



Appendix 5: People and Wetlands Monitoring Plan

1. Background

The Wetlands Regional Monitoring Program (WRMP), which is co-managed by the San Francisco Estuary Partnership and the San Francisco Estuary Institute (SFEI), established the People & Wetlands Workgroup in 2022 to develop indicators to measure the benefits and impacts of wetland restoration on people. The People & Wetlands Workgroup identifies priority management and monitoring questions that guide the selection of indicators, determines metrics and data collection protocols and/or standards for monitoring the priority indicators, increases the inclusion of different forms and sources of knowledge into wetland monitoring, and identifies ways to serve the information needs of different groups. This work expands on previous work of the WRMP that established management questions, monitoring questions, and indicators related to public health (mosquito and disease vector control). Disease vector-related indicators are not directly addressed in this document and will be addressed in future WRMP work.

The People & Wetlands Workgroup centers voices from frontline communities¹ and Tribes, and comprises experts in environmental justice, environmental education, regulatory agencies, social science, and more. Data on human-wetland connections can support advocacy for additional regional funding, inform design and adaptive management of wetland projects, provide new perspective on the effectiveness of efforts to sustain healthy aquatic habitats and resources, and more.

In December 2023, the People & Wetlands Workgroup proposed eight new indicators and one special study for inclusion in the science framework, addressing Management Questions 5B, 5C, and 5D:

- *Management Question 5B: What monitoring data and/or analyses are needed to improve the relationships between tidal marsh restoration, fish and wildlife support, mosquito and vector control, and public access?*
- *Management Question 5C: How are the benefits of wetlands (such as flood risk reduction, water quality, public access, opportunities for community stewardship, knowledge production & transmission, and cultural & spiritual experiences) distributed regionally and among different demographic groups?*
- *Management Question 5D: How does the provision of benefits (such as flood risk reduction, water quality, public access, opportunities for community stewardship, knowledge*

¹ Frontline communities are those that are most immediately vulnerable to the impacts of climate change. Often, these are communities of color and low-income, who have experienced historic underinvestment in infrastructure that can protect them from impacts, have fewer resources to respond to impacts, and experience disproportionate environmental burdens that may be exacerbated by climate change.

production & transmission, and cultural & spiritual experiences) progress over time at existing and restored wetland sites?

The People & Wetlands indicators are categorized as either “human dimensions indicators” or “equity indicators.” Human dimensions indicators are intended to monitor social aspects of wetlands, such as how people are interacting with wetland spaces and involved in wetland stewardship. Equity indicators are primarily products, with associated metrics, that evaluate the distribution of environmental features or qualities through a social lens (e.g. how water quality varies between wetlands adjacent to environmental justice communities and wetlands adjacent to other communities around the Bay). These human dimensions and equity indicators will be adapted as needed to ensure they address continued information needs. Some indicators may serve as initial, baseline products to guide other long-term monitoring.

The Steering Committee’s approval of the People & Wetlands indicators in January 2024 indicated support to add these indicators to the [WRMP Monitoring Matrix](#) and to develop new products and methods for new data collection and calculation of indicators/metrics, pending suitable funding and capacity. Standard Operating Procedures (SOPs) and Technical Methods Documents for the following People & Wetlands indicators and products will be added to the WRMP website (<https://www.wrmp.org/>) as they are developed and approved:

Human dimensions indicators – SOPs in development on data collection, analysis, management

- Representation in wetland decision-making
- Wetland visitation
- Wetland stewardship and learning
- Better practices for outreach & partnerships

Equity indicators – Technical Methods Documents in development on data sources, new metric and layer calculations, etc.

- Project benefits map
- Inclusive access map
- Flood risk reduction map
- Water & environmental quality map

Special studies

- Sense of belonging

Before new monitoring activities commence for the human dimensions indicators, SOPs will be approved by the Steering Committee or Technical Advisory Committee (whichever is more appropriate for the given indicator) and the indicator(s) will be incorporated into a version of the WRMP Implementation Plan. The Steering Committee will provide guidance on development of the equity

indicators (products) and the People & Wetlands Workgroup will approve the associated Technical Methods Documents.

