight lines into linear movement corridors for pedestrians/cycling, as well as active public spaces for inserting services into the area east of 101. Access would extend from the Caltrain station to major employers like Genentech, and to the ferry pier at Oyster Point.	X	-	X	X	X	X	11 miles of potential continuous walking cycling path east of 101, better connect 48,000 employees to the downtown as well as Caltrain and Ferry services		Major Employers East of 101, Major Employers WETA, CalTrans	Major Employers East of 101	Major Employers East of 101	South City Residential Population	SSF Public Works, Genentech, WETA, CalTrans	SSF Public Works						South San Francisco Public Works, CCAG		

2.1 SHORT TERM AND LONG TERM VISION

OUR RESILIENCY SOLUTIONS FOR COLMA CREEK AND ITS ENTIRE WATERSHED CAN BE DELIVERED - AND EVOLVE - OVER TIME.

We have designed our resiliency solutions for Colma Creek and the watershed overall to roll out over time. Visible, early improvements in existing parks along Colma Creek will build support for costlier, more systemic solutions, such as the widening of the creek and addition of the bicycle path and the east-west connection over Highway 101. Shoreline protections will need to be phased in along with land

use changes, and motivation to fund them through district-based assessments will likely grow as sea levels rise and throw the cost of inaction into sharp relief.

We have outlined below our resilient design vision in the next 5-10 years, by mid-century and by the end of the century. We also suggest scenarios for phasing in projects, recognizing that the exact nature and

timing of these projects will evolve with changes in public support, climate impacts and technological advances. The principle that guides these scenarios is to seek early, incremental wins while also guiding capital spending in a way that locks in resiliency and connectivity



2023

Vision: South San Francisco city leaders and residents have earned “The Industrial City” a reputation as “The Resilient City” by shaping ongoing capital improvements to align with resiliency and connectivity goals, and through community events that highlight a citywide culture of safety and access to amenities.

Scenarios:

- _ Caltrans has funded creekside parks under its program to offset stormwater impacts related to roadway construction.
- _ Caltrans and SamTrans secured funding to study the feasibility of a Colma creek bicycle path and the Circle pedestrian/cycle bridge, have committed funds to its design and have secured pre-development grants.
- _ Incorporating parks and schools facilitates improvements with stormwater flooding.
- _ SFO has completed a study with the water treatment district on the feasibility and value of a creek bypass easements as well as a living levee to protect their assets from sea level rise.
- _ General Plan Update is complete. It provides incentives for “community resiliency bonuses” and enables higher-value uses along the shoreline areas that will need increased property values to help fund resiliency protections.



2028

Vision: With residents and workers enjoying enhanced existing parks, new parks and paths along the creek and shoreline, they increasingly support larger-scale shoreline protection.

Scenarios:

- _ Living levee feasibility study and efforts to assemble Community Resiliency Facilities District.
- _ Watershed-level water recharge and drought protections become an increasing priority.
- _ Eco Water Park on SamTrans Island.
- _ Creek-side parks delivered through development and public dedication of sites along the Creekside.
- _ Affordable housing component also delivered within redevelopment sites adjacent to the creek.



2050

Vision: As Bay waters rise and drought/storm cycles intensify, South San Francisco’s creekside, shoreline and watershed-level infrastructure has softened their impact.

Technology firms on the shoreline have contributed through an insurance-backed Community Resiliency Facilities District to the ecosystem-based living levee, creek bypass and restored estuary, which have kept water out of their facilities while improving habitat and community access along the coast.

Residents’ support of citywide resiliency improvements have been rewarded by the Eco Water Park on the former SamTrans Island, a regional (and thanks to SFO, international) tourist attraction now in its 20th year of operation, thanks in part to a concession-based public private partnership.

Scenarios:

- _ Eco Water Park on SamTrans Island.
- _ Stage 1 of Living Levee & wetland collector complete.



2100

Vision: Water levels in the bay have risen to 6 feet (about 180 centimeters) and constant vigilance is needed to conserve water and prevent wildfires in the region’s 10-month drought seasons.

Residents of South San Francisco are more connected than ever to the shoreline as they restored estuary protecting many of the structures along the shore has grown, and as they seek relief from extreme heat. Denser housing and high-value technological and industrial land uses continue to finance ongoing protections and improvements to adapt to what has become the new normal.

Scenarios:

- _ Potential retreat scenarios being assessed with 101 becoming as flood gate and last line of defense, the produce market site adapted to become the shoreline collector.



AUTHENTIC, OPEN AND MEANINGFUL STAKEHOLDER ENGAGEMENT HAS INFORMED EVERY ASPECT OF OUR DESIGN PROPOSALS.

Our design process has embraced and built upon extensive stakeholder engagement. Our shopfront on 304 Grand Avenue, a block from the South San Francisco City Hall, has been the focal point for conversations with elected officials, community leaders, local residents, workers and students on the resiliency improvements they most would like to see.

Our design process has been informed by regular working group meetings with representatives of the City of South San Francisco and San Mateo County, and has been driven by the involvement of three community groups: San Bruno Mountain Watch, Youth Leadership Institute and the South San Francisco Historical Society. Those who stand to benefit from these increased values are candidates for special assessments or special taxes to help pay for these improvements.

Proposal Sponsors

City of South San Francisco

The City of South San Francisco has expressed support for each of the projects in our proposal, and we have incorporated their feedback on specific elements into our design. We have met regularly with the Mayor and City Manager, and representatives from the Departments of Economic & Community Development, Parks & Recreation, Planning and Public Works. The City's support as sponsor will be needed to implement most of the projects proposed, including the creekside parks, bypass elements and shoreline protections.

San Mateo County – Office of Supervisor Dave Pine and Office of Sustainability

Representatives of Supervisor Pine's office and the Office of Sustainability have played a convening and leadership role in supporting the development of our design proposals. This role will continue to be crucial to project implementation, as it will help to attract resources and other stakeholders who can champion the project.

California Department of Transportation (Caltrans)

Caltrans' sponsorship will be necessary to projects that it helps fund, including stormwater mitigation and bicycle access projects.

San Francisco International Airport (SFO)

SFO's sponsorship will be necessary to projects that it helps fund, including improvements to reduce stormwater flooding and protect against sea level rise.

South San Francisco Water Quality Control Plant

The Water Quality Control Plant's sponsorship will be necessary for resiliency upgrades in and around its treatment plant at the mouth of Colma creek, including ecosystem-based tertiary treatment, estuary habitat restoration and the living levee.

Proposal Champions

San Francisco Estuary Institute (SFEI)

An early contributor to our design proposal, SFEI's support as a champion will be necessary to the success of the lower Colma Creek restoration and public access, living levee, and restored estuary/wetland collector.

San Bruno Mountain Watch

This local environmental organization has helped situate our proposals in the larger San Bruno/Colma Creek watershed context and emphasized the importance of incorporating native vegetation into all proposed projects to improve their resiliency to drought. Their involvement will ensure a more sustainable, holistic approach to ecosystem-based improvements along the creek and shoreline and throughout the watershed.

Youth Leadership Institute (YLI)

Our partnership with YLI has resulted in environmental education opportunities for 15 high school students in South San Francisco, through internships and outreach events. To build long-term public support for our design proposal, it will be important to continue opportunities for schoolchildren in South San Francisco to learn about climate-related challenges and solutions.

South San Francisco Historical Society

The Historical Society has provided us with a wealth of images and narratives documenting changes in land-use over the city's history. This reflection on the past has provided us with invaluable insight into how South San Francisco will need to evolve in the future to respond to the impacts of climate change.

Key Stakeholders

Stakeholders with Assets at Risk

Our protective infrastructure proposals will be funded in part by property owners at risk of current and future stormwater flooding and sea level rise. One of the pillars of our funding strategy is to create pools of flood insurance policy holders to fund resiliency improvements through lower insurance premiums (please see individual project sheets and funding strategy for more information).

Stakeholders who will Financially Benefit

Improvements to local parks, and new creekside and east-west bicycle paths will increase access and are expected to help raise property values. Property owners who stand to benefit from these increased values are candidates for special assessments or special taxes to help pay for these improvements,

Disadvantaged Communities

Our design proposals have been driven by the understanding that disadvantaged communities in South San Francisco have lacked access to the shoreline, and to parks and open space more generally. By increasing bicycle and pedestrian East-West travel across Highway 101, we are also helping South San Franciscans with limited transportation options to gain access to jobs in the technology firms at Oyster Point.



2.3 FINANCE PLAN

OUR FINANCIAL APPROACH RELIES ON A NUMBER OF DIFFERENT PUBLIC AND PRIVATE FUNDING SOURCES.

Funding for the pre-development and development of our proposed projects will need to come from a variety of sources over a variety of time frames. We present here our guiding principles for funding and highlight mechanisms that should be focused on first or that present newer, innovative sources of funding. Specific cost estimates and phasing are discussed in the individual project proposals.

Three principles guide our plan for securing funding for the projects in our design proposal, and point to the combination of funding sources that sponsors will need to consider for each project.

Leverage internal value

Leverage local flood insurance payments, property assessments and increases in land value to the extent feasible to finance resilience improvements. We estimate that the maximum value of a 50-year bond based on a special assessment or tax on properties either protected along the shoreline or benefited by the Colma Creek improvements would be approximately \$165 million in present dollars. This is based on multiplying the current assessed value by 0.5% (which is a high assessment) and the underlying annual revenue.

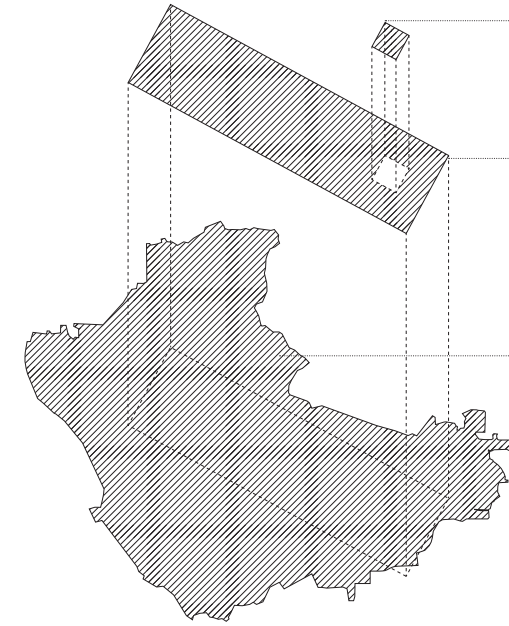
Better position for outside funding

Make the most of outside funding and grant sources from regional, state and federal sources and philanthropy. The grant sources table in Part 4 - Project Delivery Sheets provides details on potential grant funding opportunities.

Align with asset owners

Influence the design of resilience investments made by large infrastructure asset owners (including Caltrans, and SFO and water treatment plant).

This combined approach will diversify the risks associated with each type of funding, and will better enable the City of South San Francisco and other project sponsors to make the case for the multiple benefits associated with each project. Part 4 provides detailed information on each type of funding source.



PROJECT: Individual projects could be awarded density bonuses for incorporating resilient design that provides community benefit beyond what is required.

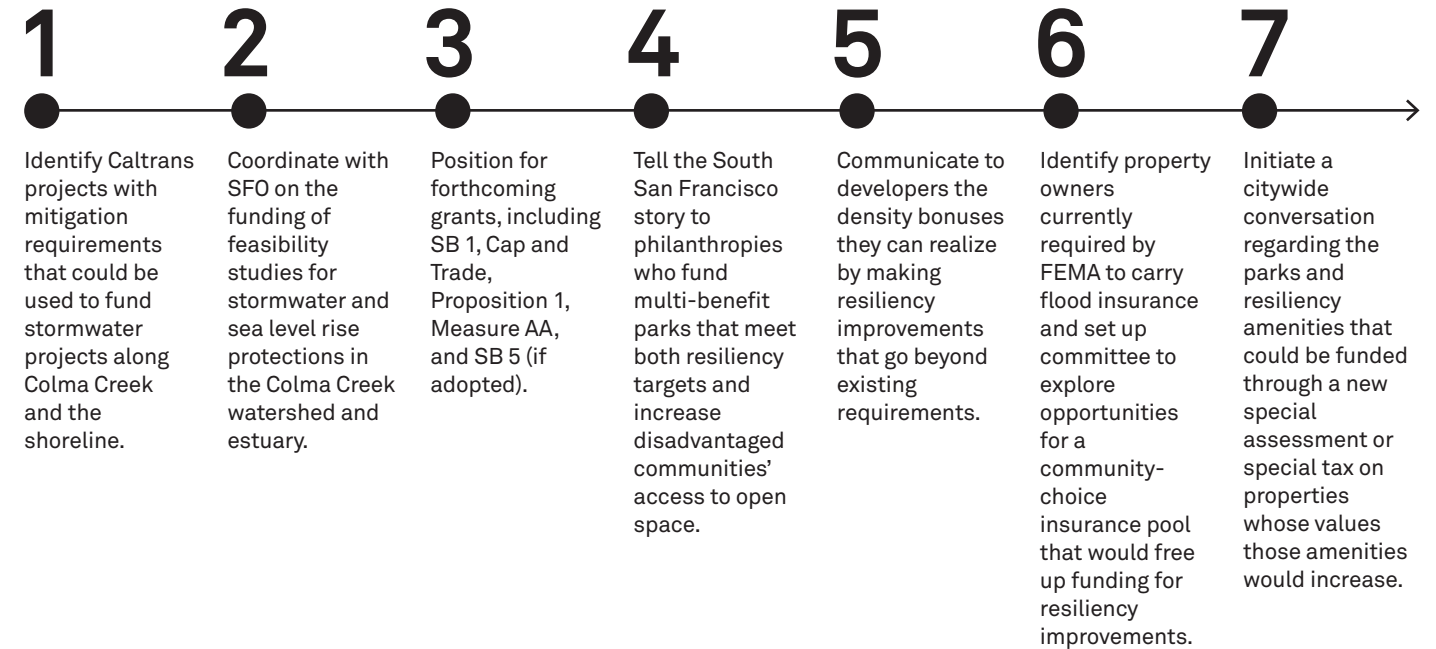
DISTRICT: Properties benefiting from resilient or urban greening improvements could help fund them through Community Resiliency Facilities Districts based on pooled insurance premiums, traditional Community Facilities Districts, Geological Abatement Hazard Districts, and other special taxes.

CITYWIDE: An increased citywide parks assessment for new park construction as well as improvements to existing parks' operations and maintenance. The additional assessment could be justified in part by demonstrating that existing parks would be improved in part by connecting them to the new parks through the Colma Creek trail and access to the shoreline.

