SF ESTUARY Wetlands Regional Monitoring Program

People & Wetlands Standard Operating Procedures (SOP): Representation in Wetland Decision-Making Survey

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People & Wetlands SOP Introduction

People & Wetlands Workgroup

People & Wetlands (P&W) Workgroup members contribute expertise in environmental justice, environmental education, social science, wetland restoration and adaptive management, urban planning, and more to the WRMP. Each P&W SOP contains a list of contributing authors. All current and former workgroup members at the time of SOP development are listed below, with their affiliation at the time of their contributions to the workgroup.

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About the WRMP

The Wetland Regional Monitoring Program (WRMP, www.wrmp.org) is a multi-agency effort to coordinate the monitoring of estuarine wetland habitats within the San Francisco Estuary (SFE) and inform wetland restoration, conservation, and adaptive management as reflected in the mission statement:

> *The WRMP delivers coordinated regional monitoring of the San Francisco Estuary's wetlands to (1) inform science-based decision-making for wetland restoration and adaptive management and (2) increase the cost-effectiveness of permit-driven monitoring associated with wetland restoration projects.*

The SFE is the largest enclosed estuary in the western United States, ranging from the upper estuary (Suisun Marsh, Suisun Bay, and the Delta) that receives freshwater inputs from the watershed of the Sacramento River and San Joaquin River, to the lower estuary, which experiences relatively greater marine influence. Information and analyses generated by the WRMP will help us understand how landscape-scale drivers such as climate change are affecting the SFE across space and time. The WRMP focuses on the monitoring of brackish and saline wetland habitats throughout the SFE, and the human and equity dimensions of these habitats, including those in five regions delineated within the WRMP: Suisun Bay, San Pablo Bay, and Central, South, and Lower South San Francisco Bay.

Background on Human Dimensions in the WRMP

The P&W Workgroup formed in 2022 to further develop the human dimensions of the WRMP, with an emphasis on centering the perspectives of marginalized communities and considering ways to incorporate new forms and sources of knowledge into the WRMP. This process involved identifying priority management and monitoring questions about human connections to wetlands, then selecting

and determining methods for monitoring indicators that address those questions. 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 set of Standard Operating Procedures (SOPs) and will be addressed in future WRMP work.

Human dimensions indicators in the WRMP serve numerous purposes, including highlighting the importance and function of wetlands to people, informing design and adaptive management of wetland projects, and evaluating progress on agency mandates about environmental equity. Communicating about the benefits of wetlands in terms that resonate with communities provides vital support for advocacy about continued regional wetland restoration funding. Analyses of relationships between indicators will provide valuable information on potential management interventions to influence social outcomes. Finally, agencies with policies about benefitting disadvantaged, vulnerable, or under-represented communities may be interested in what we learn from indicators that evaluate equity in distribution of wetland benefits and/or the methods the WRMP uses for these equity assessments.

Workgroup Guiding Principles

The P&W Workgroup developed the following guiding principles that apply to its recommendations:

- Promotes equity
- Promotes community pride in and stewardship of wetlands
- Centers perspectives of marginalized communities and Tribes and encourages their direct inclusion in decision-making
- Can lead to improved public health and well-being

Purpose of People & Wetlands Standard Operating Procedures

The Technical Advisory Committee (TAC) and workgroups of the SFE WRMP provide scientific and technological advice to the Steering Committee (SC) of the WRMP. The purpose of the People & Wetlands SOPs is to recommend standardized methods for monitoring and reporting on the status and trends of wetland human dimensions in the SFE. These approaches have been selected by the P&W Workgroup based on existing human dimensions data, peer-reviewed literature, gray literature (e.g. publicly available government reports), and/or consensus-based professional judgment regarding their importance for capturing relevant human-wetland connections and for answering the WRMP Management Questions outlined in the WRMP Program Plan (WRMP, 2020). These SOPs will be referenced by the WRMP in future iterations of the WRMP Monitoring Plan and Implementation Plan. Data collected in alignment with these SOPs are intended to address the following WRMP Guiding and Management Questions:

- *Guiding Question 5: How do policies, programs, and projects to protect and restore tidal wetlands benefit and/or impact public health, safety, and recreation?*
    - *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 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.

SOPs for the following People & Wetlands indicators will be added to the WRMP website (https://www.wrmp.org/) as they are developed and approved:

Human dimensions indicators

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

Equity indicators

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

Special studies

- Sense of belonging

For human dimensions indicators and special studies, SOP contents generally include data collection methods and locations, survey instruments or standardized data collection forms, and plans for data storage and analysis. For equity indicators, SOP contents include information such as the sources of data layers included on maps and methodology for metric calculations.

While different monitoring elements of the WRMP are outlined individually in separate SOPs, they are interrelated and will be integrated in the WRMP Monitoring Plan. For instance, by tracking similar metrics at the regional scale, such as demographics of wetland decision-makers, visitors, and stewardship/education participants, the WRMP can study relationships between these forms of

participation. Trends and patterns seen in human dimensions indicators collected at WRMP monitoring network sites, such as visitation rates, can also be correlated with physical or biological factors (vegetation cover, bird indicators, presence of key features linked to sense of belonging, etc.) to improve understanding of potential site-scale management actions to increase visitation or better serve target demographic groups.

