

PUBLIC REVIEW DRAFT

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Tribal and Environmental Justice Issues in the Sacramento-San Joaquin Delta: History and Current Perspectives



**Delta
Stewardship
Council**

A CALIFORNIA STATE AGENCY

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Table of Contents

Executive Summary 4

Section 1: Introduction 12

Section 2: Recommendations 16

Section 3: What is Tribal and Environmental Justice?..... 26

Section 4: History and Context: Tribal and Environmental Justice in the Delta 33

Section 5: Current Tribal and Environmental Justice Issues in the Delta 55

Section 6: Conclusion..... 85

Appendices 86

 Appendix A: Issue Paper Limitations 87

 Appendix B: Definitions 89

 Appendix C: Issue Paper Development Process..... 91

 Appendix D: All Issues Identified and Corresponding Source(s), Categorized by
 Representational, Procedural, and Distributive Justice Issues..... 100

 Appendix E: Public Comments Analysis 103

References 112

Executive Summary

Why a Tribal and Environmental Justice Issue Paper?

Incorporating tribal affairs and environmental justice (EJ) into the Delta Stewardship Council's work requires understanding, acknowledging, and working in partnership to address historic wrongs that have resulted in inequitable *distributions* of environmental harms and benefits; confirming there is a fair and open governance *process* that all community members can participate in going forward; and ensuring that those most burdened and historically marginalized are *represented* in environmental decision-making in the Delta.

In 2019, via the Council's first five-year review of the Delta Plan, EJ was identified as a key issue, noting a gap in our organizational understanding of EJ and a specific need for more information and analysis to inform potential future actions by the Council (DSC, 2019).

When staff began this initiative, we identified a need to delineate between EJ as a whole and EJ issues as they relate to tribes and tribal communities (referred to as tribal justice in this paper). This stems from the understanding, echoed at the tribal listening session held by the Council in April 2023, that tribes have disparate impacts, concerns, and relationships related to historical wrongs committed against them, are in unique positions as sovereign governments, and at times are EJ communities as well.

This issue paper focuses on tribal affairs and EJ within the present-day legal boundaries of the Sacramento-San Joaquin Delta and Suisun Marsh (Delta) and the mission, duties, and responsibilities set forth in the Delta Reform Act. The Council recognizes that tribes and tribal communities view the legal Delta as an artificial construct. As such, this paper is not a full exploration of all tribal and EJ issues in the watershed and how tribal and EJ issues manifest upstream (e.g., cultural significance and damage to tribal communities from damming the tributaries in the upper watershed) and downstream (e.g., access to clean, affordable water in tribal and EJ communities in the Central Valley and southern California) of the Delta, which is a topic deserving rigorous study but was beyond the scope of this issue paper.

A wide range of tribal and EJ issues affect the Council's work and the Delta more broadly. **This issue paper is an important first step in acknowledging and responding to the concerns of tribal and EJ communities.**

What Did We Learn About Tribal and Environmental Justice Through This Effort?

The environmental injustices experienced by communities in and around the Delta today have evolved through complex and interdependent social, ecological, economic, and engineering developments across the region. These historical events bring attention to historical wrongs committed against Native Americans and other marginalized populations through forceful removal from homelands, exploitation of labor, redlining, water rights decisions and diversions, and lack of attention to environmental protections.

These historical events set the stage for decades of tribal and environmental injustices and provide important context for understanding the issues seen today. Through a mixed method approach drawing on multiple sources, such as scholarly literature, past public comments, 22 interviews with tribal and EJ-serving organizations, and pre-consultation with four tribes—and utilizing a framework of representational, procedural, and distributional justice—the Council identified past as well as ongoing and persistent tribal and EJ concerns in the Delta.

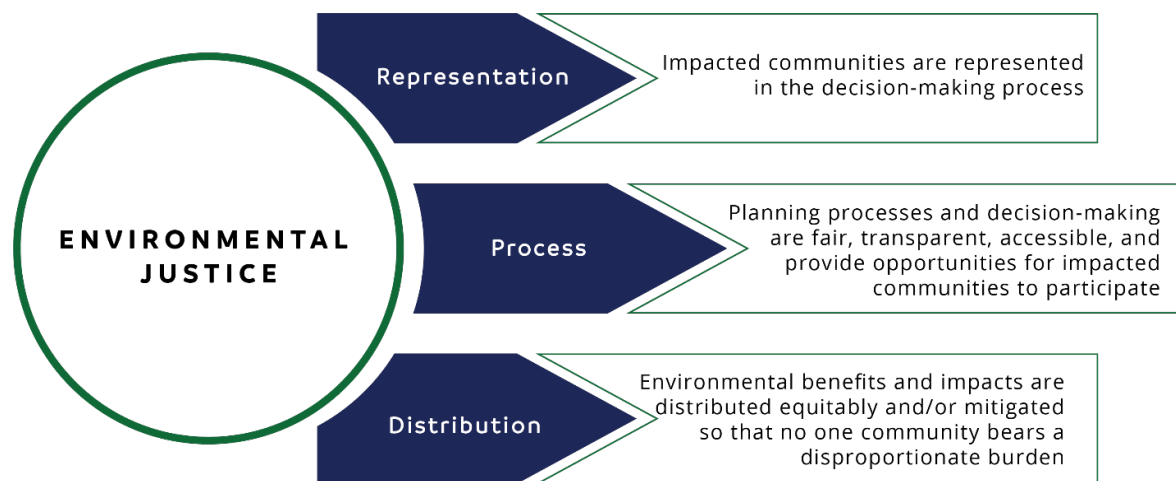


Figure 1: Environmental justice framework



Tribal justice issues

California tribal governments and communities have experienced a long history of marginalization and exclusion exacerbated by community racism and redlining and amplified by climate change. Despite federally recognized tribal governments' rights as sovereign nations, which include the right to hold elections, determine their own citizenship, own and manage land, implement tribal law and policy, and consult directly with the United States on policy and regulations, these rights continue to be impinged upon. This has been either through unrecognized or unratified treaties, encroachment on tribal land, or lackluster or outright missing consultation with tribes on policy and decisions that impact them.

Tribal communities have the right to harvest, to teach, and to put down prayers. However, these opportunities are threatened by environmental and socio-ecological changes that impact the land, which is the basis for tribal cultures. Closely intertwined with tribal sovereignty is the repression of tribal expertise, cultural beliefs, practices, and knowledge (Traditional Knowledge). There is currently a lack of recognition that Traditional Knowledge is one of the primary sources of scientific information for Best Available Science, based on thousands of years of observation and application (DSC, 2015).

Representational justice issues

Representation matters. To address representation, it's first imperative that agencies understand who the elected leaders or appointed representatives of California Native American tribes are, who comprise tribal and EJ communities, and where they are located spatially throughout the Delta. Tribal and EJ communities are underrepresented or inadequately represented in decision-making processes. Government agency staff's lack of understanding of what EJ means creates barriers for tribes, tribal communities, and community-based organizations (CBOs) through resistance to change and systemic racism.

Procedural justice issues

Key themes emerged from the interviews and other sources reviewed for this issue paper that highlight multiple procedural justice issues well-documented in EJ literature, including limited opportunities for meaningful involvement in decision-making processes, lack of transparency in decision-making, and minimal capacity to engage in multiple policy forums perceived as redundant. Early, often, and meaningful consultation with tribes on all initiatives, policies, or decisions that may impact them is also key to addressing procedural justice issues. The need for tribal consultation policies that set the tone and expectations for consultation, such as the Council's, is imperative.

"Everything is **connected**. When you change one thing, it will change another. We must use that **intersection** to build [broader] community with groups that are **not explicitly focused on the issue at hand**."

INTERVIEW QUOTE

Limited resources, limited funding, and public agencies often seeing public engagement as a “box-checking” exercise rather than a process that influences decision-making all hamper tribal and CBO engagement in government processes. Government processes—particularly environmental decision-making—are often confusing and opaque, with outside parties unclear on how to engage. Interviewees and participants in community outreach events identified a lack of coordination and alignment between tribal governments, state agencies, local governments, and outside entities working on the same issues.

Distributive justice issues

Distributive justice considers how environmental burdens and benefits are distributed across communities and, specifically, how these distributions correlate with socio-demographic characteristics. Based on analysis from the interviews, the issue paper discusses seven core areas of distributive justice concern in and around the Delta: (1) climate change, (2) flood risk, (3) water, (4) air quality, pollution exposure and public health, (5) housing and unhoused communities, (6) food security and access, and (7) recreation and outdoor access.

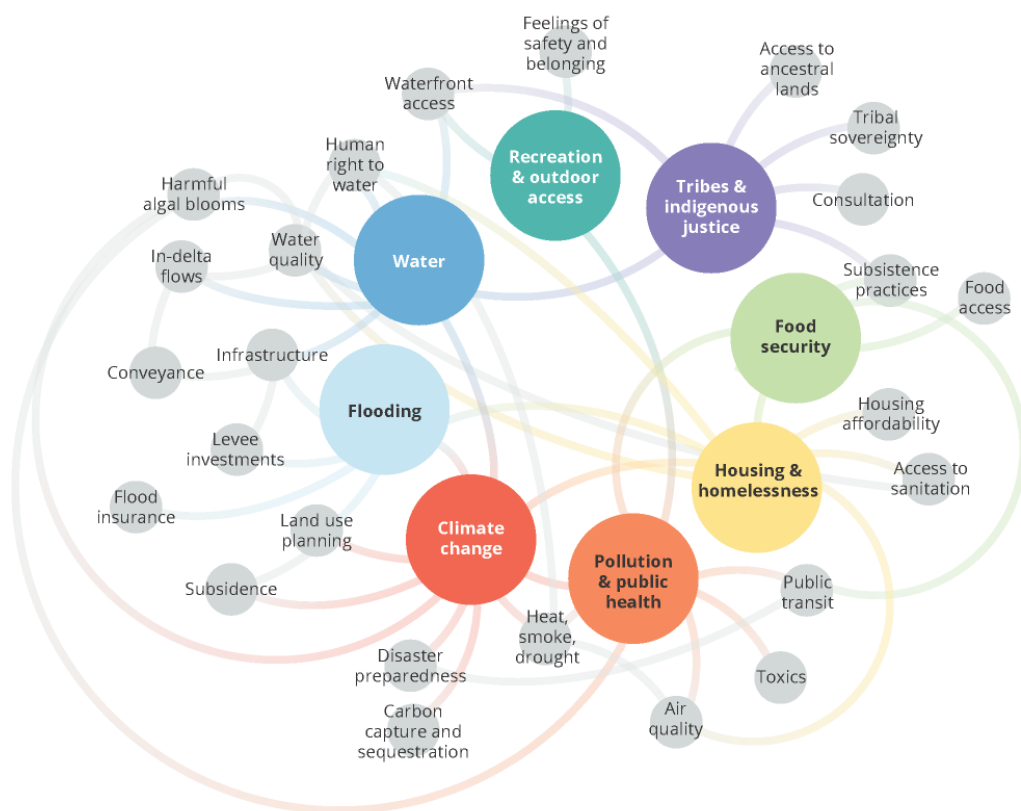


Figure 2: Graphic demonstrating intersectionality of distributive environmental justice issues





How Will This Paper Be Used?

The Council's 2019 Five Year Review recommendation charged staff with identifying “future policy options for the Council to consider” to better address EJ concerns in its work. Through the various sources reviewed for this issue paper, it became evident that while there are actions that the Council should take, the issues and actions identified are complex and cannot be addressed by the Council alone.

The paper includes a set of recommendations—both general recommendations relevant to all who work in the Delta as well as recommendations specific to the Council. The issues are presented within the three EJ tenets of representational, procedural, and distributional justice; however, the recommendations are not. Staff consciously took this approach because of the interrelated nature of the issues and the interrelated approach we see as necessary to address these issues.

The recommendations are summarized below. For a complete list of all recommendations, please see **Section 2** of the issue paper.

General Recommendations for All Agencies Working in the Delta

	Invest in Relationship and Trust Building
	Work Through Trusted Community Partners
	Be Intentional and Justice-Oriented
	Make it Easy to Participate Early
	Follow Through
	Enhance Connections Between State Agencies and Local Governments
	Identify and Fill Research and Data Needs

Council-Specific Recommendations

Goal 1: Integrate environmental justice into the Delta Stewardship Council, consistent with the Delta Reform Act.

Strategy 1a: Commit to advancing environmental justice over the short and long term.

Strategy 1b: Create a more inclusive workplace through creative and equitable recruitment and retention, building staff capacity and literacy on equity and tribal and environmental justice.

Strategy 1c: Support and promote representation of tribal and environmental justice communities in Delta governance and decision-making.

Goal 2: Expand opportunities for tribes to practice their cultures, and recognize tribal rights in the Council's work.

Strategy 2a: Build and strengthen relationships between tribes and the Council that recognize, honor, and promote tribal interests in the Delta.

Strategy 2b: Conduct proactive and early tribal consultations on Council initiatives and activities and facilitate and support tribal consultation.

Goal 3: Promote visibility and understanding of environmental justice in Delta issues through research, policy development, and communications.

Strategy 3a: Establish partnerships that provide ongoing and stable support for community-engaged research that centers community identities, capacities, needs, and issues.

Strategy 3b: Embed equity in Delta science to ensure that the Council's support of science-based adaptive management and decision-making promotes equitable outcomes.

Strategy 3c: Enhance environmental justice communities' understanding of environmental and climate risks by improving data communication and transparency.

Goal 4: Explore ways to address funding inequity in communities that historically have seen the least investment.

Strategy 4a: Review, adapt, and enhance the Council's funding programs to advance equity.

Section 1: Introduction

The Council's 2019 Five-Year Review of the Delta Plan (2019 Five-Year Review) identified environmental justice (EJ) as a key issue, noting a gap in organizational understanding of EJ as it relates to the Council's mission and authorities and a specific need for more information and analysis to inform potential future actions by the Council (DSC, 2019). Endorsed by the Council via resolution 2019-3, the 2019 Five-Year Review recommended that the Council prepare an issue paper “to investigate the potential need for additional strategies or responses within the Delta Plan to address disadvantaged communities and environmental justice.”

When staff began this initiative, we identified a need to delineate between EJ as a whole and EJ issues as they relate to tribes and tribal communities (referred to as tribal justice in this paper). This stems from the understanding, echoed at the tribal listening session held by the Council in April 2023, that tribes have disparate impacts, concerns, and relationships related to historical wrongs committed against them, are in unique positions as sovereign governments, and at times are EJ communities as well. As such, in recognition of the unique status of federally recognized tribes, this paper recognizes tribes first whenever possible. Native American people are citizens of the cities, counties, and states where they reside and many are also members of tribes that have a responsibility to their membership. There must also be a further distinction when speaking of tribal justice that state agencies are not speaking for tribes. In addition, there is a unique legal and political relationship between the federal/state government and federally recognized tribes, which is based on the United States Constitution, treaties, Supreme Court decisions, federal laws, and Executive Orders. Not all tribes have federal recognition status and may be engaged in long-standing negotiations with the federal government to seek recognition or may have historically been denied such recognition. Some may also choose not to pursue formal recognition. Governor Brown's and Governor Newsom's Executive Orders (EOs B-10-11 and N-15-19, respectively) affirm and reaffirm state agencies' responsibility to conduct tribal consultation on any agency activities that may impact them.

Past Sacramento-San Joaquin Delta (Delta) governance efforts have been criticized by EJ activists, in scholarly literature, and in an independent state agency report that

examined CALFED¹ for a lack of adequate inclusion of EJ considerations, stating that EJ concerns have been marginalized, underfunded, and not given sufficient attention (Little Hoover Commission, 2005; London et al., 2008; Shilling et al., 2009; Sze et al., 2009).

The Sacramento-San Joaquin Delta Reform Act of 2009 (Delta Reform Act) (Wat. Code, § 85000 et seq.)—which created the Delta Stewardship Council as a successor to CALFED—states that one of the fundamental goals for managing land use in the Delta is ensuring the utilization and conservation of Delta resources, taking into account the social and economic needs of the people of the state (Wat. Code, § 85022(d)(2)).

The Council’s mission is to further the coequal goals. Achieving the state’s coequal goals of “providing a more reliable water supply for California and protecting, restoring, and enhancing the Delta ecosystem—in a manner that protects and enhances the unique cultural, recreational, natural resource, and agricultural values of the Delta as an evolving place” (Wat. Code, § 85054)—is not possible without considering equity and justice.

Incorporating tribal and EJ into the Council’s work requires understanding, acknowledging, and working in partnership to address historic wrongs that have resulted in inequitable *distributions* of environmental harms and benefits today, confirming there is a fair and open governance *process* that all community members can participate in going forward, and ensuring that those most burdened and historically marginalized are *represented* in environmental decision-making in the Delta.

Past public comments submitted to the Council, as well as feedback received across various types of public engagement, illustrate a wide range of EJ issues affecting the Council’s work and the Delta more broadly. This issue paper is an important first step

¹ CALFED was a cooperative state-federal planning effort between water, environmental, state, and federal officials to safeguard the Sacramento-San Joaquin Delta. It was created in 1994 and disbanded in 2005.

in understanding, acknowledging, and responding to the concerns of tribal communities and Delta communities.

Scope and Organization of This Paper

This issue paper presents the Council's understanding of tribal and EJ through the lens of past tribal and environmental injustices in the Delta and current tribal and environmental justice issues. The issue paper also recommends actions to better address issues within the scope of the Council's mission, authority, and influence.

This issue paper focuses on tribal and EJ within the present-day legal boundaries of the Sacramento-San Joaquin Delta and Suisun Marsh (Delta) and the mission, duties, and responsibilities set forth in the Delta Reform Act. The Council recognizes that tribes and tribal communities view the legal Delta as an artificial construct. As such, this paper is not a full exploration of all tribal and EJ issues in the watershed and how tribal and environmental issues manifest upstream (e.g., cultural significance and damage to tribes from damming the tributaries in the upper watershed) and downstream (e.g., areas access to clean, affordable water in tribal and environmental justice communities in the Central Valley and southern California) of the Delta, which is a topic deserving rigorous study but was beyond the scope of this issue paper. This paper expresses the Council's evolving understanding of tribal and EJ issues and provides foundational context from which the Council can build and grow its tribal and EJ work into the future. Its recommendations commit the Council to additional efforts to shape and increase our

Best Available Science

The Delta Reform Act requires the Council to make use of “best available science” in implementing the Delta Plan, and the Delta Plan outlines specific guidelines and criteria for categorizing scientific efforts (Delta Plan Appendix 1A). These specifications require scientists to use the best information and data to inform management and policy decisions. The required elements of best available science include: well-stated objectives, outlined assumptions and limitations, use of a clear conceptual model, experimental design with standardized methods for data collection, sound logic for analysis and interpretation, and clear documentation of the entire process.

The Delta Plan's criteria for categorizing whether a body of work or project can be considered best available science (BAS) includes:

- 1) relevance
- 2) inclusiveness
- 3) objectivity
- 4) transparency and openness
- 5) timeliness
- 6) peer review

understanding of tribal and EJ issues and to begin addressing them in our work as we pursue our mission.

This paper is organized first to express the Council's understanding of what can be done right now—by all agencies working in the Delta and by the Council specifically—to begin to better incorporate a tribal and EJ lens into our collective work. As such, the next section outlines recommendations relevant to all state and federal agencies doing work in the Delta, as well as recommendations specific to the Council. Following the recommendations, the paper describes the Council's current understanding of tribal and EJ, the history of EJ in the Delta (which we acknowledge is likely incomplete), and a summary of current known tribal and EJ issues in the Delta.

To the greatest extent possible, this issue paper was developed following the principles of best available science (BAS). However, prior to the development of this paper, EJ and the interweaving of Traditional Knowledge within Delta science and decision-making had not been a focus or area of expertise for the Council, and peer-reviewed literature and empirical data on EJ issues in the Delta are limited. Council staff drew on multiple data sources, including new primary interview data collected following established social scientific methods, past public comments submitted to the Council, and secondary data sources from published literature and available public datasets and tools. These data are woven together following a mixed methods approach, which is widely accepted and applied in health and social sciences to integrate rigorously collected quantitative and qualitative data sources (Creswell et al., 2011). Our hope is that this paper makes significant contributions to further both original data and synthesis of many existing, disparate data sources on the topic of EJ in and around the Delta.



Section 2: Recommendations

The Council's 2019 Five Year Review recommendation charged staff with identifying “future policy options for the Council to consider” to better address EJ concerns in its work. Through the various sources reviewed for this issue paper, it became evident that while there are actions that the Council must take, the issues and actions identified are complex and cannot be addressed by the Council alone.

This section, *Recommendations*, includes both general recommendations relevant to all who work in the Delta as well as recommendations specific to the Council. Furthermore, while the issues are presented within the three EJ tenets of representational, procedural, and distributional justice, the recommendations are not. Staff consciously took this approach because of the interrelated nature of the issues and the interrelated approach staff feels is necessary to address these issues. To help make the connection between the tenets and the recommendations, however, each recommendation is coded by tenet:

- R = Representational
- P = Procedural
- D = Distributive

In many instances, a recommendation could be considered to address multiple tenets and is coded accordingly.

General Recommendations for Agencies Working in the Delta

Several themes emerged that are relevant for every organization and agency working in the Delta (including the Council); this first section addresses these broader observations.

Invest in relationship and trust-building (P): EJ communities have a long history of being disenfranchised by governments, so trust must be built. Repeating interactions and establishing relationships demonstrates commitment and is important to encouraging participation and building buy-in to engagement processes. Agency staff should come out to communities to meet people in their spaces, on their terms, and experience their events and ways of life. Reaching people effectively requires significant effort and time.

Examples include:

- Take tours of communities to hear issues from community perspectives,
- Host or attend smaller group meetings to allow for “true dialogue,”
- Canvas door-to-door or table at community events or in community spaces, and
- Build the capacity of tribal liaison structure through training and resources to put in the essential work of trust-building with tribes that transcends the tenure of any one liaison.

Relatedly, the state government as a whole should invest in its overall capacity to support and promote public participation and engagement. Building trust takes time and an ongoing and consistent commitment to prioritize this work.

Work through trusted community partners (R, P): Each community is different, and it is important to tailor outreach to meet the unique needs and conditions of the community, which local partners will help to ensure. Work with and through trusted community organizations that are embedded in and trusted by the community. Furthermore, agency staff must talk about EJ issues in ways that resonate with the community (rather than jargon and technical language).

Be intentional and justice-oriented (R, P, D): Intentional effort is needed to connect with communities that are nearly always left out of environmental planning and policy conversations, such as unhoused populations, farm workers, and tribes. Get proactively involved in different communities early, not only with those who frequently show up and engage. Be open to shifting perspectives to bring justice to the forefront of awareness. Focus on listening and hearing the concerns and ideas community members hold for how to go about fixing the problem rather than starting by presenting the agencies’ ideas. In other words, talk with rather than to.

Make it easy to participate early (P): Conducting direct, meaningful outreach and providing resources to support community participation is essential to achieving equity in governance processes and ensuring that all communities can be represented beyond already established networks.

Examples include:

- Make it easier for agencies and tribes/CBOs to enter into contracts for services,
- Ensure language access and language support are available for meetings and important documents and information that communities should be aware of (e.g., contamination concerns or health risks),
- Ensure physical accessibility to meeting locations,
- Continue to support hybrid meetings,
- Host meetings in person in Delta communities,
- Hold meetings at different times, including in the evenings, to accommodate different interested parties' schedules,
- Be respectful of people's time by giving them enough time to review materials or proposals (i.e., longer public comment periods) and not requiring them to sit through hours-long public meetings to be able to provide a two-minute comment on a single agenda item,
- Provide clear and specific instructions on how to engage on different issues, including which agencies to engage with, what processes are relevant, and what opportunities there are to voice opinions and concerns,
- Improve coordination across agencies so that communities are not receiving duplicative asks,
- Make requests for input understandable to non-technical, diverse audiences (across ages, education levels, background knowledge), removing jargon and "agency speak," and
- Communicate clearly about decision-making processes: who will be most impacted and how, what the decision-making process is, and what the timeline is.

Tribal consultation should be undertaken on any activities that may be of interest to tribes and should be done as early as possible in the process. Regular communication, even if agencies do not hear anything back, is helpful for tribes. In addition, agencies should work with tribes to understand their needs for consultation, such as how they prefer to convey information. Establishing a constant feedback loop is essential.

Follow through (P): Be clear, honest, and transparent regarding how input will be used. Do not hold back or be afraid to have a tough conversation. Move engagement beyond a “box-checking” exercise to co-produce and put into action ideas and solutions, especially ones that prioritize the most disadvantaged and vulnerable communities first. Communicate how community feedback was incorporated into plans and decisions.

Enhance connections between state agencies and local governments (R, P):

Increase coordination between local government and state regulatory agency scientists so that state scientists can better support local community needs related to the respective state mission. Improve coordination among state agencies to reduce redundant processes and to align policy goals before asking the same tribes, communities, and CBOs to engage in a similar process.

Identify and fill research needs and effectively communicate findings (D):

Increase research and data analysis on tribal and EJ issues. Useful and useable data can help with decision-making. Some of the additional research and data needs in the Delta include:

- Increasing monitoring for harmful algal bloom (HAB) development and HAB toxin exposure (water and air) to create better HAB management and mitigation strategies where vulnerable communities are most exposed, using rigorous epidemiological methods,
- Using community or community science data to understand waterways and connections with drinking water and wastewater,
- Utilizing community data to help identify appropriate solutions through research,
- Increasing research and data on environmental hazards and climate change-related issues, such as evaluating environmental management decisions’ public health impacts,
- Presenting research results in a tangible, easy-to-understand way that allows the community to learn and engage,
- Funding more research on community-identified science needs, and
- Developing a program or a central hub that provides accessible data and information to answer equity-related questions. For example, an online interactive map for the Delta similar to the Bay Area Equity Atlas created by the San Francisco Foundation.



Council-Specific Recommendations

The following recommendations are specific to the Delta Stewardship Council.

Goal 1: Integrate environmental justice into the Delta Stewardship Council, consistent with the Delta Reform Act.

Strategy 1a: Commit to advancing environmental justice over the short and long term.

1. **Endorse EJ Recommendations.** Identify and present to the Council environmental justice goals, strategies, and actions drawn from this issue paper within the Council's authority and jurisdiction for consideration and potential direction to develop an implementation plan with benchmarks and periodic reporting. (P, R, D)
2. **EJ Policy Evaluation.** Evaluate current Council planning documents (such as the Delta Plan), including policies/regulations and performance measures, to assess opportunities to advance environmental justice within them. If appropriate, recommend amendments. (P, R, D)
3. **Identify EJ Communities.** Develop a framework to spatially identify California EJ communities affected by Delta policy and management decisions. (R)
4. **Study Delta Water Justice Issues.** Identify and help fund research that improves understanding of the nexus between EJ and Delta water management in communities outside of the legal Delta. Use research findings to identify subsequent actions the state of California—including the Council—can take to address identified issues. (D)

Strategy 1b: Create a more inclusive workplace through creative and equitable recruitment and retention, building staff capacity and literacy on equity and tribal and environmental justice.

1. **Lead by Example.** Foster a work culture that values diversity, equity, inclusion, and belonging, where all employees feel empowered to advance tribal and environmental justice in their work. (P)
2. **Learn More About Tribal and Environmental Justice.** Increase opportunities for staff to continually build their understanding of tribal and environmental justice related to the Council's mission. (P)
3. **Enable Career Pathways to the Council.** Strengthen career pathways to the Council through new partnerships and increased organizational visibility. (P)
4. **Support Community-Based Learning.** Support K-12 schools, institutions of higher education, and community-based organizations' programs that mentor and support youth and young adults from tribal and environmental justice communities pursuing careers in policy, science, and engineering. (R, P)

Strategy 1c: Support and promote representation of tribal and environmental justice communities in Delta governance and decision-making.

1. **Improve Access to Council Decisions.** Address barriers to historically underrepresented communities participating in Council decision-making processes. (R, P)
2. **Empower Tribal and EJ Voices.** Actively promote openings on Delta decision-making bodies to tribes and community organizations to increase representation. (R, P)
3. **Offer Tribal and EJ Perspectives to the Delta Plan Interagency Implementation Committee (DPIIC).** Consult with tribes and community-based organizations (CBOs) to explore tribal and EJ representative participation options in DPIIC. Utilize the DPIIC subcommittee structure to include tribal and EJ communities in DPIIC-led initiatives. (R, P)
4. **Identify/Develop Partnership Models.** Explore potential contract mechanisms and resources for tribes, community members, and CBOs to inform Council decision-making processes. (R)

5. **Seek Ongoing Advice from Community Experts.** Explore the formation of tribal and/or EJ Advisory Group(s). (R)
6. **Practice Consistent Outreach.** Compile a database of CBOs/NGOs from EJ communities and adopt an agency-wide practice of consistently and appropriately conducting outreach. (R, P)

Goal 2: Expand opportunities for tribes to practice their cultures, and recognize tribal rights in the Council's work.

Strategy 2a: Build and strengthen relationships between tribes and the Council that recognize, honor, and promote tribal interests in the Delta.

1. **Build on Ongoing Tribal Efforts.** Support and engage in partner agency efforts to strengthen Delta tribal access and use of the Delta, co-stewardship and co-management with partner agencies, ancestral land return efforts, protection of tribal data, protection of tribal cultural resources, and partnerships. (R)
2. **Amplify Tribal Histories.** Work with the Truth and Healing Council to host listening sessions for tribes and tribal communities to amplify Delta tribal histories and experiences. (R)
3. **Host Tribal Roundtables.** Regularly invite tribal representatives to present at Council meetings to increase direct Councilmember interaction with tribes. (R)
4. **Be Humble and Ask Questions.** Provide cultural humility training for Council members and staff that addresses tribal issues and engagement best practices. (P)
5. **Embrace More Ways of Knowing.** Facilitate dialogue among tribes, agencies, and other partners (e.g., NGOs, academics, consultants) to increase the interweaving of Traditional Knowledges with Western science, including adaptive management conceptual models. (R, P)

Strategy 2b: Conduct proactive and early tribal consultations on Council initiatives and activities and facilitate and support tribal consultation.

1. **Seek Early Tribal Engagement.** Engage early and often with tribes, providing ample advanced notice of Council initiatives, activities, and opportunities for engagement. (R, P)
2. **Set and Uphold Tribal Consultation Expectations.** Evaluate the Council's Tribal Consultation Policy at least every five years and update it as needed. (P)
3. **Lead Inter-Agency Tribal Partnerships.** Continue leading inter-agency partnerships that identify and address tribal needs and barriers for engaging in Delta science and planning. (R, P)

Goal 3: Promote visibility and understanding of environmental justice in Delta issues through research, policy development, and communications.