REGIONAL/STATEWIDE: Regional and state grants would help fund investments, such as watershed and stormwater improvements, with ramifications beyond the City of South San Francisco. Additional funding could come from aligning the investments of regional/state asset owners such as Caltrans, San Francisco International Airport and the Water Quality Control Plant with the projects in this design proposal.

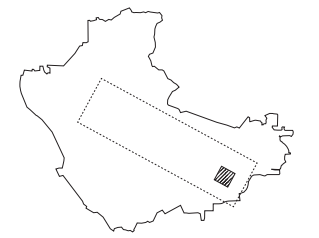
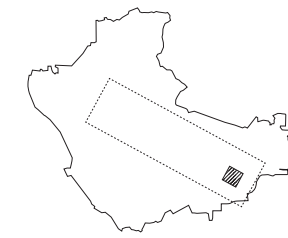
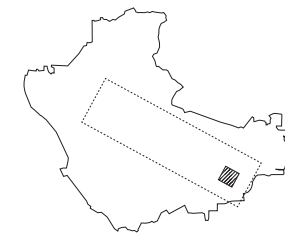
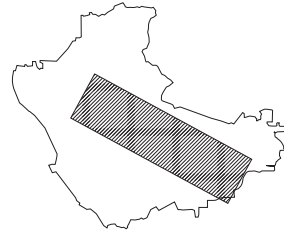
First Steps

Where should the City of San Francisco and other potential project sponsors and champions start? We suggest the following action plan:



A SUCCESSFUL FUNDING STRATEGY WILL COMBINE TRIED-AND-TRUE METHODS WITH NEWER APPROACHES

Below we discuss five innovative funding mechanisms that can help bring South San Francisco closer to its resiliency funding goals.



Funding mechanism	Community Resiliency Facilities District	In Lieu Fee Mitigation and Managed Retreat Finance Policies	Environmental Performance Bonds	Green Bonds	Public-Private Partnerships
Scale	District	District	Project	Project	Project
Purpose	Finance District level SLR and Flooding Infrastructure Investments	Finance manage retreat through densification/development	Finance environmental infrastructure paid entirely through the performance of the asset	Finance infrastructure investments that also provide environmental benefits	Finance infrastructure investments that provide ongoing annual revenue after completion.
What it could fund	Lower Creek Restoration & Public Access SLR 'Living Levee' & Wetland Collector	SLR 'Living Levee' & Wetland Collector	WQCP Upgrades & Eco Water Park SLR 'Living Levee' & Wetland Collector	The Circle Lower Creek Restoration & Public Access WQCP Upgrades & Eco Water Park SLR 'Living Levee' & Wetland Collector Watershed level projects	WQCP Upgrades & Eco Water Park
What it is	Property owners in a FEMA flood zone join together to fund resiliency improvements through lower insurance premiums.	Potential upzoning in certain developments in exchange for buyout assistance toward the buyout and managed retreat of chronically flooded areas.	A bond issued by a municipal agency, utility, transit authority. Bond proceeds go to the issuer in case of a natural disaster.	A bond issued by a private company or public entity designed to fund environmentally beneficial initiatives.	A partnership between a public entity and private investor aimed at the construction of public infrastructure.
How it could fund proposed resiliency project in South San Francisco	Property owners currently participating in the National Flood Insurance Program would instead purchase flood insurance from a Community Choice Flood Risk Financing pool. Payments above the cost of insurance but below the cost of FEMA insurance would go to resilient infrastructure.	Developers in the surrounding areas would receive density bonuses in exchange for contributing toward a buyout fund. Property owners (residential or commercial) in chronically flooded areas would have the choice of selling their property to the fund. The fund could further fund the retirement of existing building and restoration of wetlands in flooded zones.	Flood prevention infrastructure would reduce insurance premiums for landowners, municipal agencies and transit authorities. A performance bond would bundle up those savings into an investment of infrastructure that prevents flood damage.	A bond issued by a municipal agency, utility, transit authority. Bond proceeds go to the issuer in case of a natural disaster.	A long-term investor, developer or operator of resiliency infrastructure would build, finance and potentially operate an infrastructure project. Investment entity would profit from future bond proceeds, future tolls or a combination of both.
Stakeholders who will benefit	Landowners within the district	Landowners in chronically flooded areas.	Residents protected by resiliency infrastructure.	Residents protected by resiliency infrastructure.	Residents protected by resiliency infrastructure.
Already used in South San Francisco?	New	New	New	New	New
Process required for adoption	If structured as a CFD, 2/3 of property owners must approve	State legislature and/or City Council Approval.	Ballot Measure	Ballot Measure/Board Approval	Request for proposal process and City Council Approval.
Example	San Francisquito Creek JPA	New Jersey Blue Acres Program	Texas Wind insurance Association	Apple's \$1.5 Billion Green Bond	Ontario Place Disraeli Bridges Winnipeg

2.4 GOVERNANCE AND REGULATORY STRATEGY

As climate change impacts do not stop at city borders, building resilience to climate change will require the City of San Francisco to partner and coordinate with other public and quasi-public agencies at the county, regional, state and federal level. The below table provides an overview

how the City of South San Francisco and other project sponsors are already coordinating with county, regional, state and federal agencies.

Project	Agencies with Sponsor or Champion Role	Agencies with Regulatory Role	Agencies with Funding Role	Potential Barriers
Orange Park	<ul style="list-style-type: none"> _ City of South San Francisco (SSF) Department of Parks and Recreation _ SSF Department of Public Works _ County Association of Governments of San Mateo County (CCAG) _ Colma Creek Advisory Committee 	<ul style="list-style-type: none"> _ City of South San Francisco _ San Mateo County Flood Control District 	<ul style="list-style-type: none"> _ Caltrans, California Water Boards (Prop 1 Stormwater Grants) 	<ul style="list-style-type: none"> _ Operations and maintenance of existing parks is a priority; an additional resiliency mandate could be competing for resources
New Creek-side Parks	<ul style="list-style-type: none"> _ City of South San Francisco (SSF) Department of Parks and Recreation _ SSF Department of Public Works _ County Association of Governments of San Mateo County (CCAG) _ Colma Creek Advisory Committee 	<ul style="list-style-type: none"> _ City of South San Francisco _ San Mateo County Flood Control District 	<ul style="list-style-type: none"> _ Caltrans, California Water Boards (Prop 1 Stormwater Grants) 	<ul style="list-style-type: none"> _ Operations and maintenance of existing parks is a priority; an additional resiliency mandate could be competing for resources
Greened & Expanded Colma Creek	<ul style="list-style-type: none"> _ City of South San Francisco (SSF) Department of Parks and Recreation _ SSF Department of Public Works _ County Association of Governments of San Mateo County (CCAG) _ Colma Creek Advisory Committee 	<ul style="list-style-type: none"> _ San Mateo County Flood Control District _ State Transportation Improvement Program (STIP) 	<ul style="list-style-type: none"> _ Caltrans, California Water Boards (Prop 1 Stormwater Grants) Caltrans for bikeway improvements _ Urban Waterways Grant 	<ul style="list-style-type: none"> _ Widening and naturalizing the channel will require coordination among several city departments as well as property owners and the flood control district, as well as Caltrans where the widening affects US highway 101
The Circle	<ul style="list-style-type: none"> _ SSF Department of Parks and Recreation _ SSF Department of Public Works _ SSF Department of Economic Development _ San Mateo County Sustainability Office 	<ul style="list-style-type: none"> _ Caltrans 	<ul style="list-style-type: none"> _ Caltrans _ Federal Surface Transportation Program (STP) and the Congestion Mitigation & Air Quality Improvement Program (CMAQ) 	<ul style="list-style-type: none"> _ Would need to align with Caltrans plans for bicycle/ pedestrian crossing over Us Highway 101 _ Union Pacific would have to agree to sale of freight line for public bike path if that connector is to be included
Creek Bypass Easements	<ul style="list-style-type: none"> _ City of South San Francisco (SSF) Department of Parks and Recreation _ SSF Department of Public Works _ County Association of Governments of San Mateo County (CCAG) _ Colma Creek Advisory Committee 	<ul style="list-style-type: none"> _ San Mateo County Flood Control District 	<ul style="list-style-type: none"> _ Caltrans _ California Water Boards (Prop 1 Stormwater Grants) 	<ul style="list-style-type: none"> _ Widening and naturalizing the channel will require coordination among several city departments as well as property owners and the flood control district, as well as Caltrans where the widening affects US highway 101
Lower Colma Creek Restoration & Public Access	<ul style="list-style-type: none"> _ SSF Department of Parks and Recreation _ SSF Department of Public Works _ SFO _ SSF Department of Economic Development _ San Mateo County Sustainability Office _ Colma Creek Advisory Committee 	<ul style="list-style-type: none"> _ City of South San Francisco _ San Mateo County Flood Control District 	<ul style="list-style-type: none"> _ California Water Boards (Prop 1 Stormwater Grants) _ SFO _ SSF Water Quality Control Plant _ Bay Trail 	<ul style="list-style-type: none"> _ Property owners and local asset owners, including Union Pacific, would need to buy in
WQCP Upgrades & Eco Water Park	<ul style="list-style-type: none"> _ SSF Department of Parks and Recreation _ SSF Department of Public Works _ SSF Water Quality Control Plant _ SamTrans 	<ul style="list-style-type: none"> _ Regional Water Quality Control Board _ Sam Trans 	<ul style="list-style-type: none"> _ Water Quality Control Plant 	<ul style="list-style-type: none"> _ Most barriers are related to funding, which could be potentially address in part through a public private partnership to fund and operate the eco water park.
SLR 'Living Levee' & Wetland Collector	<ul style="list-style-type: none"> _ SSF Department of Parks and Recreation _ SSF Department of Public Works 	<ul style="list-style-type: none"> _ BCDC _ US Army Corps of Engineers (potentially) 	<ul style="list-style-type: none"> _ CA Water Boards (Prop 1 Stormwater) _ US FEMA Pre-disaster mitigation grants _ US EPA (to the extent a Habitat Conservation Plan would be a source of funding) _ SFO 	<ul style="list-style-type: none"> _ Property owners and local asset owners, including SFO, would need to buy in



OFFICE OF THE CITY MANAGER

CITY COUNCIL 2018

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PRADEEP C. GUPTA, PH.D. COUNCILMEMBER

MIKE FUTRELL, CITY MANAGER

11 May 2018

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

Dear Resilient by Design,

I am pleased to voice my support for the HASSELL+ Design Team for their work designing innovative solutions that tackle the impacts of climate change in San Mateo County. As the City Manager for the City of South San Francisco, I have appreciated the energy and ideas that HASSELL+ has been able to elevate in our community throughout the Resilient by Design | Bay Area Challenge.

The HASSELL+ project, Collect & Connect - Resilient South City is a proposal to align with local schools on higher ground to collect/treat/reuse water and connect to the Colma Creek Corridor via slow movement streets for water and cycling, creating a local network of resilience for South City and surrounding neighborhoods. This proposal will create more public green space and continuous public access along South San Francisco's Colma Creek.

This proposal aims to reduce the impacts of flooding, mitigate against sea-level rise vulnerability, restore native flora and fauna, and create more amenity and healthy lifestyle opportunities. The proposed strategy and vision complements the core mission of the City to provide a safe, attractive and well-maintained City that enhances the Community's quality of life.

I look forward to the unveiling of the Collect & Connect - Resilient South City designs in May 2018, and to continuing to work with our local community to make this vision of resilience a reality in South San Francisco and San Mateo County.

Sincerely,

Mike Futrell
City Manager, City of South San Francisco

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Phone: 650.877.8500 • Fax: 650.829.6609



DAVE PINE
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May 16, 2018

Amanda Brown-Stevens
Managing Director
SF Bay Resilient by Design
375 Beale St, Suite 800
San Francisco, CA 94105

Re: Support for the HASSELL+ Project, Collect & Connect - Resilient South City

Dear Amanda,

As the SF Bay Resilient by Design approaches its conclusion, I feel very fortunate that the City of South San Francisco and the County of San Mateo have had the opportunity to partner with the HASSELL+ team. The HASSELL+ team did a superb job reaching out to the community for input, incorporating prior analysis and studies, and injecting innovative ideas for addressing the flooding and sea level rise challenges that we face in the Colma Creek area.

Of particular note was the HASSELL+ team's success in transforming a formerly-vacant storefront on Grand Avenue into a community meeting place, design hub, and an educational center. Over the course of the project, I attended a number of events at the center, and was impressed by the diversity of community members who visited.

As a San Mateo County Supervisor representing South San Francisco, I have been involved with flooding and sea level rise issues in the Colma Creek area for some time. I led an effort to partner with the Coastal Conservancy to prepare a resiliency study for the San Bruno and Colma Creeks. In addition, I help guide the work of the San Mateo County Flood Control District which has responsibility for addressing flooding in Colma Creek. Having the HASSELL+ team build off these efforts has generated important new perspectives as to how we can make this vulnerable area both more resilient and a valuable public amenity.

The HASSELL+ team's project, "Collect & Connect - Resilient South City", identifies sites and measures across the entire Colma Creek watershed that can build resilience. Importantly, it proposes to create more public green space and continuous public access along the creek. This is very much needed as now the creek is largely culverted and not perceived as a community asset.

I look forward to continuing to work with the local community to make this "Collect & Connect" vision of resilience a reality.

Sincerely,

Dave Pine
President, San Mateo County Board of Supervisors

HASSELL+
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COUNTY OF SAN MATEO
COUNTY MANAGER'S OFFICE
OFFICE OF SUSTAINABILITY

Jim Eggemeyer
Director

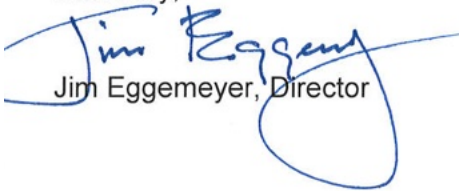
May 16, 2018
Page 2

May 16, 2018

County Government Center
455 County Center, 4th Floor
Redwood City, CA 94063
www.green.smcgov.org

Amanda Brown-Stevens
Managing Director
SF Bay Resilient By Design
375 Beale St., Suite 800
San Francisco, CA 94105

I look forward to the unveiling of the Collect & Connect - Resilient South City designs in May, and to continuing to work with our local community to make this vision of resilience a reality.

