

# Bay Conservation and Development Commission's Adapting to Rising Tides Program

Prevention First  
September 27, 2016



San Francisco Bay Conservation  
and Development Commission

# ART Program Objectives

- Provide guidance and support to lead or assist successful adaptation efforts at local, regional and sector scales
- Leverage best available data, information and research to support local and regional efforts
- Continue to develop and refine approaches that lead to action
- Provide consistent assessments that address regional issues and provide a foundation for local action

**Adapting to Rising Tides**

ABOUT ART SUPPLIES ART APPROACH

The Adapting to Rising Tides (ART) Program is an initiative led by the San Francisco Bay Conservation and Development Commission. ART provides staff support and other resources to help agencies and organizations collaboratively plan for sea level rise and storm impacts.

Welcome to the **ART Portfolio**, a place to find planning guidance, tools and information that have been developed, tested and refined by the Adapting to Rising Tides Program to address the specific challenges of climate change.

Findings	Projects	How-to
ART Program outcomes summarized by sectors and adaptation planning issues	Latest information about current and past projects of the ART Program	Background information, step-by-step guidance and "supplies" for leading an adaptation planning project
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**Help Desk >**  
Answers to frequently asked questions. How to contact us for additional help.



# ART Planning Process

## Adapting to Rising Tides Planning Process



# The Adapting to Rising Tides Approach

- Integrates equity, economy, environment and governance from start to finish
- Can be applied to different geographies, sectors, hazards and climate impacts
- Convenes a working group to build local capacity and ensure outcomes resonate locally
- Results in a robust and transparent vulnerability assessment that makes the case for adaptation
- Establishes a clear roadmap for how to prioritize and implement adaptation actions



# ART is Multi-Sector



## **Community Characteristics**

Individuals, households, neighborhoods

## **Residential Housing**

Single-family, multi-family, mobile homes

## **Community Facilities and Services**

Public health infrastructure

Emergency facilities and services

Waste collection and transfer stations

Commercial land uses

## **Industrial Land Uses**

Industrial land uses

Brownfields

Hazardous Materials Sites

Landfills (closed and open)

## **Parks and Recreation Facilities**

Shoreline parks

Bay trail

Marinas

## **Water Management**

Water supply

Wastewater

Flood management

Stormwater infrastructure

## **Transportation**

Passenger and freight rail

Local, state, interstate roads

Bay trail

Seaport

Marine oil terminals

## **Energy and Fuel Supply**

Pipelines

Refineries

Power generation

Power distribution (substations)

# ART is Collaborative

ART emphasizes convening and engaging with stakeholders to build the shared understanding, trust, and buy-in needed for collaborative problem solving

ART Stakeholders have included:

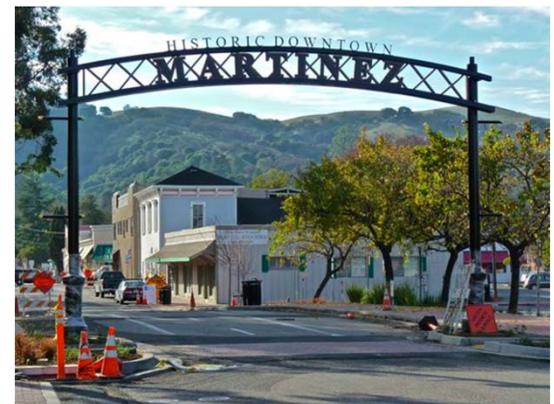
- City Planning, Public Works, Ports, Sustainability Officers, transportation providers
- County Planning, Economic Development, Flood Control, Public Works, Health Services, Office of Emergency Services
- Water, Wastewater, Parks Districts
- Metropolitan Transportation Agencies, Regional Planning Agencies, NOAA, US EPA, FEMA
- Private Entities and Non-Governmental Organizations (power, rail, refineries, industrial alliances and councils, CBOs, nonprofits)