2. 2024-2025 People & Wetlands Monitoring Activities and Products

The WRMP is pursuing the following People & Wetlands monitoring and data synthesis activities in 2024-2025, which were part of the proposal approved by the Steering Committee in January 2024. These near-term items were prioritized given the relative level of cost/effort, People & Wetlands Workgroup's priorities, and availability of staff and partners with relevant expertise to develop the SOPs/products. The People & Wetlands Workgroup used the following criteria to prioritize their recommended indicators:

- Promotes equity
- Promotes community pride & stewardship
- Centers perspectives of communities and Tribes
- Promotes public health & well-being

The near-term People & Wetlands monitoring activities and products are described below.

Monitoring Activities

2.1 Representation in Wetland Decision-Making

Representation is an important component of procedural equity – defined as fairness in processes that allocate resources – and can help us understand and address equity in distribution of environmental resources and harms (McDermott et al. 2013). The WRMP intends to survey groups with influence on decision-making in publicly funded wetland restoration projects to evaluate their representativeness of the region's communities. Survey results will inform wetland restoration-related programs, committee managers, and funders of how well their staff/members reflect the demographics of the communities they serve and the organizational perspectives that are represented by group members. This indicator is intended to examine inclusivity of historically underrepresented groups and environmental justice communities in decision-making spaces that influence wetland-related resources. Open-ended survey responses and case studies/resources compiled by WRMP staff and partners will generate useful information to support inclusive representation of the region's communities. The People & Wetlands Workgroup considers community representation in decision-making processes to be a key component of equity, and therefore a critical element to monitor, to address Management Question 5C: ***How are the benefits of wetlands distributed regionally and among different demographic groups?*** The Representation Survey addresses a portion of the following WRMP monitoring question under MQ5C: ***To what degree are communities and Tribes involved in wetland stewardship, learning, and engagement activities, and what are the demographics of those involved?***

2.1.1 Approach and Methods

The Representation Survey SOP details the methods the WRMP will use to survey wetland decision-makers, including members of committees, boards, workgroups, and agency staff operating across the following areas of wetland restoration and management: project implementation, expert advisory input, permitting, public funding, and monitoring. Data will be collected virtually through a combination of in-meeting and email surveys to groups that meet criteria outlined in the SOP. Specific groups identified as meeting these criteria are also listed in the SOP. Several committees and boards receiving the survey have terms lasting 2-4 years, thus data collection will repeat every 3-5 years.

2.1.2 Data Analysis and Products

The primary information products will be graphics that summarize representation in the following ways: demographic representation, Tribal representation, and perceived power/influence across demographic groups. Graphics will be presented on an indicator page of the WRMP website and upcoming State of Our Estuary website, along with narrative interpretation of results. Open-response survey data will also be analyzed and synthesized into recommendations that can be shared on the WRMP website, along with other resources (e.g. case studies, articles), to assist committee and program managers with inclusivity efforts.

Demographics of survey respondents will be compared with community demographics at the regional level. Responses from Bay Area-focused groups will be compared with American Community Survey (ACS) data for the 9-county Bay Area and responses from Delta-focused groups will be compared with ACS data for the 6 Delta counties. In some cases, when ACS comparative data are not available, we may use other sources. When data are not available in a format suitable for comparison with the WRMP dataset (such as gender) or are not appropriate for comparison (such as age), respondents' data will be summarized but not compared to regional data.

Further analyses will be performed so the representation data can serve as an indicator for the State of Our Estuary website. These analyses will be detailed in a Technical Appendix for the State of Our Estuary.

2.1.3 Data Management, Reporting, and Visualization

Survey responses will be collected through Qualtrics (or similar survey software) and individual survey response data will be stored online, in a Box folder private to survey administrators, to protect confidentiality. Summary-level data and anonymous open-response data will be shared with respective program/committee managers, and summary-level data will be shared publicly on the WRMP website and upcoming State of Our Estuary website. Data quality assurance and control will be performed by survey administrators according to the Representation Survey SOP.