Sincerely,

Jim Eggemeyer, Director

Re: Support for the HASSELL+ project, Collect & Connect - Resilient South City

Dear Amanda,

As the Director of the Office of Sustainability, I am pleased to voice my support for the HASSELL+ Design Team for their work designing innovative solutions that tackle the impacts of climate change in San Mateo County. We appreciated the efforts the HASSELL+ team made to engage the community through the Grand Street store front, and their efforts to build off of existing reports, studies, and projects.

The HASSELL+ project, Collect & Connect - Resilient South City, is a proposal to create more public green space and continuous public access along South San Francisco's Colma Creek, something very much needed in our community. Aiming to reduce the impacts of flooding, mitigate against sea-level rise vulnerability, restore native flora and fauna, and create more amenity and healthy lifestyle opportunities by connecting a continuous public corridor from Orange Memorial Park to a new public park at the shoreline.

Resilient South City aims to align with local schools on higher ground to collect/treat/reuse water, create safe routes for walking/biking to school, open-up schoolyards for more community recreation, and to become better equipped as community shelter points in times of disaster.

The Office of Sustainability's Sea Change SMC program works to increase coordination and collaboration around sea level rise planning efforts in San Mateo County. Our staff worked on a countywide sea level rise vulnerability assessment, which highlighted the vulnerability of this area. We also assisted with a resiliency study for the San Bruno and Colma Creeks in partnership with the Coastal Conservancy. The HASSELL+ project has built of this work, and this effort is an important part of increasing the resilience of the Colma Creek area.



2.5 LETTERS OF SUPPORT



May 9th, 2018

Dear Resilient By Design,

I've often looked upon the Colma Creek watershed from the ridge of San Bruno Mountain, hopeful that one day the creek in the city would be freed from its restrictive, concrete channel and undergo a community-based transformation into an engaging, ecologically healthy waterway and valued public space.

The first time I was contacted by the HASSELL+ team and learned that there was a project focused on studying and proposing ways of making such a hope a reality, I remember feeling a deep level of gratitude, inspiration, and excitement, as if a far-off dream had suddenly been grabbed from the margins of my wishful hopes and moved into the realm of real possibility.

I am writing to express my support and admiration for the HASSELL+ Design Team for their work designing innovative solutions that tackle the impacts of climate change in San Mateo County, before disaster strikes.

As the Programs Director for San Bruno Mountain Watch, I work within the Colma Creek watershed on San Bruno Mountain and engage communities in the cities touched by the journey of Colma Creek. I've personally seen local community members, including many high school students from South San Francisco, connect with the inspiring ideas that the HASSELL+ team has invited us to imagine and strive towards through the Resilient by Design | Bay Area Challenge.

The HASSELL+ project, Collect & Connect - Resilient South City, is a proposal to create more public green space and continuous public access along South San Francisco's Colma Creek.

The project is so timely, as action is needed now to prepare for and respond to the impacts of flooding and rising sea levels along the South City shoreline and within the urban neighborhoods and districts.

I am deeply excited by the proposal to restore native flora and fauna to the creek environment, as I work extensively on habitat restoration projects on San Bruno Mountain and manage the Mission Blue Nursery, where thousands of native plant species sourced from the mountain are grown. It would be so fitting for the mountain to pitch in to this project by providing its beautiful botanical resources for the restoration of the creek as well as the sustainable landscaping initiatives that would accompany the proposed continuous public corridor from Orange Memorial Park to a new public park at the shoreline.

I'm pleased that Resilient South City aims to work with local schools on higher ground to collect, treat, and reuse water. I've been involved in the creation of native plant gardens on school campuses, and have seen how much enjoyment and educational value the students gain from creating landscapes that give back to their local environment. Furthermore, I appreciate the team's ideas for creating safe routes for walking and biking to school as well as making schoolyards open for more community recreation and available as community shelter points in times of disaster.

These beacons of resilience, learning and community will be connected to the Colma Creek Corridor via slow movement streets for water & cycling thereby creating a local network of resilience for South City and surrounding neighborhoods.

I look forward to the upcoming unveiling of the Collect & Connect - Resilient South City designs, and would be delighted to continue working with local communities to make this vision of resilience a reality in South San Francisco and San Mateo County.

Warm Regards,

Ariel Cherbowsky Corkidi
Programs Director



5/7 8

Dear Resilient By Design,

Youth Leadership Institute (YLI) is pleased to support the HASSELL+ Design Team for their work designing innovative solutions that tackle the impacts of climate change in San Mateo County, before disaster strikes. As the Bay Area Director for the Youth Leadership Institute, I have appreciated the energy and ideas that HASSELL+ has been able to elevate in our community throughout the Resilient by Design | Bay Area Challenge.

The mission of Youth Leadership Institute (YLI) is to build communities where young people and their adult allies come together to create positive social change. For over 6 years YLI has sparked the leadership of 9,000 young people in 10 communities to solve pressing social issues and pass 8 policies. YLI's community-based programs are located in San Francisco, Marin, San Mateo and the Central Valley. YLI is committed to engaging and developing young people of color, low-income youth, and other non-traditional youth as organizers and agents of social change through our model of youth development that amplifies youth voice. YLI chooses to engage youth as part of the solution and nurtures this passion, providing ways for youth to lead and channel this motivation into effective community change.

The HASSELL+ project, Collect & Connect - Resilient South City, is a proposal to create more public green space and continuous public access along South San Francisco's Colma Creek, something very much needed in our community. Aiming to reduce the impacts of flooding, mitigate against sea-level rise vulnerability, restore native flora and fauna, and create more amenity and healthy lifestyle opportunities by connecting a continuous public corridor from Orange Memorial Park to a new public park at the shoreline.

Resilient South City aims to align with local schools on higher ground to collect treat reuse water, create safe routes for walking biking to school, open-up schoolyards for more community recreation, and to become better equipped as community shelter points in times of disaster. These beacons of resilience, learning and community will be connected to the Colma Creek Corridor via slow movement streets for water & cycling, creating a local network of resilience for South City and surrounding neighborhoods.

I look forward to the unveiling of the Collect & Connect - Resilient South City designs in May, and to continuing to work with our local community to make this vision of resilience a reality in South San Francisco and San Mateo County.

Sincerely,

A handwritten signature in black ink, appearing to read 'Fahad Qurashi', is written over a light yellow rectangular background.

Fahad Qurashi
Bay Area Director, Youth Leadership Institute
fQurashi@yli.org, (415) 855-0553

PART 3 –

PROJECT
DELIVERY
SHEETS

3.1 ORANGE MEMORIAL PARK UPGRADES

DESIGN PROPOSAL

Completing the existing master plan for Orange Memorial Park while extending the current water quality project to include flood mitigation by adding capacity to beow ground storage tanks and also lowering playing fields for inundation to mitigate against downstream flooding. Increase native plant population.

EST. IMPACT

Increased detention of up to 70 acre feet while also adding 4 sporting facilities within the new parkland area of 35 acres.

NOTE ON PROJECT IMPACTS

Enhance the ability to manage flooding during smaller storm events by creating up stream detention capacity. This increase detention also has water quality benefits and is part of the larger adaptive management strategy of the hydromodification of the upper watershed of Colma Creek.

KEY STAKEHOLDERS

SSF Parks&Rec, RWQCB, CalTrans, SM County Flood Control, BCDC, EPA, SSF DPW

STAKEHOLDERS WITH ASSETS AT RISK

SSF Parks&Rec

STAKEHOLDERS WITH FINANCIAL BENEFIT

Adjacent Property Owners

DISADVANTAGED COMMUNITIES ASSOCIATED WITH THE SITE

Growing Downtown Residential Population

PROJECT SPONSORS (INDIVIDUALS/ENTITIES THAT ARE RESPONSIBLE FOR OVERSEEING AND GUIDING, IMPLEMENTATION)

SSF Parks&Rec, San Mateo County Flood Control District

PROJECT CHAMPIONS (INDIVIDUALS/ENTITIES THAT ARE COMMITTED TO ADVANCING THE PROPOSAL, AND CAN INFLUENCE IMPLEMENTATION)

City of South San Francisco (for the Water Quality portions of OMP)

PHASING

Staged excavation of each quadrant of the park with excavated material used in construction of living levee at shoreline.

ALTERNATIVE A

Lowering of only passive recreational areas, baseball and soccer fields retained above the common innundation area.

GOVERNANCE MECHANISMS

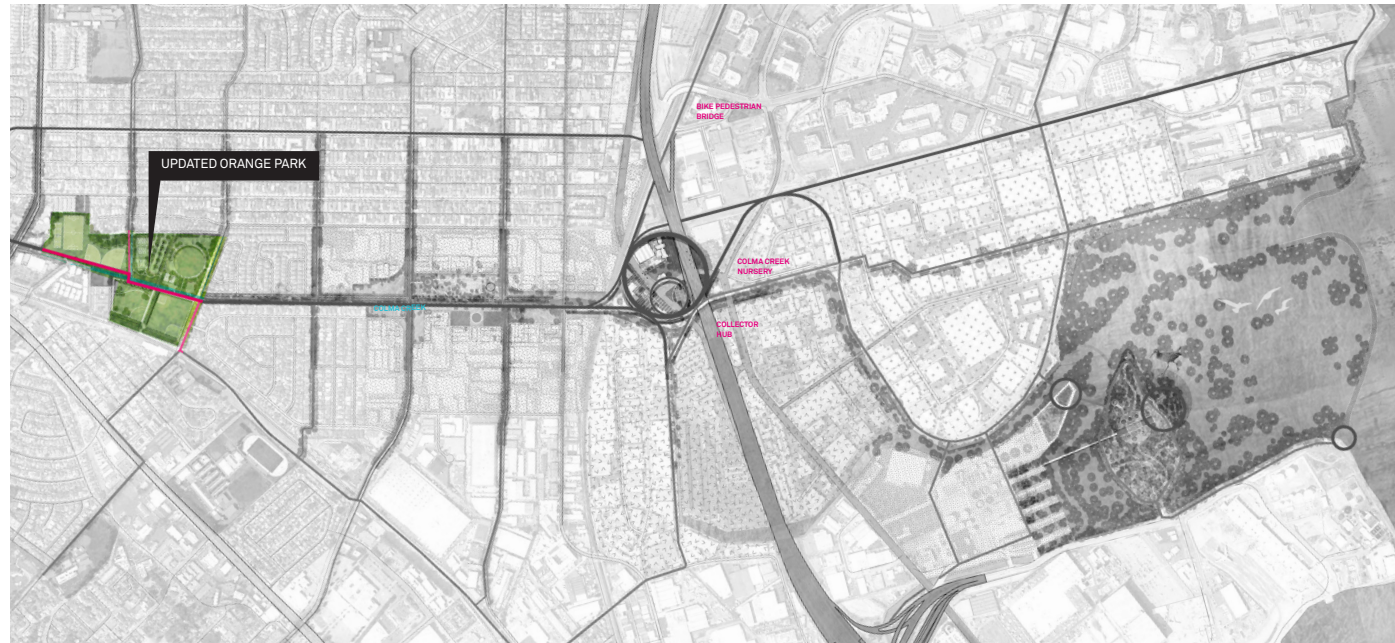
- _Align resiliency improvements with city capital planning
- _Collaborative city-county planning
- _At the County level, could reformulate flood control zone to include larger sections of the watershed and to assist in funding flood management projects.

AGENCY APPROVAL NEEDED

Regional Water Quality Control Board, South San Francisco Recreation and Park, Department of Public Works and Flood Control District.

FUNDING MECHANISMS

- _Special Assessment for Parks
- _ Caltrans Project funding
- _ Philanthropy



3.2 EXPANDED & GREENED COLMA CREEK

DESIGN PROPOSAL

Increased capacity created within Colma creek by widening channel, lowering adjacent access paths to include additional area within channel

EST. IMPACT

Creation of additional peak flow capacity to reduce flooding directly adjacent to the creek segment in small and mid-size storm events (<25-year). Provide for increased ability manage upstream flow connections and continous safe ped/cycle access from Orange Ave to Linden (1.1miles).

NOTE ON PROJECT IMPACTS

Create sufficient capacity for the 10-year storm flow between Spruce Avenue and Highway 101 by widening the creek section by 20% and significant reduction of 25-year storm flow flooding in this segment.

KEY STAKEHOLDERS

RWQCB, CalTrans, SM County Flood Control, BCDC, EPA

STAKEHOLDERS WITH ASSETS AT RISK

Caltrans, private property owners

STAKEHOLDERS WITH FINANCIAL BENEFIT

Adjacent Property Owners

DISADVANTAGED COMMUNITIES ASSOCIATED WITH THE SITE

Industrial Land Employment Base, Growing Downtown Residential Population

PROJECT SPONSORS (INDIVIDUALS/ENTITIES THAT ARE RESPONSIBLE FOR OVERSEEING AND GUIDING, IMPLEMENTATION)

SSF Parks&Rec, San Mateo County Flood Control District

PROJECT CHAMPIONS (INDIVIDUALS/ENTITIES THAT ARE COMMITTED TO ADVANCING THE PROPOSAL, AND CAN INFLUENCE IMPLEMENTATION)

Colma Creek Advisory Council

PHASING

Lowering of Sister Cities Park & conversion of South Canal Rd could be delivered concurrently. New pedestrian/cycle bridges in later stages.

ALTERNATIVE A

Expanded hardscape creek with walls removed.

FUNDING MECHANISMS (DRAW FROM FUNDING TABLE)

Public land, funded with support of grants related to water quality, cycling & flood mitigation.

GOVERNANCE MECHANISMS

_The Colma Creek Advisory Committee could play a convening role for the agencies playing championing, regulatory and funding roles.

AGENCY APPROVAL NEEDED

Regional Water Quality Control Board, South San Francisco Recreation and Park, Department of Public Works Army Corps of Engineers and Flood Control District.

