

Sea Level Rise, Groundwater Rise, & Shoreline Contamination

Climate Justice Campaign Tools and Informational Resources

For questions or requests to add resources, please contact skylar@greenaction.org

This document is a compilation of resources pertaining to sea level rise, groundwater rise, and contaminated sites from various government agencies, academic institutions, climate and environmental justice and community organizations around the San Francisco Bay Area and state-wide. These resources include tools such as databases from government agencies and academic institutions, government and academic reports on sea level rise and contaminated sites around the Bay, community-based and grassroots organizations, coalitions, and non-profit organizations that are currently working to address this issue of sea level and groundwater rise and shoreline contamination in the Bay Area. Additionally, this resource guide includes a list of local and state government agencies that have jurisdiction over contaminated sites around the Bay and academic institutions that are involved in this work.

The purpose of this document is to make these various community, government, and academic resources available and accessible to the public. If you live around the San Francisco Bay and are concerned about contamination and/or sea level rise in or near your community, please use these resources and links provided to learn more about how your community may or may not be impacted by sea level rise and shoreline contamination. These resources are just a starting point and many of the resources listed have contact information that will allow you to learn even more about these issues.

DATABASES

Resource	Link	When Do I Use This?	Contact Person
DTSC EnviroStor	https://www.envirostor.dtsc.ca.gov/public/	Use the California Department of Toxic Substances Control's EnviroStor tool to track contaminated sites in regards to cleanup, permitting, enforcement, and investigation.	envirostor@dtsc.ca.gov

		EnviroStor can be used to see what contaminated sites are located near your community and to learn about the history/risks posed by the site to your community.	
GeoTracker	https://geotracker.waterboards.ca.gov	Use the Water Quality Control Board's GeoTracker to track contaminated sites that have the potential to impact water quality in California, with an emphasis on groundwater. The tool helps in tracking contaminated sites and can be used to see what contaminated sites are located near your community and to learn about the history/risks posed by the site to your community.	geotracker@waterboards.ca.gov
EPA Facility Registry Service	https://www.epa.gov/frs	Use the Environmental Protection Agency's (EPA) Facility Registry Service to research and or explore different sites that are subject to environmental risk in your own community. This is a database that contains information on various facilities, sites, and/or places of environmental interest that fall under government regulation.	frs_support@epa.gov
Adapting to Rising Tides Bay Shoreline Flood Explorer	https://explorer.adaptingtorisingtides.org/explorer	Use the Flood Explorer to view and interact with data regarding projected sea level rise along the shoreline of the San Francisco Bay. This interactive map can be used to view how sea level rise will affect your community in the coming years. The website includes an analysis of the socioeconomic impacts of sea	todd.hallenbeck@bcdc.ca.gov 415-352-3667

		level rise throughout the bay and an interactive storymap that explains sea level rise concepts.	
Surging Seas: Risk Finder	https://riskfinder.climatecentral.org/state/california.us?comparisonType=county&forecastType=NOAA2017_int_p50&impact=EPA&impactGroup=Contamination+Risks&level=3&unit=ft	Use Climate Central's Surging Seas: Risk Finder to view information on sea level rise and coastal flooding and the impacts which they may have on your community. The toolkit should be used to research and understand the sea level rise and coastal flooding and how they will affect your own community. The website includes maps, local sea level and flood risk projections, and potential impacts for population, land, and, depending upon location, other variables.	drizza@climatecentral.org
NOAA Coastal Flood Exposure Mapper	https://coast.noaa.gov/floodexposure/#-10575352,4439107,5z	Use the National Oceanic and Atmospheric Administration's Coastal Flood Exposure Mapper to identify and assess the impacts that coastal hazard risks on your community. The website can be used to learn about the risks of flood exposure and its potential impacts.	https://coast.noaa.gov/contactform/
Baykeeper Shoreview	https://baykeeper.org/shoreview/pollution.html	Use Baykeeper's Shoreview function to view information on current and former industrial sites along the shore of the San Francisco Bay and learn how these sites will be affected by sea level rise. The interactive map shows where these sites are geographically located and how/when they will be reached by current sea level projections. This site should	info@baykeeper.org