Strategy 3a: Establish partnerships that provide ongoing and stable support for community-engaged research that centers community identities, capacities, needs, and issues.

1. **Be a Trusted Partner.** Participate in and partner with existing tribal and environmental justice networks to build trust, increase understanding, and improve outcomes. (P)
2. **Create an EJ Research Network.** Continue building and investing in the Delta Social Science Community of Practice to include and support EJ and tribal knowledge practitioners and researchers. (R, P)
3. **Promote Science for Communities.** Pair tribes and CBOs with scientists to collaborate on projects that address tribal and EJ-related science and community needs and issues and publicly highlight successful collaborations. (R)
4. **Respect Data Ownership.** Develop a data management protocol for data collected through Council-sponsored tribal and community-engaged research that respects tribal data and community ownership of its own data. (R, P)

5. **Safeguard Human Research Subjects.** Ensure that Council-funded human subjects research projects undergo applicable ethical review and approval. (P)

Strategy 3b: Embed equity in Delta science to ensure that the Council's support of science-based adaptive management and decision-making promotes equitable outcomes.

1. **Identify and Pursue Tribal and EJ Science Actions.** Prioritize science actions, including but not limited to the Science Action Agenda and Delta Science Plan, that include coordination with tribes and EJ organizations to incorporate EJ and tribal research needs in Delta science. (R, P, D)
2. **Advance Community-Based Collaborative Science.** Advance collaborative, community-based research in partnership with tribal and EJ communities. (R, P, D)
3. **Share Findings Together.** Develop and host accessible and relevant science communication and knowledge exchange events, outreach, and products in partnership with interested tribes and community organizations. (R, P, D)

Strategy 3c: Enhance environmental justice communities' understanding of environmental and climate risks by improving data communication and transparency.

1. **Communicate Risk.** Apply the Council's communication resources to share flood, water supply, water quality, and climate risks and to promote resources for adaptation. (P)
2. **Communicate Data and Synthesis.** Make Council-sponsored data and synthesis publicly available, accessible, and useable. (P)

Goal 4: Explore ways to address funding inequity in communities that historically have seen the least investment.

Strategy 4a: Review, adapt, and enhance the Council's funding programs to advance equity.

1. **Help Tribes and EJ Communities Access Science Funding.** Continue to consult with tribal and environmental justice communities to enhance tribal and EJ communities' participation in science solicitations. (R, P)
2. **Establish Proposal Evaluation Criteria for EJ Issues.** Create a framework for Delta science funding applicants and reviewers to consider how projects address environmental justice issues in relevant research. (R, P)
3. **Dedicate Delta Science Funding for Tribal and Environmental Justice Research.** Set aside a portion of Delta science funding for tribal and environmental justice research topics to inform decision-making in the Delta. (R, P, D)
4. **Explore a Climate Justice Technical Assistance Grant Program.** Explore the development of a technical assistance grant program in the Delta focused on climate justice outcomes (i.e., EJ issues and climate adaptation strategies). (D)
5. **Seek Delta-Specific EJ Appropriations.** Identify opportunities to support Delta-specific EJ appropriations to the Legislature and Congress that are targeted toward EJ communities and achieving tribal and environmental justice outcomes in the Delta. (R, P)

Section 3: What is Tribal and Environmental Justice?

EJ is an umbrella concept that has evolved through social activism movements, critical scholarship and research, and public policy. Broadly, EJ focuses on the distribution of environmental goods and harms across societal structures of power and socio-demographics, including diagnosing root causes of inequality and injustice.

Within the context of EJ, it is important to establish that EJ issues impact tribal communities disproportionately. Furthermore, EJ—with respect to tribes—recognizes tribal equity, and the priorities and unique status tribes have with environmental decision-making and management.

EJ has been defined and interpreted in multiple ways (e.g., by social activists and academic scholars) and in different policy contexts. For example, under California state law, EJ is defined as “the fair treatment and meaningful involvement of people of all races, cultures, incomes, and national origins, with respect to the development, adoption, implementation, and enforcement of environmental laws, regulations, and policies” (Gov. Code, § 65040.12, subd. (e)). This definition specifies that EJ “includes, but is not limited to... all of the following:

- The availability of a healthy environment for all people;
- The deterrence, reduction, and elimination of pollution burdens for populations and communities experiencing the adverse effects of that pollution, so that the effects of the pollution are not disproportionately borne by those populations and communities;
- Governmental entities engaging and providing technical assistance to populations and communities most impacted by pollution to promote their meaningful participation in all phases of the environmental and land use decision-making process; and
- At a minimum, the meaningful consideration of recommendations from populations and communities most impacted by pollution into environmental and land use decisions.” (Gov. Code, § 65040.12, subd. (e)).

The federal government defines EJ similarly and specifies that EJ will be achieved when everyone has “the same degree of protection from environmental and health hazards, and equal access to the decision-making process to have a healthy environment in which to live, learn, and work” (USEPA, 2023).

EJ efforts by advocates and organizers often seek both to understand and address the disproportionate burden of environmental impacts (e.g., land or water contamination) borne by certain communities and to call for equitable development and implementation of environmental laws, programs, and policies. For example, the 17 “Principles of Environmental Justice” drafted at the First National People of Color Environmental Leadership Summit (Summit) in 1991—widely recognized as foundational EJ principles—call for, among other things, “the right to participate as equal partners at every level of decision-making...” and “universal protection from...extraction, production and disposal of toxic/hazardous wastes and poisons...that threaten the fundamental right to clean air, land, water, and food” (“The Principles of Environmental Justice”, 1991).

The Summit is recognized as a central catalyzing event in the development of a cohesive EJ grassroots movement, which emerged from the coalescence of advocacy efforts for civil rights, labor protection, anti-toxics, public health protection, and tribal sovereignty (Cole & Foster, 2001; Harrison, 2019). Coalition-building across these previously disparate movements brought about sustained calls for attention to equity and social justice in environmental law and regulation, resulting in the formalized recognition of EJ and the creation of the Office of Environmental Equity (later becoming the Office of Environmental Justice) at the U.S. Environmental Protection Agency (EPA) in 1992. Shortly thereafter, President Clinton’s Executive Order 12898 (EO 12898) directed all federal agencies to integrate EJ principles into regulatory practice in 1994. Over the past 30 years, federal and state programs have attempted to acknowledge, assess, and address environmental injustices with varying degrees of success. In April 2023, President Biden signed Executive Order (EO) 14096, which seeks to embed EJ in the work of federal agencies and ensure that “all people - regardless of race, background, income, ability, tribal affiliation, or zip code - can benefit from the vital safeguards enshrined in our nation’s foundational environmental and civil rights laws.” Among various directives to federal agencies, EO 14096 established the White House Office of Environmental Justice.

Similarly, over the last two decades, EJ has been recognized as a California statewide priority. Equity² and EJ are stated priorities of the Newsom administration. Executive Order N-16-22 directed state agencies and departments to embed equity analyses in their missions, policies, and practices and established the state's first Racial Equity Commission, tasked with developing a Racial Equity Framework.

Conceptual Framework

The Council uses the definition of EJ provided in California State law. Throughout this issue paper, we apply a common conceptual framework for EJ built on three interrelated tenets:

- **Representational justice**, or the fair and respectful representation of impacted communities throughout environmental decision-making (Bullard, 1993; Bullard, 2000; Schlosberg, 1999; Schlosberg, 2004; Schlosberg, 2007);
- **Procedural justice**, which refers to a fair and open process including resources for communities to participate. "Procedural justice requires the recognition of local actors and their knowledge, inclusive participation, transparency in... planning and management, and consent from all parties involved" (Seigerman et al., 2022); and
- **Distributive justice**, which refers to the distribution of impacts (benefits and harms) across a population over time. Distributive justice calls for the "fair allocation of resources, material benefits and burdens, risks, and opportunities" (Seigerman et al., 2022).

²A closely related concept, equity is commonly defined as just and fair inclusion in society in which all can participate (Seigerman et al., 2022). "Health equity" is defined in California statute as "efforts to ensure that all people have full and equal access to opportunities that enable them to lead healthy lives" (Health and Safety Code § 131019.5(a)(2)). "Determinants of equity" are defined as "social, economic, geographic, political, and physical environmental conditions that lead to the creation of a fair and just society" (Health and Safety Code § 131019.5(a)(1)).

This conceptual framework also builds a more holistic understanding of environmental justice and injustice in the Delta, recognizing the strong interdependencies between these tenets of justice. Those involved in decision-making (representational justice) determine the rules, laws, and decisions (procedural justice) that, in turn, influence which and how environmental harms and benefits are generated and distributed (distributive justice). People are best positioned to speak to their own experiences, but if they have no platform from which to speak, their experiences remain unheard. At the same time, people who lack basic resources (e.g., time, money, information) are likely to have a harder time participating and are less likely to be represented in policy processes. Thus, representational and procedural injustices enable distributive injustices, while distributive injustices, in turn, exacerbate procedural and representational injustices. In other words, **EJ cannot be achieved unless representational, procedural, and distributive justice are met.**

How does Environmental Justice Relate to Tribes?

According to Indigenous scholar and journalist Dina Gilio-Whitaker (2019), EJ for tribes is forever tied to the history and legacies of Western colonial settlement. Colonization brutally dispossessed Native Americans in the Delta (and around California), displacing them from their homelands and precipitating various processes of ecological collapse that have vastly altered, and in many cases degraded, the characteristics of the lands and waters of the Delta watershed, which are the basis for tribal culture (Middleton-Manning et al., 2018); further discussed in **Section 4: History and Context**.

It is important to note that tribal issues are complex and evolving, and their scope often goes beyond what this issue paper or the Council can fully address. Tribal justice, when used in connection with EJ and in the context of this issue paper, refers to respecting tribes' unique status and recognizing the unique cultures, traditions, and rights of California tribes. It also includes the appropriate interweaving of tribal traditional knowledge into resource management decisions and practices. It serves as a foundation for the exercise of self-determination and the pursuit of tribal economic, social, and cultural development within their own communities and sets the tone for interactions with the state as a whole and the Council for issues and concerns on tribes' ancestral homelands.

Defining and Identifying EJ Communities

A fundamental step in incorporating EJ into government decision-making is identifying vulnerable and environmentally burdened communities—referred to throughout this paper as “EJ communities”—so that resources and actions can be targeted and prioritized for these communities (Lee, 2020). In the Delta and across the state, certain communities are disproportionately exposed and vulnerable to environmental hazards and continue to be inadequately represented or excluded in government decision-making processes, including but not limited to Native American tribes, communities of color, and low-income communities (Liévanos, 2009; Liévanos, 2016; and SWRCB, 2021b).

EJ communities, or communities using related terms such as underserved, marginalized, or disadvantaged, have been defined variably by different scholars, EJ advocates, and government agencies. EJ scholars have shown that government agency efforts to integrate EJ have often diverged from core EJ principles that EJ activists have long advocated for (Harrison, 2015; Liévanos, 2012; London et al., 2013), underscoring the need for clear agency definitions for EJ communities that integrate core EJ principles to ensure that actions are targeted to the most burdened communities. This difference between certain government agency definitions for EJ communities and EJ movement principles exemplifies a commonly observed discrepancy between agencies’ EJ programs and EJ movement principles (Harrison, 2015).

Central to many environmental struggles have been disagreements over the correct spatial scale at which to define and address EJ problems (London et al., 2013), including the proper spatial scale used in indices and tools to identify EJ communities. EJ analyses have used different units of analysis (e.g., census tracts, zip codes, or counties), and results can differ based on the unit of analysis (Taquino et al., 2002). Most EJ spatial analyses in the U.S. have been at the census tract scale, which is problematic because using this scale assumes that environmental hazards and populations are uniformly distributed throughout a tract (Fisher et al., 2006). Smaller, rural communities often do not show up in spatial analyses at the census tract scale, an issue especially relevant in the Delta, which contains a mix of large urban communities and small rural communities.

Indices used to identify EJ communities are limited by data availability, which is especially a problem in rural areas and for traditionally hard-to-count populations. As discussed in the Council’s Delta Adapts Equity Technical Memorandum, many

vulnerable populations are not well captured by existing indices and indicators (DSC, 2021a). Furthermore, Native American tribes and other underrepresented communities have historically not been accurately reported in census data, and thus, indices that use historical census data may not accurately represent the most vulnerable and marginalized communities (Haaland & Ortiz, 2022).

Another issue with the state's current approaches to defining EJ communities has been the conflation of California Native American tribes with EJ communities/disadvantaged communities. In these definitions and programs, tribes are often considered a disadvantaged community, but some tribal representatives have expressed that this term "erodes the self-governing nature of [tribes]" (Haaland & Ortiz, 2022). Additionally, many existing mapping tools "do not provide data from tribal lands and various other local reporting metrics which are not included in Census data. Tribes may not fully participate in Census and environmental quality data gathering because of historical mistrust of governmental reporting methods, leading to the inability to provide clear metrics for third-party review" (Haaland & Ortiz, 2022).



The state has established numerous statutory definitions that relate to EJ communities. While no statutory definition uses the specific term “EJ community,” various statutes specify related definitions for disadvantaged communities, vulnerable communities, and various other terms. State agencies and programs similarly apply a variety of different terms and definitions related to these communities (see Appendix B: Definitions). It is important to note that neither the Delta Reform Act nor the Delta Plan defines EJ communities.

For purposes of this Issue Paper, EJ communities are those specified in Health & Safety Code section 39711, which directs the California Environmental Protection Agency (Cal EPA) to identify the “final designation of disadvantaged communities” for Greenhouse Gas Reduction Fund allocations.

This statute specifies that:

“[t]hese communities shall be identified based on geographic, socioeconomic, public health, and environmental hazard criteria, and may include, but are not limited to, either of the following:

- (1) Areas disproportionately affected by environmental pollution and other hazards that can lead to negative public health effects, exposure, or environmental degradation;
- (2) Areas with concentrations of people that are of low income, high unemployment, low levels of homeownership, high rent burden, sensitive populations, or low levels of educational attainment.”

Section 4: History and Context: Tribal and Environmental Justice in the Delta

The landscape of the Sacramento-San Joaquin Delta watershed has been radically transformed from pre-Euro-American colonization and settlement to the present day (**Figure 3**). This transformation from an Indigenous-managed marshland to the epicenter of California's industrial agricultural sector and freshwater conveyance system set into motion many of the environmental injustices that shape the region today (Dillon, 2021; Zedler & Stevens, 2018).

This historical context recognizes that the environmental injustices experienced by communities in and around the Delta today have evolved through complex and interdependent social, ecological, economic, and engineering developments across the region. This context highlights some key historical events in and around the Delta, drawing from a large body of work led by EJ communities, tribal communities, and academics.

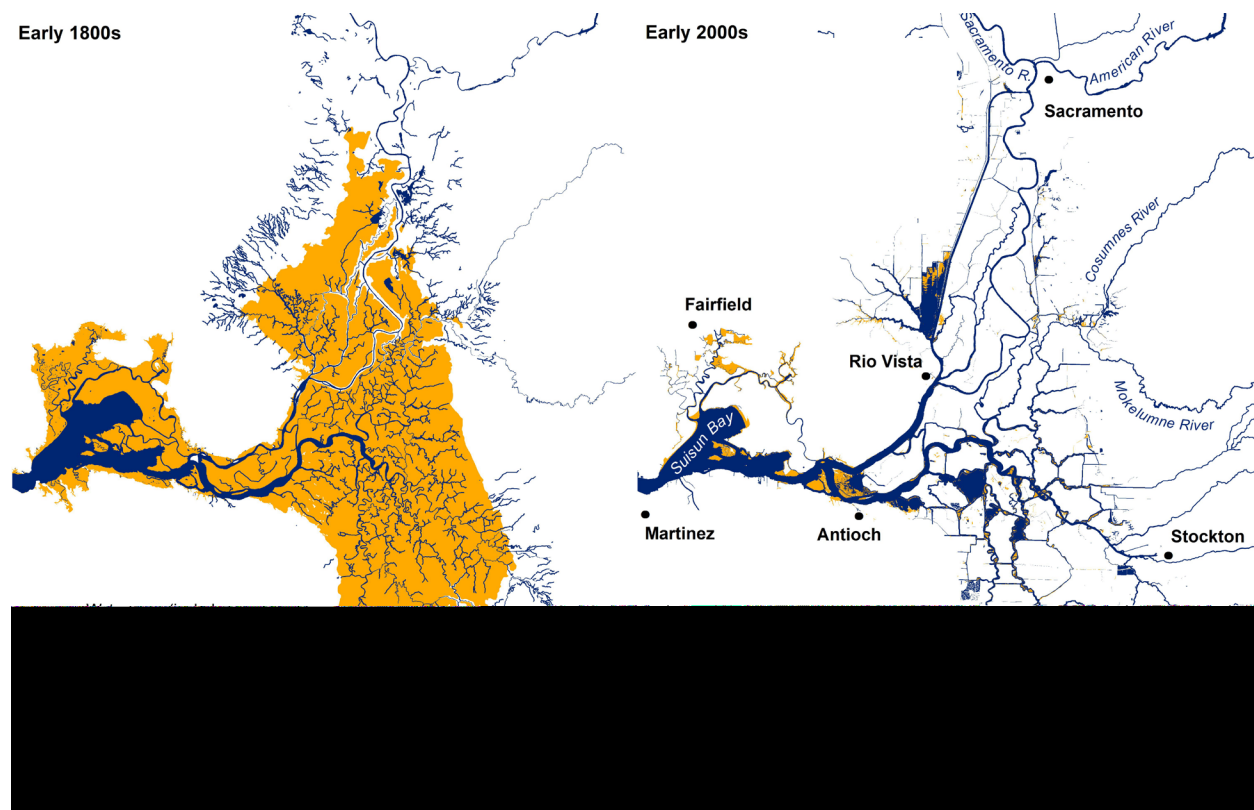


Figure 3: Comparison of historical (early 1800s) and modern (early 2000s) Delta waterways. Figure 3 contrasts the historic extent of waterways and tidal marsh habitat in the Delta (left panel) with the modern extent (right panel). Figure created using data published in Whipple et al. (2012).

Displacement of Original Inhabitants of the Delta

Indigenous peoples have lived in and managed the Delta landscape since time immemorial. Estimates from Whipple et al. (2012) suggest the Delta ecosystem may have supported a population of more than 10,000 people, almost three percent of the estimated Native population of California prior to settler contact. In comparison, today, over 550,000 people live within the legal Delta and Suisun Marsh boundaries, and millions more depend on the health of its ecosystems. The Delta watershed and larger Bay estuary were occupied by the Native Peoples of the numerous villages and tribes of the Bay Miwok, Coast Miwok, Plains Miwok, Maidu, Nisenan, Ohlone, Patwin, Pomo, Wappo, Wintun, Washoe, and Yokuts (see **Figure 4** for a map of California tribal territories before European contact). However, it is important to note that while these tribes were physically located around and in what is defined as the Delta today, tribes throughout the California region viewed and still view the entire watershed that runs from Mount Shasta to the Tulare Basin as one interconnected, culturally sacred system that cannot be demarcated into sections (heard in tribal pre-consultations prior to release of the public draft).

Tribal communities fished, hunted, and carefully harvested over 500 species of plants in the region to meet cultural, spiritual, ceremonial, and subsistence needs. Active management by tribes directly supported the vast diversity and abundance of plant and animal species present in the region when settlers arrived (Stuart, 2016a); Zedler & Stevens, 2018). These tribes used water to support their cultural, spiritual, ceremonial, subsistence, and/or traditional practices. For example, as Hankins (2018) describes, “For millennia, [Plains Miwok] have asserted the ancestral responsibility to ensure the balance and stewardship of land and water is maintained. Within this context, water is a sacred element of life, and this view is shared by many other Indigenous people around the world; it is a lifegiving force to which all creation is connected.”

Euro-American settlement of the Delta devastated the Native American populations of the region. Spanish colonizers arrived in Northern California in the late 18th Century, leading many coastal tribal nations to retreat to the Delta’s tule wetland and riparian corridors as places of refuge to escape Spanish militias (Garone, 2020). Malaria was introduced in 1832 and spread rapidly by the mosquitos in the Delta’s wetlands, wiping out entire tribal villages with an estimated mortality rate of around 75% of the Native population at that time (S.F. Cook, 1955; Stuart, 2016b). Cholera (1833) and smallpox (1839) followed, with similarly high death rates (S. Cook, 1955).

Surviving tribal members were captured and forced into slavery in Spanish missions, where casualty rates under brutal labor conditions were extremely high (Zedler & Stevens, 2018).

Despite active resistance during Spanish colonization, by the beginning of the California Gold Rush in 1849, the Indigenous populations in and around the Delta had been largely decimated. U.S. settlement in the American West was no less brutal, especially in California, where state-sponsored extermination campaigns were enacted against California tribes. Still, in defiance of violent displacement and land dispossession, the introduction of disease, slavery, forced assimilation, and genocide, Native American people have survived and continue to resist colonial processes of assimilation and erasure (Dillon, 2021; Stuart, 2016b; Sze et al., 2009; Zedler & Stevens, 2018). Today, those original villages and tribes that resided in the Delta watershed and larger Bay estuary are represented by numerous local tribes, both federally and non-federally recognized. Many Native American people live on reservations or rancherias outside of the Delta in the eastern foothills of the Sierra Nevada (Stuart, 2021), as well as in urban areas throughout the watershed. Displacements continued even after the western settlement of California, as detailed further in the discussion of water infrastructure development found later in this section.

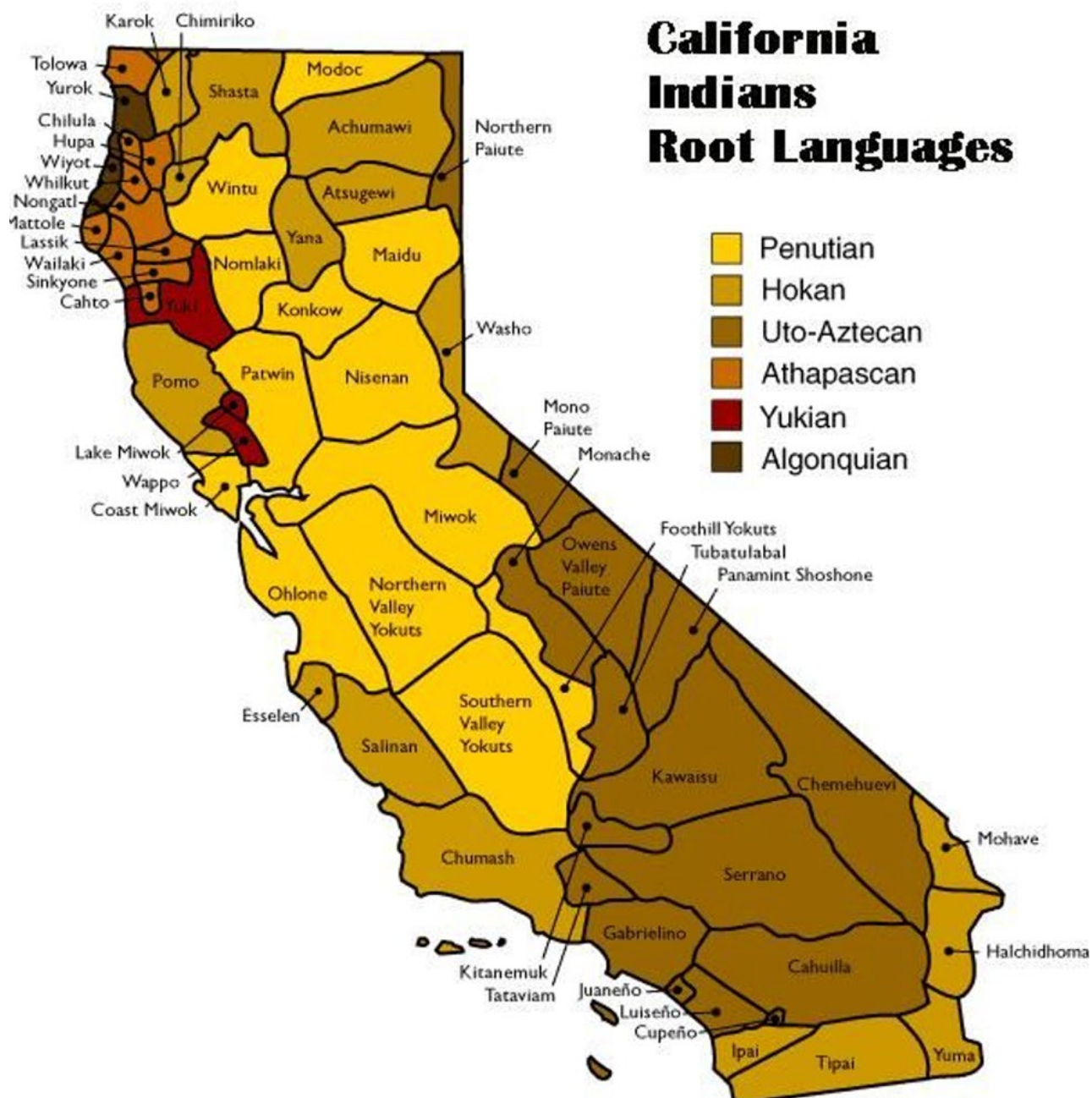


Figure 4: Map of California Indian Root Languages and Tribal Groups. Source: Hinton, 1994.

Even as tribes in the Delta region and across California have shown remarkable resilience, the forcible removal of Native populations from their traditional homelands has had long-lasting implications on tribal livelihood.

Exploitation During the Reclamation Era

Coinciding with the discovery of gold in the California foothills in the late 1840s and California's statehood in 1850, the 80-year period known as the "Reclamation Era" began (Lund et al., 2007). Soon after California was granted statehood, the second of three federal "Swamp Lands Acts" ("An Act to enable the state of Arkansas, and other states to reclaim the swamp lands within their limits") transferred 2.2 million acres of federal "swamp lands" to the state of California for sale to individuals to "reclaim" (i.e., drain and cultivate), with most of these swamp lands consisting of tule marsh in the Delta (Hindle & Bhatia, 2017; Peterson, 1974). While the Swamp Lands Acts facilitated and incentivized large-scale reclamation, other factors contributed—including the presence of malaria in the Central Valley (introduced in 1832), which provided an additional incentive for draining and converting wetlands (as it was then believed that malaria came from a gas believed to be associated with swamp lands), as well as the perception by settlers that swamp lands were useless (Garone, 2020). Naming the Delta as a swamp signaled to settlers that it needed to be drained, leveed, and farmed, despite the fact that Indigenous peoples had been living in these lands for generations upon generations (Claire & Surprise, 2022; Hindle & Bhatia, 2017; Peterson, 1974). While reclamation efforts were initially spurred by the Swamp Lands Acts and sentiments that the Delta needed to be tamed, eventually, settlers realized that the Delta was an ideal area for agriculture due to its fertile soils, abundant water, and access to nearby markets (Sze et al., 2009).

The Delta region, however, was prone to periodic, devastating floods, making levee-building mandatory to enable large-scale agricultural development (Bradner & Singleton, 2017; Ingebritsen & Ikehara, 1999). Practices during the Gold Rush—especially hydraulic mining—exacerbated flood risks in the Central Valley, including in the Delta (Bradner & Singleton, 2017). Hydraulic mining sent huge amounts of sediment downstream, where it was deposited in streams and rivers and caused extensive property damage and flooding downstream (Alpers et al., 2005; Bradner & Singleton, 2017).

Throughout the Reclamation Era, Chinese immigrants and Native American workers largely carried out the strenuous and dangerous labor of draining "swamp lands", dredging channels, and manually constructing a network of levees that enabled Delta wetlands to be converted to agriculture (Dillon, 2021). Many Chinese immigrants initially worked in gold mines and then on the Transcontinental Railroad (Helzer, 2015). Discrimination against Chinese miners and the completion of the

Transcontinental Railroad led to Chinese laborers being widely available for early levee-building efforts in the Delta (USGS, n.d.; Helzer, 2015). Through these actions, the Delta landscape, and consequently, its ecosystems, were fundamentally altered. The reclamation efforts that began in the 1850s and 1860s continue today via levee maintenance and drainage actions, carried out in large part by today's Reclamation Districts along with federal and state agencies. **Today, 1,100 miles of levees protect against flooding and related hazards, but the resulting patchwork of islands and channelized waterways has also resulted in the dramatic loss of marshland, tidal species, and habitats.** As a result of human modifications, only approximately 3% of the Delta's historical tidal wetlands remain today (Whipple et al., 2012).

Draining and farming the Delta's historical wetlands also initiated a process of land subsidence, mostly due to the oxidation of peat soils but also from wind erosion (DSC, 2013b; DSC, 2022a). Drainage and cultivation dried the saturated peat, reducing its volume by approximately half; it is estimated that drainage of the Delta's peatlands has led to the loss of half of the Delta's soil carbon stock (Windham-Myers et al., 2023). Early cultivation practices also included burning, which further reduced the volume of the soil and altered its structure (DSC, 2013b; DSC, 2022a). Because of this historic and ongoing subsidence, much of the central Delta today is below sea level, with some islands as low as 9 meters below sea level (Windham-Myers et al., 2023). Ongoing subsidence continues today across much of the Delta; negative impacts from subsidence include worsening flood risks and increased levee maintenance costs, increased risks to water quality and water supply reliability, reduced extent of areas suitable for restoration of tidal marsh habitat, and significant greenhouse gas (GHG) emissions (DSC, 2022a). Deverel et al. (2020) estimated that the total annual GHG emission from organic-matter oxidation in the Delta is 2 million metric tons of carbon dioxide equivalent—approximately 1% of the state's total GHG emissions, 6% of the state's agricultural emissions, and 21% of the state's non-animal agricultural emissions.

The degradation of the Delta landscape—through the draining and conversion of its wetlands to farmland—has been detrimental to many ecosystems, and, from an ecocultural perspective, it further eroded the basis of Native cultures and lifeways.

After levee building and reclamation efforts were complete, many Chinese immigrants remained in the Delta to work as tenant farmers and low-wage farm laborers. California's 1913 Alien Land Act prohibited these Asian immigrants from purchasing land, whether it was for residential or agricultural purposes. Many

Chinese immigrants settled in the Delta's Chinatown, originally named Lockeport. Today, the town now known as "Locke" still stands and remains much the same as it was when it was built over one hundred years ago, even having withstood flooding, poverty, racial discrimination, and neglect (National Park Service, 2018; The Locke Foundation, n.d.).