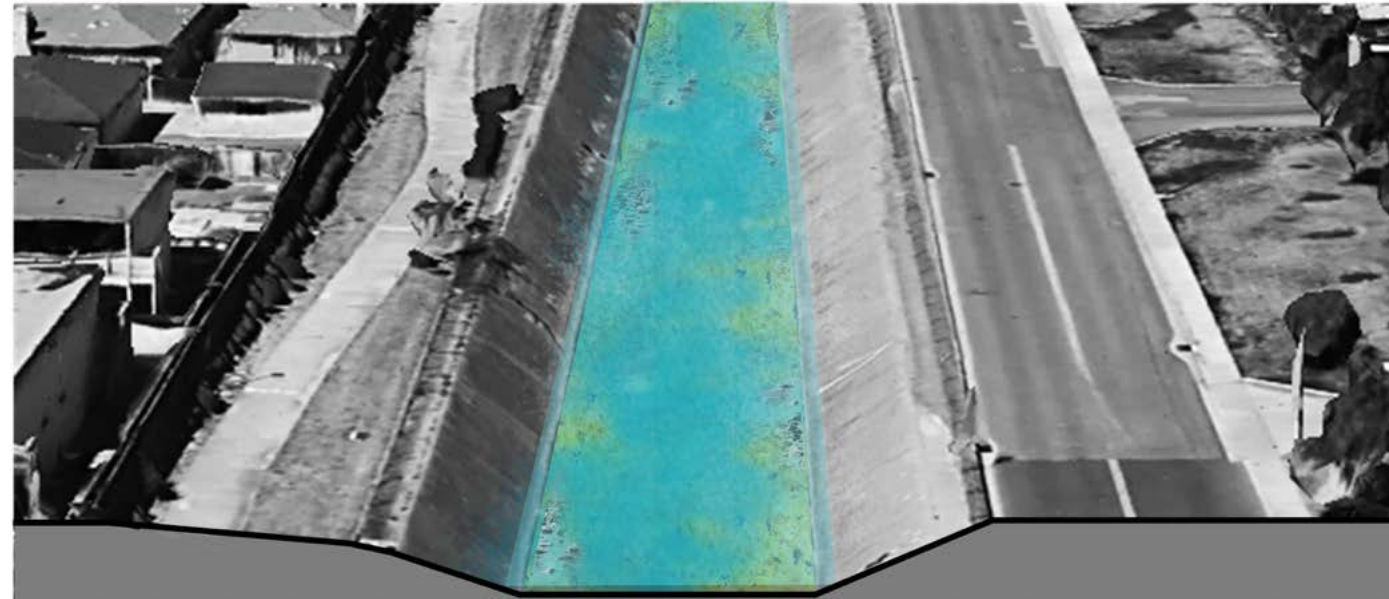
FUNDING MECHANISMS

- _ Community Facilities District (special tax)
- _ Private developers via Community Zoning Bonus
- _Special Assessment for Parks
- _ Caltrans Project funding
- _ Philanthropy
- _ Stormwater utility



**3.2 EXPANDED & GREENED
COLMA CREEK**
FIRST STEPS - SISTERS CITES PARK

EXISTING

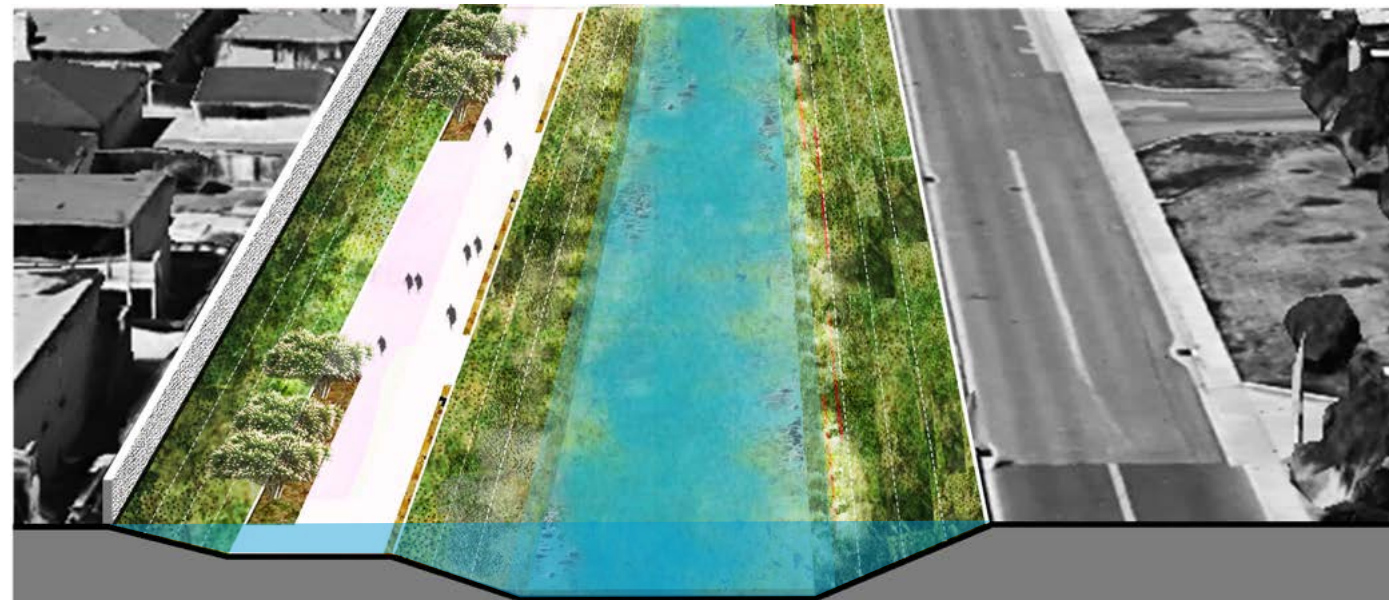


Sisters Cities Park

Existing Canal Section

North Canal Rd.

PROPOSED



Lowered
Cycleway within

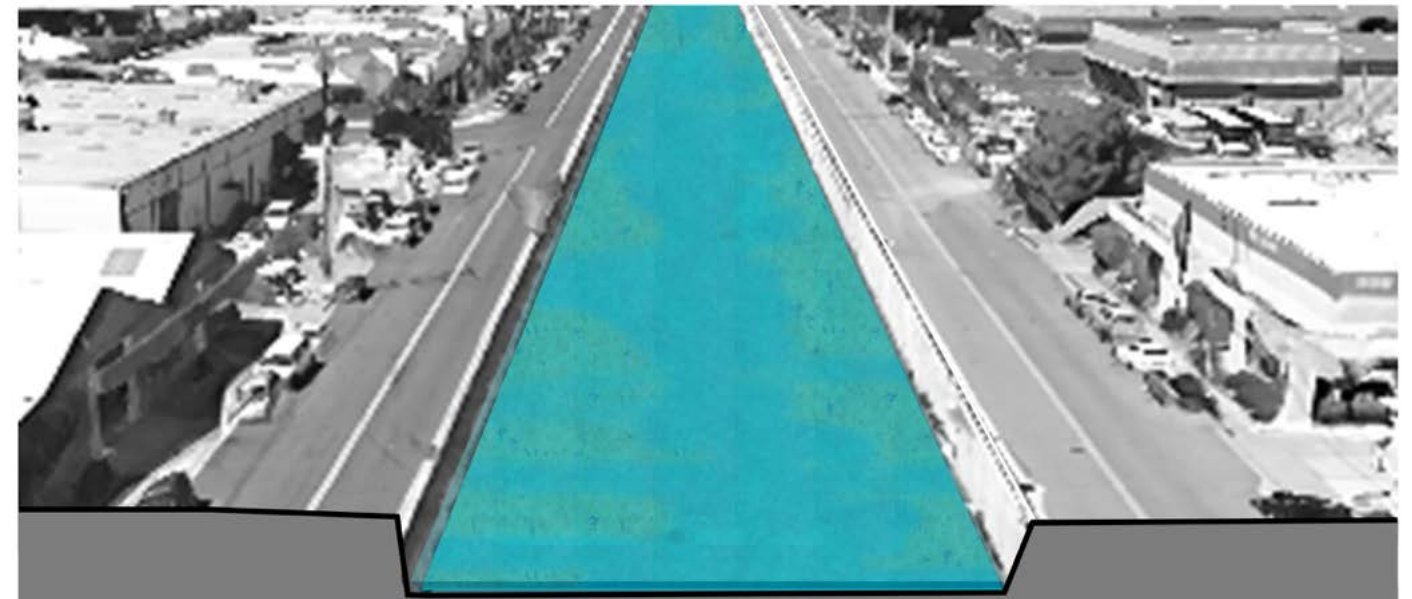
Green and expanded
canal section

North Canal Rd.

Native plants are
used on adapted
edge

**3.2 EXPANDED & GREENED
COLMA CREEK**
FIRST STEPS - SPURCE TO LINDEN

EXISTING



South Canal Rd.

Existing Canal Section

North Canal Rd.

PROPOSED



Continuous
pedestrian/cycle path
within canal

Green and expanded
canal section

North Canal Rd.

Industrial properties
are accessible from
other streets

Soft bottom creek and
green edges allow for
water to penetrate into
the soil

3.3 NEW CREEK-SIDE PARK

DESIGN PROPOSAL

New water retention/detention parks created adjacent to Colma Creek through land acquisitions and rezoning's and contributions associated with new development

EST. IMPACT

Extending recreational greenspace from Orange Memorial Park along side the creek to Linden St. creating a Colma Creek Linear Park that adds an additional 43 acres of recreational parkspace.

NOTE ON PROJECT IMPACTS

Enhance the ability to manage flooding during smaller storm events by creating up to 18 ac-ft detention capacity. This will primarily manage tributary flows entering the creek along this segment from the North, however this detention could also be used to divert flows from the creek if upstream detention was constrained physically.

KEY STAKEHOLDERS

Land Owners, SSF Planning, SSF Parks&Rec

STAKEHOLDERS WITH ASSETS AT RISK

Private property owners, Flood control district

STAKEHOLDERS WITH FINANCIAL BENEFIT

Adjacent Property Owners

DISADVANTAGED COMMUNITIES ASSOCIATED WITH THE SITE

Industrial Land Employment Base, Growing Downtown Residential Population

PROJECT SPONSORS (INDIVIDUALS/ENTITIES THAT ARE RESPONSIBLE FOR OVERSEEING AND GUIDING, IMPLEMENTATION)

SSF Parks&Rec, San Mateo County Flood Control District

PROJECT CHAMPIONS (INDIVIDUALS/ENTITIES THAT ARE COMMITTED TO ADVANCING THE PROPOSAL, AND CAN INFLUENCE IMPLEMENTATION)

SSF Planning PHASING

Designed for staged delivery of parks within an overall master plan. Large lots provide for a relatively quick process and for each stage to add space of a useable scale.

GOVERNANCE MECHANISMS

- _Align resiliency improvements with city capital planning.
- _Collaborative city-county planning.
- _At the County level, could reformulate flood control zone to include larger sections of the watershed and to assist in funding flood management projects.

FUNDING MECHANISMS

- _Community Facilities District (special tax)
- _Private developers via Community Zoning Bonus
- _Special Assessment for Parks
- _Caltrans Project funding
- _Philanthropy
- _Stormwater utility



3.3 NEW CREEK-SIDE PARK

FIRST STEPS - REZONE SITES

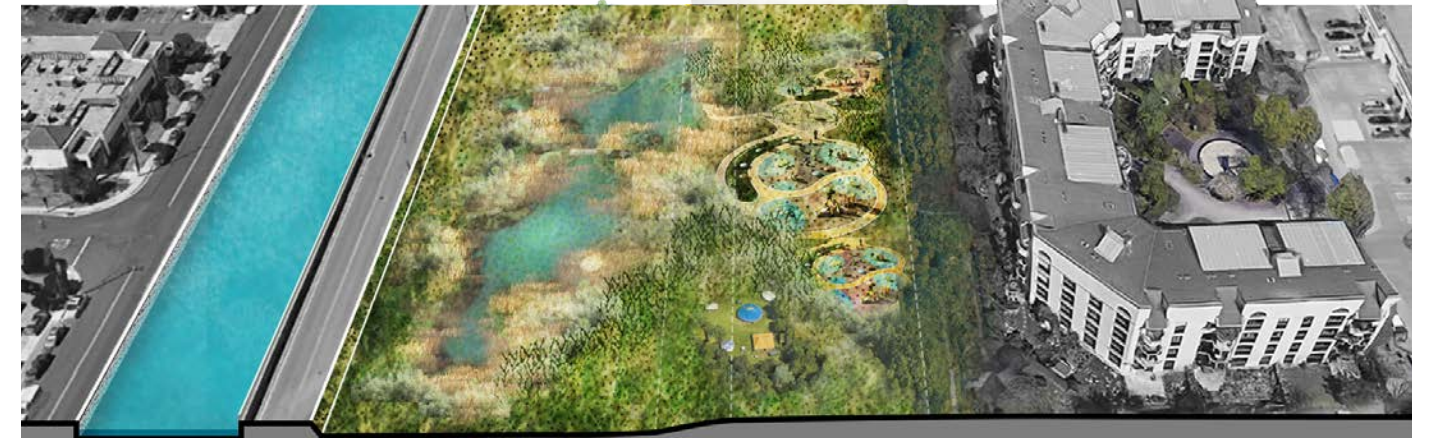
EXISTING



Colma Creek

Existing Large Industrial lot

PROPOSED



Colma Creek

New park for inundation to mitigate flooding. Storm water infiltrates into soil

New playgrounds and recreation

New development (residential and industrial) to preserve jobs that support downtown

Overflow between Creek and Park

3.3 NEW CREEK-SIDE PARK

FIRST STEPS- SPURCE ST GREEN INFRASTRUCTURE

EXISTING



Existing storm water pipe below Spurce St

PROPOSED



New inundation park with overflow to creek

Slow Street created. through swale directing water into new park

Continuous creek park

3.4 THE CIRCLE

DESIGN PROPOSAL

A pedestrian and cycle bridge connecting from Colma Creek (at Linden), over the rail corridor to Caltrain and Produce Ave/Hwy 101/Airport Blvd to lower Colma Creek, and as well as under the 101 on the former freight rail line. Green area created below for a new natives nursery providing both flood detention, 101 runoff treatment, lighting, and landscaping designed as a gateway to South City.

EST. IMPACT

Increased access to Caltrain as well as safe and continuous access east-west between downtown and major employers (0.8 miles). Up to 10 acre-feet of detention to reduce flooding from Colma Creek using a bypass directly from the Creek under Hwy 101 via a culvert. Additional runoff collected from HWY 101 to assist with flood attenuation, but primarily as a water quality project that can share space with the floodable space. This project will be part of an overall adaptive management strategy for large flooding events and will assist as an individual project during small events (e.g., <10-year).