		be used by those concerned about industrial waste leaching into the Bay watershed.	
CalEnviroScreen 4.0	https://calenviroscreen-oehha.hub.arcgis.com/#CalEnviroScreen	Use the California Office of Environmental Health Hazard Assessment's CalEnviroScreen 4.0 to view census data in an interactive map. The map shows each census tract and different environmental impacts through a percentile scoring. In conjunction with the environmental scoring, CalEnviroScreen also displays data such as the race/ethnicity and age profiles of a census tract. You can use this resource to see what environmental factors affect your community and how impacted your community is relative to other California communities.	CalEnviroScreen@oehha.ca.gov
US EPA EJScreen	https://ejscreen.epa.gov/mapper/	Use the United States Environmental Protection Agency's EJScreen application to see what communities are disproportionately affected by environmental injustice throughout the country. The interactive map and database can be used to help identify or understand environmental burdens in your own community and/or surrounding communities.	https://www.epa.gov/ejscreen/forms/contact-us-about-ejscreen
BCDC Community Vulnerability Mapping Tool	https://bcdc.maps.arcgis.com/apps/webappviewer/index.html?id=526ca82e85eb403489de768498f605f3	Use the San Francisco Bay Conservation and Development agency's Community Vulnerability Mapping Tool to learn about current sea level rise projections, models for adaptation and planning, and information on	

		community outreach and engagement opportunities. Use this website to learn about how sea level rise can/may impact your community.	
USGS Coastal Storm Modeling System	https://www.usgs.gov/centers/pcmsc/science/cosmos-groundwater?qt-science_center_objects=0#qt-science_center_objects	Use the United States Geological Survey's Coastal Storm Modeling System to view an interactive map that creates predictions of storm-induced coastal flooding, erosion, and cliff failures over large geographic scales throughout coastal regions. Use this resource to learn about coastal flooding and the effects associated with increasingly severe weather patterns in your community.	https://answers.usgs.gov/

REPORTS

Report Title	Link	Description	Contact Email
"Ticking Time Bomb: Climate Change, Sea Level and Groundwater Rise, Shoreline Contamination, and Environmental Justice in the San Francisco Bay Area." 2023	https://greenaction.org/wp-content/uploads/2023/04/Greenaction-Report-April-2023-Shoreline-Contamination-and-Sea-Level-Rise-in-the-San-Francisco-Bay-Area.pdf	This report by Greenaction, completed in early 2023, brings together 50 diverse case studies of toxic contamination on the shores of the San Francisco Bay where inadequate cleanup and sea level and groundwater rise threaten the environment and health of marginalized communities already under high pollution burdens. The report contains background information on groundwater and sea level rise, the dangerous nature of toxins at these Federal Superfund and State Response sites, and policy recommendations such as safe and thorough waste remediation and application of best available science.	skylar@greenaction.org
City and County of San Francisco Civil Grand Jury Report: "Buried Problems and a Buried Process: The Hunters Point Naval Shipyard in a Time of Climate Change." 2022	https://civilgrandjury.sfgov.org/2021_2022/2022%20CGJ%20Report_Buried%20Problems%20and%20a%20Buried%20Process%20-%20The%20Hunters%20Point%20Naval%20Shipyard%20in%20a%20Time%20of%20Climate%20Change.pdf	In 2021, the San Francisco Civil Grand Jury set out to investigate whether climate change-induced groundwater rise was poised to impact the Hunters Point Naval Shipyard Superfund Site in the city. In this report, the jury communicates that they found that groundwater and sea level rise are very likely to affect toxins at the Hunters Point Naval Shipyard in a way that will dangerously affect infrastructure and human	(415) 551-3635