# ART Project Outcomes

- A **collaborative working group** that has the information and capacity to understand and address current and future flood risks
- A robust, **multi-sector, multi-jurisdiction** evaluation of current and future flooding
- Development of **innovative shoreline geospatial analysis and mapping**
- A comprehensive assessment of vulnerabilities and consequences based on **ART's detailed assessment questions**
- A clear and compelling case for **taking action** on priority planning issues



# General Bay Area Seaport Findings

## **San Francisco Bay Area Seaports:**

- The services, infrastructure and facilities that the ports rely on is vulnerable to current and future flooding
- Facilities, infrastructure and materials that are at, or below, grade or under wharves are vulnerable to current and future flooding from multiple sources, including groundwater
- The region lacks redundancy if port operations were to be disrupted at one or more ports



# General Bay Area Seaport Findings

## **San Francisco Bay Area Seaports:**

- Due to the large number of entities involved in ports and the critical role they play in the region, there is a critical need for coordination and collaboration to address vulnerabilities
- Ports contribute to the economy and provide jobs both directly and indirectly and disruption at the region's seaports could have significant economic consequences
- Sea level rise will increase the cost and frequency of maintenance for ports and leaseholders



# General Bay Area Seaport Findings

## **San Francisco Bay Area Seaports:**

- Bay Area Ports are very diverse and perform a number of functions and roles within the region, including traditional maritime activities as well as other uses such as airports, real estate, public spaces, museums and historic buildings and resources.
- The role of Ports in emergency preparedness and response and experience with emergency drills is something that the region can learn from and integrate with.



# Seaports: Port of Oakland

- Port of Oakland facilities assessed included berth terminals, railway terminals, 20 deep water berths, 35 container cranes, as well as the local roads, interstates, warehouses and intermodal rail yards that serve the seaport relies on



## **Key Issue:**

While Port of Oakland facilities are not vulnerable until higher water levels, the infrastructure and services that the Port relies on are vulnerable in the near term. Even temporary disruption to the road and rail that serve the Port will result in economic impacts to the city, region and the state, including disrupting jobs that both directly or indirectly rely on the Port. Shifting cargo from rail to roadway will also affect surrounding neighborhoods, local roads and interstates.

# Seaports: Port of Oakland

## Port of Oakland Vulnerabilities:

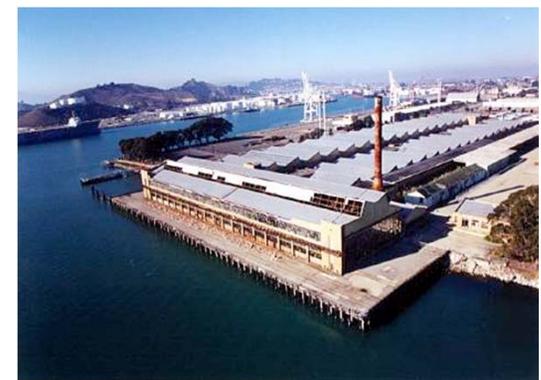
- Rail that serves the seaport is vulnerable to current and future flooding and rail cannot operate if any portion of the line is flooded
- Interstate access to the seaport is vulnerable to current and future flooding
- Some of the first flooding may come from groundwater and overland flooding, flooding low areas of the Ports facilities
- The Port handles a large number of perishable items and delays or disruptions can result in ruined cargo



# Seaports: Port of Richmond

## Port of Richmond Vulnerabilities:

- Equipment, materials and infrastructure located at or below-grade.
- Rail, interstate and local roadways are vulnerable to flooding and lack redundancy, no alternative route for rail cargo and little additional capacity for truck traffic.
- There is insufficient capacity to handle displaced shipping needs, in particular petroleum shipping
- The Port of Richmond terminals currently do not have groundwater pumping systems in place, rising groundwater could damage infrastructure necessary for port operations.