Exclusionary and Extractive Industrialization and Pollution

The California Gold Rush, Reclamation Era, and subsequent regional industrialization resulted in significant economic development for the Delta and Delta watershed. Economic development also created large amounts of pollution that have had negative impacts on natural ecosystems and the communities living and working in and around the Delta from the early 1900s through the present day. Following the Gold Rush era, many decades of intensive metal and mineral mining across the Sierra Nevada foothills and Coastal Range followed. Mining operations created runoff of sediment, chemicals, and heavy metals throughout the watershed, with lasting impacts on the estuary as contaminants have accumulated in the sediment that settled in the Delta and out through the San Francisco Bay (van Geen & Luoma, 1999). Similarly, industrialized, input-intensive agricultural systems across the entire Central Valley have precipitated a pronounced increase in pesticide and fertilizer runoff into the Delta watershed (Delta Independent Science Board, 2018). Today, more than 100 industries, wastewater treatment plants, and urban stormwater discharges drain into the Delta and San Francisco Bay, contributing to poor water quality (Luoma et al., 2015). Poor water quality throughout the Delta watershed, driven by these legacy and current contamination sources, continues to impair terrestrial and aquatic ecosystem functions, spur the development of harmful algal blooms, contaminate drinking water systems, and threaten public health, especially for recreationists and subsistence fishers in the Delta. See the callout box for a more detailed list of current contaminants and their sources in the Delta and San Francisco Bay. EJ issues related to water quality are discussed in greater detail in **Section 5**.

Redlining and correlation with present-day exposure to environmental hazards

In the 1930s, under the New Deal, the Federal Housing Authority (FHA) initiated programs aimed at addressing housing shortages, which furthered racial segregation in cities across the U.S. These programs created racialized patterns of segregation, housing discrimination, and disproportionate exposure to environmental harms that remain in place today. The process of “redlining” allowed for the Home Owners Loan Corporation (HOLC) and FHA to assess maps of metropolitan areas across the country and assign neighborhoods color codes (green, blue, yellow, or red, from most to least desirable) to indicate where financial investment and home mortgages were deemed “safe”. The explicitly race-based classification system enabled systematic discrimination against Black and other homebuyers of color, who were denied access to credit and home mortgages because their neighborhoods were “redlined” as undesirable (CalEPA, 2021; Rothstein, 2017).

A significant and growing area of research seeks to illuminate the patterns of exposure to environmental harms and present-day socio-demographic characteristics of neighborhoods in relation to the 1930s HOLC neighborhood classification maps (CalEPA, 2021). **Across multiple states and metropolitan areas, research consistently reveals correlations between historically redlined neighborhoods and present-day areas experiencing the highest levels of exposure to environmental**

Delta and San Francisco Bay Contaminants

Luoma et al. (2015) summarized contaminants in the Delta and San Francisco Bay along with their sources:

- “Mercury from historic mining sources contaminates food webs.
- Selenium from Central Valley irrigation drainage and Bay refineries affects reproduction of native predator species in the Bay.
- Organic chemicals remaining in sediments from historic use accumulate in food webs, including DDT and its breakdown products, and polychlorinated biphenyls (PCBs).
- Pharmaceuticals, flame retardants, and personal care products from waste treatment facilities disrupt endocrine systems of aquatic organisms and birds.
- Multiple, changing pesticides from agriculture and urban uses cause toxicity at least near their points of release.
- Nutrient inputs from wastewater treatment facilities and other sources affect Delta food webs.
- Nitrogen, phosphorous, and other nutrients stimulate nuisance or toxic algal blooms and water weeds, as turbidity of water declines.”

hazards and the greatest vulnerability to those hazards based on socio-demographic factors of race, income, immigration status and languages spoken (Bullard, 1993; Cushing et al., 2015; Merchant, 2003). This growing body of evidence points to the legacy of racialized and discriminatory urban development and urban planning histories that have created conditions in which low-income communities and communities of color are more likely to live and work in more hazardous environments (CSIWG, 2018; OPR, 2017; Rothstein, 2017; Shonkoff et al., 2011).

In the Delta, studies have examined the correlation between formerly redlined areas and present-day exposure to environmental hazards in the metropolitan areas of Sacramento and Stockton. In Sacramento, while not in the legal Delta, redlined neighborhoods were located in the western reaches of the city adjacent to the Sacramento River, close to shipping ports and railroad throughways (see **Figure 5**). Continual industrial development near the Port of West Sacramento creates heavy pollution exposure in these neighborhoods today. In Stockton, redlined neighborhoods were predominantly located in the southern parts of the city (see **Figure 6**). Today, industrial sites, distribution centers, and trucking through-routes are heavily located in South Stockton, causing significant air pollution concerns (CalEPA, 2021). In all eight California cities included in the HOLC assessments, including Sacramento and Stockton, formerly redlined neighborhoods have the highest CalEnviroScreen 3.0 scores, meaning these neighborhoods today experience high levels of pollution burden or vulnerability (CalEPA, 2021). Nationally, formerly redlined neighborhoods (including those in Stockton and Sacramento) experience disproportionately higher risks of current and future flooding and extreme heat compared to neighborhoods that were not redlined (Katz, 2021; Conzelmann et al., 2023).

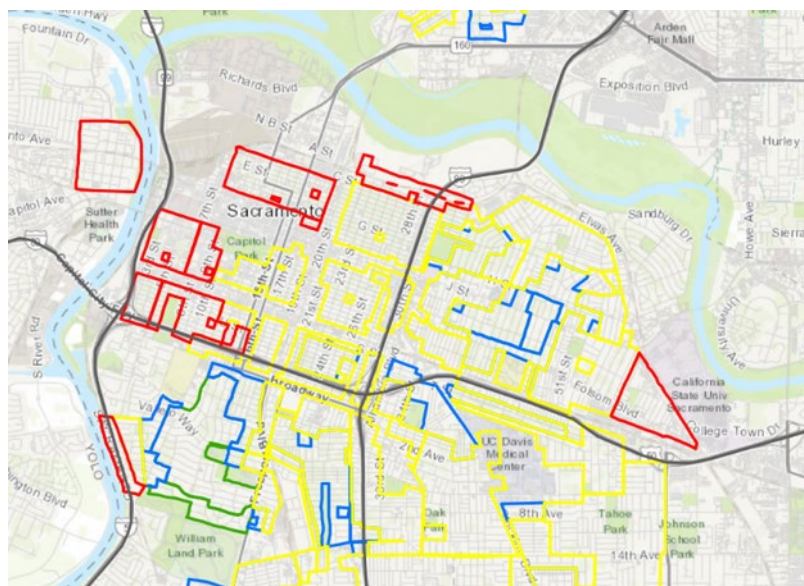


Figure 5: Downtown Sacramento redlined neighborhoods. Map shows HOLC color classifications, with neighborhoods outlined in red being those that were “redlined” from financial investment. Map from CalEPA’s “Pollution and Prejudice” (CalEPA, 2021).

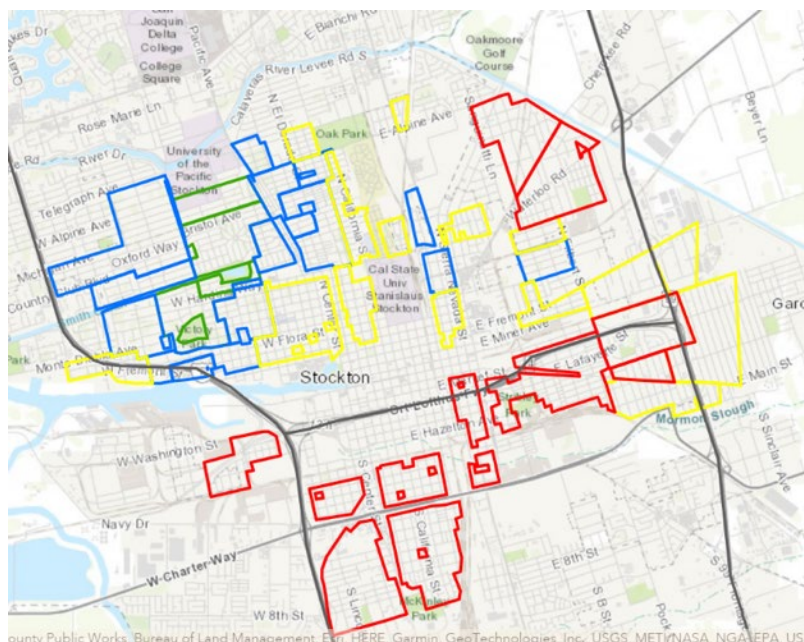


Figure 6: Stockton redlined neighborhoods. Map shows HOLC color classifications, with neighborhoods outlined in red being those that were “redlined” from financial investment. Map from CalEPA’s “Pollution and Prejudice” (CalEPA, 2021).

Water infrastructure

In addition to industrial and municipal development, the Delta was transformed dramatically throughout the 20th century as large-scale water infrastructure was developed throughout the state. To provide more reliable water supplies despite the

state's hydrologic variability and diverse geography, state, federal, and local agencies have built a vast water infrastructure system throughout California. The Delta, because of its geographic location sitting at the confluence of the Sacramento and San Joaquin Rivers and its role today in conveying water supplies, is the central distributional node in California's current water system. Rivers and dredged channels act as conveyance canals, and pumping plants provide the momentum to move stored water to areas south. California's overall system includes a range of surface reservoirs, aqueducts, pumping plants, operable gates, groundwater wells, and water treatment facilities constructed over the last hundred-plus years (DSC, 2018).

Pushed to meet these water supply demands, the Delta has been vastly transformed over time with the development of this water infrastructure system, including the development of the State Water Project (SWP) and federal Central Valley Project (CVP)—the two largest water systems in the state (CNRA & DWR, 2023)—as well as other water infrastructure for upstream diversions and in-Delta water use. The existing state and federal water systems were designed principally to address the state's geographic imbalance between abundant, seasonal water supplies north of the Delta and agricultural, municipal, and industrial water demands to the south (DSC, 2018).

During the past 150 years, human activities—including water diversions, reclamation of tidal marsh, and channelization of Delta waterways—have resulted in increased salinity levels in the Delta compared to historical levels (Contra Costa Water District, 2010; Whipple et al., 2012). The location, extent, and dynamics of the freshwater-saltwater gradient in the Delta have been altered by landscape modification, water management, and flood management infrastructure such as dams and conveyance facilities, levees, and channel dredging (DSC, 2013c). Present-day communities and economic activity within the Delta, as well as people and economic activity that rely on Delta water exports, depend on Delta water quality being maintained to adequate standards.

Upstream diversions

About half of the state's runoff flows through the Delta watershed. Many diversions in the Delta watershed occur in the upper watershed. On average, approximately 31 percent of the flow from the Delta watershed is diverted before it ever reaches the Delta. These diversions are done through an extensive network of locally constructed dams, canals, and diversion structures that have been built over the past century and a half on nearly every stream and drainage within the Delta watershed. Some of the

water diverted from Delta tributaries is returned to the tributaries through wastewater effluent and agricultural return flows, albeit at a degraded quality. Water from these diversions sustains the economies of the residents, businesses, and growers who live in the areas where the water comes from, as well as the economies in the export areas. Some of these historical diversions occur through two large aqueduct and reservoir systems that were constructed early in the twentieth century to serve the growing water demands of San Francisco and East Bay Area communities. These facilities—the Hetch Hetchy and Mokelumne River aqueducts and associated infrastructure—divert water before it reaches the Delta and convey it directly to reservoirs, treatment facilities, or customers in the Bay Area region.

In-Delta water use

Within the Delta, growers and residents have historically relied on Delta water. Most of this water is used for agricultural irrigation, as well as to supply water for small and large communities throughout the Delta (DSC, 2018). Over 1,800 in-Delta diversions remove water directly from channels and sloughs for irrigation use. At the same time, many in-Delta water users also have to actively de-water their land by pumping water off islands to lower groundwater levels to below crop root zones (DSC, 2021c). Some Delta water is diverted to provide water for human communities within the Delta; a number of water systems supplying Delta communities use groundwater (either solely or in conjunction with surface water). Delta surface water and groundwater are connected to varying degrees depending on the specific area; surface and groundwater interaction in a given area depends on a variety of factors, such as local hydrology and geology (DSC, 2018; SWRCB, 2023c). Surface water quality can directly affect groundwater quality (SWRCB, 2023c).

Delta water exports

Delta water exports now provide water to more than 27 million Californians (including EJ communities throughout the state) and provide irrigation water for about 3 million acres of farmland (DSC, 2023b; DWR & Berkeley Research Group, 2023). About two-thirds of the state's population in urban areas receive at least a portion of their water supply from Delta water exports (CNRA & DWR, 2023). As part of the CVP and SWP, a massive network of dams, canals, pipelines, and other associated infrastructure exports Delta water for use across much of the state—including the San Joaquin Valley, Southern California, central California coast, as well as the San Francisco Bay Area (**Figure 7**). A report prepared by Berkeley Research Group in collaboration with DWR has estimated that, depending on the definition used, between 6.6 and 8.2

million people residing in areas considered disadvantaged communities are served by SWP water, with most of these individuals residing in Southern California (DWR & Berkeley Research Group, 2023).



Figure 7: The Delta watershed and areas that receive Delta water. From DSC, 2013a.

While the primary purpose of the CVP and SWP is to provide water for municipal, industrial, and agricultural use, the projects also provide flood control benefits, generate electrical power, and provide water to wildlife refuges (DWR, n.d.; USBR, 2023). Using water provided by these projects, especially the CVP, water availability

expanded dramatically from the early 1900s through the 1950s for irrigated agriculture in the Central Valley (Claire & Surprise, 2022; Sze et al., 2009).

Water infrastructure and associated EJ issues

Alongside its water supply and other benefits, including its essential role in maintaining Delta water quality for human uses today, this system of water infrastructure and conveyance has had associated negative impacts on the physical environment (both within and outside of the Delta) and people, including the original Indigenous inhabitants of California. For example, prior to the 1970s, the construction and operation of water infrastructure, including the SWP and CVP, were not required to consider or mitigate impacts on native species (DSC, 2018). In redistributing access to freshwater resources across the state, the CVP, for example, caused major disruptions to the Central Valley's ecological and hydrological systems; most CVP facilities were constructed before major federal natural resources and environmental protection laws were enacted (Dunning, 1993; Stern et al., 2023). However, beginning in the 1970s, with the passage of a host of environmental protection laws, the protection of the ecosystem became an explicit legal obligation for the SWP and CVP in addition to the delivery of fresh water for agricultural and urban use (DSC, 2018). Furthermore, the Public Trust Doctrine protects the state's navigable lakes and streams as resources held in trust for the public for navigation, commerce, fishing, recreational, ecological, and other public values (DSC, 2018). The California Supreme Court has held that the state "has an affirmative duty to take the public trust into account in the planning and allocation of water resources and to protect public trust uses whenever feasible" (*National Audubon Society v. Superior Court*, (1983) 33 Cal. 3d 419, 446 publ.). Today, much of the debate related to the continued operation of the CVP relates to how to address its impacts on ecosystems and the hydrologic system that were not mitigated when the project was initially constructed (Stern et al., 2023).

Water infrastructure—along with other uses and development of land by non-native people today in the Delta and across the state—sits on unceded land, in most cases with no compensation given to the Indigenous people who had inhabited it. The ethos that all available water should be put to "productive" use for agriculture and urban development through storage and human control of the system—the dominant worldview at the time of the initial construction of much of California's water infrastructure, including the CVP and SWP—is fundamentally at odds with an Indigenous worldview, including the knowledge and practices that were embedded

within the Delta's historical ecology (Middleton-Manning et al., 2018). Expansion of irrigated agriculture in the Central Valley, facilitated in large part by the CVP, led to further displacement of native Californian peoples, as well as disruption of cultural resources, historical and traditional practices, and subsistence livelihoods across the Central Valley, as the landscape was transformed to benefit commercial and industrial agricultural development (Middleton-Manning et al., 2018).

The EJ implications of government-funded water infrastructure and conveyance systems in California extend beyond impacts to California tribal communities. For example, strategist Amy Vanderwarker (2012), citing other literature, describes how federal water infrastructure, including the CVP, has subsidized industrial agriculture while investing much less in the surrounding communities who bear its burdens, noting that much of these subsidies go to large-scale corporate agriculture, rather than small family farmers as initially intended. Vanderwarker (2012) states, "Even though the federal government spends billions on water, energy, and crop subsidies, it does not authorize enough money to help provide safe drinking water to small systems in the same agricultural areas. In some areas of California, farms receive federally subsidized irrigation water piped from hundreds of miles away, while low-income communities next door cannot drink their tap water due to agricultural contamination..."

For instance, a number of agricultural water districts south of the Delta rely on substantial amounts of water exported from the Delta. An analysis of available data on the use of Delta water exports, through a review of submitted Agricultural Water Management Plans, found that of 33 agricultural water districts south of the Delta that had data available to assess reliance on Delta exports, 17 are highly reliant on Delta exports (defined as receiving more than 50% of their total water supply from the CVP or SWP) (Noble et al., 2023). The infrastructure that delivers water to these agricultural water districts is located near a number of small community water systems that are currently out of compliance with drinking water standards (Noble et al., 2023). Water system consolidation is considered financially feasible when systems are within three miles of each other (London et al., 2018). It was found that within three miles of the 17 highly reliant agricultural water districts, 30 out-of-compliance water systems serving unincorporated communities were providing water to 191,692 people (Noble et al., 2023). Supplying these communities with water for one year would take just 0.7% of the total water supply of the nearby, highly reliant agricultural water districts (Noble et al., 2023). While raw Delta export water must be treated to be suitable for drinking water, contaminated groundwater—which most out-of-

compliance water systems rely on as their primary water source—is usually more difficult to treat than surface water (Chappelle et al., 2021).

This analysis suggests there is both a large need and a relatively feasible opportunity for Delta water to be more equitably distributed to address drinking water needs. However, additional funding and technical assistance would be needed to fund water system consolidation and adequate water treatment infrastructure for these small water systems, which often lack the necessary financial, technical, and managerial capacity (Chappelle & Hanak, 2015). When other solutions are not feasible, physical consolidation of small water systems with larger systems can be a cost-effective way to address water supply and water quality issues in small water systems (Hanak et al., 2019). When small water systems are too dispersed to make physical consolidation feasible, on-site solutions (e.g., water treatment infrastructure) are needed; administrative consolidation (providing smaller water systems with technical and managerial economies of scale), such as through a joint powers authority, can help address lack of capacity (Hanak et al., 2019).

There has been continued debate and litigation for decades over proposals to further alter water conveyance infrastructure and increase reliability for water exports from north to south (e.g., the Delta Peripheral Canal proposal, the Bay Delta Conservation Plan, California WaterFix project, and the current Delta Conveyance Project). This remains an active debate, with the distributional benefits and impacts of these projects central in conflicting perspectives. Delta water management, more broadly, has always been political and contested, but EJ narratives are increasingly being brought from margin to center, largely through the work of tribes and CBOs. An example of this is the *Title VI Complaint and Petition for Rulemaking for Promulgation of Bay-Delta Water Quality Standards*, brought forward by the Shingle Springs Band of Miwok Indians, the Winnemem Wintu Tribe, Little Manila Rising, Restore the Delta, and Save California Salmon against the California State Water Resources Control Board. The petition asks the U.S. EPA to initiate an investigation into the State Water Board's water management policies and practices in the Bay-Delta and initiate a rulemaking to adopt Clean Water Act-compliant water quality standards for the Bay-Delta, including designating Tribal Beneficial Uses and adopting flow-based, temperature, and harmful algal bloom (HAB) criteria that protect beneficial uses and tribal reserved rights. The petition was filed on December 16, 2022, and was accepted by the U.S. EPA on August 9, 2023.

Past and Ongoing Statewide and Delta Environmental Justice Initiatives

Statewide EJ policy efforts

Catalyzed by EJ activism and scholarship, the past twenty years have seen an increase in public policy interventions to address the inequitable distribution of environmental goods and harms across the country, including in California (Harrison, 2019). Across California's state government, multiple environmental and natural resource management agencies are devoting increasing attention toward inequities in the environment that fall along racial, class, and socio-economic lines. Many state agencies have convened EJ advisory groups, established EJ policies and programs, hired dedicated EJ staff, developed EJ grant programs (e.g., CalEPA's EJ Grants Program), and conducted quantitative analyses to assess the distribution of environmental goods and harms across different communities (e.g., Office of Environmental Health Hazard Assessment's CalEnviroScreen). See the callout box below for more information about state agency EJ efforts.

Critiques of state efforts

Initially, the state's EJ efforts primarily focused on improving opportunities for public participation (Liévanos, 2012; London et al., 2008). Improving equitable participation processes and ensuring all communities, not just those with political power, have a voice in important environmental decision-making processes is central to procedural and representational justice. However, researchers have concluded that it is not sufficient for EJ policy efforts to focus on process alone (Dobbin & Lubell, 2019; Liévanos, 2012; London et al., 2008); rather, they called on the state agencies to expand their EJ work to push for measures (e.g., monitoring, regulatory enforcement, selective permitting) that materially address disproportionately distributed environmental goods and harms and reduce health, economic and well-being disparities driven by unequal living, working, and recreational conditions (Harrison, 2019; London et al., 2008).

Other aspects of state EJ initiatives have been critiqued. For example, EJ advocates and scholars have persistently criticized California's choice of a market-based mechanism to achieve greenhouse gas reduction goals (i.e., the California Cap and Trade system, regulated by the California Air Resources Board (CARB)), as market-based systems give polluters the power to pay to pollute and local environmental

impacts such as air pollution continue to burden the most vulnerable communities (Cushing et al., 2018; Liévanos, 2012; London et al., 2013; Sze et al., 2009). This illuminates that communities are disproportionately empowered or burdened by the selection of different policy instruments (Howlett, 2009). Furthermore, academic critics have observed that EJ advisory groups and committees usually have no formal authority, limiting their influence over policy design and implementation, with some research concluding that many EJ advisory groups are merely symbolic, fostering the appearance that the state is working to integrate EJ into policy goals, but lack the power and resources to produce tangible change (Liévanos, 2012; London et al., 2013; London et al., 2008; Sze et al., 2009).

The California Environmental Justice Alliance (CEJA), a coalition of community-based and statewide advocacy groups who work together to advance EJ goals across the state, publishes annual assessments of several California state agencies' efforts to develop, implement and monitor policies that affect low-income communities and communities of color. CEJA recognized positive actions these agencies have taken to reduce pollution sources and spend more time with impacted communities. From 2016-2020, however, CEJA found an overall decline in agencies' performance across multiple categories, including protecting human well-being, respecting community expertise, and meaningfully conducting community engagement (California Environmental Justice Alliance, 2020).

Examples of Recent State Agency Tribal and Environmental Justice Efforts

Tribal Justice

- Governor Executive Orders: Executive Order B-10-11 and Executive Order N-15-19
- Truth and Healing Council
- 2020 Statement on Administration Policy on Native American Ancestral Lands (Office of the Governor, 2020)

Environmental Justice

Policies and Procedures

- The San Francisco Bay Plan, Environmental Justice and Social Equity findings and policies (2019)
- The California State Lands Commission's Environmental Justice Policy (2018)
- The California Coastal Commission's Environmental Justice Policy (2019)
- The Ocean Protection Council's Equity Plan (2022)

Racial Equity Plans

- California Department of Water Resources' Racial Equity Action Plan (2022)
- California Strategic Growth Council's 2023-2025 Racial Equity Action Plan (2023)
- San Francisco Bay Conservation and Development Commission's in-progress Racial Equity Action Plan (2024)
- State Water Resources Control Board's 2023-2025 Racial Equity Action Plan (2023b)

Advisory and Interagency Groups

- San Francisco Bay Conservation and Development Commission's (BCDC) EJ Advisors program (2019)
- The California Air Resources Board's Environmental Justice Advisory Committee (2006)
- The U.S. EPA's National Environmental Justice Advisory Council (1993)
- The White House Environmental Justice Advisory Council (2021)
- The California Natural Resources Agency's Equity and EJ Roundtable
- The National Oceanic and Atmospheric Administration's EJ Coastal Interagency Coordination Group (2021)

Funding

- The State Water Resources Control Board's Safe and Affordable Funding for Equity and Resilience (SAFER) Program (2023d)
- CalEPA's EJ Action Grants and EJ Small Grants programs (n.d.)
- The State Coastal Conservancy's JEDI Guidelines in Action (2020)
- The Ocean Protection Council's Equity Plan (2022)

Legislation

- AB 2616 (2016)
- AB 685 (2012)

Resolutions

- State Water Resources Control Board's Resolution No. 2021-0050: Condemning Racism, Xenophobia, Bigotry, and Racial Injustice and Strengthening Commitment to Racial Equity, Diversity, Inclusion, Access, and Anti-racism. (2021b)

Delta-specific EJ efforts

Environmental governance in the Bay-Delta has seen an evolution of agency arrangements aimed at fostering collaboration and finding areas of compromise in order to manage the estuary for both ecosystem health and water supply reliability. Two Delta-specific governance efforts preceded the Delta Reform Act and the establishment of the Delta Stewardship Council: the California Bay-Delta Program, also known as CALFED, a cooperative planning effort among federal and state agencies, and the state-sponsored Delta Vision process. The 1994 federal Executive Order 12898 (*Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*) required the integration of EJ into federal agency actions. This led EJ to be included in the CALFED Record of Decision (ROD) that laid out the program goals and objectives (Little Hoover Commission, 2005). Following the disintegration of CALFED, the Delta Vision process and its Delta Vision Blue Ribbon Task Force provided recommendations that led the Legislature to pass the Delta Reform Act of 2009 (DSC, 2013a).

In both of these initiatives, however, efforts to incorporate EJ were marginalized in comparison to other priorities, a sentiment shared by EJ advocates who participated in the planning processes, researchers who observed these processes unfold, and an independent state agency report that examined the integration of EJ into CALFED (Little Hoover Commission, 2005; London et al., 2008; Shilling et al., 2009; Sze et al., 2009).

During the CALFED era, the California Bay-Delta Authority had a Public Advisory Committee, within which nine subcommittees were formed, including an EJ subcommittee that was tasked with integrating EJ across the entire CALFED program (Little Hoover Commission, 2005). Both statewide and Bay-Delta-focused EJ organizations participated in the EJ subcommittee for five years before ultimately withdrawing support and boycotting all CALFED processes to demonstrate their dissatisfaction with the process and their belief that the CALFED process lacked genuine commitment to EJ (Shilling et al., 2009). Multiple factors contributed to the EJ subcommittee's frustration. As concluded by the Little Hoover Commission's report on CALFED, multiple factors contributed to the EJ subcommittee's frustration. It was unclear how effective any of the subcommittees were in informing and influencing the CALFED process; the report highlights the EJ subcommittee as an example, stating that the EJ subcommittee was not adequately funded to carry out its charge of developing a plan for integrating EJ across the CALFED program (Little Hoover

Commission, 2005). While the EJ subcommittee was singlehandedly charged to advise on the integration of EJ into all relevant CALFED programs and policies, the subcommittee was granted no formal authority to provide input on specific programs (Shilling et al., 2009). The subcommittee was also understaffed and operated without a designated chair who would represent the subcommittee on the larger Public Advisory Committee (as other subcommittees had), and it had insufficient funding, compared to the funding provided for the rest of the CALFED program, for research and coordination (Shilling et al., 2009). The dearth of research created by insufficient institutional investment itself undermined the subcommittee's legitimacy in CALFED decision-making spaces, where research and technical expertise were privileged over practical, traditional, and local knowledge (Shilling et al., 2009). The lack of resources and influence, combined with the institutional complexity of CALFED, led to disenfranchisement of the EJ subcommittee members and the subcommittee's eventual unanimous resignation (Shilling et al., 2009). The Little Hoover Commission report concluded that CALFED failed to achieve many of its goals, especially in its integration of EJ (Little Hoover Commission, 2005).

After CALFED dissolved, the state legislature commissioned the Delta Vision Blue Ribbon Taskforce to develop a strategy for managing the Delta to support both ecological function and sustainable economic development. This process (known as Delta Vision) opened a unique window of opportunity for visioning priorities in the Delta. However, Sze et al. (2009) concluded, based on fieldwork and interviews to trace the Delta Vision process, that EJ was "marginalized within the Delta Vision process, understood as a 'special interest,' rather than a term that has particular legal/regulatory meaning..." Ultimately, the Delta Vision Strategic Plan included recommendations that EJ issues should be included in the recommended "California Delta Ecosystem and Water Plan" and in future Delta decision-making, and to seek the counsel of the recommended Public Advisory Group to enhance public participation and address EJ concerns (Delta Vision Blue Ribbon Task Force, 2008).

Recognizing shortcomings of past EJ policy processes, particularly efforts in the Delta and the legacy institutions that preceded the Council, provides important context for ongoing EJ efforts throughout the Delta, including the development of this issue paper.

Section 5: Current Tribal and Environmental Justice Issues in the Delta

This section summarizes current tribal and EJ issues identified in the process of developing this paper. Issues are presented by key topics, which were identified and characterized based on content from the 22 research interviews conducted with tribal and EJ CBOs and the analysis of past public comments. To triangulate the interview and public comment data, this section is substantiated with additional data as available from:

- Review of best available peer-reviewed EJ literature and additional agency reports, and publicly available data and analysis tools,
- Nineteen meetings with the EJ Expert Group from November 2021 through early 2024,
- Four community outreach events in 2022, where public input was solicited on current EJ issues of concern, and
- Pre-consultation with four tribes, as well as the Council’s tribal listening session held in April 2023.

(See Appendix C and the *Summary of Delta Environmental Justice Interviews: Report on Methods and Findings* (DSC, 2022b) for more detail on the topical analysis used to determine key issue areas and applying mixed-methods approaches to integrating multiple data sources).

Tribal justice issues are presented first, followed by EJ issues organized around the three core tenets of EJ—representational, procedural, and distributive justice—and then into key sub-topics within each tenet. As previously described, most, if not all, EJ issues speak to more than one EJ tenet, as these issues are intersectional in nature and manifest at different scales. Given this intersectionality, there is some repetition throughout this section to demonstrate the connectivity amongst issues and EJ tenets.