KEY STAKEHOLDERS

CalTrans, CalTrans, Adjacent Land Owners, Major Employers East of 101, WETA

STAKEHOLDERS WITH ASSETS AT RISK

CalTrans (101 & Produce Ramp), Adjacent Land Owners (Park & Fly, Produce Market, Adjacent Industrial Businesses), City of South San Francisco (San Mateo Avenue & Airport Blvd tunnel)

STAKEHOLDERS WITH FINANCIAL BENEFIT

Adjacent Property Owners

DISADVANTAGED COMMUNITIES ASSOCIATED WITH THE SITE

Industrial Land Employment Base, Growing Downtown Residential Population

PROJECT SPONSORS (INDIVIDUALS/ENTITIES THAT ARE RESPONSIBLE FOR OVERSEEING AND GUIDING, IMPLEMENTATION)

SSF Parks&Rec, San Mateo County Flood Control District

PROJECT CHAMPIONS (INDIVIDUALS/ENTITIES THAT ARE COMMITTED TO ADVANCING THE PROPOSAL, AND CAN INFLUENCE IMPLEMENTATION)

CalTrans

PHASING

Hardscape removed and converted to softscape. Temporary access over rail corridor to station as first priority for access.

ALTERNATIVE A

Connecting access over rail corridor, before diverting to existing freight alignment under 101

ALTERNATIVE B

Connecting under rail corridor within widened canal before connecting to existing freight corridor under 101

FUNDING MECHANISMS (DRAW FROM FUNDING TABLE)

Public land, funded with support of grants related to water quality, cycling & flood mitigation.

GOVERNANCE MECHANISMS

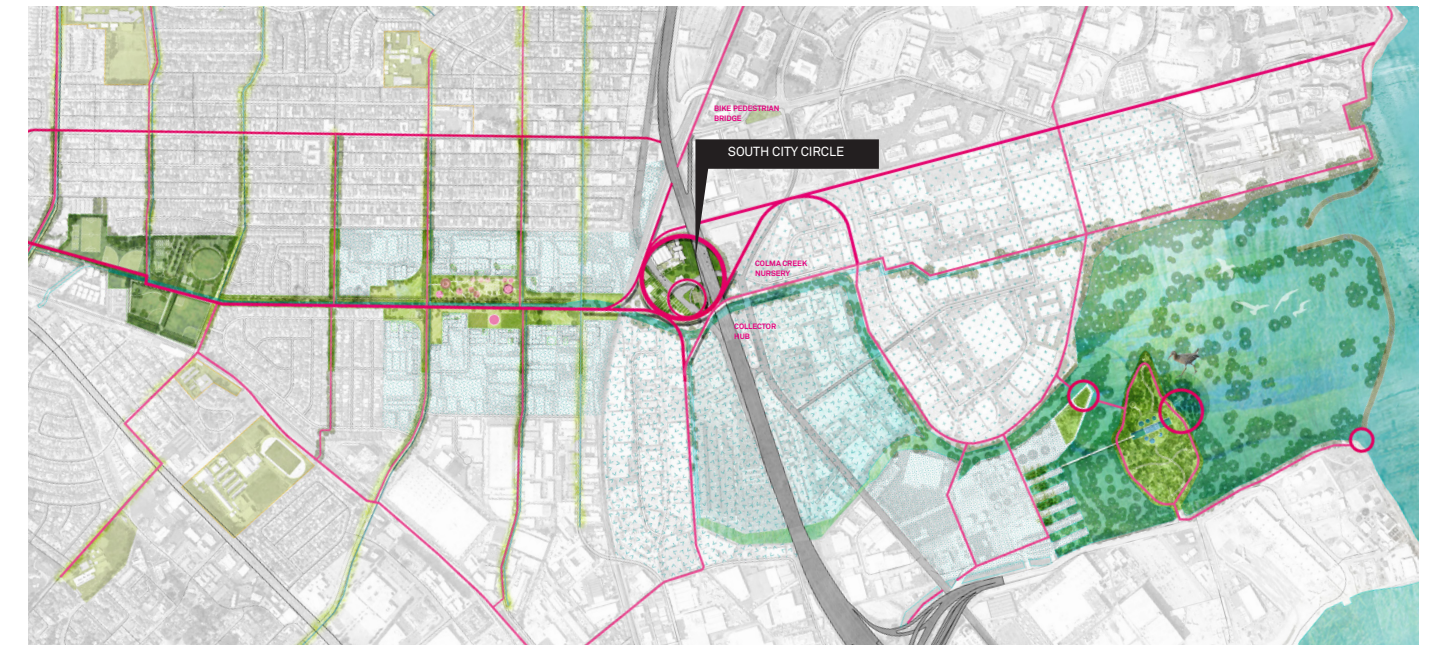
_ Build on existing coordination between the City of South San Francisco, San Mateo County and Caltrans for improvements associated with US Highway 101.

AGENCY APPROVAL NEEDED

Caltrans, regional water quality control board if you are trying to get TMDL credit for treatment of stormwater. Army Corps of Engineers, Flood Control district, DPW.

FUNDING MECHANISMS

_ Green Bonds
_ Private developers via Community Zoning Bonus
_ Caltrans Project funding



3.5 CREEK BYPASS EASEMENTS

DESIGN PROPOSAL

Diversion overflow through new linear parkway easement in two locations; at the edge of produce market site re-connecting Colma Creek to Navigable Slough, and at the right angle in lower Colma creek connecting under Harbor Way and Littlefield Avenue to the Bay.

EST. IMPACT

Diversion of up to 900 cfs peak flow to navigable slough and 500 cfs through the downstream easement, both historical reaches of the Colma Creek Delta. Project alone significantly reduce flooding within adjacent properties and provide additional creek capacity to assist in flood reduction mitigation of upstream projects. Resolve smaller storm events within these reaches (<25-year events) and significantly reduce the extent and depth.

NOTE ON PROJECT IMPACTS

Diversion of 1,400 cfs into new bypass channels reduces flow within the undersized section between Utah Ave and Hwy-101 to its capacity to convey up to the 10-year storm 100% within the channel.

KEY STAKEHOLDERS

Adjacent Land Owners, SM County Flood Control, CalTrans

STAKEHOLDERS WITH ASSETS AT RISK

Produce Market & ParkNFly Site, East-side industrial Properties

STAKEHOLDERS WITH FINANCIAL BENEFIT

Adjacent Property Owners

DISADVANTAGED COMMUNITIES ASSOCIATED WITH THE SITE

Industrial Land Employment Base

PROJECT SPONSORS (INDIVIDUALS/ENTITIES THAT ARE RESPONSIBLE FOR OVERSEEING AND GUIDING, IMPLEMENTATION)

San Mateo County Flood Control District

PROJECT CHAMPIONS (INDIVIDUALS/ENTITIES THAT ARE COMMITTED TO ADVANCING THE PROPOSAL, AND CAN INFLUENCE IMPLEMENTATION)

San Mateo County Flood Control District & FEMA

PHASING

Produce market bypass delivered first to

relieve flooding pressure on that site and at the edge of 101.

GOVERNANCE MECHANISMS

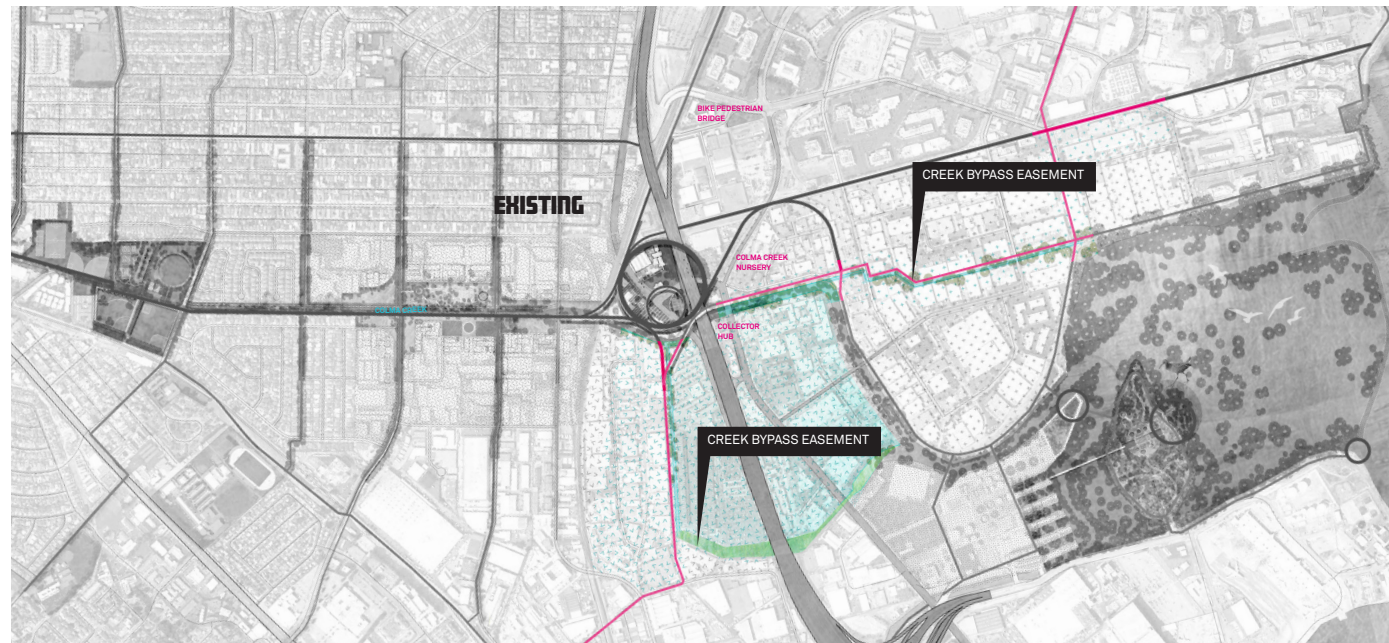
_ The Colma Creek Advisory Committee could play a convening role for the agencies playing championing, regulatory and funding roles.

AGENCY APPROVAL NEEDED

SSF Department of public works and San Mateo Flood Control District

FUNDING MECHANISMS

_ Private developers via Community Zoning Bonus
_ Special Assessment for Parks
_ Stormwater utility



3.5 CREEK BYPASS EASEMENTS

FIRST STEPS- OVERFLOW EASEMENTS

EXISTING



PROPOSED



Diverging into Navigable Slough to avoid flooding of Produce Market

Overflow through to shoreline using one property and several right-of-ways

3.6 LOWER COLMA CREEK

DESIGN PROPOSAL

Adaptation of existing walled edge with softened edge including restoration planting and pedestrian/cycle paths.

EST. IMPACT

Continuous new public access with 2.2 miles of new accessway, as well as 2.2 miles (x2) of restored native habitat on both canal edges.

NOTE ON PROJECT IMPACTS

Long-term adaptive management strategy of softening the edges of downstream section of the creek. Targeted parcel abandonment provides creek capacity and reduces downstream constraints of the creek, which allows for greater upstream cap.

KEY STAKEHOLDERS

Adjacent Land Owners, BCDC, EPA, California Coastal Conservancy

STAKEHOLDERS WITH ASSETS AT RISK

East-side Industrial Properties

STAKEHOLDERS WITH FINANCIAL BENEFIT

Adjacent Property Owners

DISADVANTAGED COMMUNITIES ASSOCIATED WITH THE SITE

Industrial Land Employment Base

PROJECT SPONSORS (INDIVIDUALS/ENTITIES THAT ARE RESPONSIBLE FOR OVERSEEING AND GUIDING, IMPLEMENTATION)

San Mateo County Flood Control District

PROJECT CHAMPIONS (INDIVIDUALS/ENTITIES THAT ARE COMMITTED TO ADVANCING THE PROPOSAL, AND CAN INFLUENCE IMPLEMENTATION)

SSF Planning

PHASING

Potential water's edge planting stages before reworking of levee wall into bermed walkway.

FUNDING MECHANISMS (DRAW FROM FUNDING TABLE)

Public land, funded with support of grants related to water quality, cycling & flood mitigation.

GOVERNANCE MECHANISMS

_ If a Community Facilities District is

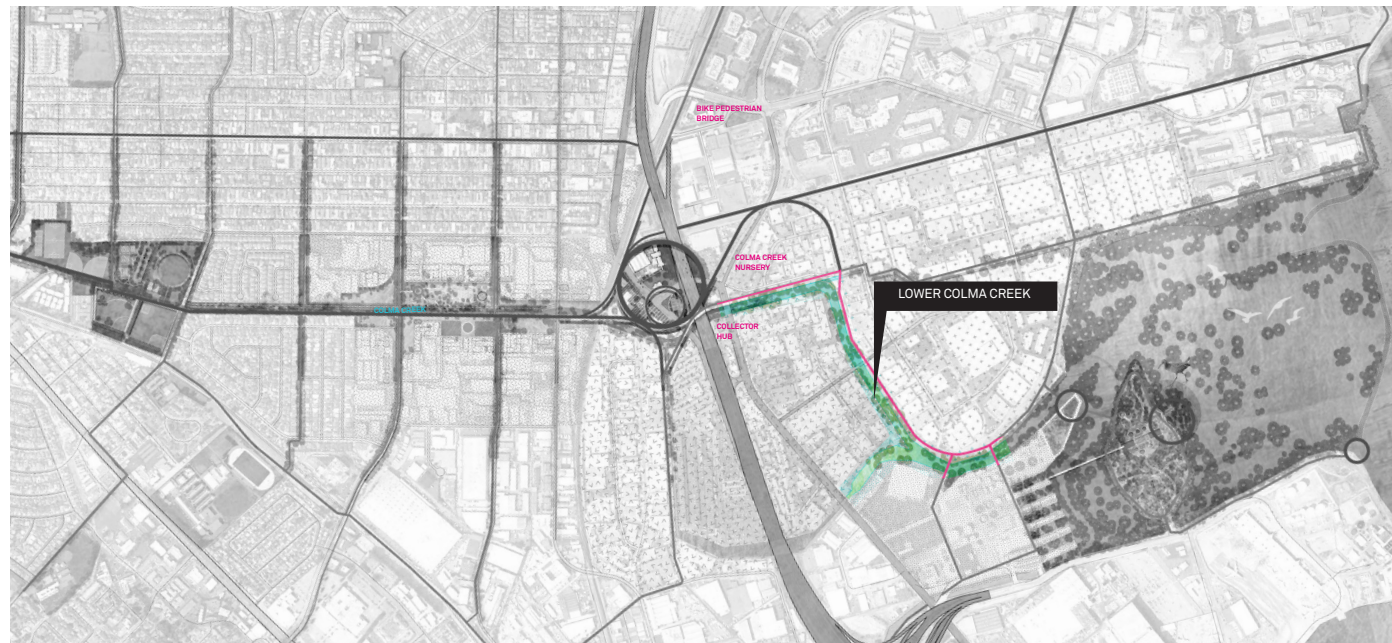
established to pay for resiliency protections, it could provide a governing/convening role for coordination among property owners and agencies.