		health. The jury recommends not only that the City hire expert scientists to assess the precise risks and guide future development planning, but also that a special Hunters Point Shipyard Cleanup Oversight Committee be immediately created to oversee and assert the City's best interests in the superfund cleanup process.	
State Agency Sea-Level Rise Action Plan by the Ocean Protection Council (OPC) 2022	https://www.opc.ca.gov/webmaster/_media_library/2022/08/SLR-Action-Plan-2022-508.pdf	This comprehensive guide (2022) from the OPC provides information on the projected impacts of sea level rise and proposes an action plan framework with specific actionables, agencies to take charge of each, projected timelines, and metrics of success.	COPCpublic@resources.ca.gov
DTSC Draft SLR Guidance for Project Managers 2023	https://dtsc.ca.gov/wp-content/uploads/sites/31/2023/02/DTSC-SLR-GUIDANCE-February-2023.pdf?emrc=63ebf26d76763	This draft guidance is the first formal document DTSC has released enforcing sea level rise be acknowledged for contaminated sites along the shoreline. While this guidance is essential, ensuring the DTSC strengthens and enforces it is key. During the public comment period, Greenaction comments focused on: ● Preparing for the highest SLR projections ● Further addressing groundwater rise and providing explicit projections	Todd.Sax@dtsc.ca.gov

		• Accountability • Enforcement of the Guidance • Necessary immediate action	
Port of San Francisco Commission Memorandum on Waterfront Adaptation 2022	https://sfport.com/files/2022-10/10112022_item_11a_draft_waterfront_adaptation_strategies_final.pdf	This memorandum by the Port of San Francisco Commission announces seven draft strategies for protecting the city's waterfront from flooding, seismic activity, and related threats such as sea level rise. The adaptation strategies described are A) taking no action, B) nonstructural adaptation, C) addressing lower-than-projected sea level rise, D) adaptably addressing lower-than-projected sea level rise, E) holding the line, F) managing the water with machinery, and G) aligning with watersheds. The Commission uses the metric of adaptability to 3.5 feet of sea level rise by 2040 and up to 7 feet by 2090 as one measure of success. It is noteworthy that none of the proposed strategies account for the effects of groundwater rise. The Commission is accepting ongoing community feedback on the draft strategies to select one by early 2024, and implement it going forward. (Source)	commission-secretary@sfport.com

Shallow Groundwater Response to Sea-Level Rise — Alameda, Marin, San Francisco, and San Mateo Counties 2022	https://www.sfei.org/sites/default/files/biblio_files/Shallow%20Groundwater_Sea%20Level%20Rise_Pathways_SFEI_2022_v2.pdf	Sea-level-related groundwater rise poses a threat to infrastructure and contaminated sites in coastal zones and wetlands. This study evaluated groundwater tables' responses to seasonal rainfall and set out projections for groundwater table rise relative to sea-level rise in Alameda, Marin, San Francisco, and San Mateo Counties. Further information and data from this study are laid out at this link. Prepared by Pathways Climate Institute and San Francisco Estuary Institute.	kzhill@berkeley.edu Christine L. May
"Rising Coastal Groundwater as a Result of Sea-Level Rise Will Influence Contaminated Coastal Sites and Underground Infrastructure." by Kristina Hill, Daniella Hirschfeld, Caroline Stanhope Lindquist, *et al.* 2023	https://essopenarchive.org/users/621729/articles/645176-rising-coastal-groundwater-as-a-result-of-sea-level-rise-will-influence-contaminated-coastal-sites-and-underground-infrastructure	This scientific study by Hill *et al.* demonstrates that contamination cleanup and sea-level-rise mitigation strategies such as surface capping and sea walls, pumping, and levees, respectively, are inadequate to protect human health and infrastructure because they don't account for groundwater rise and its dangerous potential to make contaminants more mobile and toxic. The team found that 326 coastal U.S. Superfund sites are vulnerable to SLR-related groundwater rise, and in the San Francisco Bay Area, two times more land area than originally believed — including state-managed contaminated land — is	kzhill@berkeley.edu