Tribal Justice Issues

While other EJ issues discussed in this paper are discussed in separate sections for representational, distributive, and procedural issues, tribal justice issues are discussed in their own section because tribes’ unique status merits a separate focus. The Council pre-consulted directly with four tribes with a relationship to the Delta on

this issue paper. Additionally, three interviewees representing primarily tribal perspectives engaged in discussions highlighting issues affecting both federally and non-federally recognized tribes in the Delta and around the state. Other interviewees—whose organizations also serve non-Indigenous communities—spoke to issues affecting Native Americans both in and outside the formal tribal context, the latter including urban (Sacramento) Native Americans and Native American Delta residents who are not members of Delta-regional tribes. The Council held a tribal listening session with four tribes at its April 2023 Council meeting, which also informs this section. This section also draws upon scholarly literature.

Tribes and interviewees discussed tribal and Indigenous EJ issues that touch on representational, procedural, and distributive injustices but noted that these three categories are tightly interwoven. In broad strokes, Indigenous peoples have been displaced from their ancestral lands in the Delta and across California and thereby restricted from practicing their cultures. Failure to provide meaningful consultation or other forms of engagement (procedural) also represents a failure to honor and uphold tribal sovereignty (recognition). This paired procedural-representational injustice perpetuates distributive injustices created by development and other environmentally damaging landscape modifications, which cause debilitating physical and psychological health/wellbeing impacts to Indigenous communities (distributive).

For purposes of discussion, tribal EJ issues are grouped into the following interrelated types: recognition (tribal sovereignty and preservation, Traditional Knowledge), procedural (marginalization and exclusion, consultation), and distributive (environmental hazards, water system).

Recognition

Tribal sovereignty and preservation: Tribes have inherent rights, including the right to harvest, to teach, and to put down prayers. Interviewees expressed that tribal rights are being actively impinged upon by environmental (e.g., flood risk, climate change) and socio-ecological (e.g., the Delta Conveyance Project, urban development) changes that impact the land, which is the basis for tribal cultures. Interviewees also noted that recreational access conflicts with tribal sovereignty, priorities, and preservation when recreational activities are prioritized over tribal beneficial uses. Often, recreational uses (e.g., ATVs, boats in rivers) have environmentally damaging effects that also preclude tribes from exercising their inherent rights, including access to ceremonial areas that are in the public realm. Tribes seek the protection of their

cultural resources and the use of their ancestral homelands in perpetuity, which is often met with dismissal, no reaction, or in extreme cases, threats of violence.

Tribes also described challenges with attempts to purchase land they originally held in and around the Delta in an attempt to restore portions of their original homelands. In many cases, tribes have experienced attempts at price gouging, which “further exploits cultural sites.” In other cases, particularly related to the return of publicly owned land, bureaucratic hurdles have presented what are often insurmountable barriers for tribes with limited capacity.

Lastly, tribes expressed concerns about how public agencies understand the concept of tribal sovereignty in relation to cultural sites. As one tribal representative put it,

“Public agencies often rely on their own archaeologists to determine whether a site is culturally significant. Tribes should be the only ones who can say whether a site is culturally significant to them. It doesn’t make sense, from a tribal sovereignty perspective, to think otherwise.”

Traditional Knowledge: Closely intertwined with tribal sovereignty and preservation is the repression of tribal/Indigenous cultural beliefs, practices, and knowledge (referred to here as Traditional Knowledge, but may also be referred to as Traditional Ecological Knowledge or Indigenous Knowledge). Traditional Knowledge, using the White House Office of Science and Technology Policy’s definition:

“...is a body of observations, oral and written knowledge, innovations, practices, and beliefs that promote sustainability and the responsible stewardship of cultural and natural resources through relationships between humans and their landscapes. [It] cannot be separated from the people inextricably connected to that knowledge. It applies to phenomena across biological, physical, social, cultural, and spiritual systems. Indigenous Peoples have developed their knowledge systems over millennia, and continue to do so based on evidence acquired through direct contact with the environment, long-term experiences, extensive observations, lessons, and skills” (Daniel et al., 2022).

Members of the EJ Expert Group, representatives at the tribal listening session, and interviewees expressed the importance of recognizing that Traditional Knowledge is Best Available Science, based on thousands of years of observation and application.

They stressed that it is Traditional Knowledge that fostered the biodiversity that is enjoyed, celebrated, and valued by many Bay-Delta communities today.

Traditional Knowledge is beginning to be supported at the federal and state level. The federal Office of Science and Technology Policy and the Council on Environmental Policy released *Indigenous Traditional Ecological Knowledge and Federal Decision Making* on November 15, 2021, elevating the treatment of Traditional Knowledge to be coequal to Western scientific knowledge and calling for Traditional Knowledge to inform federal decision-making. On November 30, 2022, the Office issued instructional guidance to all federal agencies to implement this memorandum. California has further elevated Traditional Knowledge in decision-making, especially for the protection of tribal cultural resources.

Sources of this injustice, according to interviewees, include lack of access to land and waterfronts for stewardship, subsistence, and cultural practices, both due to colonial displacement and present-day cost of land; repression of language and associated loss of cultural/place-based knowledge; lack of understanding of tribal cultural practices (e.g., burning) fostering public resistance; and the risk of commercial appropriation (e.g., plant species harvested for health food stores) when culturally significant areas become publicly known. These result in reduced physical health and well-being for tribal communities and have negative fallout effects for the broader regional community. For example, among the benefits of the practice of cultural burning is the control of fleas, ticks, and mosquitoes. Two interviewees explicitly linked repression of Traditional Knowledge to implications for tribal sovereignty and preservation. One interviewee discussed how agency representatives often do not understand the sacredness of the entire “creation area” – as evidenced by Delta jurisdictional boundaries that do not include the full watershed – and lack of recognition for (in the interviewee’s words) “all our relations,” (animals, plants, land, air, water) as community members. The tribal perspective of the Delta existing as an entire watershed from the Sierra Nevada mountains to the San Francisco Bay was expressed in the April 27th, 2023, Council tribal listening session and the 2023 Adaptive Management Forum. Additionally, tribes have shared their preference for agency staff to acknowledge their ignorance where it applies regarding Traditional Knowledge, and to ask questions and learn from them (DSC, 2023a). Interviewees stated that to the extent that agencies do not recognize or respect this knowledge, they fail to honor tribal sovereignty and undermine tribal preservation. In another interview, repression of Traditional Knowledge about the interrelated risks of various

toxins (on humans, other animals, food, etc.) was described as an extension of cultural genocide.

In addition, several interviewees, as well as tribes in pre-consultation, discussed the lack of access to tribal cultural resources, which is an issue of both representational and distributive injustice. For example, an interviewee discussed the placement of the Los Vaqueros Reservoir and Clifton Court Forebay, which are located within the Miwok ancestral territory, as an example of a lack of access to tribal cultural resources. As this interviewee noted, the construction of these permanent infrastructure projects has degraded or destroyed a sacred landscape containing culturally significant species frequently identified in stories, ceremonial places, gathering sites, and much more (Hankins, 2018). The psychological impacts of such loss and disruption have been described by Cunsolo and Ellis (2018) as “ecological grief” and, according to Hankins (2018), have created discontent among Plains Miwok traditional cultural practitioners for generations. Tribes also expressed concern with cultural sites on levees, and within the path of the proposed Delta Conveyance Project. It has also been expressed that while recognition of Traditional Knowledge and the use of Traditional Knowledge is necessary and increasing, this also brings the risk of misuse and appropriation. Concerns were expressed regarding the use of Traditional Knowledge by non-tribal people who use the information without proper context, consent, and guidance. Traditional Knowledge should be applied by local tribes and cultural practitioners. EJ Expert Group members shared this passage from the “Good Fire” report, recently updated in 2024 (Clark et al., 2024):

“Care must also be taken to ensure the confidentiality and non-disclosure of Traditional Knowledge when such confidentiality is requested by a tribe or knowledge bearer ... many tribes are currently developing Traditional Knowledge and data sovereignty protection processes, policies, and protocols and/or agreements. While these are not all yet fully formulated, it is important that agency staff inquire about their existence and comply with any such policies, protocols, and agreements. This may also require agencies to modify or amend their own such policies and procedures.”

Procedural

Marginalization and exclusion: In concert with the examples outlined in the recognition section above, interviewees and tribes noted that tribal nations and

Indigenous communities are marginalized and excluded in ways that inhibit their engagement in policy processes. Two interviewees explicitly expressed that tribes face discrimination, including both individual and institutional racism and systemic oppression: this manifests, for example, in the failure to recognize tribal experts who do not have credentials (e.g., a PhD). In addition, two interviews highlighted exclusion as a representational/procedural issue for specific communities: 1) non-federally recognized tribes, who are not included in formal tribal consultation and whose inherent rights are not respected; and 2) Native American people who live in the Delta but are not members of Delta-regional tribes, who might be unrepresented in tribal consultation, and who do not feel welcome or valued in other engagement processes. As explained by one interviewee,

“We have an audience of nearly 700 tribal members that aren’t necessarily part of a Delta tribe (urban-native) and many have felt that their opinion hasn’t been valued, so don’t want to get involved.”

Tribes also expressed marginalization from those who view them as “roadblocks” to development or a group that always says no. As one tribal representative has put it,

“We want to work with projects to make them work. But when we are ignored or only consulted at the last minute, that’s when I have to make phone calls people don’t like. It’s about respect.”

Consultation: Closely related to marginalization is lack of meaningful or “good faith” consultation with tribes. In one interview, this was traced to the history of broken promises, starting with unratified treaties in the 1800s and the subsequent murder of Native American people, which established a precedent of unfulfilled commitments and non-enforcement of regulatory requirements to uphold tribal rights. Interviewees shared that tribal engagement is often sought too late for meaningful input. In the words of one interviewee,

“This has become agencies telling the tribes what they intend to do, but not providing opportunity for ‘free and prior informed consent’ to the action.”

This was echoed during the April 2023 Council tribal listening session and 2023 Adaptive Management Forum, as participants shared the desire for tribal consultation

to happen before a project's design phase (DSC, 2023a). Interviewees noted that tribal consultations can also be adversarial, with agency representatives showing disrespect for or distrust of tribal representatives, and that, at times, tribal words are misreported or misconstrued. One interviewee commented that agencies often send biologists or archaeologists who lack an understanding of tribal rights or procedural requirements to tribal consultations. This sentiment was also expressed in the Council's April 2023 tribal listening session. Another interviewee observed there is broad ignorance of and, at times, disregard for tribal law, as well as Federal Indian law, among agency staff and the general public. In addition, interviewees noted that because agency staff sent to tribal consultations are often not high-ranking in their organizations, tribal input provided through tribal consultation is frequently ignored by decision-makers. Even when trust is built with agency staff, those staff are often not there very long, and the process must start anew because the agency doesn't have a framework to continue that trust-building.

Tribal consultation was identified as a critical entry point for tribes but also one that has been weaponized against them when used perfunctorily as a "box-checking" exercise rather than an ongoing process to meaningfully address tribal concerns and needs. Participants in the April 2023 Council tribal listening session also shared that tribes are exhausted from saying the same thing over and over to various agencies, and that agencies need to figure out how to make it easier for tribes to understand which agency is responsible for which project (DSC, 2023a). Tribes are also frustrated when tribal thoughts and history, provided in tribal consultations, are paraphrased to the point where all meaning is lost. Similarly, tribes hope that agencies can find new ways to receive public comments rather than through comment letters, which also tend to prioritize the paraphrasing of tribal history and context.

Barriers: Interviewees discussed procedural barriers to their work on Indigenous EJ issues. For one interviewee, the procedural issues themselves (marginalization and exclusion, lack of meaningful tribal consultation) are also barriers, along with threats of violence, agency staff turnover, and agencies implicitly or explicitly pitting tribes and rancherías against one another. Two interviewees converged in expressing the frustration that change—with tribal consultation processes and in government response to input provided—is very slow:

"It's critical to be patient; some of our [consultation] work has taken 15 years to get 25% complete."

In tribal pre-consultation, tribes also expressed capacity barriers to be able to engage with the “hundreds to thousands” of projects that federal, state, and local agencies are working on that tribes should have say in. They expressed a need to be compensated for their time consulting on projects, and that the disparity between staff paid to work on these projects every day and tribal staff’s ability to keep up is immense. Tribes expressed that funding mechanisms also need to be creative as the “red tape” associated with contracting with agencies often adds up to more cost than the compensations might be worth.

Distributive

Environmental hazards: Interviewees discussed a variety of environmental hazards facing tribal communities, including pollution exposure through ceremonial use of water; construction-related soil contamination; and chemical contamination from sprayed fire retardants. In addition to negative health impacts, these hazards also impinge on tribal sovereignty, priorities, and preservation. One interviewee whose organization focuses on urban Native Americans and other underserved communities in Sacramento listed a myriad of exposures, including soil/water contamination, wildfire smoke and other air pollutants, heat exposure (urban heat islands, lack of shade trees), and noise pollution. Tribes have also shared concerns with regular conflicts with homeless encampments where traditional waterways and sacred sites are occupied and polluted. These health hazards are exacerbated by community racism/redlining and amplified by climate change (see **Section 4** for more information on community racism/redlining and later in this section for more information on climate change impacts).

Water system: One interviewee highlighted commodification of water as an injustice linked to corruption. Rather than being treated as a life-supporting necessity for humans and ecosystems, or a member of Indigenous community and part of Indigenous peoples’ spirituality, water is treated as a resource and sold for wealth generation:

“A day will come when water is the highest cost commodity. Those who can afford it will, and those who can’t, will get substandard water to drink.”

Representational Justice Issues

Key findings identify and focus on three core representational justice issues: who “counts” as an EJ community, agency EJ competency, and the underrepresentation of EJ communities in decision-making bodies and processes.

Who “counts” as an EJ community: As discussed in **Section 3**, defining EJ communities is a challenging task. Interviewees identified the communities most impacted by environmental and social justice issues as: “disadvantaged communities or DACs,” “low-income communities,” “Indigenous communities,” “tribes,” “youth,” “at-risk youth,” and “foster youth,” “minority communities” and “people of color,” “vulnerable communities,” “unhoused communities,” “immigrant communities” including Hmong, Filipino, and Latino immigrants, “undocumented immigrants,” “renters,” “EJ communities,” “elders” and “seniors,” “people with disabilities,” “farmworkers,” “Legacy town residents,” and “food insecure communities”.

Available literature concurs that these populations are known to be underrepresented in government decision-making bodies and processes and likely to experience a disproportionate share of environmental burdens and exclusion from environmental goods (CalEPA, 2021; CSIWG, 2018; Cushing et al., 2015; OPR, 2017; Liévanos, 2016; Liévanos, 2020; OEHHA & CalEPA, 2021; Shonkoff et al., 2011). It is important to note that not all Delta legacy towns meet all criteria that staff has elected to use to define EJ communities. While many Delta legacy towns have a majority of residents with socioeconomic disadvantages, some legacy towns have extremely affluent, well-resourced, and environmentally protected residents.

Agency competency in EJ: Multiple interviewees identified barriers that are created when agencies do not understand what EJ means. As explained by interviewees, it is important to understand all the dimensions in which communities are underprivileged or disproportionately burdened by the environment (e.g., low-income and unhoused communities), but too often, agencies assume EJ to only be about race. Interviewees felt that agencies also often lack understanding and acknowledgment of tribal government and tribal law and do not involve knowledgeable staff in tribal consultation and engagement. Participants in the community outreach events emphasized the need for government agencies, consultants, and academic research staff to be trained on matters of diversity, equity, and inclusion (DEI) and best practices for engaging with tribes. Participants noted that science staff at government agencies and consultancies need a better understanding of how EJ issues connect

with their work and of the cultural, tribal, and EJ policy context at their respective agencies so that these staff are not operating in silos within their own agencies.

Finally, interviewees identified systemic racism and resistance to change as key barriers to progress. Although interviewees noted that they sometimes see racism acknowledged in EJ discussions, they have not seen these acknowledgments translate into institutional actions or change. One interviewee felt that agencies are uncomfortable with change because they think it will be expensive and don't know how to work with the populations in need of greater support.

Representation of EJ communities in decision-making bodies and processes:

Interviewees also expressed that disadvantaged communities are consistently underrepresented or inadequately represented in decision-making processes. For example, multiple interviewees discussed disadvantaged communities being inadequately accounted for or included in climate change planning processes. A few interviewees also discussed representational water justice concerns related to involvement in water decision-making processes and which communities are legitimized as having a stake in water distribution decisions. Many interviewees indicated that certain communities—notably tribes and disadvantaged communities—are excluded from or not adequately represented in water management decision-making. Multiple interviewees described communities excluded or marginalized in the Delta Conveyance Project process, including tribes, rural residents, and Delta agricultural communities. One interviewee's statement illustrates this sentiment:

"In the Delta, it feels that there is a push for these tunnels because the people in this agricultural community aren't savvy enough to speak out. The state acts like they just don't hear anything from the Delta."

Interviewees also identified representational justice issues related to unhoused community members and community members with disabilities, sharing that unhoused communities feel underrepresented in planning and policy processes and that "people in disability communities need to be meaningfully reached out to, to participate in meetings" with reasonable accommodations.

Recent literature supports that EJ communities are inadequately represented in decision-making processes, both across California and within the Delta. For example, small, disadvantaged communities have historically been inadequately represented in

local, regional, and state water management (Dobbin, 2021; Firestone & Francis, 2011; Ranganathan & Balazs, 2015). More broadly, EJ communities have been shown to be vastly underrepresented in scientific research, news media, and legislation in California. A review by Fernandez-Bou et al. (2021) of California-related scientific papers, newspaper articles, and California legislative bills from 2017-2020 found that while about 25% of Californians live in a disadvantaged community (defined as census tracts in the 75th percentile of CalEnviroScreen 3.0 scores), only about one in 2,000 scientific and newspaper articles and only 2% of legislative bills covered them. While the coverage of disadvantaged communities across all three platforms (news media, scientific papers, and legislation) has increased in the past 20 years, these communities remain understudied and underrepresented (Fernandez-Bou et al., 2021). Studies focused on Delta governance, while limited, specifically have shown that EJ communities have historically not been—and still are not—adequately represented in Delta governance and decision-making (Little Hoover Commission, 2005; London et al., 2008; Sze et al., 2009; Triyanti et al., 2020).

Procedural Justice Issues

Key themes emerged from the interviews and other sources reviewed for this issue paper that highlight multiple procedural justice issues well-documented in EJ literature, including lack of opportunities for meaningful involvement in decision-making processes, lack of transparency in decision-making, and lack of capacity to engage in multiple policy forums perceived as redundant.

Barriers to meaningful involvement: Multiple interviewees identified limited resources and funding among EJ organizations as key barriers to meaningful involvement in Delta governance. Climate adaptation professionals at the 2023 California Adaptation Forum reiterated the best practice that short, one-year grant periods are not sufficient when working with new community-based organizations, as it takes time for trust to develop, and the organizations do not operate on the same timelines as agencies often do (California Adaptation Forum, 2023). Available literature supports that funding for CBO participation, data support, and accessible public participation practices are integral to the success of EJ policy efforts but are often insufficient (Petersen et al., 2006).

Interviewees also discussed challenges within engagement practices, identifying that agencies' public engagement is often more of a "box-checking" exercise than something that actually influences decisions. Interviewees expressed that EJ parties

are often left out of public processes or included only due to relationships they have built with individual agency staff members, which don't carry forward if staff members leave. As one interviewee described:

"If the few people I communicate with eventually leave, that relationship could be gone."

This underscores the importance of institutionalizing equitable public participation practices that ensure most impacted communities are consistently targeted in outreach.

Lack of transparency: Multiple interviewees wanted to better understand how decisions are made, seeking decision-making transparency. Transparency in government refers to processes or conditions that enable individuals to obtain clear, accurate, and timely information about the activities of government entities, particularly regarding decision processes and management actions that will impact their environment, health, or daily lives. As past literature documents, previous EJ policy efforts in the Delta have been obfuscated by complicated technicalities, failure on the part of government agencies to acknowledge the government's role in perpetuating inequities, the complexities of proving adverse environmental impacts are inequitably distributed across race and class lines, and the established strength of private industry lobbies pursuing policy solutions that benefit industry (Petersen et al., 2006). In sum, *transparency* as to how and why environmental decisions are made and who is benefitted or harmed by those decisions has been limited to date.

Lack of coordination and alignment across agencies: Both interviewees and participants at community outreach events noted that there is a disconnect between state and local governments' efforts and a lack of coordination across entities working on similar issues. Both interviewees and participants at community outreach events noted a need for better coordination among agencies, more consistency and alignment of goals and processes across different agencies, and consolidation of similar processes to make it easier for EJ organizations and community members who are asked to participate in many different agency processes. The 22 organizations interviewed reported engaging with 31 different agencies/departments at the federal, state, and local levels, as well as the state legislature.

Distributive Justice Issues

Distributive justice considers how environmental burdens and benefits are distributed across communities and, specifically, how these distributions correlate with socio-demographic characteristics. Based on topical analysis from the interviews, the following discussion is organized around seven core areas of distributive justice concern in and around the Delta:

- climate change,
- flood risk,
- water,
- air quality, pollution exposure, and public health,
- housing and unhoused communities,
- food security and access, and
- recreation and outdoor access.

Within each of the core areas, the concerns of interviewees are summarized alongside external data sources that provide additional perspective on how the harms and opportunities under each of these topics are distributed across the social landscape. These topics interact and intersect with one another. As such, the distinction between core areas or how specific concerns are classified is somewhat arbitrary (e.g., water quality concerns could be classified as both climate change and water issues).

Note: Some of these issues are outside the scope of the Council's authority. All issues that came up in the interviews and other sources reviewed for this issue paper, however, are included in order to provide a more complete picture of tribal and EJ in and around the Delta and to inform other agencies whose authority in the Delta may intersect with these issues.

Climate change

General climate change concern was a key EJ issue among interviewees. It is well documented that the impacts of long-term climate trends and extreme events disproportionately impact the health, safety, and well-being of some communities over others due to differences in exposure, sensitivity, and adaptive capacity, or the capacity to respond to climate hazards (Mendez, 2020; Sze, 2020; USEPA, 2021). The most vulnerable populations are those that are exposed, are highly sensitive, and have low adaptive capacity to climate hazards (DSC, 2021a; DSC, 2021b). Tribes and

socially vulnerable groups are more likely to be impacted by climate change because of their location's low adaptive capacity and high sensitivity to impacts, among other compounding factors. For example, across the U.S., Native American individuals are 48% more likely to be inundated by sea level rise and experience labor loss due to climate change and increases in high-temperature days in areas that these communities live in (USEPA, 2021). Low-income individuals and those without a high school diploma are 15% more likely to currently live in areas projected to see the highest increases in childhood asthma diagnoses due to increased particulate air pollution as a result of climate change (USEPA, 2021). **Climate change affects everyone, but a growing amount of evidence suggests that climate change disproportionately affects low-income communities of color because they are more likely to experience higher exposure to climate hazards and have lower capacity to adapt due to lower financial assets, compounding effects of existing community burdens, and lack of representation in risk mitigation decisions.** As a result, these communities are least equipped to anticipate, cope, and recover from climate impacts (USEPA, 2021).

The Council's Delta Adapts climate change vulnerability assessment developed a social vulnerability index (SVI) to identify Delta communities with higher sensitivity and/or lower adaptive capacity to climate hazards relative to other communities in the Delta, using 14 indicators at the Census block group level representing factors that would increase an individual's or population's vulnerability (DSC, 2021a; DSC, 2021b). Results from the SVI indicate that the communities most vulnerable to climate change are concentrated in Stockton, Pittsburg, and Antioch. Sacramento, Tracy, West Sacramento, and unincorporated areas of San Joaquin County also have highly socially vulnerable communities.

The interviews conducted for this paper provided additional insights regarding which populations are likely to experience higher exposure to climate threats. Regarding heat and wildfire smoke, interviewees emphasized that unhoused individuals experience the greatest exposure while residing outdoors, followed by agricultural workers and those who do manual labor in outdoor settings. Low-income individuals and renters may be less likely to have in-residence air conditioning and air filters, making them more vulnerable as well. Analyses from the US EPA (2021) show that individuals working in extreme heat outdoors or indoors without air conditioning are at risk of experiencing health and cognitive effects, especially if the individual is low-income. Low-income individuals working in outdoor sectors can earn up to 48% less

income than the median worker and will likely work through multiple extreme heat day events to earn income to meet basic necessities (US EPA, 2021).

Interviewees also identified other communities likely to be highly vulnerable in the face of other climate disasters, including the elderly, youth, and people with disabilities, who can face more challenges in disaster evacuations, as well as low-income, minority, and immigrant communities who may not have access to alternative places to stay during evacuations. For example, studies have shown that the elderly and young children are especially sensitive to heat exposure; older individuals are more likely to experience cardiac strain from heat exposure, and young children regulate body temperature less effectively because they sweat less (USEPA, 2021). Interviewees highlighted how long-term climate trends disproportionately burden some communities over others: for example, power shutoffs for fire prevention purposes place a higher burden on low-income communities; wildfire smoke exacerbates health risks in regions that already experience poor air quality and high heat (e.g., Central Valley and eastern Delta); and sea level rise places greater flood risk on some communities. Additionally, low-income individuals have been found to experience higher rates of climate change-related mortality because of a lack of access to quality healthcare (USEPA, 2021).

This understanding of climate vulnerability is also supported by available literature. Regarding extreme heat, it is well documented that in urban areas, impervious surfaces and scarcity of vegetation create urban heat islands – regions that are hotter than surrounding rural areas (Altostratus Inc., 2015; Oke, 1982; Oke et al., 1989). Low-income communities and communities of color are overrepresented in urban areas that have higher rates of impervious cover and less tree cover and are, therefore, more likely to be exposed to the urban heat island effect (Shonkoff et al., 2011). **In the Delta, the urban heat island effect is greatest in Tracy and South Stockton and along the Highway 4 corridor in East Contra Costa County** (DSC, 2021b).

According to interviewees, there are varying levels of preparedness and response during extreme climate events such as floods, fires, and droughts. For example, some Delta islands lack adequate evacuation routes and emergency resources. The Delta Residents Survey found that 20% of Delta residents report no access to personal motorized vehicles (Rudnick et al., 2023). Tribal communities may also be disproportionately impacted by climate change due to their close relationship with the environment. This is supported by literature that documents how, in many cases, because of the cultural disruptions wrought by Western colonial settlement, tribes

have been deprived of the social and material resources they have relied on since time immemorial to adapt to past environmental change (USEPA, 2021; Whyte, 2016). In the Delta, processes, and practices that restrict tribes from their ancestral homelands and repress their cultural practices also challenge tribes' abilities to respond and adapt to climate change impacts (see further discussion in the Tribal Justice Issues section above).

Finally, interviewees described political resistance to change as one of the largest barriers to climate justice. Examples interviewees highlighted included local land use planning processes that neglect to consider anticipated climate impacts such as flooding due to sea level rise and local elected officials who are unwilling to take action because they think their constituents may not believe in climate change. Data from the Delta Residents Survey, however, directly refutes this point: **more than 85% of Delta residents believe climate change is happening and human-caused, and greater than 75% are concerned about the impacts that climate change will cause in the Delta in the future.** Furthermore, the majority of respondents support further action by the government to prepare for impacts (Rudnick et al., 2023).

Flood risk

The Delta region is expected to face increased flooding due to more frequent and excessive rainfall in the next century due to climate change (DSC, 2021b; USEPA, 2021). Multiple interviewees identified allocation of levee investments, flood insurance access and affordability, land use planning and development, and subsidence as key distributive injustices. Indeed, the federal government evaluates the economic consequences of flooding rather than the risk to human life and community sustainability. Most urban levees are federal and subject to U.S. Army Corps of Engineers policies and practices for evaluating levee improvements (USACE, 2009).

Interviewees identified that minority and low-income communities are frequently located closer to levees that have received comparatively lower levels of investment than levees in high-income and white communities. Literature supports that both low-income and minority groups have historically been (and continue to be) underrepresented in flood risk investments, which can both impact flood-fighting investments and impair preparedness and relief efforts during emergencies and disasters (Liévanos, 2020; USEPA, 2021). In the Delta, flood risk is higher in formerly redlined areas that presently are home to lower-income communities of color (see **Section 4, History and Context** for more discussion of formerly redlined areas and

present-day exposure to flood risk and other environmental hazards; Katz, 2021; Liévanos, 2020). In Stockton, for example, areas with higher populations of people of color, low-income communities, and formerly redlined or areas targeted by subprime lending have higher flood and sea level rise risk (Liévanos, 2020).

Much of the Delta is protected from flooding by levees. According to the Delta Adapts climate change vulnerability assessment, under current conditions, approximately 9,000 Delta residents are exposed to flooding by levee overtopping during an event with a one percent annual chance of occurrence (primarily in unincorporated San Joaquin County); 34% of those exposed live in areas identified as having “high” or “highest” social vulnerability to climate change (DSC, 2021b). Sea level rise and changes in hydrologic patterns are not expected to have a significant effect on residents’ flood risk exposure in the next decade, but as sea levels rise and high-flow events become more common, the likelihood of levee overtopping will increase. Without improvements, by 2050, the combined effect of sea level rise and changes in riverine inflows are projected to expose almost 66,000 Delta residents to flooding due to levee overtopping during an event with a one percent annual chance of occurrence. **The vast majority of exposed residents in 2050 would be in San Joaquin County, and 65% of exposed residents would live in areas identified as having “high” or “highest” social vulnerability to climate change** (DSC, 2021b).

Interviewees also discussed the intersection between disproportionate flood risk and the housing crisis, explaining that residents in high flood risk zones often are unable to relocate even if they would like to, due to unaffordability of housing:

“The housing crisis intersects with flood risk because there’s nowhere for people who live right next to levees to move.”

Interviewees also expressed concern regarding local land-use planning and zoning processes that allow low-income or affordable housing development in high flood-risk areas or fail to account for future sea level rise projections. This was described as an “impending” EJ disaster, as people who move into affordable housing developments in these high flood-risk areas then become more likely to face damages, clean-up costs, and/or experience displacement during future extreme events—impacts that low-income communities are less able to cope with because they have fewer resources (USEPA, 2021). Interviewees also noted the issue of homeless encampments being located near levees, raising significant safety concerns for these

highly vulnerable populations. Large encampments can also compromise the stability of levees and hinder emergency response operations on levees.

Interviewees also identified that communities with higher numbers of elderly residents, residents with physical disabilities, or residents without personal vehicles are more vulnerable to flood risks because of mobility constraints that make evacuation challenging during extreme events. Additionally, the USEPA (2021) states that individuals older than 65 are more likely to live in high-impact flood areas and are less likely to move, partly due to having greater ties to their community.