AGENCY APPROVAL NEEDED

SSF Department of public works and San Mateo Flood Control District, Army Corps, BCDC

FUNDING MECHANISMS

- _ Green Bonds
- _ Community Facilities District (special tax)
- _ Special Assessment for Parks



3.7 WQCP UPGRADES & ECO WATER PARK

DESIGN PROPOSAL

Additional natural treatment areas at the shoreline of the WQCP as well as restoration of the SamTrans depot for a new public park for recreation and education associated with water quality (in partnership with commercial facilities).

EST. IMPACT

Creation of 12.4 acres of natural treatment zones adjacent to WQCP, as well as extended treatment wetland habitat in 23.5 acres of new recreational parkland.

NOTE ON PROJECT IMPACTS

This is based on 7:1 ratio of naturalized treatment space related to SSF WWTP average daily flow. This, however, does not consider the adjacent cities that use the discharge, which do not have capacity for nutrient removal.

KEY STAKEHOLDERS

SSF WQCP, SamTrans, BCDC, SFO, EPA, California Coastal Conservancy

STAKEHOLDERS WITH ASSETS AT RISK

SamTrans, SFO

STAKEHOLDERS WITH FINANCIAL BENEFIT

SSF WQCP, Adjacent Property Owners

DISADVANTAGED COMMUNITIES ASSOCIATED WITH THE SITE

South City Residential Population

PROJECT SPONSORS (INDIVIDUALS/ENTITIES THAT ARE RESPONSIBLE FOR OVERSEEING AND GUIDING, IMPLEMENTATION)

SSF Public Works

PROJECT CHAMPIONS (INDIVIDUALS/ENTITIES THAT ARE COMMITTED TO ADVANCING THE PROPOSAL, AND CAN INFLUENCE IMPLEMENTATION)

Regional Water Quality Control Board, Coastal Conservancy, SFEI, San Mateo County, SFO

PHASING

Initial habitat creation and ecological treatment within the disused wharf fingers, before expansion of restoration efforts to SamTrans site.

GOVERNANCE MECHANISMS

_ Build on existing coordination mechanisms within City of South San Francisco Departments and with SamTrans.

AGENCY APPROVAL NEEDED

Regional Board, BCDC

FUNDING MECHANISMS

- _ Environmental Performance Bonds
- _ Green Bonds
- _ Public-Private Partnerships
- _ San Francisco International Airport (SFO)
- _ Measure AA
- _ Water/wastewater utility
- _ Stormwater utility



3.7 WQCP UPGRADES & ECO WATER PARK

FIRST STEPS-NATURAL FINAL STAGE

EXISTING



PROPOSED



3.8 SLR 'LIVING LEVEE' & WETLAND COLLECTOR

DESIGN PROPOSAL

Creation of a new 'living levee' tidal barrier and a 'wetland collector' area for habitat restoration and recreation which is also capable of detaining storm water during king tides of long-term sea-level rise scenarios.

EST. IMPACT

Protection from 60 inches of SLR along with detention for 1,900 acre-feet of stormwater to contain the 50-year event (within a 12-hour maximum tidal period) within a 300-acre area for habitat restoration and water recreation.

KEY STAKEHOLDERS

BCDC, SFO, EPA, California Coastal Conservancy

STAKEHOLDERS WITH ASSETS AT RISK

SFO, SSF WQCP, SamTrans, Industrial Land Owners

STAKEHOLDERS WITH FINANCIAL BENEFIT

Adjacent Property Owners

DISADVANTAGED COMMUNITIES ASSOCIATED WITH THE SITE

Industrial Land Employment Base

PROJECT SPONSORS (INDIVIDUALS/ENTITIES THAT ARE RESPONSIBLE FOR OVERSEEING AND GUIDING, IMPLEMENTATION)

San Mateo County Flood Control District

PROJECT CHAMPIONS (INDIVIDUALS/ENTITIES THAT ARE COMMITTED TO ADVANCING THE PROPOSAL, AND CAN INFLUENCE IMPLEMENTATION)

SFO, San Mateo County

PHASING

36 inches SLR at outer edges of Collector. Partial barriers then built to understand sediment build-up patterns. Final barrier and tidal control then built.

ALTERNATIVE A

Potential sea-level rise protections created at edge of SamTrans Island and Colma

Creek outlet.

FUNDING MECHANISMS (DRAW FROM FUNDING TABLE)

Public land, funded with support of grants related to water quality, cycling & flood mitigation?

GOVERNANCE MECHANISMS

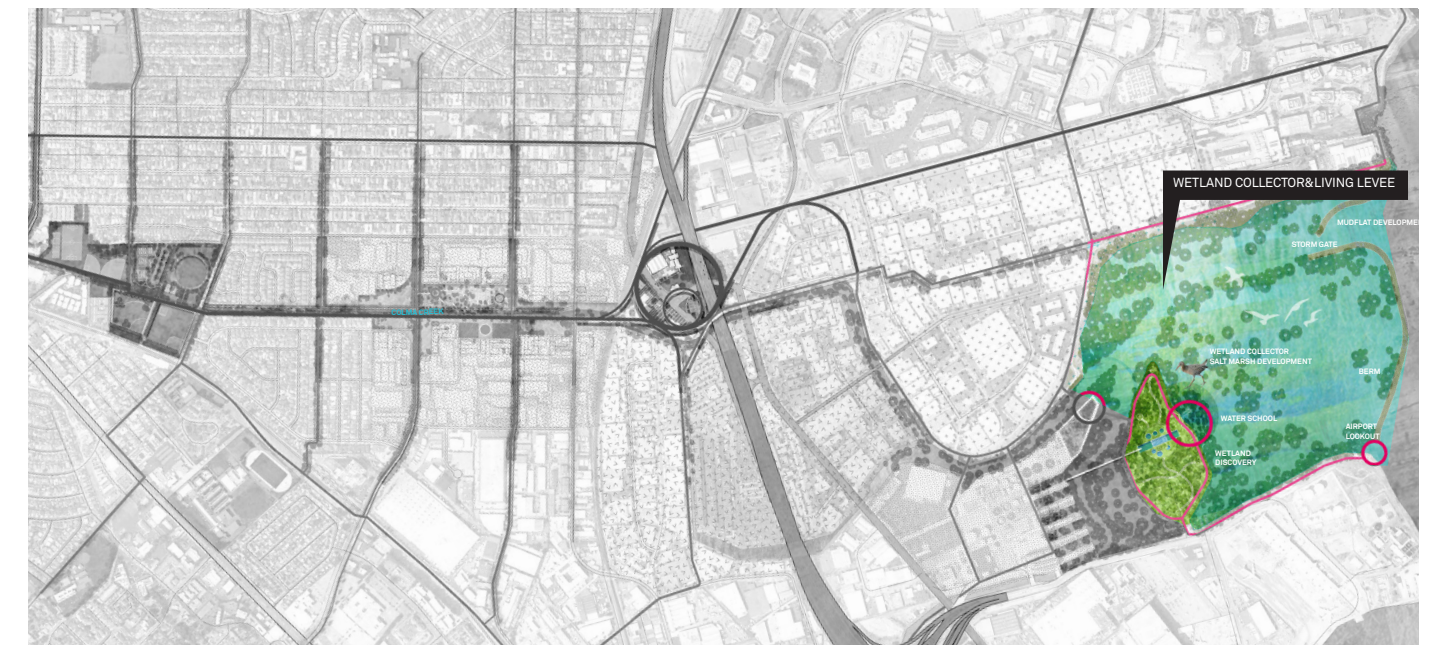
_ If a Community Facilities District is established to pay for resiliency protections, it could provide a governing/ convening role for coordination among property owners and agencies.

AGENCY APPROVAL NEEDED

BCDC

FUNDING MECHANISMS

- _ Community Resiliency Facilities District
- _ In Lieu Fee Mitigation and Managed Retreat Finance Policies
- _ Green Bonds
- _ Community Facilities District (special tax)
- _ San Francisco International Airport (SFO)
- _ Measure AA



PART 4 –

DELIVERY
SUMMARY
TABLES

Funding mechanism	Scale	Purpose	Pre-development	Development	Stakeholders who will benefit	Already used in South San Francisco?	Orange Park	Greened & Expanded Colma Creek	New Creek-side Parks	The Circle	Creek Bypass Easements	Lower Colma Creek Restoration & WQCP Up-grades & Eco Water Park	SLR Living Levee & Wetland Col-	Watershed level projects	What it is	How it could fund proposed resiliency project in South SF	Process required for adoption	Example	Mechanisms	Additional considerations	
Community Resiliency Facilities District	District	Finance District level SLR and Flooding Infrastructure Investments	X	X	Landowners within the district	New							X		Property owners in a FEMA flood zone join together to fund resiliency improvements through lower insurance premiums.	Property owners currently participating in the National Flood Insurance Program would instead purchase flood insurance from a Community Choice Flood Risk Financing pool. Payments above the cost of insurance but below the cost of FEMA insurance would go to resilient infrastructure.	If structured as a CFD, 2/3 of property owners must approve	San Francisco Creek JPA	A Community Facilities Resiliency District (CFRD) uses the same governing structure as a Community Facilities District (CFD): voluntary entry by land owners, 2/3 majority needed for approvals and changes, and flexibility to the types of projects it can fund. The fundamental difference is that it also provides flood insurance to the properties within its boundary. A CFRD takes advantage of the fact that landowners in the Bay Area enrolled in the National Flood Insurance Program (NFIP) pay more in flood insurance than the true actuarial rate. This would allow a CFRD to provide savings in flood insurance to land owners within its boundaries and simultaneously fund resiliency infrastructure.	The central issue underlying this CFRD is level of governance. Given that member of the CFRD members pay about the same (or perhaps even slightly less) in flood insurance through the NFIP and the a CFRD the question becomes, "Where are my insurance fees better spent, through a national insurance program or through an infrastructure district in my community?".	
In Lieu Fee Mitigation and Managed Retreat Finance Policies	District	Finance manage retreat through densification/development			Landowners in chronically flooded areas.	New							X		Potential upzoning in certain developments in exchange for buyout assistance toward the buyout and managed retreat of chronically flooded areas.	Developers in the surrounding areas would receive density bonuses in exchange for contributing toward a buyout fund. Property owners (residential or commercial) in chronically flooded areas would have the choice of selling their property to the fund. This could further fund the retirement of existing building and restoration of wetlands in flooded zones.	State legislature and/or City Council Approval.	New Jersey Blue Acres Program	There is currently no precedent (or funding mechanism) for managed retreat finance for commercial property. However, In Lieu Fee Mitigation fund currently finance marsh and wetlands restoration throughout the state. This policy, combined with strategic rezoning of could finance the buyback of chronically flooded areas and the restoration of marsh and wetlands along the South San Francisco coast.		
Environmental Performance Bonds	Project	Finance environmental infrastructure paid entirely through the performance of the asset			Residents protected by resiliency infrastructure.	New						X	X		A bond issued by a municipal agency, utility, transit authority. Bond proceeds go to the issuer in case of a natural disaster.	Flood prevention infrastructure would reduce insurance premiums for landowners, municipal agencies and transit authorities. A performance bond would bundle up those savings into an investment of infrastructure that prevents flood damage.	Ballot Measure	Texas Wind Insurance Association	Environmental performance bonds connect catastrophe (or insurance) bonds to new infrastructure investments. A flood mitigation infrastructure reduces insurance costs landowners and governmental agencies. An environmental performance bond monetizes avoided losses associated with a new resiliency investment.	The key insight of an environmental performance bond is that it allows agencies and landowners to pay for prevention rather than for insurance premiums or disaster mitigation.	
Green Bonds	Project	Finance infrastructure investments that also provide environmental benefits			Residents protected by resiliency infrastructure.	New			X		X	X	X		A bond issued by a private company or public entity designed to fund environmentally beneficial initiatives.	A bond issued by a municipal agency, utility, transit authority. Bond proceeds go to the issuer in case of a natural disaster.	Ballot Measure/Board Approval	Apple's \$1.5 Billion Green Bond	Bonds are governments' most common vehicle for funding the costs of large infrastructure projects. They allow local governments to borrow the up front capital in exchange of periodic interest payments over a preestablished period of time.		
Public-Private Partnerships	Project	Finance infrastructure investments that provide ongoing annual revenue after completion.			Residents protected by resiliency infrastructure.	New						X			A partnership between a public entity and private investor aimed at the construction of public infrastructure.	A long-term investor, developer or operator of resiliency infrastructure would build, finance and potentially operate an infrastructure project. Investment entity would profit from future bond proceeds, future tolls or a combination of both.	Request for proposal process and City Council Approval.	Ontario Place Disraeli Bridges Winnipeg	A Public Private Partnership (P3) has the added advantage that it is project delivery strategy (design, construction, maintenance and operation) as well as a financial.		
Community Facilities District (special tax)	District	Finance community infrastructure investments above existing city services.		X	Landowners within the district; more generally residents/workers in the district.	Existing		X	X		X		X		Property owners in district agree to pay for a share of district amenities.	A CFD of Landowners that directly benefit from the protection from stormwater and sea level rise provided by the funded projects.	2/3 approval			Preliminary calculations show that given South San Francisco's current development levels the most aggressive bonding scenarios would fund a maximum \$2 billion in resiliency infrastructure.	
Private developers via Community Zoning Bonus	Project	Developer charges that provide community benefits for additional density allowances.		X	Public and property owners beyond the development would benefit from resiliency improvements.	Existing		X	X	X	X				Community Zoning Bonuses allow developers to build at higher densities in exchange for providing community amenities beyond what regulations require. Amenities that improve resiliency could qualify, such as more permeable surfaces or setting aside land to increase the width of stormwater channels.	This could be used to fund permeable surfaces or creekside improvements when development permits are sought for properties affected by creekside flooding.	Planning Board must approve		Community Zoning Bonuses allow developers to build at higher densities in exchange for providing community amenities beyond what regulations require. Amenities that improve resiliency could qualify, such as more permeable surfaces or setting aside land to increase the width of stormwater channels.		
Special Assessment for Parks	City	Ad valorem tax for additional community facilities above basic city services.	X	X	Residents citywide; regional visitors/users	Existing	X	X	X		X	X		X		Could be used to fund new shoreline parks, bike trails and creekside parks, and improvements to existing parks.	50% voter approval		South San Francisco already has a relatively high property assessment for Parks and Recreation. Any increase in assessment for new parks amenities would have to compete with funding needed for operations and maintenance.		
Caltrans Project funding	Project	Mitigation funds for improving water quality through stormwater management and treatment infrastructure.	X	X	Property owners near projects stormwater flooding projects; residents citywide for bicycle/pedestrian projects.	Existing	X	X	X	X					To mitigate the environmental impacts of its projects, Caltrans provides funding for mitigation projects, such as parks or vegetation that filters and slows stormwater runoff.	Stormwater mitigation requirements for Caltrans projects, even outside of South San Francisco, could be used to fund stormwater improvements in South San Francisco. Separately, Caltrans projects to meet bicycle/pedestrian access requirements could fund the Circle bicycle/pedestrian bridge and pathways leading to/from Highway 101.	Decision by Caltrans		To mitigate the environmental impacts of its projects, Caltrans provides funding for mitigation projects, such as parks or vegetation that filters and slows stormwater runoff. Caltrans	A key component of our funding strategy is to align with large asset owners, such as Caltrans and SFO, to influence the design of resiliency improvements they will have to make to provide multiple benefits (which may involve linking with multiple funding sources).	
State grants	Varies - see grants table	Varies				Varies									See tab on grants opportunities		Varies				
Federal grants	Varies - see grants table	Varies				Varies									See tab on grants opportunities		Varies				
San Francisco International Airport (SFO)	District	Infrastructure investments that mitigate the impacts of sea level rise and flooding on SFO operations.	X	X	SFO will be main beneficiary. Additional beneficiaries will be property owners near projects stormwater flooding projects/sea level rise projects; residents citywide for park amenities associated with resiliency improvements.	Existing						X	X		SFO is funding infrastructure to protect the airport from stormwater flooding, king tides and sea level rise.	SFO has financial interest in contributing to the cost of improvements to reduce stormwater flows through Colma Creek and the living levee protections from sea level rise.	Decision by SFO				
Measure AA	District (shoreline)	Planning and infrastructure investments to address sea level rise and protect the Bay's natural and built shoreline.	X	X	Property owners near resilient shoreline projects; residents citywide for access and shoreline amenities.							X	X								
Philanthropy	Varies	Varies	X		Citywide residents		X	X	X	X										Parks projects that provide increased access to disadvantaged communities would be in a position to attract funding from philanthropic foundations.	
Water/wastewater utility	District	Investments that achieve the mission of the wastewater utility and maximize social, environmental, and economic benefits to their ratepayers.	X	X	Citywide/regional							X	X		Owens and operates the wastewater treatment plant at the mouth of Colma Creek. Treatment plant is affected both by peak stormwater flows and sea level rise, particularly because it would be very difficult to move the treatment plant inland.	The utility is interested in transition tertiary treatment processes to natural processes, in line with state policy. Utility rates could contribute funding to nature-based wastewater treatment, wetland collector and living levee.	Rate increases for resiliency improvements would pass unless over 50% of ratepayers oppose.				
Stormwater utility	Citywide	Finances investments in stormwater management to address water quality and flooding impacts realized from impervious surfaces. Incentivize private investments in stormwater management.	X	X	Citywide/regional			X	X	X		X	X		Improvements proposed at the Colma creek and watershed level will contribute to stormwater quality and reduce incidence of stormwater flooding.	Stormwater rates can fund parks-based improvements to improve stormwater quality and slow peak flows.	Depending on the outcome of challenges to Proposition 218, rate increases for resiliency improvements would pass unless over 50% of ratepayers oppose.				