		predicted to be impacted by groundwater inundation. Low-income and people of color communities are disproportionately exposed to these risks, both nationally and in San Francisco.	
"How rising groundwater caused by climate change could devastate coastal communities" by Kendra Pierre-Louis, *MIT Technology Review*, 2021	https://www.technologyreview.com/2021/12/13/1041309/climate-change-rising-groundwater-flooding/	This article explains the connection between sea level rise and its impact of groundwater rise, demonstrating ways in which groundwater rise is already devastatingly affecting the lives of people who live even within a few miles of coasts. The effects of groundwater rise are being felt and will continue to be felt inland before more dramatic surface flooding from the sea. These effects include compromising sanitation, sewer systems, and stormwater redirection; mobilizing toxic contaminants left in the soil; seeping into gas mains, eroding roadways from below, corroding furnaces and damaging home and building foundations. The article additionally outlines why seawalls, levees, and pumping are inadequate solutions, though urban planners aren't accounting for it.	Kendra Pierre-Louis

Adapting to Rising Tides Contaminated Lands Reports	https://www.adaptingtorisingtides.org/portfolio/contaminated-lands/	Read this report to learn more about sea level rise and contaminated sites around the Bay, complete with county by county reports, issues observed and lessons learned. This report is part of BCDC's Adapting to Rising Tides effort.	Nicolas.Sander@bcdc.ca.gov
Defining Vulnerable Communities in the Context of Climate Adaptation 2018	https://opr.ca.gov/docs/20200720-Vulnerable_Communities.pdf	Use this resource to find information on more publicly-available tools and resources that are used to define vulnerable communities in an adaptation context. This report is by the Governor's Office of Planning and Research.	lisa.hu@opr.ca.gov
What Threat Does Sea Level Rise Pose to California? Legislative Analyst Office's Report 2020	https://lao.ca.gov/reports/2020/4261/sea-level-rise-081020.pdf	Read this 2020 report to learn about projections and risks posed by sea level rise to California, including the San Francisco Bay.	michael.greer@lao.ca.gov
Adapting to Rising Tides Shallow Groundwater Workshop Summary and Technical Memo	http://www.adaptingtorisingtides.org/wp-content/uploads/2020/04/GW_WkshpSummary_Nov2019_FINAL_ADA.pdf http://www.adaptingtorisingtides.org/wp-content/uploads/2020/03/GW_ModelComparison_Compendium_ADA.pdf	Read these reports to learn about how sea level rise and groundwater rise occurs in the San Francisco Bay Area. These documents are based on a workshop and presentation given by Dr. Kristina Hill of UC Berkeley.	todd.hallenbeck@bcdc.ca.gov

City of Alameda, The Response of the Shallow Groundwater and Contaminants to Sea Level Rise 2020	slr2020.pdf (alamedaca.gov)	Read this report to learn about the assessment completed for the City of Alameda in 2020 regarding sea level rise.	kris.may@pathwaysclimate.com

COMMUNITY BASED ORGANIZATIONS & NON-PROFIT ORGANIZATIONS

Organization	Link	Description	Contact
San Francisco Bay Shoreline Contamination Cleanup Coalition's Position Statement	https://docs.google.com/document/d/1chK38a0vNGMySBJuhLe6_J5uXrjML7tHOyLE4TKrmnI/edit?usp=sharing	This position statement outlines the demands of the SF Bay Shoreline CCC regarding complete cleanups of hazardous and radioactive waste using environmental justice principles.	skylar@greenaction.orgbiom
West Oakland Environmental Indicators Project-Oakland Shoreline Leadership Academy	https://woeip.org/featured-work/oakland-shoreline-leadership-academy/osla-classwork/	Use this research to learn more about the West Oakland Environmental Indicators Project's Oakland Shoreline Leadership Academy.	phoenix.woeip@gmail.com
Richmond Shoreline Alliance	www.richmondshorelinealliance.org	If you are from the Richmond area and want to get more involved and learn about environmental justice, environmental protection, and an accessible and healthy Richmond shoreline now and for future generations, you can join the Richmond Shoreline Alliance. RSA is an alliance of Richmond area residents organizations, and allies dedicated to environmental justice.	carolyn.graves@kp.org
San Francisco Bay Shoreline Contamination Cleanup Coalition (SF Bay CCC)	http://sfbayshorelineccc.org	If you want to learn more about sea level rise and shoreline contamination around the San Francisco Bay reach out to the SF Bay Shoreline Coalition. This is a coalition made up of grassroots, nonprofit groups and	skylar@greenaction.org