Example metrics to be calculated include the following:

- Percent of respondent groups (committees, boards) with Tribal representation and/or percent of respondents representing communities or Tribes/Tribal organizations

- Overall levels of agreement with statements about ability to access/participate in meetings and influence decision-making, and breakdowns by demographic groups and organizational perspectives
- Comparison of respondent demographics vs regional community demographics, when comparison is appropriate and suitable regional data are available

Products

2.2 Project Benefits & Inclusive Access Map

The WRMP is developing a regional map/dashboard of wetland restoration projects and their stated benefits (e.g. flood risk reduction, water quality improvement, public access/recreation, stewardship & learning, cultural access/cultural resource protection, and more), overlaid with environmental justice (EJ) community maps. This map is intended to serve as a resource that provides context to funders of multi-benefit wetland/shoreline restoration and enhancement projects and informs decision-making about future projects. This product can help identify gaps – areas underserved by restoration, or by particular types of projects – that could be addressed by special calls for proposals or targeted outreach. Proposed inclusion of additional map layers such as presence of significant habitats, flood risk, and existing parks/open space will also enable funders to easily see the context of proposed project locations to inform their decision-making. Given the current absence of robust and consistent data on actual benefits provided by wetland restoration projects, this dashboard will be a starting point for addressing Management Question 5C: ***How are the benefits of wetlands distributed regionally and among different demographic groups?***

The People & Wetlands “Project benefits map” and “Inclusive access map” indicators will be combined, and a central focus of the overall map/dashboard will be evaluating the distribution of access and quality of access in relation to EJ communities. In addition to the funder audience identified above, this access element is intended to serve additional audiences including environmental justice advocates and shoreline planners/permittees. The EJ overlay in this product enables the WRMP to calculate metrics about differences in access around the region and between EJ communities and others, which can help EJ advocates identify areas in most need of access enhancements to improve equity and convey those needs in funding applications. Restoration funders and shoreline planners/permittees can also use this product to identify key amenities or features currently missing in proposed project areas and suggest their inclusion. The public access focus of this product addresses the following WRMP monitoring questions under MQ 5C: ***How is wetland access, including quality of access, distributed around the estuary? How does access vary between EJ communities and other communities?***

2.2.1 Approach and Methods

Data on restoration projects and their stated benefits will come from [EcoAtlas Project Tracker](#). Existing Project Tracker data under Administrative Regions managed by the SF Bay Restoration Authority (SFBRA) and Bay Conservation and Development Commission (BCDC) have some form of categorization in place

for project benefits. The WRMP will use these existing datasets, crosswalking the different schemes for categorizing benefits, and will establish a shared set of benefits that will be assigned to projects moving forward. Information on benefits will primarily be self-reported by project implementers in the Project Tracker tool. The WRMP will help develop a set of definitions for the benefits to assist with standardized categorization. More information on the categorization scheme will be available in the Technical Methods Document.

Additional layers will be displayed on the map/dashboard to assist with decision-making of the audiences described above. Some layers will be derived based on existing data to visually depict regional differences. For example, metrics about quality of access will be calculated based on presence of key amenities and features (e.g. bathrooms, picnic tables, interpretive centers). These will initially be based on readily available regional data, with the ability to augment with additional amenities/features as the WRMP identifies new key amenities/features (e.g. through the Sense of Belonging Special Study, described below) and datasets, and/or has capacity to generate new data (e.g. through community-engaged monitoring). Metrics will be calculated to summarize information about proximity/accessibility of projects and public access points to communities, enabling the WRMP to quantify and report change over time. Additional layers, layer calculations, and metric calculations will be defined in the Technical Methods Document.

Restoration project data will be updated on a rolling basis. Frequency of updates to map layers and metrics will be determined in development of the Technical Methods Document.

2.2.2 Data Analysis and Products

The product will be an EcoAtlas dashboard with interactive map layers that inform decision-making about multi-benefit wetland restoration, and with summary metrics that focus on public access to wetland sites.

Derived layers will be defined in the Technical Methods Document, and may include the following (calculated for each operational landscape unit² in the Bay):

- Number of public access points per mile of shoreline
- Percent of shoreline area designated as a park/public open space
- Average inclusive access score for shoreline parks (based on a derived layer scoring each park/open space based on presence of key amenities/features)

Metrics will be defined in the Technical Methods Document, and may include the following:

- Total residents within the service area of public access projects
- Percent of public access projects served by public transit (e.g. within 0.5-mile or 10-minute walk)
- Percent of residents within walking distance of public access projects (e.g. 0.5 miles)
- Percent of residents within biking distance of public access projects (e.g. 2.5 miles)

² Operational landscape units are connected geographic areas sharing certain physical characteristics that would benefit from being managed as a unit to provide particular desired ecosystem functions and services, as defined by [SFEI](#).