GRANT SOURCES

Grant Name	Issuing Agency	Underlying Revenue Source	Main purpose	Amounts (range)	Matching Requirement	Pre-development Funding	Implementation Funding	Next funding cycle	Orange Park	Greened & Expanded Colma	New Creek-side Parks	The Circle	Creek Bypass Easements	Lower Colma Creek Restoration	WQCP Upgrades & Eco Water Park	SLP 'Living Levee' & Wetland Col-	Watershed level projects	How it could fund proposed resiliency project in South SF	Process required for application	Examples of projects funded	Link 1	Link 2	Link 3	
CalTrans Sustainable Transportation Planning Grant Program: Sustainable Communities (Competitive) Grant	CalTrans	SB1	Funds local and regional multi-modal transportation and land use planning projects that further the region's RTP SCS (where applicable), contribute to the State's GHG reduction targets, and also assist in achieving the Caltrans Mission and Grant Program Over arching Objectives .	\$100,000 min (\$50,000 min for disadvantaged communities) - \$1,000,000 max	Required local match 11.47%	X		Total of \$6 million dollars will be available in 2019-20; Application due Feb 2019.		X		X		X			X	Sustainable Communities Grant could fund pre-development services and studies related to any mobility components of the design ideas, including many of the bicycle and pedestrian plans, and any temporary demonstration projects to build support.	Primary applicant can be an MPO with sub-applicants, a Transit Agency, or a City or County.	Studies or plans to reduce VMT, active transportation plans, corridor enhancement studies, climate change adaptation, temporary built environment demonstration, e.g. tactical urbanism, student internships, etc. (Many more examples in grant application pdf on page 13).	http://www.dot.ca.gov/hq/tpp/grant_files/FY_18-19/01_FINAL_JAN18_STPGrant-GuideFY2018-19.pdf	http://www.dot.ca.gov/hq/tpp/grants.html		
CalTrans Adaptation Planning Grant	CalTrans	SB1	Support planning actions at local and regional levels that advance climate change adaptation efforts on the transportation system, especially efforts that serve the communities most vulnerable to climate change impacts.	\$100,000 min - \$1,000,000 max	Required local match 11.47%	X		Total of \$6 million dollars will be available in 2019-20; Application due Feb 2019.		X		X		X				Adaptation Planning Grant could fund pre-development services and studies related to any climate change impacts on multi-modal transportation infrastructure, especially that impact disadvantaged communities.	Primary applicant can be an MPO, a Transit Agency, a City or County, a Local or Regional Agency, or a Special District.	Studies to assess climate vulnerability, plan green infrastructure, transportation infrastructure adaptation, other strategies to provide cooling in transit shelters or decentralized energy storage, etc. (Many more examples in grant application pdf on page 6).	http://www.dot.ca.gov/hq/tpp/grant_files/FY_18-19/05_FINAL_JAN18_APGrant-GuideFY2018-19.pdf			
Solutions for Congested Corridors Program	California Transportation Commission (CTC)	SB1	Open to county and regional transportation agencies or CalTrans - to fund projects that make specific improvements and are part of a comprehensive corridor plan designed to reduce congestion in highly travelled corridors by providing more transportation choices while preserving the character of the local community and creating opportunities for neighborhood enhancement projects.	Varies	No match required.		X	\$250M available annually from 2017-18 to 2020-21.				X					X	The Circle and the Slow Streets project ideas could be an important part of reducing congestion on 101 and associated on/off ramps. With this in mind, SamTrans could be a lead agency to apply for this grant, especially if the bicycle paths and bus lanes are designed in a way that makes it safer for both modes of transportation to coexist.	County and regional transportation agencies or CalTrans can apply.	HOV lanes, bus lanes, improvement at transit stations that improve safety, operational efficiency, or additional capacity, bike lanes, crosswalks, etc. (Many more on page 4).	http://www.catc.ca.gov/programs/sb1/sccp/	http://www.catc.ca.gov/programs/sb1/sccp/docs/sb1-sccp-final-adopted-guide-lines-and-resolution-120617.pdf		
Urban and Community Forestry Program: Urban Forest Expansion and Improvement	CAL Fire	CARB - California Air Resources Board: California Climate Investments (CCI) - Cap and Trade	Tree planting, incl. assoc. vegetation like bioswales in disadvantaged communities to reduce GHG (identified by CalEnviroScreen 3.0: https://calepa.ca.gov/EnvJustice/GHGInvest/)	\$150,000-1,500,000	25% match required (Could be waived for Disad. Comm.)	X	X	\$17.5 million available in 2017-18 (deadline passed in Feb 2018); possible to develop Concept Plan in the Fall 2018 for the next year.	X	X	X		X	X	X	X	X	Urban Forest Grant could fund any tree-planting components of the design ideas, especially in areas that provide shade/canopy for non-motorized transportation routes, and especially near disadvantaged communities.	Annual guidelines posted in Fall, Concept Proposals submitted in late Fall and selected projects will develop the Project Application with staff.	Tree planting, bioswale projects with a net GHG benefit.	http://www.caclimateinvestments.ca.gov/	http://www.fire.ca.gov/Grants/downloads/UrbanForestry/2017-2018/CAL%20FIRE_UCF_GRANT%20GUIDE-LINES_17_18_FINAL%2012_19_17.pdf	https://www.arb.ca.gov/cc/capandtrade/auctionproceeds/2017_draft_funding_guidelines.pdf	
Climate Adaptation and Resiliency Program	Wildlife Conservation Board	CCI (Cap and Trade)	Protect and restore ecosystems on natural and working lands to provide climate change adaptation and resilience for wildlife; Assist natural and working lands managers in implementing practices that provide climate adaptation and resilience. Facilitate the reduction of GHG emissions; Increase carbon sequestration in natural and working lands, and provide additional social, economic, and environmental benefits, or "co-benefits".	Varies		X	X	4 times a year: February, May, August, and November		X						X	X	Wildlife-focused climate adaptation grants could be used in the Colma Creek and Wetland Collector projects to fund land acquisition, planning or implementation phases in order to protect wildlife like the endangered Clapper Rail and Salt Marsh Harvest Mouse species.	Local governments, park and open space districts, resource conservation districts, private landowners, and nonprofit organizations may apply.	2018: \$5.3M to Alameda County Water District to modify flow releases in Alameda Creek and build fish ladders; 2016: \$200,000 grant to Santa Cruz County Resource Conservation District and Trout Unlimited for the analysis of increasing stream flow to support endangered steelhead and Coho salmon species.	https://wcb.ca.gov/Programs/Climate-Adaptation	https://nrm.dfg.ca.gov/FileHandler		
Active Transportation Program (ATP) Cycle 4 Grant	CalTrans	CCI (Cap and Trade)	Encourage increased use of active modes of transportation: biking, walking.	Large Projects (\$7M); Medium (\$1.5-7M); Small (<\$1.5M)	No match required	X	X	2019 (Cycle 4) Call for projects in May 2018		X	X	X		X			X	Any of the project components related to bicycle and pedestrian network improvements would benefit from this grant.	Application varies depending on project size.	Expanded bike share programs; safe routes to school; active transportation projects, especially if that serve disadvantaged communities.	http://www.dot.ca.gov/hq/Local-Programs/atp/cycle-4.html	http://www.catc.ca.gov/programs/atp/2019/docs/041718-Final-Draft-2019-ATP-Guidelines.pdf		
Prop 1 Restoration Grant Program: Watershed Restoration Grant Program	California Department of Fish and Wildlife (CDFW)	Prop 1	Meet California Water Action Plan objectives: more reliable water supplies, restoration of important species and habitat, and more resilient, sustainably managed water resources system.	Varies	No match required		X	\$24 million available in 2018-2019 for The Watershed Restoration Grant Program (outside of the Sacramento-San Joaquin Delta); Due June 2018.	X	X	X		X	X	X	X	X	Any of the watershed related projects that improve water quality and support the endangered species on site could be eligible for this grant.	Public agencies, non-profits, public utilities, State Indian tribes, mutual water companies	Species-specific habitat restoration; dam removal; waterway restoration projects.	https://www.wildlife.ca.gov/conservation/watersheds/restoration-grants	https://nrm.dfg.ca.gov/FileHandler		