Finally, interviewees identified barriers to flood insurance as another element of flood risk issues. Flood insurance is expensive, often even unaffordable to low-income residents who live in high flood risk zones. Recent literature has shown that many communities in the Delta are unaware of their flood risk or do not know how to navigate the process of acquiring flood insurance (Fransen et al., 2008; Ludy & Kondolf, 2012); **in 2023, less than 20% of Delta residents reported having flood insurance** (Rudnick et al., 2023). Income levels affect how people perceive flood risks and their willingness and ability to evacuate in response to warnings (Bell et al., 2016). Linguistically isolated households may not be as aware of flood risks or receive timely warnings (Bell et al., 2016).

Water

Water is both a defining feature of the Delta landscape and culture and was named by a majority of interviewees (15 out of 22) as central to environmental injustice in the Delta. **Water issues included water supply, water quality, and water affordability challenges, with a focus on which communities have access to clean, reliable, and affordable water and which do not.** With regards to current water management systems, interviewees described the water rights priority system as not representative of all water users, politically corrupt, and responsible for the unequal distribution of water access and benefits. Interviewees are not alone in calling attention to challenges with the current water rights system. Following multiple recent severe droughts, academic researchers, non-governmental organizations, governmental research entities such as the Legislative Analyst's Office, and even state regulatory agencies have engaged in discussions acknowledging the challenges with the current water rights system allocating more water than is available on average water years and perpetuating the historic inequities that resulted in the present-day distribution of senior water rights (Grantham & Viers, 2014; Lee et al., 2022; LAO, 2009; SWRCB, 2021c). Participants in these forums have

called for modernizing and increasing transparency in water rights data collection and accounting, reforming water rights allocations to account for likely precipitation futures under changing climate regimes, and addressing other longstanding inequalities.

In the 2023 California Water Data Challenge, these conversations were pushed further by a research team's efforts to draw on publicly available datasets (e.g., SWRCB (2022) eWRIMS) to estimate representational injustices in the state's water system. While the uncertainty associated with the approach and dataset are not reported, the researchers' analysis suggests that water decision-makers at state (state agency executives), local (water agency directors), and individual (individual water rights holders) levels are not representative of California's overall population on the basis of race and gender demographics. For example, while approximately 35% of the state's population identified as white and not Hispanic or Latino on the 2020 Census, the research team reported 69% of state agency executives, an estimated over 80% of local water agency board directors, and an estimated over 90% of individual small water rights holders identified as white and not Hispanic or Latino (Fidell & Shipman, 2023), suggesting a large discrepancy in racial and ethnic representation with respect to water decision-making.

Beyond water rights and decision-making representation, several interviewees noted that when through-Delta freshwater flows are low, both in-Delta and south-of-Delta communities experience a wide range of water challenges, including drinking water contamination, water hardness, increased concentration of pollutants, decline in terrestrial and aquatic ecosystems and their ecosystem services, and HABs. Three interviewees specifically discussed their concerns that HABs are getting bigger, lasting longer, and affecting areas many people visit.

The Delta is experiencing more frequent and severe HAB events (Lehman et al., 2017), which can cause indirect deleterious effects by decreasing dissolved oxygen and creating fish kills as well as through direct effects of toxin production. The Center for Disease Control and Prevention lists the most common routes of exposure as skin contact through direct exposure to water (i.e., swimming) or ingesting contaminated water or food (the effects of breathing in HAB toxins is still emerging in Delta research; CDC, 2022b). HABs in the Delta are dominated by *Microcystis*, which produces toxins that are harmful to humans and animals, causing diarrhea, vomiting, and liver damage if ingested. Tissue lesions consistent with liver toxin exposure have

been documented in juvenile Striped Bass during *Microcystis* blooms (Lehman et al., 2010), indicating a potential human food exposure pathway.

Two interviewees discussed how drought further exacerbated these water supply and water quality concerns. There has been increasing scientific attention to drought impacts in the legal Delta, and recent research has documented reductions in overall water quality, increased salinity intrusion, increased occurrences of HABs, and widescale ecosystem decline (CCST, 2021; Interagency Ecological Program Drought MAST, 2022). Additional research has demonstrated Black and Latino communities across the Bay-Delta face disproportionately greater risk of surface water contamination across the board (Liévanos, 2016), suggesting that drought impacts too may fall more heavily on disadvantaged communities.

Another interviewee stated that, while creating impacts outside of the Delta, a reduction in water exported south of the Delta influences demand on groundwater pumping in the Central Valley, which has led to over-pumping, depletion of groundwater levels, well outages, and increased groundwater quality concerns in the Central Valley. These concerns are corroborated by recent research showing that the impact of drought and reduced surface water resources available to export via the SWP and CVP have resulted in groundwater depletion, leading to significant domestic and municipal well failures in the Central Valley (Bostic et al., 2023; Pauloo et al., 2020).

Additionally, multiple interviewees and community members who provided input at community events discussed concerns related to water conveyance in the Delta generally and the proposed Delta Conveyance Project specifically. Many interviewees and community members shared concern that the Delta Conveyance Project could negatively impact in-Delta water quality by reducing through-Delta flows. The shared concern and distrust of the project among interviewees is well-illustrated by one comment:

"[Current exports already] send water away from the Delta, while communities in the Delta...[have] water barely above acceptable standards for drinking."

Additional interviewees mentioned water quality issues independent of the proposed Delta Conveyance Project as well, pointing out how poor water quality conditions impact drinking water quality and recreational activities such as swimming and fishing and can cause toxicity to unhoused community members who may be bathing and

drinking directly from waterways. One major source of poor water quality exposure is from HABs. Although there are statewide established toxin action levels for different water uses (i.e., recreational, fish consumption, water intake by dogs or cattle; OEHHHA & CalEPA, 2012), these action levels are recommendations, and there is a lack of routine monitoring in areas, with a high risk of potential exposure. Routine HAB toxin monitoring has been implemented in Clifton Court Forebay and at the Banks Pumping Plant.

Regarding drinking water impacts, data from the Water Board's SAFER program dashboard confirms that a number of drinking water systems within the Delta are failing or at risk of failing Human Right to Water standards. **As of April 2024, within the legal Delta and Suisun Marsh, 11 drinking water systems serving 306,537 people were failing Human Right to Water standards, and 27 systems serving 96,705 people are at risk of failing these standards** (SWRCB, 2024) (**Figure 8**). Note that the population served by these systems likely includes some residents who live outside of the legal Delta and Suisun Marsh boundaries.

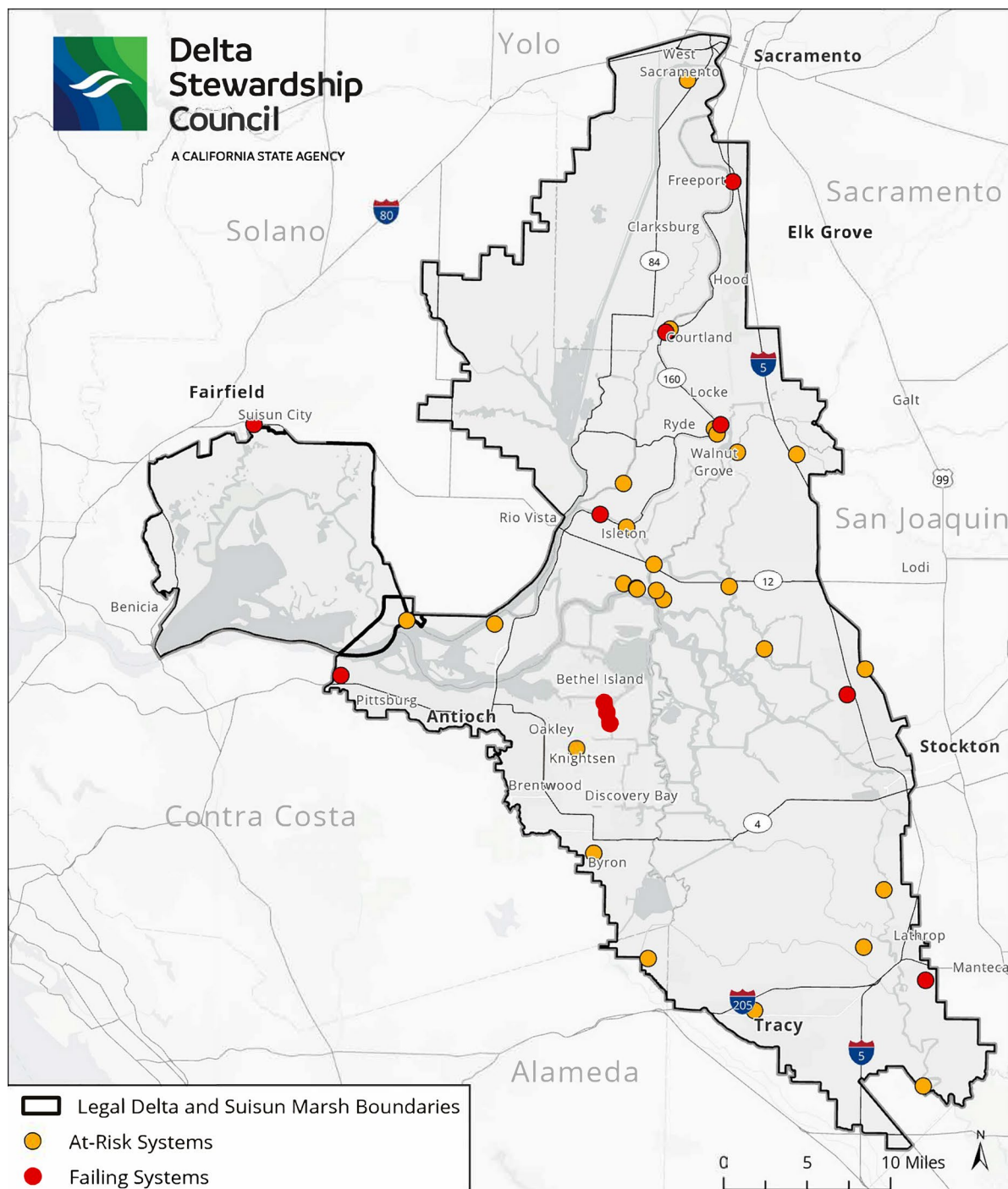


Figure 8: Water systems within the legal Delta and Suisun Marsh that are (as of April 26, 2024) failing (shown in red) and at-risk of failing (shown in orange) human right to water standards, as identified by the SAFER program dashboard. Data is from SWRCB, 2024.

In addition to these known out-of-compliance regulated water systems in the Delta and across the state, about two million residents statewide rely on unregulated water systems of unknown quality (Firestone & Dobbin, 2021). Additional research in California has demonstrated the inequitable distribution of water risks across race

and class. For example, **water systems serving communities with a higher percentage of Black and Hispanic/Latino populations have been found to have higher cumulative cancer risks** (Uche et al., 2021). In the San Joaquin Valley, water systems serving Disadvantaged or Disadvantaged Unincorporated Communities (DACs, DUCs) have greater rates of contamination and are more likely to be in violation of safe drinking water standards than water systems serving non-DAC communities (Balazs et al., 2012; London et al., 2018).

Interviewees also expressed that other communities highly impacted by poor water quality include tribes, whose members are exposed to contaminated water through cultural practices, and unhoused individuals who lack access to clean water for drinking, cooking, bathing, and sanitation.

Water affordability: Multiple interviewees identified water affordability concerns. One interviewee discussed water rates and rate structures in depth, sharing that many water ratepayers cannot afford their monthly water bill. According to this interviewee, water affordability issues are also exacerbated by current inflation and are difficult to address due to regulatory restrictions preventing water districts from establishing variable water rates for different customers. Several interviewees emphasized that small and disadvantaged communities, including some Delta legacy communities, often lack funds to address poor water quality concerns or secure access to a water system with adequate treatment. One interviewee noted that in Contra Costa County, underserved communities living on the shoreline and those relying on small water systems or wells (such as communities on Bethel Island) are particularly affected by water quality issues because they lack funds to adequately treat and supply their own water. Participants at community outreach events noted that many residents in Stockton lack adequate and reliable access to water and electricity, often because utility bills are too expensive.

Water affordability has gained increased attention as a water justice issue in California over the past few decades, as drinking water costs have continued to rise. The retail price of water has outpaced inflation in California over the last decade, and water rates are expected to rise across many community water systems in California (SWRCB & UCLA Luskin Center for Innovation, 2020). Although, at present, water may be considered affordable for median-income households, water bills in California are frequently unaffordable for people living in poverty and communities served by small water systems, as well as low-income households in larger water systems (Goddard et al., 2021). In its 2023 Drinking Water Needs Assessment, the State Water Board found

that only 39% of community water systems faced no affordability burden (SWRCB, 2023a). Statewide, as of February 2024, the SAFER program identifies 738 water systems with high water affordability risk, with 75 of those systems within the five Delta counties (Contra Costa, Sacramento, San Joaquin, Solano, and Yolo), including a number of systems within the legal Delta (SWRCB, 2024)³.

Another measure of affordability evaluates what percentage of households pay a relatively large proportion of their monthly income on an average residential water bill; **in the Delta counties, 21% of the population falls into high affordability risk according to monthly water bills (SWRCB, 2023d)**. When water bills are unaffordable, and service is shut off, there are health and economic costs. Shutoffs create concern for water-related illnesses such as skin and soft tissue diseases and can result in additional economic burdens to the state, as low-income families incur additional healthcare costs caused by water shutoffs (SWRCB & UCLA Luskin Center for Innovation, 2020).

Air quality, pollution exposure, and public health

Interviewees frequently mentioned air quality, pollution exposure, and public health as key EJ concerns for Delta communities. According to interviewees, low-income, minority, unhoused, and tribal communities, as well as renters, youth, and elderly people, bear disproportionate impacts of air, land, and water pollution. Interviewees cited concern for long-term respiratory health impacts, the stress of unknown long-

³ Water affordability risk was calculated using three indicators: *household socioeconomic burden* (a composite indicator using data on both poverty prevalence—defined as the percent of the population living below two times the federal poverty level—and housing burden (the percent of households in a census tract that are both low income (making less than 80% of the Housing and Urban Development (HUD) Area Median Family Income) and severely burdened by housing costs (paying greater than 50% of their income to housing costs)); *percent of median household income* (the annual system-wide average residential water bill for six hundred cubic feet per month relative to the annual Median Household Income within a water system’s service area); and *extreme water bill* (drinking water customer charges that meet or exceed 150% of statewide average drinking water customer charges at the six hundred cubic feet level of consumption) (SWRCB, 2023a).

term impacts of exposure to pollutants, as well as other health impacts from prolonged exposure to contamination and environmental hazards such as HABs.

Interviewees associated HABs with health concerns in surrounding communities, as well as worsening local air quality when cyanotoxins aerosolize. As of late 2023, research is currently underway studying the aerosolization of cyanobacteria and their toxins in the Delta (Thronson, 2022). Aerosolization from cyanotoxins has been extensively documented in saltwater bodies; however, aerosolization in freshwater systems needs to be further studied (Plaas & Paerl, 2020). A few studies and anecdotal evidence from human exposures have suggested that aerosolized HABs may be more toxic than previously understood. According to the Centers for Disease Control and Prevention, people can become ill through inhaling aerosols contaminated with cyanobacteria and may experience respiratory irritation such as wheezing, coughing, and sore throat, and aerosols may cause irritation to the eyes, nose, and skin (CDC, 2022a). With climate change, cyanobacteria have increased and are most strongly influenced by wind speed, direction and humid conditions (Plaas & Paerl, 2020).

Research has shown that air pollutants can adversely affect communities in other ways, even impacting the academic performance of children (Pastor et al., 2006). These impacts are compounded by the barriers many of these communities face in accessing public health services, public transportation, healthy food, and general services that contribute to a state of well-being.

Interviewees attributed disproportionate pollution exposure patterns to land use decisions and redlining practices that placed marginalized communities in closer proximity to industrial land uses, freeways and noise pollution, toxic waste, illegal dumping, and other pollutants of concern (see **Section 4** for more discussion of formerly redlined areas). For example, interviewees noted an area in South Sacramento (adjacent to the legal Delta) that is surrounded by three freeways and the executive airport, has high levels of poverty, and is home to large Latino and Asian populations. High pollution exposure, lack of air quality monitors, and lack of green spaces or buffers leave the communities in this corridor disproportionately burdened.

Similarly, interviewees noted that the underserved community of South Stockton faces some of the worst air quality in the Central Valley due to the concentration of freeways, industry, trucking routes, and the Port of Stockton on the south side of the city. South Stockton and parts of South Sacramento are among a number of communities throughout the state selected to be part of the California Air Resources

Board's Community Air Protection Program, which aims to reduce exposure in communities most impacted by air pollution (CARB, 2024). Interviewees explained that these areas are sometimes the only option available for low-income housing. Furthermore, as noted by interviewees, many people in these communities have few options other than to work outside or in industrial jobs that expose them to high rates of pollution. Moreover, other factors that affect health, including drug use, societal racism, poor mental health, and the COVID-19 pandemic, compound these environmental health impacts, demonstrating how the intersections of many aspects of living create high cumulative pollution burdens in specific communities. As an interviewee put it,

"Everything in EJ is intersectional – affordable housing, vulnerable communities, public health, air pollution, inequity."

In addition to the pollution and health concerns raised by interviewees, research in the last decade has also identified mercury as a toxin Delta residents are exposed to by consuming contaminated fish. Specifically, among the Delta's diverse ethnic communities, subsistence fishing is an important cultural and economic practice, and as such, anglers may be exposed to mercury in amounts well above what the U.S. EPA deems to be acceptable for public health (Shilling et al., 2010). While efforts such as the Delta Mercury Exposure Reduction Program (MERP) have helped raise awareness about the need to avoid consumption of mercury-contaminated fish, this is still an ongoing issue of concern (OEHHA & CalEPA, 2022a; Sacramento-San Joaquin Delta Conservancy, 2023).

Climate change is also expected to have an impact on air pollution, altering how particulate matter pollution affects vulnerable populations. For example, climate-driven changes in air pollution are predicted to lead to more premature deaths and increased childhood asthma rates (USEPA, 2021).

Housing and unhoused communities

Affordable housing and the health and safety of unhoused individuals (i.e., people experiencing homelessness) were another frequent concern among interviewees. Both interviewees and EJ Expert Group members explained that people who disproportionately suffer from issues related to housing and homelessness are often members of low-income communities, people of color, undocumented immigrants,

Native Americans, people with disabilities, LGBTQ+, and people transitioning out of foster care. This finding is supported by recent research in Sacramento County, for example, that reports that 58% of unsheltered adults indicated in 2022 that they have one or more disabling health conditions that prevent them from being employed and/or maintaining stable housing (Baiocchi et al., 2022). In addition to not having stable or safe housing, interviewees explained that these individuals are also likely to face health and safety concerns in shelters, lack access to sanitation resources, and have increased exposure to poor water quality, extreme heat, and climate change impacts. Furthermore, interviewees felt that local governments are not being proactive about the housing crisis. As one interviewee put it in reference to their county government:

"Be fully engaged with homeless issues in general, step up and provide leadership."

Interviewees identified several areas across and adjacent to the Delta with large, unhoused populations: the cities of Vallejo, Stockton, Sacramento, and Benicia, as well as more broadly across Contra Costa, Yolo, Solano, and Sacramento counties. Recent data corroborate interviewees' concerns for growing unhoused populations across the Delta. For example, in Sacramento County, an estimated 9,278 individuals experienced homelessness in 2022, which represents a 67% increase from 2019 (Baiocchi et al., 2022). Lack of shelter and sanitation resources, including bathrooms, places to bathe and wash hands, and trash services, create health and environmental hazards for unhoused people (Leibler et al., 2017). A survey conducted by the Sacramento Regional Coalition to End Homelessness (2018) showed that, at the time of the survey, fewer than 20% of Sacramento City parks had public restrooms, and of the parks that had restrooms, 21% were locked.

Interviewees expressed concern that unhoused people along the American River Parkway are often blamed for starting fires, which are used for warmth or cooking but also fuel nearby communities' concerns for air quality and safety. Interviewees explained that encampments near levees are located in immediate flood risk zones, raising significant safety concerns for these highly vulnerable populations. Large encampments can also compromise the stability of levees and hinder emergency response operations on levees.

In addition to homelessness, interviewees described the high cost of living and access to affordable housing as challenges across the region. These concerns are

substantiated by a growing body of recent research. For example, a poll conducted by Valley Vision, a public interest think tank serving the greater Sacramento area, found that low wages relative to the cost of living are one of the top five issues cited by residents in the Sacramento region (Avanceña et al., 2022). The poll reports a few staggering figures: a third or more of residents are struggling to afford what they need to live, 30% of residents cannot or can barely afford adequate food supply, 41% of residents cannot or can barely afford rent or mortgage or other bills, and 65% cannot afford to put money into a savings account. Recent data from the Delta Residents Survey found that **25% of Delta residents report household incomes of \$50,000 annually or lower and report affordability of basic needs (housing, food, utilities, transportation) to be a key challenge to their well-being living in the region** (Rudnick et al., 2023).

Food security and access

Interviewees identified lack of access to healthy and nutritious foods as issues of food security and food access. They identified three main drivers for these issues: inability to engage in subsistence activities, lack of transportation to access stores selling healthy foods, and concerns with the larger food system.

Interviewees explained that subsistence activities, including fishing, foraging, and gardening, are limited by barriers to access to gathering/harvesting areas and agency requirements to purchase licenses for subsistence activities. Sometimes, people also refrain from subsistence activities because they are concerned about dangerous contaminants in soils and waterways; a salient example is the concern for mercury-contaminated fish in the Delta. According to interviewees, subsistence fishers continue to face significant health risks because they often lack information about the dangers of consuming fish sourced from polluted waters.

Interviewees also discussed healthy foods as integral to the health and well-being of communities. By contrast, food insecurity and lack of access to healthy foods lead to health impacts and community decline. These concerns have been well-documented in recent research. In 2020, 9.1% of California's population experienced food insecurity, defined as the lack of access, at times, to enough food to support an active, healthy life. **Among Delta counties, San Joaquin County (12.1%), Sacramento County (11.7%), Yolo County (10.6%), and Solano County (9.4%) had a food insecurity rate higher than the statewide average**, while only Contra Costa County (8.5%) ranked below (Gundersen et al., 2022). Often, lower-income communities and communities of color cannot readily access healthy foods, so they instead rely on

more accessible unhealthy food sources (Hilmers et al., 2012). In the Delta-adjacent City of Sacramento, for example, food access disparities exist across neighborhoods: several areas, especially in North Sacramento, Arden Arcade, and South Area, are low-income neighborhoods in which more than 33 percent of residents live more than a mile away from the nearest large grocery store (City of Sacramento, 2020). Low-income residents in Sacramento have higher rates of food insecurity and are less likely to have access to community gardens or farmers' markets (City of Sacramento, 2020). In Stockton, 12 census tracts—predominantly located in South Stockton—are low-income tracts in which a significant portion of residents live more than a mile away from the nearest supermarket (USDA, 2019).

Finally, in reference to the larger food system, multiple interviewees expressed concerns that agricultural losses from water shortages would lead to food shortages and possible food contamination caused by the use of recycled water for irrigation.

Recreation and outdoor access

Significant research demonstrates that recreation and outdoor access, often described as “green space,” has many positive health, social and community, educational, and economic benefits for communities. For example, access to green space can regulate air and water pollution, increase physical activity, and promote economic stability (Jennings et al., 2016). Interviewees identified inequitable access to green space as a key concern, with minority and low-income urban communities being less likely to have access to green and open spaces for recreation. These communities then suffer the physical and mental health impacts associated with being unable to access green and open spaces or form a relationship with the land. Other research supports that areas without green space also have higher air temperatures and lower air quality, with associated health impacts.

Interviewees named South Sacramento, South Stockton, parts of Vallejo, Delta legacy communities, the Sycamore area in Antioch, and small towns in the western Delta as areas lacking access to green and outdoor spaces. Interviewees' concerns are further corroborated by the Healthy Communities Data and Indicators Project, which maps the percentage of the population residing within ½ mile of a park, beach, open space, or coastline for California cities, towns, and census-designated places (CDPs). **In the Delta, communities with a percentage of the population within ½ mile from a park, beach, open space, or coastline (i.e., easy accessibility) that is lower than the state average include many of the Delta communities: Clarksburg, Courtland, Walnut Grove, Rio Vista, Thornton, Isleton, Terminous, Lincoln**

Village, Country Club, French Camp, Discovery Bay, Byron, Knightsen, and Bethel Island (California Department of Public Health, 2017). Delta communities with the lowest population-weighted tree canopy coverage, compared to other Delta cities, towns, and CDPs, include Rio Vista, Thornton, Terminous, French Camp, Lathrop, Manteca, Mountain House, and much of the portion of Contra Costa County within the Delta: Discovery Bay, Knightsen, Bethel Island, Oakley, Brentwood, Antioch, and Pittsburg (Bodenreider et al., 2022).

One interviewee noted,

“Sacramento has always prided itself as the City of Trees, but that’s not for everyone. It’s not in all areas...This leads to more heat impacts in areas with less trees. We need to change the mindset of the City to expand the canopy into Latino neighborhoods as well.”

Furthermore, despite water dominating the Delta landscape and also being what people think about in terms of recreation in the region, two-thirds of Delta residents report recreating on land (Rudnick et al., 2023). Interviewees also noted that feelings of safety and belonging are also central to achieving equitable outdoor and green space access and that certain community members don’t feel welcome in some outdoor recreation areas.



Section 6: Conclusion

What began in 2019 as a response to a finding in the legislatively mandated five-year review of the Delta Plan has grown into a thought-provoking and humbling exploration for the Delta Stewardship Council staff and leadership on what it means to live and work in and around the Delta today. Now, with a greater understanding of the painful history of marginalization and racism in the Delta, the Council is uniquely positioned and committed to working to improve the situation.

Understanding the urgency of the situation, the Council did not want to wait until the completion of this paper to begin to address tribal and environmental justice issues. Since 2019, the Council has:

- Increased focus on collaborative science and social science integration, including funding a Delta Residents Survey aimed at better understanding Delta community needs,
- Begun to regularly include community-based organizations and tribes in planning events,
- Led workshops on issues related to equity,
- Hosted a public EJ webinar series featuring talks by EJ scholars,
- Increased community engagement and outreach by participating in community events,
- Hosted a listening session with Delta tribes to hear about their ties to the Delta, their sovereignty and relation to the state, and their perspectives surrounding Delta management,
- Developed partnerships with tribes toward incorporating Traditional Ecological Knowledge into decision-making and increasing engagement within the Council's activities,
- Included EJ-related scoring criteria and tribal engagement elements in the draft 2023-2024 Delta Research Proposal Solicitation Notice,
- Created a new unit and hired a program manager to focus on environmental justice and climate change, and
- Created a new position to support tribal consultations and coordinate justice, equity, diversity, and inclusion efforts.

Building from these efforts and the knowledge gained by the development of this issue paper, Council members and staff can build and grow its tribal and environmental justice work into the future.

Appendices

- A. Issue Paper Limitations
- B. Definitions
- C. Issue Paper Development Process
- D. All EJ issues identified and corresponding source(s), categorized by representational, procedural, and distributive justice issues
- E. Public Comment Review and Analysis Methods

Appendix A: Issue Paper Limitations

Council staff operated with a limited framework of EJ knowledge and on a restricted timeline. As such, the timeline for the project was shorter than some experts may recommend is necessary for relationship building, resulting in limited relationship development and trust building with tribal and EJ community organizations and individual community members. Additionally, this work occurred within a setting of historical disenfranchisement and broken trust through CALFED's failed EJ process (see Shilling et al., 2009). These historic tensions came up in Council staff's initial discussions with EJ community groups in June 2021.

Additionally, staff requested input from organizations that are perpetually strapped for resources. Despite paying EJ expert group members for their time, community-based organizations are nearly always limited in the resources and staff capacity available to engage in government processes. State and federal agencies are often competing for the same community organizations' time, which was the case for the CBOs on the Council's EJ Expert Group.

Several limitations underlie this analysis. Primary data collection focused on the areas within and adjacent to the legal Delta boundaries, which are arbitrary in the context of EJ issues. This work does not represent a comprehensive assessment of EJ in the context of how the Delta influences the entire state. For example, it does not address EJ issues in communities in Southern California and the Bay Area receiving Delta water, communities at the Delta headwaters, and communities in the Central Valley who may be affected by Delta water management decision-making.

The COVID-19 pandemic added an additional layer of hardship to EJ organizations' ability to participate in interviews conducted in this process. These are generally under-resourced and small-staffed organizations serving the communities that were disproportionately impacted by the pandemic. Despite postponing the interview research during two separate COVID spikes (winter 2021 and spring 2022) and conducting follow-up outreach, several organizations responded that they simply did not have time to participate despite their interest in the work. These organizations included groups that represent education, religious and faith-based, farmworkers, and LGBTQ+ communities.

The recommendations included in this paper focus on actions that are within the Council's authority and control. The Council's authority is created in statute, and there are several intersectional EJ issues that stretch beyond the Council's authority and scope. The complex governance system of the Delta includes many levels of

government (e.g., local, state, and federal) operating in the same geography, leading to differing and sometimes conflicting policy goals and priorities and varying expertise (Lubell et al., 2014). This presents an ongoing challenge (and opportunity) not unique to the Council for coordination and collaboration across agencies on EJ recommendations.

Additional challenges—well documented in EJ literature as common across government agency efforts to adopt EJ policies and plans—influenced the Council's process of developing recommendations from this paper. These included:

- Limited data on environmental injustices,
- The limits of analytical tools and approaches to reliably demonstrate a causal relationship between racism and oppression and the presence of environmental harms,
- Limited budget, resources, and timelines allocated to conduct EJ work,
- Agency staff and leadership having limited experience in truly implementing co-production processes with EJ communities, and
- Agency staff and leadership lacking formal training in this subject matter (Buford, 2017; Cole, 1999; Harrison, 2014; Konisky, 2015).

As many government agencies across federal, state, and local levels strive to adopt and integrate tribal and environmental justice principles into their work, all grapple with how to optimally prioritize and allocate limited resources to continue fulfilling ongoing requirements while also embracing the new ways of thinking, new data collection needs, and new approaches to analysis and decision-making that a true commitment to environmental justice demand. The Council is no different in this regard and views this issue paper as the beginning of a journey to understand and best address tribal and EJ issues as they relate to its mission and the management of the Delta.