- Percent of residents within driving distance of public access projects (e.g. 5 miles)

To the extent feasible and appropriate, metrics will also be broken down by EJ communities and non-EJ communities (e.g. total EJ community residents within the service area of public access projects; total other community residents within the service area of public access projects).

2.2.3 Data Management, Reporting, and Visualization

This product will be stored on the SFEI server for inclusion in the EcoAtlas WRMP profile or dashboard. Data and summary metrics will be visible on EcoAtlas through the WRMP profile or dashboard.

2.3 Flood Risk Reduction Map

Flood risk reduction is one of the wetland ecosystem services of greatest interest to the People & Wetlands Workgroup. SFEI's [Baylands Resilience Framework](#) has developed models of wave attenuation by wetlands, among other resilience metrics, based on the Baylands Habitat Map (Plane et al. 2023). These resilience metrics are being used to plan shoreline management actions, including strategic dredged sediment placement by the Army Corps. The WRMP is developing a StoryMap as a communications product about wetland flood risk reduction to EJ communities and strategic sediment placement, utilizing existing datasets including the Baylands Resilience Framework wave attenuation modeling results and Bay Conservation and Development Commission (BCDC) community and shoreline vulnerability indices. This product addresses the following monitoring questions under MQ 5C: ***What level of flood risk reduction are wetlands and wetland projects providing to nearby communities around the estuary? How do levels of flood risk reduction from wetlands vary between EJ communities and other communities?***

Ideally, future expansion of this work will include ground truthing of the wave attenuation modeling and augmentation with indicators for other aspects of wetland flood risk reduction (e.g. wetland capacity to absorb and hold water). Ground truthing and repeated modeling over time, with updated data, can also help address Management Question 5D: ***How does the provision of benefits progress over time at existing and restored wetland sites?***

2.3.1 Approach and Methods

The flood risk reduction StoryMap incorporates the following data layers:

- Height of 100-year wave at the back of the marsh. This layer was developed by the Baylands Resilience Framework using statistical modeling, and represents height of a 100-year wave at the back of the marsh after attenuation by both mudflat and marsh (see Plane et al. 2023 for details).
- Shoreline Vulnerability Index. This layer indicates how vulnerable the shoreline is to erosion or to overtopping from waves based on multiple factors, including shoreline type, adaptability to sea level rise by shoreline type, presence of a fortified or hardened shoreline, presence of beaches and wetlands (frontage) or a secondary line of defense, shoreline height, and wave energy (BCDC 2021).

- **Community Vulnerability.** This layer indicates which communities are more vulnerable to sea level rise. It considers communities with high concentrations of social/economic characteristics that make it difficult for a community to prepare and/or respond to environmental hazards. The layer also considers risks from living on or near land and water that is contaminated, because rising sea level and more frequent flooding can increase the risk of exposure to contaminants (BCDC 2023).

Wave attenuation modeling by the Baylands Resilience Framework is scripted and can be repeated over time as new data sources become available (e.g. updated habitat maps). Ideally, this means updated wave attenuation layers will be produced every 4-5 years.

2.3.2 Data Analysis and Products

The StoryMap examines how wave attenuation of wetlands is distributed regionally and in relation to EJ communities and vulnerable shorelines. Because it is intended for a public, non-scientific audience, it provides an overview of the risks of sea level rise to the shoreline, the role of wetlands in reducing wave energy, importance of the shoreline to people, and describes how data layers like these can be – and are being – used to prioritize areas for management interventions.

2.3.3 Data Management, Reporting, and Visualization

The StoryMap will be hosted via ArcGIS Online by the Metropolitan Transportation Commission/Association of Bay Area Governments (the administrative home agency of the San Francisco Estuary Partnership). Individual data layers are publicly available via ArcGIS Online.