# Seaports: Adaptation Actions

## Bay Area Seaport Adaptation Actions:

- Develop a seaport asset management plan with information on terminals including age, condition, expected useful life, replacement cost, rehabilitation schedule and costs, location, elevation
- Expand or form **multi-agency partnerships** to facilitate **cost sharing and joint decision-making**
- Expand and strengthen partnerships to **develop and jointly implement strategies** that address changes in transportation system condition and use due to sea level rise and storm events



# Seaports: Adaptation Actions

## Bay Area Seaport Adaptation Actions:

- Monitor groundwater levels near vulnerable infrastructure by leveraging existing data or collecting site-specific data as necessary
- Follow existing or develop new standards requiring elevation of sensitive components above anticipated flood levels
- Consider sea level rise in maintenance and operations, financing, new projects and identify near, mid and long term actions that Bay Area Ports and partners can take
- Identify the most sensitive operations, facilities and components at each Port and prioritize actions based on findings



# ART Program Technical Assistance

## ART Portfolio

- Keeping the ART Portfolio up to date with new and refined resources, data, tools, information, and findings
- Providing ART Help Desk technical assistance to local jurisdictions, communities and agencies that are working on climate adaptation and hazard mitigation

The screenshot displays the 'Adapting to Rising Tides' website. The header features the title 'Adapting to Rising Tides' and navigation links for 'ABOUT', 'ART SUPPLIES', and 'ART APPROACH'. Below the header is a landscape image of a coastal area with a body of water and hills in the background. A text box on the right side of the image reads: 'The Adapting to Rising Tides (ART) Program is an initiative led by the San Francisco Bay Conservation and Development Commission. ART provides staff support and other resources to help agencies and organizations collaboratively plan for sea level rise and storm impacts.'

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[Help Desk >](#)  
Answers to frequently asked questions. How to contact us for additional help.

# ART Program Technical Assistance

## ART Help Desk Support:

- Marin County Assessments
- San Mateo County Assessment
- Cities of San Rafael, Oakland, Benicia, Hayward, San Francisco
- Caltrans District 4, Congestion Management Agencies and MTC
- East Bay Regional Park District and Hayward Recreation
- Questions from other regions and states

The screenshot shows the 'Adapting to Rising Tides' website. The header includes the title 'Adapting to Rising Tides' and navigation links for 'ABOUT US', 'ART APPROACH', and 'NEWS'. Below the header, the breadcrumb trail reads 'Adapting to Rising Tides > Help Desk'. A sidebar on the left contains four menu items: 'Findings', 'Projects', 'How-To', and 'Help Desk', each with a plus sign. The main content area is titled 'Help Desk' and contains the following text: 'Connect with knowledgeable ART Program staff who can assist you with understanding and using Portfolio content, and connect you with other relevant information and expertise.' Below this is a paragraph: 'Leading your own adaptation planning project is a daunting task. The ART Program staff know this firsthand. Beginning in 2010 with the Alameda County pilot project, ART Program staff have led, supported and collaborated on more than ten different planning efforts around San Francisco Bay that range in scope and scale. Through this work, we have learned a great deal about how to design and conduct an adaptation planning process that is effective and efficient, and appropriate to the needs of project partners and available resources.' To the right of this paragraph is a quote box: 'I wasn't planning to lead. I was standing in the back and then everyone turned around. - Avery Hiebert'. Below the paragraph is another paragraph: 'Now we want to put all of this knowledge and experience to further good use by helping you with your planning efforts. The ART Program team is available to answer questions, to help and support efforts, and to brainstorm with you about how to approach resilience planning within your community, jurisdiction, organization or agency.' At the bottom, there are three bullet points: 'The bios for our program staff can help to lead you to the staff member(s) most familiar with your topics of concern. Or, feel free to contact any of us and we will connect you with the right support.', 'The ART Approach page describes the planning process that the ART Program has developed, tested and refined in past projects, and that we continue to use and build upon.', and 'Our Definitions and FAQs can help answer questions that we commonly get about the ART approach and the Portfolio resources.'

# Adapting to Rising Tides

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[www.adaptingtorisingtides.org](http://www.adaptingtorisingtides.org)

**Findings:** ART Program outcomes summarized by sector and issue

**Projects:** Latest information about current and past projects

**How-to:** Background information and step-by-step guidance and supplies

**Help-desk:** Connect to ART Program staff

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