Appendix B: Definitions

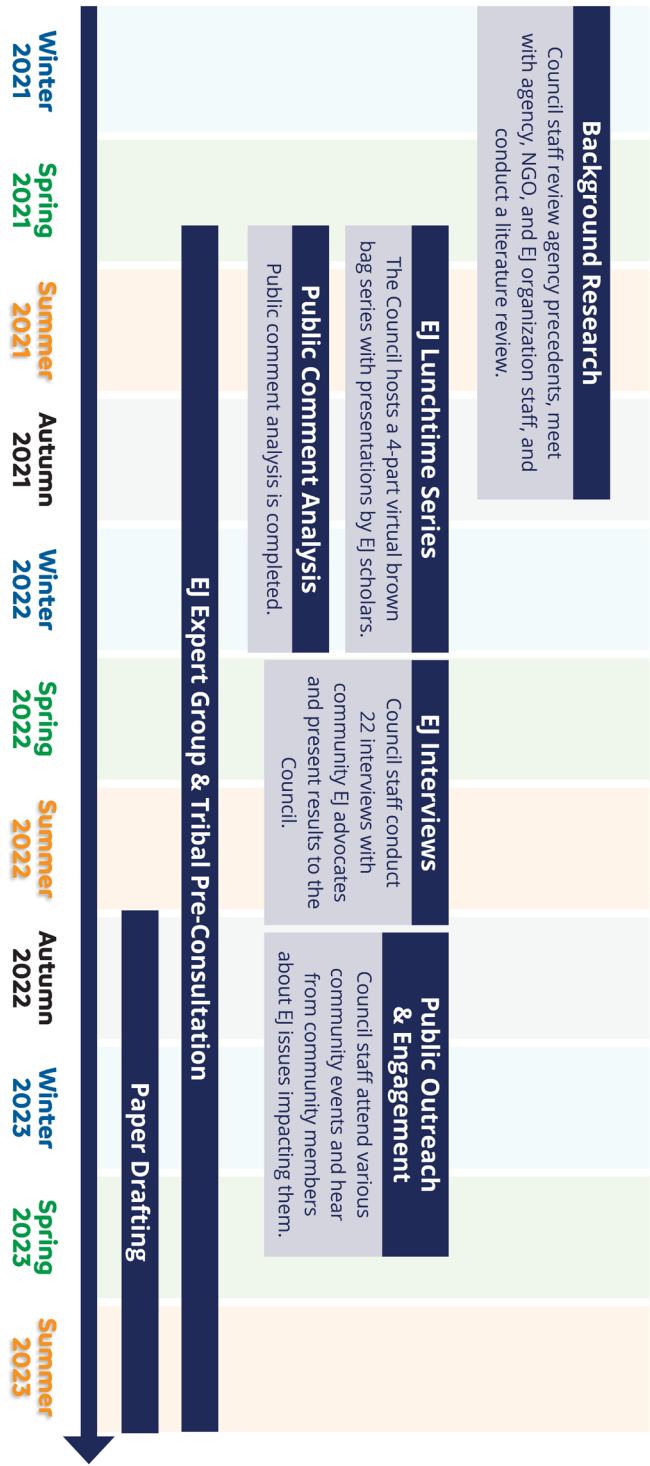
Table 1: Selected definitions related to environmental justice, equity, and environmental justice communities, including California State codified definitions

Term	Definition	Source
Environmental Justice	<p>The fair treatment and meaningful involvement of people of all races, cultures, incomes, and national origins, with respect to the development, adoption, implementation, and enforcement of environmental laws, regulations, and policies.</p> <p>(2) "Environmental justice" includes, but is not limited to, all of the following:</p> <p>(A) The availability of a healthy environment for all people.</p> <p>(B) The deterrence, reduction, and elimination of pollution burdens for populations and communities experiencing the adverse effects of that pollution, so that the effects of the pollution are not disproportionately borne by those populations and communities.</p> <p>(C) Governmental entities engaging and providing technical assistance to populations and communities most impacted by pollution to promote their meaningful participation in all phases of the environmental and land use decision-making process.</p> <p>(D) At a minimum, the meaningful consideration of recommendations from populations and communities most impacted by pollution into environmental and land use decisions.</p>	Gov. Code, § 65040.12, subd. (e); proposed regulatory definition of EJ in the Delta Plan Ecosystem Amendment.
Environmental Justice	<p>The fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation and enforcement of environmental laws, regulations, and policies. This goal will be achieved when everyone enjoys:</p> <ul style="list-style-type: none"> • The same degree of protection from environmental and health hazards, and • Equal access to the decision-making process to have a healthy environment in which to live, learn, and work. 	U.S. Environmental Protection Agency
Equity	Just and fair inclusion in society in which all can participate	Seigerman et al., 2022
Vulnerable communities	Women; racial or ethnic groups; low-income individuals and families; individuals who are incarcerated or have been incarcerated; individuals with disabilities; individuals with mental health conditions; children; youth and young adults; seniors; immigrants and refugees; individuals who are limited English proficient (LEP); and Lesbian, Gay,	Health & Saf. Code, § 131019.5

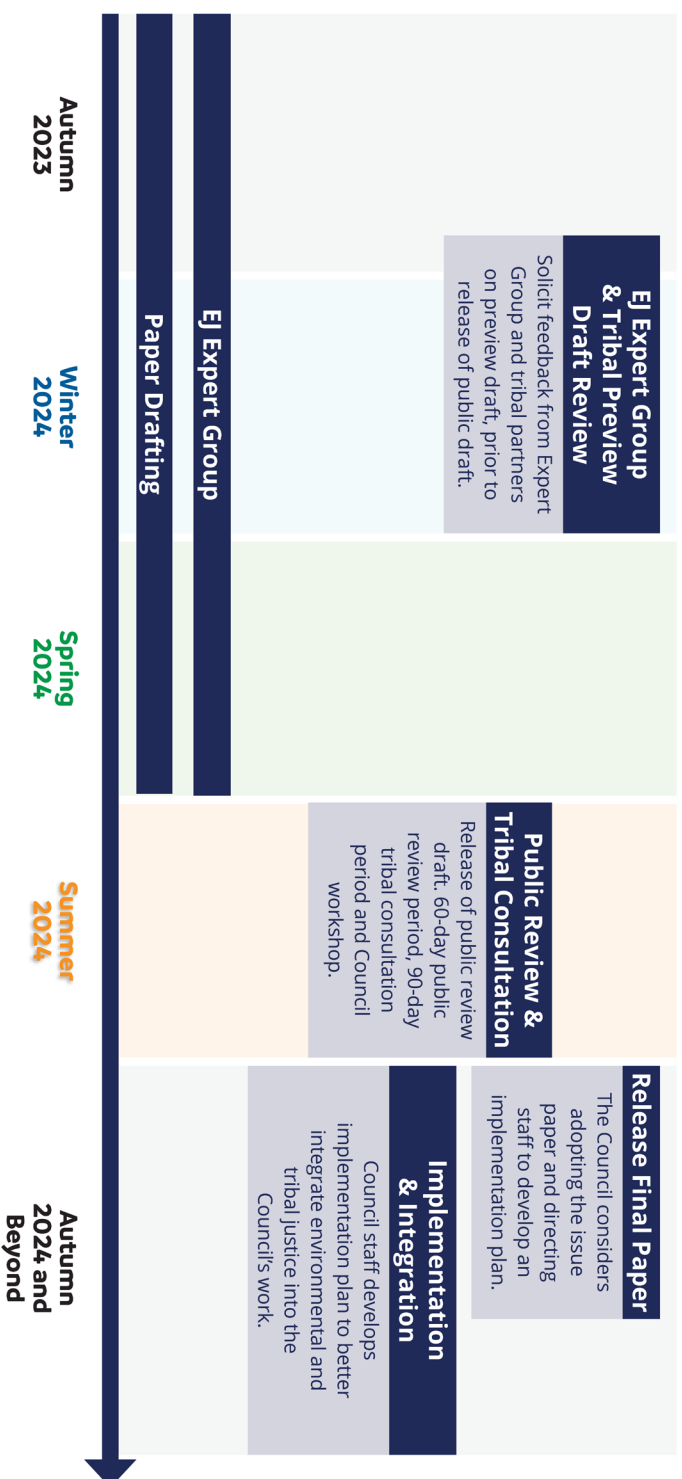
	Bisexual, Transgender, Queer, and Questioning (LGBTQQ) communities, or combinations of these populations	
Vulnerable places	Places or communities with inequities in the social, economic, educational, or physical environment or environmental health and that have insufficient resources or capacity to protect and promote the health and well-being of their residents	Health & Saf. Code, § 131019.5
Access and functional needs population	Individuals who have developmental or intellectual disabilities, physical disabilities, chronic conditions, injuries, limited English proficiency or who are non-English speaking, seniors, children, people living in institutionalized settings, or those who are low income, homeless, or transportation disadvantaged, including, but not limited to, those who are dependent on public transit or those who are pregnant	Gov. Code, § 8593.3, subd. (f)
Disadvantaged community	An area disproportionately affected by environmental pollution and other hazards that can lead to negative public health effects, exposure, or environmental degradation, or with concentrations of people who are of low income, high unemployment, low levels of homeownership, high rent burden, sensitive populations, or low levels of educational attainment. (These communities shall be identified based on geographic, socioeconomic, public health, and environmental hazard criteria, and may include, but are not limited to, the above criteria).	Health & Saf. Code, § 39711
Disadvantaged community	A community with a median household income of less than 80 percent of the statewide average	Wat. Code, § 79505.5; Cal. Health & Saf. Code, § 116275, subd. (aa)
Severely disadvantaged community	A community with a median household income of less than 60 percent of the statewide average	Health & Saf. Code, § 116760.20
Disadvantaged unincorporated community	Unincorporated inhabited territory, within which there reside 12 or more registered voters, that constitutes all or a portion of a “disadvantaged community,” meaning a community with an annual median household income that is less than 80 percent of the statewide annual median household income	Gov. Code, § 56033.5

Appendix C: Issue Paper Development Process

EJ Issue Paper Development Timeline



EJ Issue Paper Development Timeline, Continued



Background research

To inform the issue paper scope and EJ Expert Group design, Council staff began background research in early 2021, which included reviewing precedents from other state and local agencies and meeting with agency staff, community-based organizations and EJ groups, and environmental NGOs to discuss their experiences and advice in addressing EJ. Staff reviewed precedents from and/or met with the following agencies:

- California Air Resources Board
- San Francisco Bay Conservation and Development Commission
- CalEPA
- California Coastal Commission
- Sacramento-San Joaquin Delta Conservancy
- Local agency general plan EJ elements (Contra Costa County, Sacramento County, City of Pittsburg)
- Governor's Office of Planning and Research
- California State Coastal Conservancy
- San Francisco Bay Restoration Authority
- State Lands Commission
- State Water Resources Control Board.

As part of the background research, Council staff also reviewed a comprehensive list of EJ literature.

EJ Expert Group

Recruitment process: The selection of the EJ Expert Group members happened over a series of months, beginning with initial outreach to more than 60 community-based organizations and 100 tribes or tribal-serving organizations in the spring of 2021. Experts were invited to participate in a kickoff meeting in June 2021, which approximately 20 experts attended, representing expertise in social justice, Indigenous perspectives, people experiencing homelessness, subsistence fishing, and other areas related to EJ and Delta management. During that meeting, staff received constructive input from participants on the best approach to use for forming and working with the EJ Expert Group. Since June 2021, four organizations participated in the staff-led EJ Expert Group and had the opportunity to meet with Council staff approximately monthly from November 2021 to Spring 2024.

Members

- **Gloria Alonso Cruz** is the Environmental Justice Advocacy Coordinator for Little Manila Rising, a health equity nonprofit in Stockton that works with partners to address the most urgent public health risks in South Stockton while also working to preserve the legacy of marginalized communities in Stockton.
- **Barbara Barrigan-Parrilla** is the Executive Director of Restore the Delta, a nonprofit in Stockton that works to empower community members to have a direct impact on water management decisions in the Delta through public education and outreach.
- **Bob Erlenbusch** is the Executive Director of the Sacramento Regional Coalition to End Homeless, a nonprofit in Sacramento that works to end homelessness in the Sacramento region through policy analysis, community education, civic engagement, and advocacy. Bob has worked as an advocate on homelessness and housing issues at the local, state, and national levels for 38 years. He is an adjunct professor in the Division of Social Work at the California State University of Sacramento.
- **Matt Holmes** was formerly the Environmental Justice Director for Little Manila Rising. Matt was formerly Little Manila Rising's representative on the EJ Expert Group; Gloria Alonso Cruz and Jasmine Peterson replaced Matt as the representatives in May 2023.
- **Sara Medina** is the Sustainable Agriculture and Land Manager for Restore the Delta.
- **Sherri Norris** is the Executive Director of California Indian Environmental Alliance, a statewide nonprofit that works to empower California Indian communities in environmental health, land advocacy, and youth empowerment.
- **Jasmine Peterson** is the Environmental Justice Internal Director for Little Manila Rising.

Role

The EJ Expert Group was formed to help develop a range of options to address EJ concerns through a transparent, inclusive process reflecting community values and priorities. The role of the EJ Expert group is to:

- Provide expert knowledge, guidance, and recommendations regarding EJ considerations in the Delta to Council members and staff;
- Bring community insights and perspectives to the agency EJ discussions and

- Build a strong relationship with Council staff, fellow EJ Expert Group representatives, and other community groups and leaders.

The EJ Expert Group is comprised of representatives from four community-based organizations that work in areas including, but not limited to, community advocacy, building partnerships, tribal concerns, social and environmental sciences, and topics relevant to the Delta, such as water supply and quality, ecosystem restoration, flood risk reduction, and cultural, recreational, agricultural, and natural resource values. Through the EJ Expert Group, these groups were able to develop closer relationships and understandings of each other's work as relevant to the Delta. The group provided input on the main components of the issue paper, including public participation, the design of the interview guide, outreach to interviewees, and interview data analysis. Additionally, the EJ Expert Group provided input on several areas of the Council's work that pertain to EJ, including *Delta Adapts*, the Delta Plan and the Council's Covered Action Process, several components of the Delta Science Program, the current 2020 Public Participation Plan, and the development of other Council initiatives including the Science for Communities Initiative, and the Delta Residents Survey. The EJ Expert Group also led discussions on topics including housing and the unhoused and tribal sovereignty. The EJ Expert Group reviewed and provided input on draft versions of this issue paper and informed the development of the issue paper recommendations.

EJ webinar series

From September to December 2021, the Council hosted four virtual lunchtime webinars featuring EJ scholars. These webinars were open to the public and explored topics covering water justice, Indigenous justice, climate justice, and environmental regulatory agencies' environmental justice reforms. The four webinars included:

- [Water Justice](#): Linking local, regional, and state responses for implementing the Human Right to Water. With Laurel Firestone, SWRCB board member, and Dr. Kristin Dobbin, formerly a post-doctoral scholar at UCLA and currently an Assistant Professor of Cooperative Extension at UC Berkeley.
- [Environmental Regulatory Agencies' Environmental Justice Reforms](#): Progress, Challenges, and Recommendations. With Dr. Jill Lindsey Harrison, Associate Professor at the University of Colorado, Boulder.
- [Indigenous Peoples and Environmental Justice](#): with Dr. Kyle Whyte, Professor of Environmental Sustainability at the University of Michigan.

- [Climate Justice](#): Racialized disparities related to sea level rise, flooding, and foreclosure risk in Stockton. With Dr. Raoul Liévanos, Associate Professor at the University of Oregon.

Public comments analysis

Council staff collected and analyzed public comments received by the Council from 2011 - 2021 to identify EJ issues that have been brought to the Council's attention across a variety of projects. The list of issues identified in past comments was used to inform the discussion of tribal and EJ issues in the issue paper and as a prompt in the EJ interviews. Appendix E includes more information about the public comment analysis.

EJ interviews

Council staff partnered with California Sea Grant (CASG) to conduct qualitative interview-based research with EJ organizations and advocates working across the Bay-Delta to serve as a primary data source informing the issue paper development. Between January and May 2022, the CASG and Council EJ research team conducted 22 interviews with a wide range of organizations and individuals working on the ground and in the communities most impacted by social and environmental issues in the Delta. The interviews aimed to build a better understanding of EJ issues from the perspective of EJ communities and advocates to educate Council members, Council staff, and those external to the Council but working in the Delta of the most pressing EJ challenges in the region. For more information on the EJ interviews and interview results, see the *Summary of Delta Environmental Justice Interviews: Report on Methods and Findings* (DSC, 2022b).

Community engagement

Throughout Fall 2022, Council staff participated in four community events, sharing the scope of the EJ issue paper and EJ interview results. Staff participation at these events was intended to raise awareness of the Council's EJ work in Delta communities and to receive additional input from community members on EJ issues that affect them and what they would like to see local and/or state governments prioritize to improve their communities.

Community outreach included:

- Delta Stewardship Council's Science for Communities workshop, *October 6th, 2022*, Oakley, CA
- Restore the Delta's Where the Future Flows: Next Generation Visioning for the Delta, *October 14th, 2022*, virtual symposium
- Filipino American History Month (FAHM) Fest Stockton, *October 22nd, 2022*, Stockton, CA
- Delta Protection Commission's Delta Heritage Forum, *November 3rd, 2022*, Walnut Grove, CA

Community outreach elements

- Presentation: Three of the four community workshops (all except FAHM Fest Stockton) included a short overview presentation by Council EJ team staff, covering an overview of the EJ issue paper process and key issues identified in the 22 EJ community interviews.
- Virtual interactive Mural board activity: At two of the four events (Science for Communities and Where the Future Flows Symposium), Council staff conducted interactive, virtual Mural board discussion activities in which virtual participants answered questions about EJ issues that impact their community and their thoughts on solutions to these issues.
- In-person tabling: EJ team staff tabled at two of these community events (Science for Communities and FAHMfest Stockton). This included displaying an overview poster about the EJ issue paper that included key issues identified so far from the EJ community interviews and a set of question prompts for community members asking about EJ issues that impact them and their community and what they would like governments to prioritize to improve in their communities. Additional handouts were displayed, providing information about voter registration and how to contact local representatives. Tabling at these events provided Council staff an opportunity to talk with community members about who the Council is, what we do, our EJ work, and what EJ issues community members are most concerned about and would like to see prioritized by government agencies.
- Raffle: At two of the events—Where the Future Flows: Next Generation Visioning for the Delta and FAHMfest Stockton—participants were entered into a raffle for a chance to win a \$25 gift card (sponsored by CA Sea Grant) for answering questions. The raffle provided a good incentive that encouraged more people to participate in the activity.

Key takeaways on EJ Issues and associated needs brought up across the workshops:

- Most of the issues identified by workshop attendees were consistent with the issues identified in the EJ community interviews and from other sources staff have reviewed as part of EJ Issue Paper development (public comments, literature review, EJ Expert Group, etc). For example, issues related to water quality and HABs were brought up multiple times across these workshops, including the need to increase public awareness about HABs and the need for more research on HABs and impacts on people, including research to better understand HABs impacts to air quality and on water quality – air quality nexuses more generally. Attendees noted concern over other issues related to water quality, such as salinity intrusion, aquatic invasive species, and DO levels, and the negative impacts of poor water quality on drinking water and recreation.
- Workshop attendees at the Science for Communities event emphasized the need for agency and academic researchers and staff to better understand how EJ issues impact their work and the need for required DEI and tribal cultural competency trainings for agency and academic staff. Science for Communities attendees also emphasized the need for more connections between local government and state regulatory agency scientists (building on the Science for Communities workshop) so that state scientists can better support local community needs and that researchers and scientists need to be more involved in decision-making to address the current disconnect between science that is conducted and how it is used.
- Other issues identified, also generally consistent with the EJ issues previously identified, included the issue of unhoused communities being highly vulnerable to the recent heat waves and living along waterways; the importance of improving the accessibility of Delta waterways for individuals with disabilities; the need for more modernized and efficient water management technologies and policies to reduce reliance on the Delta and improve regional water resilience; and the need for better flood management actions, particularly along the San Joaquin River to better protect the cities of Stockton, Manteca, and Lathrop, such as through a Paradise Cut flood bypass.
- Other issues brought up included the importance of farming in the Delta, but that overregulating farms will eliminate them; and that no Delta tunnel should be built.

Paper Drafting

To identify tribal and EJ issues relevant to the Delta and the Council, Council staff reviewed and synthesized information from the public comments analysis, literature review, EJ interviews, EJ Expert Group meetings, public outreach, tribal pre-consultations, and the Council's April 2023 tribal listening session. To develop the recommendations, staff drafted initial draft recommendations building off of the above sources. Staff then discussed and iteratively revised the recommendations based on Council executive and legal staff input and EJ Expert Group input.

Appendix D: All Issues Identified and Corresponding Source(s), Categorized by Representational, Procedural, and Distributive Justice Issues

Representational Justice Issues	Source(s)
Delta boundaries	Interviews, literature review, tribal pre-consultations, tribal listening session
Delta communities	Interviews, literature review, public comments
Disadvantaged communities (including low-income)	Interviews, literature review, public comments
District boundaries	Interviews
EJ communities	Interviews, literature review, public comments, EJ Expert Group
Farmworker communities	Interviews
Immigrant & undocumented communities	Interviews, literature review
Latino communities	Interviews, literature review
People experiencing homelessness	Interviews, literature review, EJ Expert Group, community outreach
People with disabilities	Interviews, community outreach
Terminology	Literature review, public comments
Tribal knowledge recognition & legitimization	Interviews, literature review, EJ Expert Group, tribal pre-consultations, tribal listening session
Tribal resource management strategies	Interviews, literature review, EJ Expert Group
Tribal sovereignty	Interviews, literature review, public comments, EJ Expert Group, tribal pre-consultations, tribal listening session
Unincorporated communities	Literature review, public comments
Vocabulary	Interviews
Vulnerable communities (youth, elderly)	Interviews, literature review, public comments, EJ Expert Group
Procedural Justice Issues	Source(s)
Centering residents/community members' voices	Interviews
Fund tribal input	Tribal pre-consultations
Historical context of EJ	Interviews
Language access (including ASL and materials in alternate formats)	Interviews, public comments
Meaningful involvement	Interviews, literature review, public comments, EJ Expert Group, tribal pre-consultations, tribal listening session, community outreach
Meeting access (time, location, compensation)	Interviews

Meeting support (technological accessibility)	Interviews, literature review, public comments
Prioritizing people over profit	Interviews
Racial equity & justice	Interviews
Racism	Interviews
Regulatory Enforcement	Interviews, literature review, public comments
Reparations	Interviews
Transparency	Interviews, literature review, public comments, EJ Expert Group
Distributive Justice Issues	Source(s)
Access and affordability of basic services	Interviews
Access to climate-controlled environment (heat, AC, air quality)	Interviews
Access to traditional lands and tribal resources	Interviews, literature review, recent lawsuits, tribal pre-consultations
Air quality/ air pollution	Interviews, literature review, community outreach
Carbon capture and storage	Interviews
Climate change impacts (extreme events)	Interviews, literature review, public comments, community outreach, Delta Adapts Equity Technical Memorandum
Cultural resources	Interview, public comments
Dredging	Interviews
Drinking water supply and quality	Interviews, literature review, public comments, community outreach
Drought	Interviews, literature review, public comments, recent lawsuits
Education	Interviews
Feelings of safety and belonging	Interview, public comments
Flood risk (flood insurance, development in flood plains)	Interviews, literature review, public comments, community outreach
Food access (local and sustainable, food security)	Interviews, literature review, public comments
Groundwater supply and quality	Interviews, literature review, public comments
Harmful algal blooms	Interviews, literature review, public comments, community outreach
Housing access	Interviews, literature review, public comments
Human right to sanitation	Interviews, literature review, public comments
Human right to water	Interviews, literature review, public comments, community outreach
Job access (workforce & career development)	Interviews, literature review, public comments
Levee investments	Interviews, literature review, public comments
Pollution (water, air, toxics)	Interviews, literature review, tribal pre-consultations

Poverty	Interviews
Public health	Public comments, interviews, literature review
Recreation (outdoor, greenspace) access	Public comments, interviews, literature review
Relationship to land and water	Interviews, literature review, tribal pre-consultations
Subsidence	Interviews
Subsistence fishing (and gardening)	Interviews, literature review, public comments
Surface water quality	Interviews, literature review, public comments, tribal pre-consultations, community outreach
Technology access: highspeed internet	Interviews
Transportation	Interviews
Tribal cultural resources	Interviews, literature review, public comments, tribal pre-consultations, tribal listening session
Urban development	Interviews, literature review, public comments
Urban heat island effect	Interviews, community outreach
Voluntary agreements	Interviews
Water affordability	Interviews, literature review, public comments
Waterfront access	Interviews, public comments
Wildlife	Interviews

Appendix E: Public Comments Analysis



TECHNICAL MEMORANDUM

Date: November 4, 2021

To: Environmental Justice Expert Group Representatives

From: Sarah Hayroyan, California Sea Grant State Fellow; Jennica Moffat, California Sea Grant State Fellow

Subject: Review of Environmental Justice Comments – Preliminary Results

Purpose

As part of the effort to develop an Environmental Justice Issue Paper, Council staff collected and analyzed public comments received by the Council over the past ten years (2011-present) to identify environmental justice issues that have been brought to the Council's attention across a variety of projects. The list of issues identified in past comments will be used to inform the breadth of the Issue Paper and as a prompt in future interviews with community-based and environmental justice organizations. The interviews are planned to collect further information about the environmental justice issues associated with Delta management.

Summary of Preliminary Results

A total of 368 comments were reviewed: 278 comment letters, and 90 oral comments made at Council meetings. Comment letters were associated with specific Council projects, while oral comments covered more varied topics including Council projects, presentations by other agencies and organizations to the Council, specific covered actions, and other concerns. Of the 368 total comments reviewed, 53 raised issues related to environmental justice. A list of issues raised is provided in **Table 1**.

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Table 1. Environmental Justice Issues Identified in Past Comments

Representational Justice	Procedural Justice	Distributive Justice
Delta communities Environmental justice communities Disadvantaged communities (DACs) Vulnerable communities Tribal sovereignty Terminology	Meaningful involvement Language access Meeting support Transparency	Climate change impacts Cultural resources Drinking water supply Flood risk Food access Harmful algal blooms Human right to water Job access Levee investments Public health Subsistence fishing Tribal cultural resources Urban development Water affordability Water quality

Methods

Council staff compiled comment letters associated with formal public comment periods on the following projects: the 2013 Delta Plan, amendments to the Delta Plan (including completed amendments to Performance Measures and Chapter 3 (Conveyance, Storage, and Operations of Both), in-progress amendments to Chapter 7 (Delta Levees Investment Strategy), and proposed amendments to Chapter 4 (Ecosystem Amendment)), Delta Adapts, and the Council's Public Participation Plan. Delta Stewardship Council meeting summaries since 2011 were also compiled for review.¹

Staff read each letter and meeting summary to determine if they contained environmental justice-related comments. Comments that used phrases such as "environmental justice," "equity," "disadvantaged communities," "disproportionate impacts," or "human right to water" were entered into the dataset and coded as

¹ Compiled comments represent only a subset of all comments submitted to the Council since 2011. Among other topics, this dataset omits written comments on Delta Science Program plans and projects, comments to the Delta Independent Science Board (ISB), comments submitted in response to appeals of covered actions, and informal comments shared at workshops or stakeholder listening sessions.

explicit environmental justice comments. However, staff also looked for themes related more generally to fairness, distribution of environmental benefits and harms, cost burden, and access to information and decision-making, and coded these comments as potentially related to environmental justice. If a particular letter raised multiple distinct points related to environmental justice, these were logged separately in the data set.

Points determined to be clearly or potentially EJ-related were then coded with a primary and secondary category. Under the primary categorization, each point was coded for the tenet (or principle) of environmental justice evoked by the comment:

- **“Representational justice”** if the point related to the representation of impacted communities in Council work products or in the decision-making process;
- **“Procedural justice”** if the point discussed the need for planning processes and decision-making to be fair, transparent, and accessible for impacted communities to participate; or
- **“Distributational justice”** if the point discussed the equitable distribution of environmental benefits and impacts so that no one community bears a disproportionate burden.

Each point was then coded with a secondary category based on the specific issue discussed. Issues identified in Shilling et al. (2009), issues raised in the Council’s 2019 Five-Year Review of the Delta Plan, and issues identified through the Delta Adapts public engagement process were used as an initial list for secondary coding.² As points were reviewed and new issues were identified, these were added to the coding list.

The coding team met five times during data development to review, discuss, and standardize the issue codes being used to improve consistent interpretation of points across different staff. Once coding was completed, the team met for a final quality control check. Comments labeled as potentially related to

² Shilling et al. (2009) Marginalization by collaboration: Environmental justice as a third party in and beyond CALFED. *Environmental Science & Policy* (12): 694–709; Delta Stewardship Council. (2019). *Five-Year Review of the Delta Plan*. Endorsed by the Council on October 24, 2019. Available at: <https://deltacouncil.ca.gov/pdf/council-meeting/meeting-materials/2019-10-24-item-10-attachment-1.pdf>; Delta Stewardship Council. (2021). Delta Adapts Vulnerability Assessment, Appendices, and Technical Memoranda, available at: <https://deltacouncil.ca.gov/delta-plan/climate-change>

environmental justice were re-reviewed and re-assigned as either clear environmental justice points or not EJ points³. Staff then analyzed the data set to determine the prevalence of different issues.

Results

A total of 368 comments were reviewed, comprised of 278 comment letters, and 90 oral comments made at Council meetings. The comments reviewed were submitted by 175 unique organizations and 70 unique unaffiliated individuals. The organizations with the greatest number of comments in the dataset were California Water Research (n = 26), followed by Local Agencies of the North Delta (n = 18) and MBK Engineers (n=10).

Most letters and meeting summaries reviewed did not contain environmental justice related points. Of the total comments reviewed, 53 raised issues related to environmental justice. These 53 comments were submitted by 34 unique organizations (including three tribal governments, three municipalities, two state agencies, and six water agencies) and 13 unaffiliated individuals. The organizations with the greatest number of comments containing environmental justice points were Restore the Delta (n = 4) and California Water Research (n = 4), followed by Local Agencies of the North Delta (n = 3).

From these 53 comment letters and oral comments, 123 individual points related to environmental justice were identified and analyzed. Environmental justice points were identified for every Council project for which comment letters were included in the dataset. Points identified from oral comments covered these same Council projects as well as other topics, including Delta Conveyance, the use of social science in Delta management, and the Council's public comment process.

³ The greatest area of disagreement among coders was whether issues of fairness or distribution of water rights and water supplies should be coded as environmental justice issues. The vast majority of such comments pertained to fairness among municipalities, public agencies, or regions of the state. Ultimately, the coding team decided to exclude comments generally discussing fairness and distribution when no specific impacted populations or communities were identified. Comments that were re-assigned as clear environmental justice comments mentioned impacts to environmental justice communities, disadvantaged communities, vulnerable communities, or other specific impacted communities.