		community members from around the Bay working towards a common goal of protecting shoreline communities from the threat of sea level rise and its impacts on contaminated sites along the Bay.	
Sonoma Land Trust	https://sonomalandtrust.org/	If you are a resident of Sonoma County, you can learn more about conserving scenic, natural, agricultural and open land for the future of Sonoma County from the Sonoma Land Trust.	SR 37−Baylands Group Sears Point Tidal Wetland Restoration Project
San Francisco Baykeeper	https://baykeeper.org https://baykeeper.org/content/threats-bay	If you are a San Francisco resident and want to learn more about protecting the Bay you can reach out to Baykeeper. Baykeeper protects the Bay by patrolling on the water, investigating pollution, holding polluters accountable, and strengthening the laws that protect the Bay and the people of the Bay Area.	cole@baykeeper.org
Marie Harrison Community Foundation	https://www.canwelive.org/	The Marie Harrison Community Foundation is a Bayview Hunters Point Community organization that helps to strengthen a new generation of leaders through individual passions and community investment outside of the structures that have long been disenfranchising people of color.	a.harrison@tuchs.org

Youth United for Community Action (YUCA)	http://youthunited.net/	Youth United for Community Action (YUCA), a grassroots community organization created, led, and run by young people of color, the majority from low-income communities, provides a safe space for young people to empower ourselves and work on environmental and social justice issues to establish positive systemic change through grassroots community organizing.	info@youthunited.net
Our City, San Francisco	http://our-city.org/	Our City is a progressive grassroots network dedicated to linking families, neighbors, communities and elected officials with a shared vision of a better San Francisco and California.	415-756-8844 info@our-city.org
Rise South City	https://www.risesouthcity.org/	Rise South City aims to create a new center of gravity in the climate movement by uniting frontline communities, allies, and organizations toward resilient, regenerative, and equitable neighborhoods.	
Climate Resilient Communities (CRC)	https://crcommunities.org/	CRC is a community-based organization in East Palo Alto empowering community voices to implement equitable climate solutions for unity, resilience, and justice.	crc@crcommunities.org

GOVERNMENT AGENCIES

Resource	Link	Description	Contact Email
Government Agency Glossary	https://drive.google.com/file/d/1qwj5NE2ZfzOVtT_n9LuDmy2ORuqDq8GL/view?usp=sharing	Descriptions written by BCDC, DTSC, and RWQCB on their role in addressing sea level rise and contaminated sites.	nahal.ghoghaie@bcdc.ca.gov nelline.kowbel@dtsc.ca.gov Alyx.Karpowicz@waterboards.ca.gov
Bay Conservation and Development Commission: Adapting to Rising Tides	https://www.bayadapt.org	Use this resource to learn more about BCDC's plan to adapt to rising sea levels and their impacts to the San Francisco Bay. You can learn about how these plans may impact your community.	Jessica.Fain@bcdc.ca.gov dana.brechwald@bcdc.ca.gov
San Francisco City and County Department of Environment	https://sfenvironment.org/residents	If you are a San Francisco City or County resident, you can learn more about how your City/County plan to address climate change and environmental impacts using this resource.	environment@sfgov.org
Ocean Protection Council (OPC)	https://www.opc.ca.gov/ Strategic Plan: https://www.opc.ca.gov/we	Use the OPC as a resource for the latest SLR projections. The OPC was created by state law to	ella.mcdougall@resources.ca.gov