3. Other Upcoming People & Wetlands Monitoring Activities, Products, and Special Studies

The other monitoring activities, products, and special studies recommended by the People & Wetlands Workgroup are described below, and will be developed as capacity/funding become available.

Monitoring Activities

3.1 Wetland Visitation

Outdoor recreation, particularly around bodies of water, provides both physical and mental health benefits. Many wetland sites incorporate public access to make these benefits more readily available. The WRMP will monitor levels and types of visitation, and demographics and origins of visitors, to publicly accessible wetland areas to inform decision-making on public access. In combination with other indicators and special studies, this indicator will help land managers better understand whether changes to public access (amenities, features, other factors that make people feel more safe or welcome) and participation in stewardship and education programs lead to increased visitation by local communities, and use that information to adapt their management practices accordingly. Better understanding of

current visitors and visitation changes in response to management actions can help managers tailor future site enhancements to either current visitors or new groups. This indicator will also help funders evaluate whether sites are equitably serving local communities and inform both funders and regulators about amenities and features based on visitor demographics and types of uses. This indicator addresses the following WRMP monitoring question relevant to Management Questions 5B, 5C, and 5D: ***At wetland sites where public access is allowed, what are levels, types, and demographics of usage?***

3.1.1 Approach and Methods

As a starting point, the WRMP will review existing public access data (such as the data collected by park districts) to evaluate sufficiency for addressing the Management and monitoring questions above. Existing data will be synthesized, or, if deemed to be insufficient to address the WRMP's questions, an SOP will be developed for new data collection. Options to be considered for new data collection will include in-person surveys at wetland sites and acquisition of cell phone data, among other methods.

Inventorying visitation data will also include learning about existing data or data gaps pertaining to relationships between public access and wildlife.

Frequency of updating this indicator will be determined as the SOP or data synthesis progresses, but updates will likely be every 5-10 years.

3.1.2 Data Analysis and Products

Metrics and analyses of interest include total numbers of annual visitors (at each site and overall) and comparison of visitor demographics with community demographics. More detail will be added to this section as existing datasets are identified and/or an SOP for new data collection is developed in 2025-2026.

3.1.3 Data Management, Reporting, and Visualization

TBD - This section will be addressed in 2025-2026.

3.2 Wetland Stewardship and Learning

Opportunities for community members to get involved in wetland stewardship and learning provide an important pathway for getting people (particularly youth) interested in the environmental field, increasing visitation and connection to wetland sites, and can lead to eventual involvement in wetland-related careers. Many organizations that run stewardship and education programs and opportunities for community members also have an explicit interest in engaging members of communities underrepresented in the environmental field. In addition to collecting general data on participants (e.g. total volunteer hours, total numbers of unique participants), these organizations often also collect data on participant demographics to set goals, evaluate and communicate progress, and understand the impact of new efforts like affinity groups.

This human dimensions indicator will monitor numbers and demographics of participants in stewardship and education programs/events, such as volunteer planting days, nature walks, and stewardship

internships. This will help managers understand who their programs are reaching, learn from other programs successfully reaching target demographic groups, and adapt programs accordingly. Funders can choose to adopt this indicator as a performance measure for projects, allowing them to evaluate whether projects involving stewardship and education are equitably serving communities. This indicator addresses the following WRMP monitoring question under MQ5C: ***To what degree are communities and Tribes involved in wetland stewardship, learning, and engagement activities, and what are the demographics of those involved?***

3.2.1 Approach and Methods

The WRMP will compile a list of known organizations that run these programs and identify what demographic information they already collect about participants. Many programs collect participant information through sign-up forms or participant follow-up surveys. The WRMP will pursue synthesis of these existing data, primarily by requesting data from individual organizations/programs, and otherwise gathering data from public reports.

Given the nature of this approach (requesting data from organizations that run relevant events/programs, which may collect data for their programs as a whole or may be unable to share data broken down by site), this indicator will most likely summarize data for the region as a whole, rather than associating data with individual projects/sites. In order to serve as a performance measure for projects, project managers would need to collect and submit data associated with individual projects to the relevant funder(s).