Environmental Justice Issues

When analyzing the 123 individual points for the tenet of EJ evoked, ~55% of points discussed distributional justice issues, 27% discussed procedural justice issues, and 18% representational justice.

Secondary categorization allows us to identify the issues of highest interest to stakeholders with greater specificity.

Representational Justice

Within representation-focused points (n = 22), references to socially vulnerable communities were most frequent (n = 8), followed by references to environmental justice communities (n = 5), Delta communities (n = 3), and disadvantaged communities (DACs) (n = 3) (**Figure 1**). Points regarding socially vulnerable communities corresponded to the terminology used in the Delta Adapts Vulnerability Assessment and ranged from the need to identify communities that are socially vulnerable to drought, identify socially vulnerable communities in urban areas that receive Delta exports, and identify the vulnerabilities of small, unincorporated communities.

Some points regarding environmental justice communities described specific populations, towns, or cities in the Delta that the commenter attested should be considered environmental justice communities. For example, one commenter identified Delta cities with high populations of Spanish-language speakers and communities of color as being environmental justice communities. Another pointed to the Distressed Communities Index and the UC Davis Regional Opportunity Index as tools to identify the location of environmental justice communities. Other points regarding environmental justice communities used the term without defining it.

Points regarding DACs were more focused on water affordability, likely because DAC terminology is associated with earmarks to fund water infrastructure in low-income communities. DACs were referenced in the Delta watershed and in communities that receive Delta exports. Delta communities were also mentioned in points related to the inclusion of low-income communities of color, as well as those who live and work in the Delta, respectively. One point related to the choice of terminology to refer to groups of people, given the various terminology identified in environmental justice-related comments. The Issue Paper should

address whether and how different terms relate to different populations and communities.

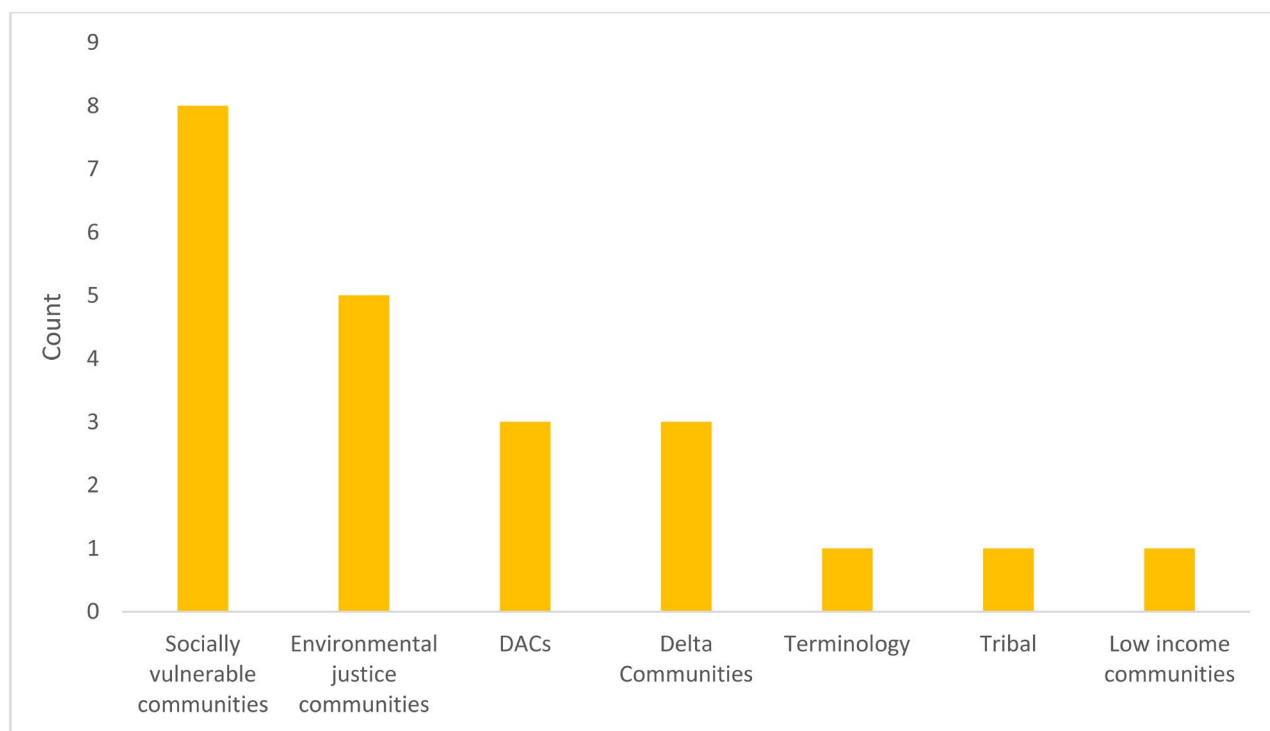


Figure 1. Representation-focused issues identified (n=22).

Procedural Justice

Within process-focused points (n = 33), the issue of greatest prevalence was meaningful involvement (n = 24), followed by meeting support (n = 6), language access (n = 2), and transparency (**Figure 2**). Points related to meaningful involvement brought up concerns such as facilitating communication and collaboration across all stakeholders, communicating how feedback was incorporated into Council plans and decisions, early notification of plans and projects, and enhanced community input in projects and initiatives. Points regarding meeting support addressed the need to host meetings within the Delta to support accessibility, and considering the timing of these meetings to support the variety of schedules and commitments across stakeholders.

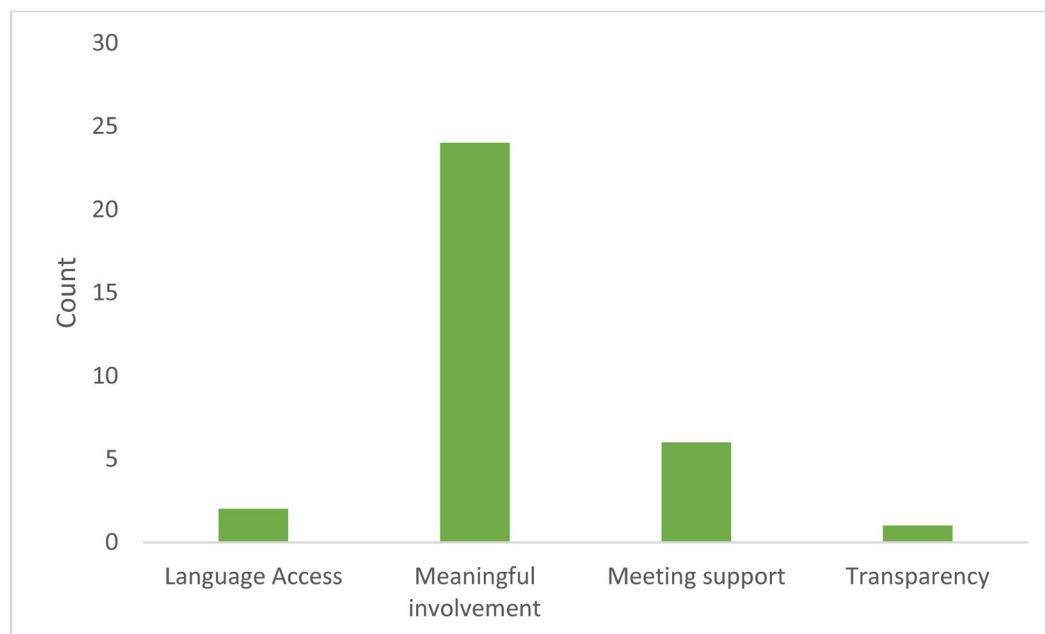


Figure 2. Process-focused issues identified (n=33).

Distribution

Within distribution-focused points (n = 68), the issues raised most frequently were levee investments (n = 11), climate change (n = 8), drinking water supply and water affordability (n = 7 each); cultural resources and public health (n = 6 each); and flood risk, tribal cultural resources, and subsistence fishing (n = 4 each). Other issues raised included job access, water quality, human right to water, urban development, food access, and harmful algal blooms (**Figure 3**).

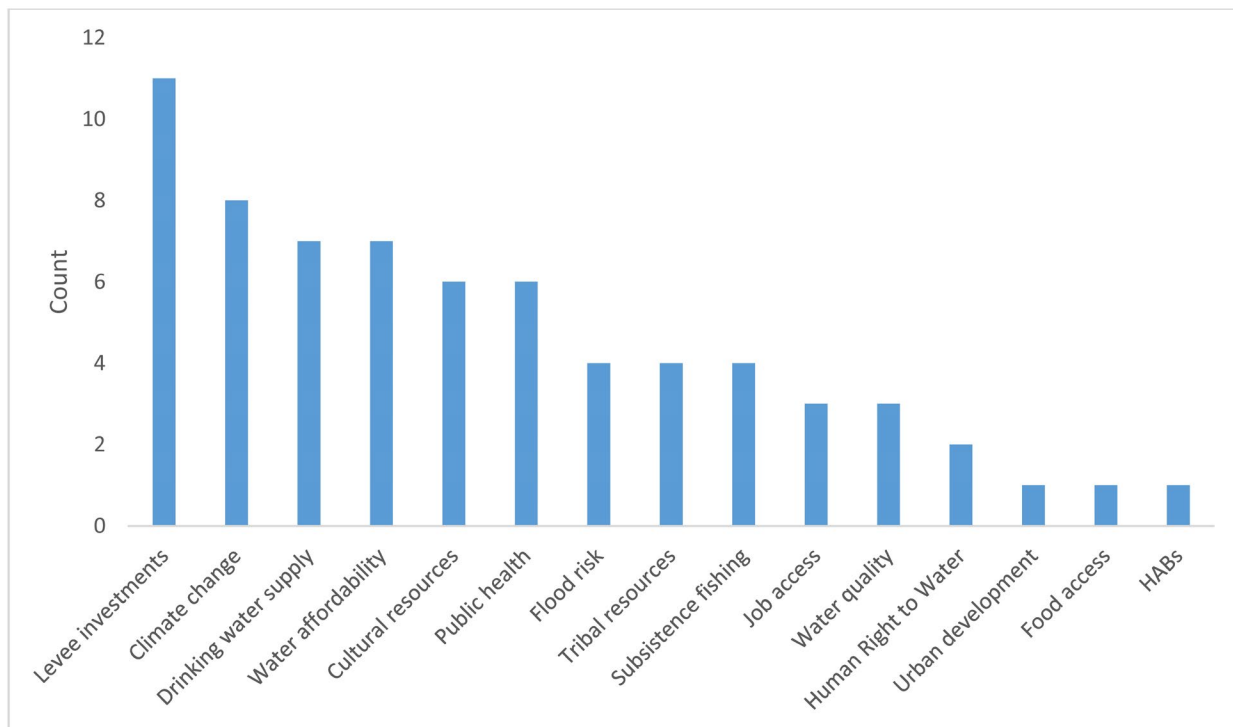


Figure 3. Distribution-focused issues identified (n=50).

Many of the environmental justice comments that made points about the distribution of environmental benefits and harms included secondary points about other issues and concerns. These were tracked separately in the dataset. Secondary points included concerns about impacts to recreational access, particularly boating in the Delta; impacts related to Delta Conveyance, ranging from noise to socioeconomic impacts; concerns about the public health effects of specific contaminants like mercury and selenium; and concerns about small community water systems and groundwater-dependent communities.

Discussion

As previously noted, the comment letters that were reviewed for this analysis were received during formal public comment periods on the following projects: the 2013 Delta Plan, amendments to the Delta Plan (including completed amendments to Performance Measures and Chapter 3 (Conveyance, Storage and Operations of Both), in-progress amendments to Chapter 7 (Delta Levees Investment Strategy),

and proposed amendments to Chapter 4 (Ecosystem Amendment)), Delta Adapts, and the Council's Public Participation Plan. Comments were therefore focused on topics and concerns related to the projects at-hand, and are unlikely to reflect the universe of environmental justice concerns held by commenters and Delta residents. Oral comments reviewed spanned a broader set of topics, but remained focused on Council agenda items (e.g. Delta Conveyance updates, the use of social science in Delta management, and the Council's public comment process). Therefore, the list in Table 1 should not be interpreted as a comprehensive list of environmental justice issues related to Delta management but rather a snapshot of issues related to the projects and presentations that the Council has chosen to focus on since 2011. Additionally, the frequency at which issues were raised may reflect the centrality of that issue in the Council's work more so than the importance of that issue to the commenter or the broader Delta community. Other data sources are needed to supplement Table 1, develop a more comprehensive list of issues, and to understand which issues are of the greatest concern to the people and communities impacted by Delta management.

References

- Alpers, C. N., Hunerlach, M. P., May, J. T., & Hothem, R. L. (2005). *Mercury Contamination from Historical Gold Mining in California*. U.S. Geological Survey (USGS). https://pubs.usgs.gov/fs/2005/3014/fs2005_3014_v1.1.pdf
- Altostratus Inc. (2015). Creating and Mapping an Urban Heat Island Index for California Final Report. Prepared for California Environmental Protection Agency and California Air Resources Board. <https://calepa.ca.gov/wp-content/uploads/sites/6/2016/10/UrbanHeat-Report-Report.pdf>
- Avanceña, I., Schmidt, E., Ramsay, A., & Ault, C. (2022). The livability poll (p. 13). Valley Vision. <https://www.valleyvision.org/resources/the-livability-poll-2022/>
- Baiocchi, A., Morris, J., Caler, K., Furio, F., Curry, S., Newham, J., Evans, E., & Orsulak, M. K. (2022). Homelessness in Sacramento County: Results from the 2022 Point-in-Time Count. California State University, Sacramento. <https://sacramentostepsforward.org/wp-content/uploads/2022/06/PIT-Report-2022.pdf>
- Balazs, C. L., Morello-Frosch, R., Hubbard, A. E., & Ray, I. (2012). Environmental justice implications of arsenic contamination in California's San Joaquin Valley: a cross-sectional, cluster-design examining exposure and compliance in community drinking water systems. *Environmental Health*, 11(84). <https://doi.org/10.1186/1476-069x-11-84>
- Bell, J. E., Herring, S. C., Jantarasami, L., Adrianopoli, C., Benedict, K., Conlon, K., Escobar, V., Hess, J., Luvall, J., Garcia-Pando, C. P., Quattrochi, D., Runkle, J., & Schreck, C. J. (2016). Ch. 4: Impacts of Extreme Events on Human Health. *The Impacts of Climate Change on Human Health in the United States: A Scientific Assessment*. U.S. Global Change Research Program, 99–128. <https://doi.org/10.7930/j0bz63zv>
- Bodenreider, C., Damicis, A., Delaney, T., Dowling, H., Maizlish, N., Nikolai, A., Oei, C., & Sadler, B. (2022). Healthy Places Index (3.0). https://assets.website-files.com/613a633a3add5db901277f96/63320a9e98493bbdcc03d509_HPI3TechnicalReport2022-09-20.pdf
- Bostic, D., Mendez-Barrientos, L., Pauloo, R., Dobbin, K., & MacClements, V. (2023). Thousands of domestic and public supply wells face failure despite groundwater sustainability reform in California's Central Valley. *Scientific Reports*, 13(1), 14797. <https://doi.org/10.1038/s41598-023-41379-9>

- Bradner, G., & Singleton, E. (2017). *The origin and evolution of the California state plan of flood control levee system*. <https://www.geiconsultants.com/wp-content/uploads/2017/10/The-Origin-and-Evolution-of-the-California-State-Plan-of-Flood-Control-Levee-System.pdf>
- Buford, T. (2017, July). Has the Moment for Environmental Justice Been Lost? ProPublica. <https://www.propublica.org/article/has-the-moment-for-environmental-justice-been-lost>
- Bullard, R. D. (1993). Review of Confronting Environmental Racism: Voices from the Grassroots. *Human Ecology Review*, 1(1), 167–172. <https://www.jstor.org/stable/24707157>
- Bullard, R. D. (2000). *Dumping in Dixie: race, class and environmental quality*. Westview Press.
- California Adaptation Forum. (2023). 2023 Forum Highlights & Recap. California Adaptation Forum. <https://www.californiaadaptationforum.org/>
- California Air Resources Board (CARB). (2024). Community Air Protection Program. California Air Resources Board. <https://ww2.arb.ca.gov/capp>
- California Coastal Commission. (2019). California Coastal Commission Environmental Justice Policy. https://documents.coastal.ca.gov/assets/env-justice/CCC_EJ_Policy_FINAL.pdf
- California Council on Science and Technology (CCST). (2021). The Many Impacts of Drought in the California Delta. https://ccst.us/wp-content/uploads/2021_DroughtSyndrome_OnePager-CCST.pdf
- California Department of Public Health. (2017). Healthy Communities Data and Indicators Project. In California Department of Public Health Geospatial Resources. California Department of Public Health Geospatial Resources. <https://cdphdata.maps.arcgis.com/apps/MapSeries/index.html?appid=c4bbd3750ad04f64b26b0588a8f4a359>
- California Department of Water Resources (DWR). (n.d.). State Water Project. Department of Water Resources. Retrieved March 16, 2023, from <https://water.ca.gov/Programs/State-Water-Project>
- California Department of Water Resources (DWR). (2022). Racial Equity Action Plan. https://water.ca.gov/-/media/DWR-Website/Web-Pages/About/Files/DWR-REAP-06142022-FINAL_ay11.pdf
- California Department of Water Resources (DWR), & Berkeley Research Group. (2023). The Economy of the State Water Project: Clean, Reliable, and Affordable Water for California. <https://water.ca.gov/-/media/DWR->

- Website/Web-Pages/News/Files/FINAL-12-14-2023---The-Economy-of-the-State-Water-Project.pdf
- California Environmental Justice Alliance. (2020). 2020 Environmental Justice Agency Assessment. California Environmental Justice Alliance.
<https://caleja.org/resources/reports/>
- California Environmental Protection Agency (CalEPA). (n.d.). Environmental Justice Program | CalEPA. CalEPA. Retrieved November 14, 2023, from
<https://calepa.ca.gov/envjustice/>
- California Environmental Protection Agency (CalEPA). (2021, August 16). *Pollution and Prejudice: Redlining and Environmental Justice in California*. ArcGIS StoryMaps.
<https://storymaps.arcgis.com/stories/f167b251809c43778a2f9f040f43d2f5>
- California Environmental Protection Agency (CalEPA). (2022). Final Designation of Disadvantaged Communities Pursuant to Senate Bill 535.
https://calepa.ca.gov/wp-content/uploads/sites/6/2022/05/Updated-Disadvantaged-Communities-Designation-DAC-May-2022-Eng.a.hp_-1.pdf
- California Natural Resources Agency (CNRA), & Department of Water Resources (DWR). (2023). *California Water Plan Update 2023*. <https://water.ca.gov/-/media/DWR-Website/Web-Pages/Programs/California-Water-Plan/Docs/Update2023/Final/California-Water-Plan-Update-2023.pdf>
- California State Lands Commission. (2018). California State Lands Commission Environmental Justice Policy. <https://www.slc.ca.gov/wp-content/uploads/2018/11/EJPolicy.pdf>
- California Strategic Growth Council. (2024). California Community Assistance for Climate Equity Program - Preparing Communities for Success. Sgc.ca.gov. Retrieved May 03, 2024, from https://sgc.ca.gov/technical-assistance/cace/docs/20240319-CACE_FactSheet.pdf
- California Strategic Growth Council. (2023). Strategic Growth Council Racial Equity Action Plan (2023-2025).
https://sgc.ca.gov/initiatives/healthandequity/docs/20230814-SGC_Racial_Equity_Action_Plan.pdf
- Centers for Disease Control and Prevention (CDC). (2022a). Illness and Symptoms: Cyanobacteria in Fresh Water. Centers for Disease Control and Prevention.
<https://www.cdc.gov/habs/illness-symptoms-freshwater.html>

- Centers for Disease Control and Prevention (CDC). (2022b, May 2). Sources of Exposure | Harmful Algal Blooms | CDC. [www.cdc.gov. https://www.cdc.gov/habs/exposure-sources.html](https://www.cdc.gov/habs/exposure-sources.html)
- Chappelle, C., Collins, J., & Hanak, E. (2021). Access to Safe Drinking Water in California. In Public Policy Institute of California (PPIC). <https://www.ppic.org/wp-content/uploads/access-to-safe-drinking-water.pdf>
- Chappelle, C., & Hanak, E. (2015). California's Water Quality Challenges. In Public Policy Institute of California (PPIC). https://www.ppic.org/wp-content/uploads/JTF_WaterQualityJTF.pdf
- City of Sacramento. (2020). Environmental Justice Factbook: Access to Healthy Food. City of Sacramento. https://www.cityofsacramento.org/-/media/Corporate/Files/CDD/Planning/General-Plan/EJ-Factbook_HealthyFoodAccess.pdf?la=en
- Claire, T., & Surprise, K. (2022). Moving the Rain: Settler Colonialism, the Capitalist State, and the Hydrologic Rift in California's Central Valley. *Antipode*, 54(1), 153–173. <https://doi.org/10.1111/anti.12777>
- Clark, S., Tripp, B., Hankins, D., Rossier, C., Varney, A., & Nairn, I. (2024). Good Fire II: Current Barriers to the Expansion of Cultural Burning and Prescribed Fire Use in the United States and Recommended Solutions. Prepared for The Karuk Tribe. <https://karuktribeclimatechangeprojects.com/wp-content/uploads/2024/03/good-fire-ii-march-2024.pdf>
- Climate-Safe Infrastructure Working Group (CSIWG). (2018). Paying it Forward: The Path Toward Climate-Safe Infrastructure in California. Report of the Climate-Safe Infrastructure Working Group to the California State Legislature and the Strategic Growth Council. https://resources.ca.gov/CNRALegacyFiles/docs/climate/ab2800/AB2800_Climate-SafeInfrastructure_FinalNoAppendices.pdf
- Cole, L. (1999). "Wrong on the Facts, Wrong on the Law": Civil Rights Advocates Excoriate EPA's Most Recent Title VI Misstep | *Environmental Law Reporter*®. [Www.elr.info](https://www.elr.info), 29(12). <https://www.elr.info/articles/elr-articles/wrong-facts-wrong-law-civil-rights-advocates-excoriate-epas-most-recent-title>
- Cole, L. W., & Foster, S. R. (2001). *From the ground up: Environmental racism and the rise of the environmental justice movement*. New York University Press.
- Contra Costa Water District. (2010). Historical Fresh Water and Salinity Conditions in the Western Sacramento-San Joaquin Delta and Suisun Bay: A summary of historical reviews, reports, analyses and measurements. In *Contra Costa*

- Water District*. <https://www.ccwater.com/DocumentCenter/View/382/Final-Report-and-Appendices-February-2010-PDF?bidId=>
- Cook, S. (1955). The Epidemic of 1830-1833 In California and Oregon. *Archaeology and Ethnology*, 43(3), 303–326.
<https://digitalassets.lib.berkeley.edu/anthpubs/ucb/text/ucp043-004.pdf>
- Cook, S. F. (1955). The Aboriginal Population of the San Joaquin Valley, California. *Anthropological Records*, 16(2), 31–80. University of California Press.
<https://digitalassets.lib.berkeley.edu/anthpubs/ucb/text/ucar016-003.pdf>
- Creswell, J., Klassen, A., Clark, V., & Smith, K. (2011). Best Practices for Mixed Methods Research in the Health Sciences. <https://obssr.od.nih.gov/research-resources/mixed-methods-research>
- Cunsolo, A., & Ellis, N. R. (2018). Ecological grief as a mental health response to climate change-related loss. *Nature Climate Change*, 8(4), 275–281.
<https://doi.org/10.1038/s41558-018-0092-2>
- Cushing, L., Blaustein-Rejto, D., Wander, M., Pastor, M., Sadd, J., Zhu, A., & Morello-Frosch, R. (2018). Carbon trading, co-pollutants, and environmental equity: Evidence from California’s cap-and-trade program (2011–2015). *PLOS Medicine*, 15(7), e1002604. <https://doi.org/10.1371/journal.pmed.1002604>
- Cushing, L., Faust, J., August, L. M., Cendak, R., Wieland, W., & Alexeeff, G. (2015). Racial/Ethnic Disparities in Cumulative Environmental Health Impacts in California: Evidence From a Statewide Environmental Justice Screening Tool (CalEnviroScreen 1.1). *American Journal of Public Health*, 105(11), 2341–2348.
<https://doi.org/10.2105/ajph.2015.302643>
- Daniel, R. A., Wilhelm, A., Case-Scott, H., Goldman, G., & Hinzman, L. (2022). What is “Indigenous Knowledge” And Why Does It Matter? Integrating Ancestral Wisdom and Approaches into Federal Decision-Making | OSTP. *The White House*. <https://www.whitehouse.gov/ostp/news-updates/2022/12/02/what-is-indigenous-knowledge-and-why-does-it-matter-integrating-ancestral-wisdom-and-approaches-into-federal-decision-making/>
- Delta Independent Science Board. (2018). Water Quality Science in the Sacramento-San Joaquin Delta: Chemical Contaminants and Nutrients.
<https://deltacouncil.ca.gov/pdf/isb/products/2018-07-26-isb-2018-water-quality-review.pdf>
- Delta Stewardship Council (DSC). (2013a). Chapter 1 Introduction. In *The Delta Plan*. Delta Stewardship Council Agency. <https://deltacouncil.ca.gov/pdf/delta-plan/2013-ch-01.pdf>

- Delta Stewardship Council (DSC). (2013b). Chapter 5 Protect and Enhance the Unique Cultural, Recreational, Natural Resource and, Agricultural Values of the California Delta as an Evolving Place. In The Delta Plan. Delta Stewardship Council Agency. <https://deltacouncil.ca.gov/pdf/delta-plan/2013-ch-05.pdf>
- Delta Stewardship Council (DSC). (2013c). Delta Plan Chapter 6 Improve Water Quality to Protect Human Health and the Environment. <https://deltacouncil.ca.gov/pdf/delta-plan/2013-ch-06.pdf>
- Delta Stewardship Council (DSC). (2015). Delta Plan Appendix 1A Best Available Science. <https://deltacouncil.ca.gov/pdf/delta-plan/2015-appendix-1a.pdf>
- Delta Stewardship Council (DSC). (2018). Chapter 3 A More Reliable Water Supply for California. In The Delta Plan. Delta Stewardship Council Agency. <https://deltacouncil.ca.gov/pdf/delta-plan/2018-04-26-amended-chapter-3.pdf>
- Delta Stewardship Council (DSC). (2019). Five-Year Review of the Delta Plan. <https://deltacouncil.ca.gov/pdf/council-meeting/meeting-materials/2019-10-24-item-10-attachment-1.pdf>
- Delta Stewardship Council (DSC). (2020). Public Participation Plan. <https://deltacouncil.ca.gov/pdf/2020-06-25-public-participation-plan.pdf>
- Delta Stewardship Council (DSC). (2021a). Delta Adapts: Creating a Climate Resilient Future: Equity Technical Memorandum. <https://deltacouncil.ca.gov/pdf/delta-plan/2021-06-16-equity-technical-memorandum.pdf>
- Delta Stewardship Council (DSC). (2021b). Delta Adapts: Creating a Climate Resilient Future: Sacramento–San Joaquin Delta Climate Change Vulnerability Assessment. <https://deltacouncil.ca.gov/pdf/delta-plan/2021-06-25-delta-adapts-vulnerability-assessment.pdf>
- Delta Stewardship Council (DSC). (2021c). Delta Adapts: Creating a Climate Resilient Future: Technical Memorandum Water Supply. <https://www.deltacouncil.ca.gov/pdf/delta-plan/2021-06-16-water-supply-technical-memorandum.pdf>
- Delta Stewardship Council (DSC). (2022a). Chapter 4 Protect, Restore, and Enhance the Delta Ecosystem. In The Delta Plan. Delta Stewardship Council Agency. <https://deltacouncil.ca.gov/pdf/delta-plan/2022-06-29-chapter-4-protect-restore-and-enhance-the-delta-ecosystem.pdf>
- Delta Stewardship Council (DSC). (2022b, August). Summary of Delta Environmental Justice Interviews: Report on Methods and Findings. Delta Stewardship Council.