Scale	Agency	Funding role	Regulatory role	Orange Memorial Park	Greened & Expanded Colma Creek	New Creek-side Parks	The Circle	Creek Bypass Easements	Lower Colma Creek Restoration & Public	WQCP Upgrades & Eco Water Park	SLR Living Levees & Wetland Collector	Resilient South City (Watershed)	Current involvement in South San Francisco	Proposed involvement in resiliency projects	Potential barriers to project implementation	Existing coordination mechanisms with South San Francisco	Mechanisms for change	Necessary Permits
City	City of South San Francisco Planning Division and Economic and Community Development Department	No funding role -- perhaps if they decided to pursue these efforts they could get budget or grants to create plans.	Planning department ensures compliance with the Zoning ordinances and general plan.			x							Oversees the planning and economic development planning for City, conduct design review for consistency with plans	There may be land use changes that would need to be rezoned.	There may be redevelopment plans that don't align with the RBD proposal.	City Department, reports to Mayor.	Rezoning where needed to accommodate the new park spaces. Also, potential to co-write a planning grant to go through the city processes to complete and adopt a plan.	Use permits and ensure conformance with general plan and zoning ordinances.
City	South San Francisco Successor Agency	No funding role.	Ensuring that these projects conform to the rules of the successor agency.										Manages all parcels formerly owned by the S SF Redevelopment Agency.	We would want the city to include stormwater protections or a major source of revenue for redeveloping. If there are opportunities to contribute to vision of the RBD proposal perhaps there are opportunities for resiliency improvements or other floodable spaces.	These sites are liabilities and not places that have funding. They likely are already planned and changing things may be difficult.	South San Francisco Successor Agency is made up of the S. SF City Council	If there opportunities to contribute to vision of the RBD proposal perhaps there are opportunities for resiliency improvements or other floodable spaces.	
City	South San Francisco Parks and Recreation Department	Funded by the South San Francisco General fund and other grants and fees.	No regulatory role except for implementing the policies and direction of the adopted by the Parks & Recreation Commission .	X	X	X			X			X	Manages all city parks.	Partner in identifying park improvements that can reduce stormwater runoff while improving community access.	Operations and maintenance of existing parks is a priority. An additional resiliency mandate could be competing for resources.	City Department, reports to Mayor.	Joint capital projects between DPW and Parks and the groundwater/water supply entity could be pursued and share costs. Orange Memorial park and others could be redesigned to address stormwater quality and flooding for multi -purpose investments.	
City	SS DPW Administrative	The S SF DPW receives funding from the City General fund and Prop M.	Projects must comply with city codes, plans and specifications.									x	SS SF DPW finances, CIP implementation, parking, solid waste landfill diversion and recycling, citywide transportation, bike share, carpool, and adopt a Storm Drain program.	Stormwater projects would likely need to be coordinated with the storm drains and bike and transportation projects.	Lack of funding for new initiatives, planned CIP doesn't include these proposals.	City Department, reports to Mayor.	Build support and add these projects to the existing CIP, conduct pilots for early wins potentially grant funded.	
City	South San Francisco Unified School District	Likely joint efforts around capital planning and programming	Projects must comply with rules for schools. See the Division of the State Architect for rules about what is allowable on school properties. (http://www.dgs.ca.gov/dsa/Programs/progProject/projsubmitplanning/juris.aspx) DSA has jurisdiction over access compliance requirements for all buildings in California including schools that are publicly-funded in whole or in part by the use of state funds. Plan review of access compliance related features only, is performed for the following entities when public funds are used in construction: Public elementary and secondary Schools (grades K-12) Community colleges All state-owned or state-leased essential services buildings University of California California State University All state-owned State of California property All state-leased State of California property (enforced by DGS/Real Estate Services Division) Certain Charter schools (see PL 17-01: Charter Schools Enforcement Jurisdiction (PDF - 65KB))									X	Operates all public schools in South San Francisco.	Incorporate stormwater filtration on school sites through increased use of vegetation; support improvements to encourage safe cycling to school.	Operations and maintenance of school facilities is a priority; an additional resiliency mandate could be seen as competing for resources. In addition, community access to school playgrounds is an ongoing subject of discussion.	Cross-agency coordination with City of San Francisco	Demonstration projects that work to build relationships, trust and show proof of concepts.	See Division of State Architect.
City	SS DPW Engineering	CSSF Capital Improvement Plan (CIP) is the plan for infrastructure including streets, storm drains, sanitary sewers, public facilities, parks, and traffic control devices. CIP links the General Plan, master planning documents, and budget; and implements for the next five years. DPW focus on projects to improve the infrastructure to meet Clean Water Act mandates including the NPDES stormwater and wastewater permits. FY 2017/18 CIP is \$83.6 million with \$49.8 million and \$32.2 million in remaining from prior years. It includes 27 new project requests and 30 projects receiving additional appropriations. New funding \$8.9 million is coming from grants and \$9.1 million from Measure W. Projects are divided between the project types: Public Facilities: These 13 projects will renovate, construct and otherwise improve city buildings. These improvements include: replacing HVAC systems, and making facilities more accessible. Parks: These 12 projects will replace and improve playgrounds and walkways City owned public spaces. Storm Drain: These 10 projects will repair and improve storm drains to reduce pollution that runs off into the San Francisco Bay. Sanitary Sewer: These 15 projects will improve the infrastructure at the Water Quality Treatment Plant and improve and rehabilitate sewer lines within the City. Streets: These 21 projects will repair bridges, resurface streets, improve medians and sidewalks, and upgrade streetlights. Traffic: These 13 projects focus on key intersections within the City to provide improved pedestrian safety, traffic calming and better bicycle rider safety on City streets.	No regulatory role except for stormwater and other discharges.	X	X	X		X	X			X	Lots of planned and ongoing capital work.	Almost all the projects proposed would involve the DPW staff and leadership.	Once the vision is accepted by the City and put into the CIP, there would just be the barriers associated with implementing nontraditional or unfamiliar projects. Also concerns about operation and maintenance and funding would be an important issue to address.	City Department, reports to Mayor.		
City	SS DPW Maintenance	Storm Water Fund – Accounts for user charges sustaining the Storm Water Management Program mandated by state and federal authorities. In order to meet the increasingly strict environmental requirements, the General Fund and Gas Tax Fund subsidize the Storm Water Fund. Sewer Enterprise Fund – Accounts for user charges supporting the operation, maintenance, and capital renovation of the wastewater collection and treatment system. The City co-owns and operates a regional treatment plant with the City of San Bruno. Parking District Fund – Accounts for meter and parking permit fees used to maintain or expand parking facilities in the downtown area. Storm Water Fund – Accounts for user charges sustaining the Storm Water Management Program mandated by state and federal authorities. In order to meet the increasingly strict environmental requirements, the General Fund and Gas Tax Fund subsidize the Storm Water Fund.	Sewer & Storm Maintenance - This crew maintains the City's sewer main lines (excluding Westborough and unincorporated areas) and some laterals of houses and businesses with a City approved clean out. Property owners without a City approved clean out are responsible for lateral maintenance. This includes cleaning, repairs, and reconstruction of the sewer lateral from the house or business to the main line. Check with us before you hire a contractor to complete the work. The Storm Drain crew is responsible for the inspection, maintenance and repair of the storm drain infrastructure and responds to mandates imposed by the Federal Government (Clean Water Act) as monitored by the Regional Water Quality Control Board (RWQCB) to lessen pollution and damage to streets and structures.	X	X	X		X	X			X	Operation and maintenance of the stormwater and sewer system, draining, signs streets and sidewalks.	Stormwater, drainage and street redesign would involve this team. Any project involving the movement of sewage would also impact this team.	Lack of funding for new initiatives, planned CIP doesn't include these proposals and there is not new funding for operations and maintenance. Prop 213 prevents increasing rates for these types of services without a vote of the public. New green infrastructure and flood control technologies may be unfamiliar and would require changing practices and project delivery systems.	City Department, reports to Mayor.	Inclusion of these projects in the CIP and then training and demonstration projects to ensure support to develop and operate.	The city must comply with its NPDES stormwater and wastewater permits.
City	SS DPW Water Quality Control	The CSSF funds sewer system services, operations, maintenance, and capital projects, through a sewer enterprise fund. Non-Major Governmental Funds: East of 101 Sewer Impact Fee Fund – Accounts for fees paid by developers used to fund capital expenditures that improve the sewer infrastructure in the areas where new business development has shown a need for an improved sewer system. 2. Major Government Funds: Capital Improvement Fund – Accounts for revenues and expenditures associated with the acquisition, construction, or improvement of City owned facilities and infrastructure. Funding comes from the General Fund, Special Revenue Funds, grants and fees. 3. Proprietary Funds: Sewer Enterprise Fund – Accounts for user charges supporting the operation, maintenance, and capital renovation of the wastewater collection and treatment system. The City co-owns and operates a regional treatment plant with the City of San Bruno. 4. Non – Major Proprietary Funds: Sewer Capacity Charge Fund – Accounts for revenues paid by users for first time connections to the sewer system or by users who increase their sanitary sewage use through facility expansion. Charges are generally paid when building permits are issued. Link to sewer rates: http://www.ssf.net/home/showdocument?id=1995	The Environmental Compliance Program administers the Pretreatment Program, Pollution Prevention Program, and Stormwater Pollution Prevention Programs mandated by the State of California. The programs regulate and control concentrations of wastewater and stormwater pollutants discharged by industrial, commercial, and residential discharges. They also regulate groundwater discharges and require a permit.							X	X	X	They treat and discharge the wastewater for the City of South San Francisco, regulate groundwater discharges and administer the stormwater, pretreatment and pollution prevention program.	Any projects that would infiltrate stormwater into the groundwater, manage stormwater and/or wastewater would have to coordinate with this agency.	They may have different plans or priorities about wastewater and stormwater treatment approaches. Groundwater recharge may not be a big priority for them as they don't control the water supply. Lack of mandate, funding and familiarity with these technologies may be a challenge.	City Department, reports to Mayor.	Master planning and then capital planning with the facilities and Genentech and community to gain familiarity, buy in and secure funding to move this along.	NPDES discharge requirements and the Regional Water Board permits would need to be negotiated to make this happen.

**GOVERNANCE
- CONTINUED**

County	San Mateo County Parks Department	Measure K is a countywide half-cent sales tax extension passed by local voters in November 2016 to support essential County services and to maintain or replace critical facilities. It is also known as the "San Mateo County Critical Services Measure." Measure K extends the sales tax for 20 years, until March 31, 2043. "To ensure San Mateo County quality of life by retaining/improving critical facilities/services, such as: providing affordable homes for seniors, people with disabilities, veterans, families; enhancing public transit; combatting human trafficking; addressing sea level rise; maintaining safe schools and neighborhoods; high-quality preschool and reading programs; park maintenance; and low-income healthcare, shall San Mateo County extend the existing half-cent sales tax, without increasing the rate, providing \$85,000,000 annually for 20 years that the State cannot take away?"	The park implements the direction of the County Parks Commission.											x		Collaborating on allowing or developing recharge facilities.	Unfamiliarity with the new approaches to groundwater, funding limitations.		Planning effort to engage and codesign. Grant to kick it off.	Groundwater infiltration permits.
County	San Mateo County Flood Control District	On February 23, 2016, the San Mateo County Board of Supervisors approved \$6.2 million over three years to begin to address flood risks in areas with cross-jurisdictional challenges. This launched the Flood Resilience Program, a team of two fully dedicated staff to hire consultants to design and implement flood resilience projects, seek grant funding, and collaborate with interested cities and other County water initiatives. Since its inception, the Program has partnered with multiple jurisdictions to build a repeatable and sustainable process for prioritizing and implementing flood resilience projects. Under the Program's leadership, these "Collaboratives" can leverage local agency relationships, share decision-making responsibilities, enable potential funding partnerships, and apply for grant funding for the ultimate goal of improved project development. The Program's current projects include: Bayfront Canal and Atherton Channel Flood Management and Habitat Restoration, Belmont Creek Flood Management Plan, Navigable Slough Feasibility Study, and the County-wide Flood Monitoring and Emergency Response Project.	It is assumed that they coordinate with the regulatory agencies on behalf of the projects.	X	X	X		X	X		X				The fund flood control district projects and planning.	Potential reformulating their zone to include larger sections of the watershed and to assist in funding flood management projects.	Unfamiliarity with the new approaches to flood management, funding limitations.	The fund flood control district projects and planning.	Potential reformulating their zone to include larger sections of the watershed and to assist in funding flood management projects.	Army Corps of Engineers
County	The County Association of Governments of San Mateo County (CCAG)	Regional - C/CAG receives funding from regional partner agencies. Transportation funding is made available through the Metropolitan Transportation Commission and includes State and Federal funding sources. Funding for air quality projects is provided through the Bay Area Air Quality Management District. Surface Transportation Program (STP) and the Congestion Mitigation & Air Quality Improvement Program (CMAQ). State Transportation Improvement Program (STIP) and As the Regional Transportation Planning Agency (RTPA) for the Bay Area, The Metropolitan Transportation Commission (MTC) is responsible for developing regional project priorities for the RTIP for the nine counties of the Bay Area. The biennial RTIP is then submitted to the California Transportation Commission for inclusion in the STIP. The California Department of Transportation (Caltrans) is responsible for developing the ITIP. MTC, in cooperation with County Congestion Management Agencies (CMA) and Caltrans, prepares and adopts the Regional Transportation Improvement Program (RTIP).	They help coordinate the compliance efforts of the stormwater program countywide and insure compliance with regional transportation directives. Through city and county stormwater programs in the Bay Area, the water quality of our local creeks, the bay, and the ocean can improve. With improved water quality, the marine ecosystem will become healthier, which will enhance the quality of life for all Bay Area residents. The Municipal Regional Permit is issued by the State and requires San Mateo County and its municipalities to enact stormwater pollution prevention measures related to construction activities, industrial sites, new development, trash management, and more. The Office of Sustainability is responsible for overseeing the Municipal Regional Permit. In San Mateo County, there are several programs aimed to reduce stormwater pollution and manage stormwater quality: The San Mateo Countywide Water Pollution Prevention Program is a partnership between the City/County Association of Governments, the County of San Mateo, and every incorporated city and town in the county to conduct coordinated stormwater management.	X	X	X		X	X	X	X				Coordination on regional stormwater and transportation initiatives.	Championing these projects and assisting with grants and funds.	Not enough funding or authority.	Coordination on regional stormwater and transportation initiatives.	Collaborative planning that includes the proposals for the county, flood control and stormwater. Joint grant applications.	
Federal	Federal Surface Transportation Program (STP) and the Congestion Mitigation & Air Quality Improvement Program (CMAQ)	FTA offers several flexible funding programs to fund transit related activities. Flexible funds are certain legislatively specified funds that may be used either for transit or highway purposes. The idea of flexible funds is that a local area can choose to use certain Federal surface transportation funds based on local planning priorities, not on a restrictive definition of program eligibility. Flexible funds include Federal Highway Administration (FHWA) Surface Transportation Program (STP) funds and Congestion Mitigation and Air Quality Improvement Program (CMAQ) and FTA Urban Formula Funds. Flexible funding allows for the innovative use of FTA and FHWA funds to create livable communities. Surface Transportation Program (STP) is the largest potential source of flexible funds. It can be used for a broad array of highway purposes and used for major transit purposes as well. A few examples include buying buses, rail vehicles, or constructing fixed guideway systems like light rail or heavy rail. FTA strongly encourages local decision makers to consider and advocate for these funds as they plan for transit projects and renovations. The Congestion Mitigation and Air Quality Improvement Program (CMAQ) Another source of funds for both FTA and FHWA projects, CMAQ, has the objective of improving the Nation's air quality and managing traffic congestion. Eligible activities under CMAQ include transit system capital expansion and improvements that are projected to realize an increase in ridership; travel demand management strategies and shared ride services; pedestrian and bicycle facilities and promotional activities that encourage bicycle commuting. Additional information on the CMAQ program is available at: (http://www.fhwa.dot.gov/environment/cmaqps/) DOT Programs (Administered by FHWA but applicable to transit) Transportation Enhancement (TE) Transportation Enhancement (TE) activities offer funding opportunities to help expand transportation choices and enhance the transportation experience through 12 eligible TE activities related to surface transportation. Transportation, Community, and System Preservation (TCSP) The Transportation, Community, and System Preservation (TCSP) Program is a comprehensive initiative of research and grants to investigate the relationships between transportation, community, and system preservation plans and practices and identify private sector-based initiatives to improve such relationships.	Ensuring projects conform to the funding mandates of these programs.				x	x	x				x		Source of funding for the transportation related projects.			Grant proposals or collaborative capital projects once the proposals are adopted.		
Federal	FEMA	Preparedness (Non-Disaster) Grants - FEMA provides state and local governments with preparedness program funding in the form of Preparedness Grants to enhance the capacity of state, local, tribal and territorial emergency responders to prevent, respond to, and recover from a weapons of mass destruction terrorism incident involving chemical, biological, radiological, nuclear and other explosive devices, and cyber-attacks. (more grants here: https://www.dhs.gov/news/2017/09/01/dhs-announces-grant-allocations-fiscal-year-2017-preparedness-grants)	Flood insurance policies impact development rules.																	

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