3.2.2 Data Analysis and Products

Metrics and analyses of interest include total numbers of annual participants and comparison of participant demographics with regional community demographics. Initially, demographic summaries will use the “lowest common denominators” shared across all datasets. For example, some programs may collect information on whether participants identify as people of color, while others collect specific race/ethnicity information. In this case, regional data would be summarized by percent of participants identifying as people of color. If organizations/programs are willing to align data collection using standardized demographic questions, future demographic data could be summarized at a higher level of detail. More detail, including on frequency of indicator updates, will be added to this section as the WRMP conducts outreach to relevant organizations and identifies existing datasets in 2025-2026.

3.2.3 Data Management, Reporting, and Visualization

TBD - This section will be addressed in 2025-2026.

3.3 Better Practices for Outreach and Partnerships

Much work has been done in recent years to advance the ways that environmental projects, including restoration, planning, and scientific studies, engage and partner with communities and Tribes. These include development of “best practices” guides for meaningful community and Tribal engagement (e.g. BARHII 2021, WRMP 2023). We use the term “better practices” because it is impossible for an indicator

to fully represent adherence to the “best” practices, which may be defined differently by different people and will inevitably change over time.

This indicator will track the degree to which projects are engaging EJ communities and Tribes in wetland stewardship based on their incorporation of better practices (i.e. as funded partners or through targeted public outreach in restoration planning or implementation). Trends in this indicator will inform funders about whether progress is being made on recommendations from the public and community-based organizations to meaningfully include community perspectives and partners in project planning and implementation. This will also inform regulators with equity policies (e.g. BCDC, Water Board) about trends in projects meeting the intent of those policies.

3.3.1 Approach and Methods

The WRMP will coordinate with entities working to establish best practices/criteria for meeting equity and engagement policies. Some data collection options that will be considered include: synthesizing data that funders and regulators collect about projects partnering and engaging with communities and Tribes (e.g. through staff evaluation of proposed projects or information in final reports), or soliciting information directly from project proponents. The WRMP will also identify other ways to share information that helps projects meaningfully engage with communities and Tribes, such as communicating about case studies.

3.3.2 Data Analysis and Products

TBD - This section will be addressed in 2025-2026.

3.3.3 Data Management, Reporting, and Visualization

TBD - This section will be addressed in 2025-2026.

Products

3.4 Wetland Water and Environmental Quality

Communities are interested in various aspects of water and environmental quality, and how quality varies in wetlands near EJ communities versus other wetlands. This concept mirrors the Project Benefits & Inclusive Access Map (which shows projects, their stated benefits, and public access in relation to EJ communities) and Flood Risk Reduction Map (which shows wetland flood attenuation metrics in relation to vulnerable shorelines and communities). The WRMP will add wetland water and environmental quality data to one of these nearer-term products. The incorporation of water and environmental quality data into one of these products will provide community groups with information of interest on environmental justice issues around wetlands, which can inform public information campaigns about fishing and other recreational safety, new contaminant testing, or cleanup activities. This will also provide helpful context for funders about the need for proposed projects that will improve water and environmental quality. This product addressed the following WRMP monitoring question under MQ 5C:

How does water quality in wetlands proximate to EJ communities compare with water quality in wetlands proximate to other communities?

3.4.1 Approach and Methods

The People & Wetlands Workgroup has prioritized the inclusion of dissolved oxygen (as a measure of basic water quality and indicator of tidal flow/flushing) and nearshore contaminant data for this product. Likely data sources include the WRMP (for future dissolved oxygen data) and Regional Monitoring Program for Water Quality (Bay RMP). Other data of interest include CRAM scores, mosquito abundance, and data derived from the Baylands Habitat Map (e.g. core marsh area).

3.4.2 Data Analysis and Products

TBD - This section will be addressed in 2025-2026.

3.4.3 Data Management, Reporting, and Visualization

TBD - This section will be addressed in 2025-2026.

4. Special Study: Sense of Belonging

Special studies are used by the WRMP to complement routine monitoring, and serve purposes such as answering specific questions distinct from long-term regional analyses of status and trends, identifying specific drivers of observed change, or piloting new SOPs. The People & Wetlands Workgroup has identified the need for a special study addressing the question: ***How safe and welcome do people in different demographic groups feel in publicly accessible wetland spaces?***

The objective of the special study is to identify whether there are communities or demographic groups that do not feel a sense of belonging around the baylands, where they are located, and factors that positively or negatively influence their sense of belonging, with a particular focus on EJ communities. The ultimate goal is to inform decision-makers about these factors so they can address them and improve equitable access to the mental and physical well-being benefits of visiting the Bay's wetlands.