- <https://deltacouncil.ca.gov/pdf/council-meeting/meeting-materials/2022-08-25-summary-of-delta-environmental-justice-interviews.pdf>
- Delta Stewardship Council (DSC). (2023a). *Council Tribal Listening Session*. https://cal-span.org/meeting/dsc_20230427/
- Delta Stewardship Council (DSC). (2023b). Water Supply | Delta Stewardship Council. Delta Plan Performance Measures. <https://viewperformance.deltacouncil.ca.gov/chapter/water-supply>
- Delta Vision Blue Ribbon Task Force. (2008). Delta Vision Strategic Plan. <https://cawaterlibrary.net/document/delta-vision-strategic-plan/>
- Deverel, S. J., Dore, S., & Schmutte, C. (2020). Solutions for subsidence in the California Delta, USA, an extreme example of organic-soil drainage gone awry. *Proceedings of the International Association of Hydrological Sciences*, 382, 837–842. <https://doi.org/10.5194/piahs-382-837-2020>
- Dillon, L. (2021). Civilizing swamps in California: Formations of race, nature, and property in the nineteenth century U.S. West. *Environment and Planning D: Society and Space*, 40(2), 258–275. <https://doi.org/10.1177/02637758211026317>
- Dobbin, K. B. (2021). California’s Sustainable Groundwater Management Act and the Human Right to Water: Opportunities and challenges for environmental justice in collaborative governance. *Escholarship.org*. <https://escholarship.org/uc/item/35p8t7r4#author>
- Dobbin, K. B., & Lubell, M. (2019). Collaborative Governance and Environmental Justice: Disadvantaged Community Representation in California Sustainable Groundwater Management. *Policy Studies Journal*, 49(2). <https://doi.org/10.1111/psj.12375>
- Dunning, H. (1993). Confronting the Environmental Legacy of Irrigated Agriculture in the West: The Case of the Central Valley Project. *Environmental Law*, 23(3), 943–969. http://nationalaglawcenter.org/wp-content/uploads/assets/bibarticles/dunning_irrigated.pdf
- Fernandez-Bou, A. S., Ortiz-Partida, J. P., Dobbin, K. B., Flores-Landeros, H., Bernacchi, L. A., & Medellín-Azuara, J. (2021). Underrepresented, understudied, underserved: Gaps and opportunities for advancing justice in disadvantaged communities. *Environmental Science & Policy*, 122, 92–100. <https://doi.org/10.1016/j.envsci.2021.04.014>

- Fidell, M., & Shipman, P. (2023). Who makes decisions about California's water? <https://cawaterlibrary.net/document/who-makes-decisions-about-californias-water/>
- Firestone, L., & Dobbin, K. (2021). Brown Bag Seminar: Environmental Justice and the Sacramento-San Joaquin Delta: Water Justice [Virtual Presentation]. https://youtu.be/dfy_4ORKxBc
- Firestone, L., & Francis, R. (2011). Implementing the Human Right to Water in California's Central Valley: Building a Democratic Voice Through Community Engagement in Water Policy Decision Making. <https://willamette.edu/law/resources/journals/review/pdf/volume-47/wlr-47-3-firestone.pdf>
- Fisher, J. B., Kelly, M., & Romm, J. (2006). Scales of environmental justice: Combining GIS and spatial analysis for air toxics in West Oakland, California. *Health & Place*, 12(4), 701–714. <https://doi.org/10.1016/j.healthplace.2005.09.005>
- Fransen, L., Ludy, J., & Matella, M. (2008). When the levees break: Relief cuts and flood management in the Sacramento-San Joaquin Delta. Escholarship.org. <https://escholarship.org/uc/item/4qt8v88d>
- Garone, P. (2020). Fall and Rise of the Wetlands of California's Great Central Valley. University of California Press. <https://www.ucpress.edu/book/9780520355576/the-fall-and-rise-of-the-wetlands-of-californias-great-central-valley>
- Gilio-Whitaker, D. (2019). As Long as Grass Grows: The Indigenous Fight for Environmental Justice, from Colonization to Standing Rock. Beacon Press. <http://www.beacon.org/As-Long-as-Grass-Grows-P1445.aspx>
- Goddard, J. J., Ray, I., & Balazs, C. (2021). Water affordability and human right to water implications in California. *PLOS ONE*, 16(1), e0245237. <https://doi.org/10.1371/journal.pone.0245237>
- Governor's Office of Planning and Research (OPR). (2017). Executive Order B-30-15 Resiliency Guidebook: Vulnerable Populations. https://opr.ca.gov/docs/20180312-Vulnerable_Communities_Descriptions.pdf
- Grantham, T. E., & Viers, J. H. (2014). 100 years of California's water rights system: patterns, trends and uncertainty. *Environmental Research Letters*, 9(8), 084012. <https://doi.org/10.1088/1748-9326/9/8/084012>
- Gundersen, C., Strayer, M., Dewey, A., Hake, M., & Engelhard, E. (2022). Map the Meal Gap 2022: An Analysis of County and Congressional District Food

- Insecurity and County Food Cost in the United States in 2020. Feeding America.
- Haaland, O., & Ortiz, P. (2022). Disadvantaged Communities Nomenclature Within the State of California: Findings and Conclusions. Department of Water Resources. <https://water.ca.gov/-/media/DWR-Website/Web-Pages/About/Tribal/Files/IRWM/URC-Nomenclature-Whitepaper.pdf>
- Hanak, E., Escriva-Bou, A., Gray, B., Green, S., Harter, T., Jezdimirovic, J., Lund, J., Medellín-Azuara, J., Moyle, P., & Seavy, N. (2019). Water and the Future of the San Joaquin Valley. <https://www.ppic.org/wp-content/uploads/water-and-the-future-of-the-san-joaquin-valley-february-2019.pdf>
- Hankins, D. (2018). Ecocultural Equality in the Miwko? Waali?. *San Francisco Estuary and Watershed Science*, 16(3).
<https://doi.org/10.15447/sfews.2018v16iss3art1>
- Harrison, J. L. (2014). Neoliberal environmental justice: mainstream ideas of justice in political conflict over agricultural pesticides in the United States. *Environmental Politics*, 23(4), 650–669.
<https://doi.org/10.1080/09644016.2013.877558>
- Harrison, J. L. (2015). Coopted environmental justice? Activists' roles in shaping EJ policy implementation. *Environmental Sociology*, 1(4), 241–255.
<https://doi.org/10.1080/23251042.2015.1084682>
- Harrison, J. L. (2019). *From The Inside Out: The Fight for Environmental Justice within Government Agencies*. The MIT Press.
- Helzer, J. (2015). Building Communities - Economics & Ethnicity Delta Protection Commission Delta Narratives (Revision Final). In *California Water Library*.
https://cawaterlibrary.net/wp-content/uploads/2017/04/DPC_Delta_Narratives_Helzer.pdf
- Hilmers, A., Hilmers, D. C., & Dave, J. (2012). Neighborhood Disparities in Access to Healthy Foods and Their Effects on Environmental Justice. *American Journal of Public Health*, 102(9), 1644–1654.
<https://doi.org/10.2105/ajph.2012.300865>
- Hindle, R. L., & Bhatia, N. (2017). Territory and Technology: A Case Study and Strategy from the California Delta. *The Plan Journal*, 2(2).
<https://doi.org/10.15274/tpj.2017.02.02.01>
- Hinton, L. (1994). California Indian Root Languages [Map]. In *Flutes of Fire: Essays on California Indian Languages*. https://www.parks.ca.gov/?page_id=23548

- Howlett, M. (2009). Governance modes, policy regimes and operational plans: A multi-level nested model of policy instrument choice and policy design. *Policy Sciences*, 42(1), 73–89. <https://doi.org/10.1007/s11077-009-9079-1>
- Ingebritsen, S. E., & Ikehara, M. E. (1999). Sacramento-San Joaquin Delta. In *Land Subsidence in the United States*. U.S. Geological Survey (USGS) Circular 1182. <https://pubs.usgs.gov/circ/circ1182/#pdf>
- Interagency Ecological Program Drought Management, Analysis, and Synthesis Team (MAST). (2022). Ecological Impacts of Drought on the Sacramento-San Joaquin Delta: with special attention to the extreme drought of 2020-2021. https://www.waterboards.ca.gov/drought/tucp/docs/2021/20220201_report_cond7.pdf
- Jennings, V., Larson, L., & Yun, J. (2016). Advancing Sustainability through Urban Green Space: Cultural Ecosystem Services, Equity, and Social Determinants of Health. *International Journal of Environmental Research and Public Health*, 13(2), 196. <https://doi.org/10.3390/ijerph13020196>
- Katz, L. (2021, March 15). A Racist Past, a Flooded Future: Formerly Redlined Areas Have \$107 Billion Worth of Homes Facing High Flood Risk—25% More Than Non-Redlined Areas. Redfin Real Estate News. <https://www.redfin.com/news/redlining-flood-risk/>
- Konisky, D. M. (2015). Failed Promises: Evaluating the Federal Government's Response to Environmental Justice. In JSTOR. The MIT Press. <https://www.jstor.org/stable/j.ctt17kk8mr>
- Lee, C. (2020). A Game Changer in the Making? Lessons From States Advancing Environmental Justice Through Mapping and Cumulative Impact Strategies. *Environmental Law Reporter*, 3. <https://www.eli.org/sites/default/files/docs/50.10203.pdf>
- Lee, C., Harder, J., Frank, R., Thompson, B., Doduc, T., Doremus, H., & Pannu, C. (2022). Updating California Water Laws to Address Drought and Climate Change. <https://www.pcl.org/media/2022/02/Updating-California-Water-Laws-to-Address-with-Drought-and-Climate-Change.pdf>
- Legislative Analyst's Office (LAO). (2009). Water Rights: Issues and Perspectives. https://lao.ca.gov/handouts/resources/2009/water_rights_issues_perspective_s_031009.pdf
- Legislative Analyst's Office (LAO). (2020). Expanding Access to Safe and Affordable Drinking Water in California—A Status Update. The California Legislature's

- Nonpartisan Fiscal and Policy Advisor.
<https://lao.ca.gov/Publications/Report/4294>
- Lehman, P. W., Kurobe, T., Lesmeister, S., Baxa, D., Tung, A., & Teh, S. J. (2017). Impacts of the 2014 severe drought on the *Microcystis* bloom in San Francisco Estuary. *Harmful Algae*, 63, 94–108.
<https://doi.org/10.1016/j.hal.2017.01.011>
- Lehman, P. W., Teh, S. J., Boyer, G. L., Nobriga, M. L., Bass, E. J., & Hogle, C. (2010). Initial impacts of *Microcystis aeruginosa* blooms on the aquatic food web in the San Francisco Estuary. *Hydrobiologia*, 637(1), 229–248.
<https://doi.org/10.1007/s10750-009-9999-y>
- Leibler, J., Nguyen, D., León, C., Gaeta, J., & Perez, D. (2017). Personal hygiene practices among urban homeless persons in Boston, MA. *International Journal of Environmental Research and Public Health*, 14(8).
<https://doi.org/10.3390/ijerph14080928>
- Liévanos, R. (2009). Exploring Environmental Inequality in the California Delta-Suisun Region.
https://nature.berkeley.edu/community_forestry/People/2008/2008/Lievanos%20Final%20Report.pdf
- Liévanos, R. S. (2012). Certainty, Fairness, and Balance: State Resonance and Environmental Justice Policy Implementation1. *Sociological Forum*, 27(2), 481–503. <https://doi.org/10.1111/j.1573-7861.2012.01327.x>
- Liévanos, R. S. (2016). Sociospatial Dimensions of Water Injustice: The Distribution of Surface Water Toxic Releases in California’s Bay-Delta. *Sociological Perspectives*, 60(3), 575–599. <https://doi.org/10.1177/0731121416648935>
- Liévanos, R. S. (2020). Racialised uneven development and multiple exposure: sea-level rise and high-risk neighbourhoods in Stockton, CA. *Cambridge Journal of Regions, Economy and Society*, 13(2), 381–404.
<https://doi.org/10.1093/cjres/rsaa009>
- Little Hoover Commission. (2005). Still Imperiled, Still Important: The Little Hoover Commission’s Review of the CALFED Bay-Delta Program.
<https://lhc.ca.gov/report/still-imperiled-still-important-little-hoover-commissions-review-calfed-bay-delta-program/>
- London, J., Fencl, A., Watterson, S., Jarin, J., Aranda, A., King, A., Pannu, C., Seaton, P., Firestone, L., Dawson, M., & Nguyen, P. (2018). The Struggle for Water Justice in California’s San Joaquin Valley: A Focus on Disadvantaged Unincorporated Communities. UC Davis Center for Regional Change.

- https://ucdcrc.sf.ucdavis.edu/sites/g/files/dgvnsk986/files/inline-files/The%20Struggle%20for%20Water%20Justice%20FULL%20REPORT_1.pdf
- London, J., Karner, A., Sze, J., Rowan, D., Gambirazzio, G., & Niemeier, D. (2013). Racing climate change: Collaboration and conflict in California's global climate change policy arena. *Global Environmental Change*, 23(4), 791–799. <https://doi.org/10.1016/j.gloenvcha.2013.03.001>
- London, J., Sze, J., & Liévanos, R. S. (2008). Problems, promise, progress, and perils: Critical Reflections on Environmental Justice Policy Implementation in California. *UCLA Journal of Environmental Law and Policy*, 26(2), 2. <https://doi.org/10.5070/I5262019559>
- Lubell, M., Robins, G., & Wang, P. (2014). Network structure and institutional complexity in an ecology of water management games. *Ecology and Society*, 19(4). <https://doi.org/10.5751/es-06880-190423>
- Ludy, J., & Kondolf, G. M. (2012). Flood risk perception in lands “protected” by 100-year levees. *Natural Hazards*, 61(2), 829–842. <https://doi.org/10.1007/s11069-011-0072-6>
- Lund, J., Hanak, E., Fleenor, W., Howitt, R., Mount, J., & Moyle, P. (2007). Envisioning Futures for the Sacramento-San Joaquin Delta. Public Policy Institute of California. https://www.ppic.org/wp-content/uploads/content/pubs/report/R_207JLR.pdf
- Luoma, S. N., Dahm, C. N., Healey, M., & Moore, J. N. (2015). Challenges Facing the Sacramento-San Joaquin Delta: Complex, Chaotic, or Simply Cantankerous? *San Francisco Estuary and Watershed Science*, 13(3). <https://doi.org/10.15447/sfews.2015v13iss3art7>
- Medellín-Azuara, J., U, K. T. P., Jin, Y., Lund, J., Jankowski, J., Bell, A., Kent, E., Clay, J., Wong, A., Santos, N., Badillo, J., Leinfelder-Miles, M., Lambert, J.-J., McAuliffe, M., Edgar, D., Freiberg, S., Gong, R., Metz, M., Little, C., & Temegsen, B. (2018). *A Comparative Study for Estimating Crop Evapotranspiration in the Sacramento-San Joaquin Delta*. https://cawaterlibrary.net/wp-content/uploads/2019/09/01_DeltaET_FinalReport_20180628.pdf
- Memorandum on Government-to-Government Relations with Native American Tribal Governments. (April 29, 1994). 59 FR 22951 [25 USC 450]. https://www.justice.gov/archive/otj/Presidential_Statements/presdoc1.htm
- Mendez, M. (2020). *Climate Change from the Streets How Conflict and Collaboration Strengthen the Environmental Justice Movement*. Yale University Press.

- <https://yalebooks.yale.edu/book/9780300232158/climate-change-from-the-streets/>
- Merchant, C. (2003). Shades of Darkness: Race and Environmental History. *Environmental History*, 8(3), 380. <https://doi.org/10.2307/3986200>
- Middleton-Manning, B. R., Houck, D., & Gali, M. S. (2018). Holding the Headwaters: Northern California Indian Resistance to State and Corporate Water Development Morning Star Gali Bay Area Native Circle -Host. *Decolonization: Indigeneity, Education & Society*, 7(1), 174–198. https://journals.scholarsportal.info/pdf/19298692/v07i0001/174_hth.xml
- National Park Service. (2018). Locke Historic-District, CA (U.S. National Park Service). [Www.nps.gov. https://www.nps.gov/places/locke-historic-district.htm#:~:text=Locke%20Historic%20District%2C%20a%20National](https://www.nps.gov/places/locke-historic-district.htm#:~:text=Locke%20Historic%20District%2C%20a%20National)
- Noble, S., Wang, J., Bell, M., Tiemann, A., & Wilcox, A. (2023). Environmental Justice and Delta Water Exports to Communities South of the Delta. UC Davis Graduate Program of Environmental Policy and Management.
- Ocean Protection Council. (2022). State of California Ocean Protection Council Equity Plan. In California Ocean Protection Council. <https://opc.ca.gov/wp-content/uploads/2022/11/OPC-Equity-Plan-508.pdf>
- Office of Environmental Health Hazard Assessment (OEHHA), & California Environmental Protection Agency (CalEPA). (2012). *Toxicological Summary And Suggested Action Levels To Reduce Potential Adverse Health Effects Of Six Cyanotoxins*. <https://oehha.ca.gov/media/downloads/fish/document/cyanotoxins053112.pdf>
- Office of Environmental Health Hazard Assessment (OEHHA), & California Environmental Protection Agency (CalEPA). (2021). Analysis of Race/Ethnicity and CalEnviroScreen 4.0 Scores Analysis of Race/Ethnicity and CalEnviroScreen 4.0 Scores. <https://oehha.ca.gov/media/downloads/calenviroscreen/document/calenviroscreen40raceanalysisf2021.pdf>
- Office of Environmental Health Hazard Assessment (OEHHA), & California Environmental Protection Agency (CalEPA). (2022a). Health Advisory and Guidelines for Eating Fish from the Central and South Sacramento-San Joaquin Delta (Contra Costa, Sacramento, and San Joaquin Counties). <https://oehha.ca.gov/media/downloads/advisories/fishadvisorycentralsouthdeltareport2022.pdf>

- Office of Environmental Health Hazard Assessment (OEHHA), & California Environmental Protection Agency (CalEPA). (2022b). OEHHA CalEnviroScreen 4.0 -1 - Response to Comments Responses to Major Comments on the CalEnviroScreen 4.0 Public Review Draft. <https://oehha.ca.gov/media/downloads/calenviroscreen/response-comments/calenviroscreen40responsetocommentsf2022.pdf>
- Office of the Governor. (2020). Statement of Administration Policy - Native American Ancestral Lands. In *Office of the Governor Gavin Newsom*. <https://www.gov.ca.gov/wp-content/uploads/2020/09/9.25.20-Native-Ancestral-Lands-Policy.pdf>
- Oke, T. R. (1982). The energetic basis of the urban heat island. *Quarterly Journal of the Royal Meteorological Society*, 108(455), 1–24. <https://doi.org/10.1002/qj.49710845502>
- Oke, T. R., Crowther, J. M., McNaughton, K. G., Monteith, J. L., & Gardiner, B. (1989). The Micrometeorology of the Urban Forest [and Discussion]. *Philosophical Transactions of the Royal Society B: Biological Sciences*, 324(1223), 335–349. <https://doi.org/10.1098/rstb.1989.0051>
- Pastor, M., Morello-Frosch, R., & Sadd, J. L. (2006). Breathless: Schools, Air Toxics, and Environmental Justice in California. *Policy Studies Journal*, 34(3), 337–362. <https://doi.org/10.1111/j.1541-0072.2006.00176.x>
- Pauloo, R. A., Escrivá-Bou, A., Dahlke, H., Fencel, A., Guillon, H., & Fogg, G. E. (2020). Domestic well vulnerability to drought duration and unsustainable groundwater management in California's Central Valley. *Environmental Research Letters*, 15(4), 044010. <https://doi.org/10.1088/1748-9326/ab6f10>
- Petersen, D., Minkler, M., Vasquez, V. B., & Baden, A. C. (2006). Community-Based Participatory Research as a Tool for Policy Change: A Case Study of the Southern California Environmental Justice Collaborative. *Review of Policy Research*, 23(2), 339–354. <https://doi.org/10.1111/j.1541-1338.2006.00204.x>
- Peterson, R. H. (1974). The Failure to Reclaim: California State Swamp Land Policy and the Sacramento Valley, 1850-1866. *Southern California Quarterly*, 56(1), 45–60. <https://doi.org/10.2307/41170515>
- Plaas, H. E., & Paerl, H. W. (2020). Toxic Cyanobacteria: A Growing Threat to Water and Air Quality. *Environmental Science & Technology*, 55(1), 44–64. <https://doi.org/10.1021/acs.est.0c06653>
- Ranganathan, M., & Balazs, C. (2015). Water marginalization at the urban fringe: environmental justice and urban political ecology across the North-South

- divide. *Urban Geography*, 36(3), 403–423.
<https://doi.org/10.1080/02723638.2015.1005414>
- Rothstein, R. (2017). *The Color of Law: A Forgotten History of How Our Government Segregated America*. In www.wwnorton.com. Liveright.
<https://www.wwnorton.com/books/the-color-of-law/>
- Rudnick, J., Tomari, K., Dobbin, K., Lubell, M., & Biedenweg, K. (2023). Delta Residents Survey Summary Report.
<https://ucdavis.app.box.com/s/34kmt02f87ohhbpj9hu0iesubm15781>
- Sacramento Regional Coalition to End Homelessness. (2018). *Dignity Denied: Lack of Access to Public Bathrooms*. Sacramento Regional Coalition to End Homelessness.
http://www.srceh.org/_files/ugd/ee52bb_ac4b3f442e1945e881e1602de0572874.pdf
- Sacramento-San Joaquin Delta Conservancy. (2023). Delta Mercury Exposure Reduction Program (MERP). Sacramento-San Joaquin Delta Conservancy.
<https://deltaconservancy.ca.gov/delta-mercury-exposure-reduction-program-merp/#:~:text=The%20Delta%20Mercury%20Exposure%20Reduction,and%20the%20Department%20of%20Water>
- San Francisco Bay Conservation and Development Commission (BCDC). (2019). San Francisco Bay Plan. www.bcdc.ca.gov.
https://www.bcdc.ca.gov/plans/sfbay_plan.html#40
- San Francisco Bay Conservation and Development Commission (BCDC). (2024). Racial Equity Action Plan. <https://bcdc.ca.gov/about/racial-equity-action-plan/>
- Schlosberg, D. (1999). *Environmental Justice and the New Pluralism*. Oxford University Press.
- Schlosberg, D. (2004). Reconceiving Environmental Justice: Global Movements And Political Theories. *Environmental Politics*, 13(3), 517–540.
<https://doi.org/10.1080/0964401042000229025>
- Schlosberg, D. (2007). *Defining Environmental Justice: Theories, Movements and Nature*. Oxford University Press.
- Seigerman, C. K., McKay, S. K., Basilio, R., Biesel, S. A., Hallemeier, J., Mansur, A. V., Piercy, C., Rowan, S., Ubiali, B., Yeates, E., & Nelson, D. R. (2022). Operationalizing equity for integrated water resources management. *JAWRA Journal of the American Water Resources Association*.
<https://doi.org/10.1111/1752-1688.13086>

- Shilling, F. M., London, J. K., & Liévanos, R. S. (2009). Marginalization by collaboration: Environmental justice as a third party in and beyond CALFED. *Environmental Science & Policy*, 12(6), 694–709.
<https://doi.org/10.1016/j.envsci.2009.03.003>
- Shilling, F., White, A., Lippert, L., & Lubell, M. (2010). Contaminated fish consumption in California’s Central Valley Delta. *Environmental Research*, 110(4), 334–344.
<https://doi.org/10.1016/j.envres.2010.02.002>
- Shonkoff, S. B., Morello-Frosch, R., Pastor, M., & Sadd, J. (2011). The climate gap: environmental health and equity implications of climate change and mitigation policies in California—a review of the literature. *Climatic Change*, 109(1), 485–503. <https://doi.org/10.1007/s10584-011-0310-7>
- State Coastal Conservancy. (2020). State Coastal Conservancy JEDI Guidelines in Action. https://scc.ca.gov/files/2020/09/JEDI_Guidelines_In_Action_FINAL.pdf
- State Water Resources Control Board (SWRCB). (2021a). Failing Water Systems: The Human Right to Water (HR2W) List Criteria. State Water Resources Control Board.
https://www.waterboards.ca.gov/water_issues/programs/hr2w/docs/hr2w_expanded_criteria.pdf
- State Water Resources Control Board (SWRCB). (2021b). Resolution No. 2021-0050. State Water Resources Control Board.
https://www.waterboards.ca.gov/board_decisions/adopted_orders/resolutions/2021/rs2021-0050.pdf
- State Water Resources Control Board (SWRCB). (2021c). Water Rights Drought Effort Review: A Compilation of Stakeholder Comments on Previous Drought Efforts and Recommendations for Future Improvements.
https://www.waterboards.ca.gov/board_info/agendas/2021/feb/warder_project_report_v2_508draft_210205.pdf
- State Water Resources Control Board (SWRCB). (2023a). 2023 Drinking Water Needs Assessment.
https://www.waterboards.ca.gov/drinking_water/certlic/drinkingwater/documents/needs/2023needsassessment.pdf
- State Water Resources Control Board (SWRCB). (2023b). 2023-2025 California State Water Resources Control Board Racial Equity Action Plan.
https://www.waterboards.ca.gov/racial_equity/docs/racial-equity-action-plan-final-en.pdf

- State Water Resources Control Board (SWRCB). (2023c). Environmental Analysis: Hydrology and Water Quality – Groundwater. https://www.waterboards.ca.gov/waterrights/water_issues/programs/bay_delta/docs/2023/staff-report/ch07-12-2-gw.pdf
- State Water Resources Control Board (SWRCB). (2023d). Safe and Affordable Funding for Equity and Resilience Program. State Water Resources Control Board. https://www.waterboards.ca.gov/water_issues/programs/grants_loans/sustainable_water_solutions/safer.html
- State Water Resources Control Board (SWRCB). (2024). SAFER Dashboard. SAFER Dashboard; State Water Resources Control Board. https://www.waterboards.ca.gov/drinking_water/certlic/drinkingwater/2022.html
- State Water Resources Control Board (SWRCB), & UCLA Luskin Center for Innovation. (2020). Recommendations for Implementation of a Statewide Low-Income Water Rate Assistance Program. https://www.waterboards.ca.gov/water_issues/programs/conservation_portals/assistance/docs/ab401_report.pdf
- Stern, C. V., Sheikh, P. A., & Ward, E. H. (2023). Central Valley Project: Issues and Legislation. Congressional Research Service. <https://sgp.fas.org/crs/misc/R45342.pdf>
- Stuart, D. (2016a). The Native Peoples of San Joaquin County: Indian Pioneers, Immigrants, Innovators, Freedom Fighters, and Survivors, Part One. The San Joaquin Historian.
- Stuart, D. (2016b). The Native Peoples of San Joaquin County: Indian Pioneers, Immigrants, Innovators, Freedom Fighters, and Survivors, Part Two. The San Joaquin Historian.
- Stuart, D. (2021). Indigenous Peoples of the Sacramento-San Joaquin Delta [Virtual Presentation]. <https://www.mvhistory.org/may-2021-first-wednesday-talk-indigenous-peoples-of-the-sacramento-san-joaquin-delta-with-david-stuart/>
- Sze, J. (2020). Environmental Justice in a Moment of Danger. In JSTOR (1st ed., Vol. 11). University of California Press. <https://www.jstor.org/stable/j.ctvqmp3jn>
- Sze, J., London, J., Shilling, F., Gambirazzio, G., Filan, T., & Cadenasso, M. (2009). Defining and Contesting Environmental Justice: Socio-natures and the Politics of Scale in the Delta. *Antipode*, 41(4), 807–843. <https://doi.org/10.1111/j.1467-8330.2009.00698.x>

- Taquino, M., Parisi, D., & Gill, D. A. (2002). Units of Analysis and the Environmental Justice Hypothesis: The Case of Industrial Hog Farms. *Social Science Quarterly*, 83(1), 298–316. <https://doi.org/10.1111/1540-6237.00084>
- The Locke Foundation. (n.d.). Locke History. Locke Foundation. Retrieved November 3, 2023, from <http://www.locke-foundation.org/locke-history/>
- The Principles of Environmental Justice. (1991). National People of Color Environmental Leadership Summit. Environmental Justice / Environmental Racism. <https://www.ejnet.org/ej/principles.html>
- Thronson, C. H. (2022). In the absence of a government program to contend with harmful algae blooms (HABs) in the Delta, a loose coalition of academics and environmental and community groups has been studying their spread and potential health impacts both from ground level and from the air. – *Estuary News Magazine*. *Estuary News Magazine*. <https://archive.estuarynews.org/habs-in-delta/>
- Triyanti, A., Hegger, D. L. T., & Driessen, P. P. J. (2020). Water and Climate Governance in Deltas: On the Relevance of Anticipatory, Interactive, and Transformative Modes of Governance. *Water*, 12(12), 3391. <https://doi.org/10.3390/w12123391>
- U.S. Army Corps of Engineers (USACE). (2009). National Economic Development Procedures Manual - Economics Primer. In *U.S. Army Corps of Engineers Institute for Water Resources*. https://www.iwr.usace.army.mil/portals/70/docs/iwrreports/iwrreport_09-r-3.pdf
- U.S. Bureau of Reclamation (USBR). (2023). Central Valley Project. Bureau of Reclamation. <https://www.usbr.gov/mp/cvp/>
- U.S. Department of Agriculture (USDA). (2019). *USDA Economic Research Service - Atlas*. USDA.gov. <https://www.ers.usda.gov/data-products/food-access-research-atlas/go-to-the-atlas/>
- U.S. Department of Justice, Office of the Attorney General. (1995). *Memorandum on Indian Sovereignty*. <https://www.justice.gov/archives/ag/attorney-general-june-1-1995-memorandum-indian-sovereignty>
- U.S. Environmental Protection Agency (USEPA). (2021). Climate Change and Social Vulnerability in the United States: A Focus on Six Impacts. https://www.epa.gov/system/files/documents/2021-09/climate-vulnerability_september-2021_508.pdf

- U.S. Environmental Protection Agency (USEPA). (2022). Title VI Complaint and Petition for Rulemaking for Promulgation of Bay-Delta Water Quality Standards. <https://www.restorethedelta.org/wp-content/uploads/2022-12-16-Bay-Delta-Complaint-and-Petition.pdf>
- U.S. Environmental Protection Agency (USEPA). (2023). Environmental Justice. US EPA. <https://www.epa.gov/environmentaljustice>
- Uche, U. I., Evans, S., Rundquist, S., Campbell, C., & Naidenko, O. V. (2021). Community-Level Analysis of Drinking Water Data Highlights the Importance of Drinking Water Metrics for the State, Federal Environmental Health Justice Priorities in the United States. *International Journal of Environmental Research and Public Health*, 18(19), 10401. <https://doi.org/10.3390/ijerph181910401>
- van Geen, A., & Luoma, S. N. (1999). A record of estuarine water contamination from the Cd content of foraminiferal tests in San Francisco Bay, California. *Marine Chemistry*, 64(1-2), 57–69. [https://doi.org/10.1016/s0304-4203\(98\)00084-x](https://doi.org/10.1016/s0304-4203(98)00084-x)
- Vanderwarker, A. (2012). Water and Environmental Justice. In *A Twenty-First Century U.S. Water Policy*. Oxford University Press.
- Water Education Foundation. (n.d.). Disadvantaged communities. Water Education Foundation. Retrieved March 14, 2023, from <https://www.watereducation.org/aquapedia-background/disadvantaged-communities#:~:text=The%20California%20Department%20of%20Water>
- Whipple, A., Grossinger, R. M., Rankin, D., Stanford, B., & Askevold, R. A. (2012). Sacramento-San Joaquin Delta historical ecology investigation: Exploring pattern and process (No. 672). SFEI Contribution. <https://www.sfei.org/documents/sacramento-san-joaquin-delta-historical-ecology-investigation-exploring-pattern-and-proces>
- Whyte, K. (2016). Indigenous Experience, Environmental Justice and Settler Colonialism. *SSRN Electronic Journal*. <https://doi.org/10.2139/ssrn.2770058>
- Windham-Myers, L., Oikawa, P., Deverel, S., Chapple, D., Drexler, J., & Stern, D. (2023). Carbon Sequestration and Subsidence Reversal in the Sacramento-San Joaquin Delta and Suisun Bay: Management Opportunities for Climate Mitigation and Adaptation. *San Francisco Estuary and Watershed Science*, 20(4). <https://doi.org/10.15447/sfew.2023v20iss4art7>

Zedler, J., & Stevens, M. (2018). Western and Traditional Ecological Knowledge in Ecocultural Restoration. *San Francisco Estuary and Watershed Science*, 16(3). <https://doi.org/10.15447/sfew.2018v16iss3art2>