	bmaster/ftp/pdf/agenda_items/20200226/OPC-2020-2025-Strategic-Plan-FINAL-20200228.pdf	protect ocean health. See their strategic plan and website for more information and resources.	
Alameda County: Environmental Page	https://www.acgov.org/publicsafety/environmental.htm	If you live in Alameda County you can learn more about your County's plans to address environmental impacts and hazardous waste sites using this resource.	http://www.acgov.org/form_app/feedback/feedback.jsp?id=DEH
San Mateo County: Climate Change Page	https://seachangesmc.org	If you live in San Mateo County you can learn more about your County's plans to address climate change and sea level rise using this resource.	seachangesmc@smcgov.org
Marin County: Local Coastal Program Page	https://www.marincounty.org/depts/cd/divisions/planning/plans-policies-and-regulations/local-coastal-program	If you live in Marin County you can learn more about your County's plans to address climate change and sea level rise using this resource.	https://www.marincounty.org/depts/cd/divisions/planning/contact-form
Santa Clara County: Consumer and Environmental	https://cepa.sccgov.org/home	If you live in Santa Clara County you can learn more about your County's plans	(408) 918-3400

Protection Agency		to address environmental issues using this resource.	
Contra Costa County: Flood Control District Page	https://www.contracosta.ca.gov/5586/Flood-Control-District	If you live in Contra Costa County you can learn more about your County's plans to address flooding using this resource.	pwfld@pw.cccounty.us
Sonoma County: Environmental Health and Safety Page	https://sonomacounty.ca.gov/Health/Environmental-Health-and-Safety/	If you live in Sonoma County you can learn more about your County's plans to address environmental issues using this resource.	eh@sonoma-county.org
Solano County: Environmental Health Page	https://www.solanocounty.com/depts/rm/environmental_health/default.asp	If you live in Solano County you can learn more about your County's plans to address environmental issues and environmental health using this resource.	RMHelp@solanocounty.com
BCDC, Environmental Justice and Social Equity Plan	https://bcdc.ca.gov/ejwg/BPAEJSE.html	Read this report to learn more about the Bay Conservation and Development Commission's plan to implement environmental justice. This plan should be implemented in all of	nahal.ghoghaie@bcdc.ca.gov

		BCDC's projects including those that address sea level rise and contaminated sites.	
BCDC, Toward Equitable Shorelines	https://bcdc.ca.gov/BPA/2-17/0620BPA2-17BackgroundReport.pdf	Read this plan to learn more about the Bay Conservation and Development Commission's plans to create an "equitable shoreline" and to learn about the history of environmental racism and injustice around the San Francisco Bay.	nahal.ghoghaie@bcdc.ca.gov

ACADEMIC & RESEARCH ORGANIZATIONS

Resource	Link	Description	Contact Email
San Francisco Estuary Institute	https://www.sfei.org/	Use this resource to learn more about the San Francisco Estuary Institute (SFEI), which is one of California's premier aquatic and ecosystem science institutes. Our mission: provide scientific support and tools for decision-making and communication through collaborative efforts. We provide independent science to assess and improve the health of the waters, wetlands, wildlife and landscapes of San Francisco Bay, the California Delta and beyond. We have three primary programs: Clean Water, Resilient Landscapes, and Environmental Informatics.	ellenp@sfei.org
Pathways Climate Institute	www.pathwaysclimate.com	Use this resource to learn more about Pathways Climate Institute, which is focused on helping communities increase climate resilience, with an emphasis on coastal environments. The team focuses on research to help fill data gaps adaptation planning, including how sea level rise will include shallow groundwater and contamination, and how extreme west coast storms such as atmospheric rivers and extratropical cycles will change with a warming climate.	kris.may@pathwaysclimate.com

Dr. Kristina Hill Lab	https://www.researchgate.net/lab/Kristina-Hill-Lab	Use this resource to learn more about Dr. Kristina Hill's research around sea level rise and groundwater rise around the Bay and their impact on contaminated sites. Dr. Hill is a professor at UC Berkeley Department of Landscape Architecture and Environmental Planning. This link will also take you to many of Dr. Hill's research papers on this topic.	kzhill@berkeley.edu
Toxic Tides Project: Dr. Rachel Morello-Frosch	https://nature.berkeley.edu/morellofroschlab/portfolio/toxic-tides/	Use this resource to learn more about the Toxic Tides project spearheaded by Dr. Rachel Morello-Frosch at UC Berkeley School of Public Health and Department of Environmental Science and Policy Management. This project looks at sea level rise and contamination throughout California.	rmf@berkeley.edu