4.1 Rationale for Sense of Belonging Special Study

Nationwide, there is evidence that people of color are underrepresented in public green and blue (water-related) spaces, identified by some as an issue of "green space justice" (Gao, Zhai, & Fu, 2023). Even when wetland projects are located in or near environmental justice communities, with concerted efforts to make the sites accessible and appealing to visitors, People & Wetlands Workgroup and WRMP Steering Committee members have observed underutilization by nearby community members. Some have heard from frontline community members, particularly people of color, that they do not visit nearby publicly accessible shoreline areas because they feel unsafe, unwelcome, or like they don't belong.

This special study will pilot a method for gathering information on sense of belonging and using the resulting information in decision-making.

4.2 Data Collection

The WRMP will design a special study that characterizes the factors that promote a sense of belonging, safety and inclusion at the San Francisco Estuary's wetlands among diverse community members. The study will collect information to address the following questions: ***What specific factors are perceived as barriers to feeling safe and welcome in wetlands areas for people from environmental justice communities? How do these factors vary across different communities and demographic profiles within the Bay Area?***

As a first step, the WRMP will conduct a literature review to identify potential data collection methods on sense of belonging in public natural spaces, such as interviews or focus groups in partnership with community-based organizations. This section will be expanded in 2025-2026 based on results from the literature review.

4.3 Data Analysis

Data analysis will likely include manual coding of interview/focus group data and statistical analysis of differences in responses between demographic groups. This section will be expanded in 2025-2026.

Key factors that are identified through this special study may be used to update other indicators, such as public access site scores on the Inclusive Access Map. Information on factors, particularly those important to specific demographic groups (e.g. types of programming, signage in different languages), will be shared with land managers to inform future projects that aim to make sites more accessible or appealing to targeted user groups.

As managers begin to use this information on factors influencing sense of belonging, ongoing WRMP monitoring of visitation will enable analysis of whether management changes to these factors correspond to changes in visitation rates and demographics, with a particular focus on visitation by historically underserved groups and local communities.

References

Bay Area Regional Health Inequities Initiative [BARHII] (2021). Farther Together: Seven Best Practices for Engaging Communities to Create a Healthy, Resilient Region for All.

<https://www.adaptingtorisingtides.org/wp-content/uploads/2023/09/BARHIIFartherTogether2021.pdf>.

Bay Conservation and Development Commission [BCDC] (2021). Shoreline Vulnerability Index [Data set].

<https://data-bcdc.opendata.arcgis.com/>.

Bay Conservation and Development Commission [BCDC] (2023). Community Vulnerability [Data set]. <https://data-bcdc.opendata.arcgis.com/>.

Gao S, Zhai W, & Fu X (2023). Green space justice amid COVID-19: Unequal access to public green space across American neighborhoods. *Frontiers in Public Health*, 11, 1055720.

McDermott M, Mahanty S, & Schreckenberg K (2013). Examining equity: a multidimensional framework for assessing equity in payments for ecosystem services. *Environmental Science & Policy*, 33, 416-427. <https://doi.org/10.1016/j.envsci.2012.10.006>.

Plane E, Braud A, Lowe J, Iknayan K, Foley M (2023). Regional Analysis of Potential Beneficial Use Locations. Conducted for the San Francisco Bay Regional Dredged Material Management Plan. Prepared by the San Francisco Estuary Institute for the US Army Corps of Engineers, San Francisco District. SFEI Contribution No. 1178. San Francisco Estuary Institute: Richmond, CA. <https://www.sfei.org/documents/regional-analysis-potential-beneficial-use-locations>.

Wetlands Regional Monitoring Program [WRMP] (2023). Best Practices for Tribal Engagement. https://www.wrmp.org/wp-content/uploads/2023/06/WRMP_Tribal-Engagement-Best-Practices_20230524.pdf.