Glossary of Terms

Equity – Equity, in this context, is achieving fairness and balance in access to environmental resources and benefits of a healthy environment (e.g., green space, safe neighborhoods, healthy homes, healthy fisheries), in bearing environmental burdens, and in participating in environmental decision-making and stewardship (definition adapted from Environmental Defense Fund definition).

Human dimensions – Human dimensions of wetlands are the interactions between people and wetlands, including participation in wetland-related recreation and management activities, the social benefits and ecosystem services of wetlands, and the negative interactions (i.e. ecosystem disservices and human impacts on wetlands).

Environmental justice communities – Environmental justice communities are those that have been disproportionately impacted by environmental burdens (e.g., pollution in air, water and on land) and social inequities. These populations most often include historically underrepresented communities that are at higher risk of experiencing adverse health outcomes due to environmental inequities.

Representation in Wetland Decision-Making Survey SOP

Description & Purpose

The People & Wetlands Workgroup is proposing 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. The survey will also evaluate group members' sentiments about access to and influence on 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). 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.

Survey Development

The survey was developed in 2024 by Ally Malilay (NOAA Fisheries RAY Fellow) and Alex Thomsen (SF Estuary Partnership), with support from Sasha Harris-Lovett and Hannah Kempf (SF Estuary Partnership), the People & Wetlands Workgroup, and other WRMP staff. Survey methods were presented to the Bay-Delta Social Science Community of Practice for expert feedback. The survey authors also coordinated with social science researchers at UC Davis, Dr. Mark Lubell and Kyra Gmoser-Daskalakis, to improve the survey questions based on their experience and include additional questions relevant to their governance research. The survey and data management protocols have been reviewed by the State of California—Health and Human Services Agency Committee for the Protection of Human Subjects (project 2024-133).

Because results of this survey are intended to be compared with broader community demographic data in order to evaluate representativeness, survey questions and responses were developed to align with existing surveys, primarily the American Community Survey. Question wording and demographic categories were also informed by other existing surveys including Grassroots Ecology's volunteer survey, Bay Area Council annual polls, the 2023 Delta Residents Survey, 2024 State of the Estuary Conference survey, and Explore the Coast final report template. See Appendix A for the full survey.

Data Collection

Data will be collected virtually through a combination of in-meeting and email surveys to groups that do work related to wetland restoration and management at a regional scale in the Bay and Delta. To maximize response rates, in-meeting requests for survey responses will be used as much as possible, and will be accompanied by a brief presentation about the purpose of the survey by the survey administrators (see distribution materials in Appendix B). Broadly, survey recipients will include 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. Because this indicator is intended to measure change over time, the People &

Wetlands Workgroup developed the following criteria for groups to survey so that changes in the indicator reflect changes in representation, rather than changes in methodology:

- The group has a broad regional scope (Bay Area, Delta, Suisun[1], or SF Estuary)
- The group is a standing group that can be easily re-contacted over time (e.g. publicly available contact lists, committees)
- A major focus of the group is one of the following components of voluntary tidal wetland restoration or management:
    - Project implementation
    - Expert advisory input
    - Permitting
    - Management of public funds
    - Monitoring and evaluation
- The group is directly connected to a government agency or program that makes decisions about SF Estuary wetlands, or is directly responsible for implementing a wetland project
- Staff surveyed should be limited to project/program management or permitting staff whose role includes selecting/recommending restoration and enhancement projects for funding, influencing the benefits/outcomes that restoration and enhancement projects provide, or a similar scope

See the full list of groups, and distribution materials, in Appendix B.

Data collection will occur in the winter/early spring, starting in 2024-2025. Several committees and boards receiving the survey have terms lasting 2-4 years, thus data collection will repeat every 3-5 years.

Data Storage and Analysis

Survey responses will be collected through SurveyMonkey (or similar software) and individual survey response data will be stored online, in a Box folder private to survey administrators, to protect confidentiality. Aggregated data from the results will be publicly available on the WRMP website (www.wrmp.org) and upcoming State of Our Estuary website and shared with relevant program/committee managers.

Data quality assurance and control will include checking the percentage of questions answered and confirming whether the response is associated with at least one of the target groups identified in Appendix B.

The primary information products will be graphics that summarize representation in the following ways: demographic representation, Tribal representation, and perceived power/influence across demographic and/or organizational groups. 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. Demographic comparisons for Suisun-specific groups will be determined later. In some cases, when ACS comparative data are not available, we may use other sources such as the Bay Area Equity Atlas, Bay Area Council polls, and Delta Residents

[1] Suisun is included, and not other subregions, because management in Suisun is unique from other parts of the Bay and Delta, and not all Bay- or Delta-focused groups include Suisun.

Survey. When data are not available in a format suitable for comparison with our dataset (such as gender) or are not appropriate for comparison (such as age), respondents' data will be summarized but not compared to regional data.

Regional comparison data from the ACS will be accessed via API from the U.S. Census Bureau using the *tidycensus* package (Walker and Herman 2024) in R (R Core Team 2023). For each new round of survey data collection, we will compare data with the most recent available ACS 5-year estimates for race, ethnicity, and language for our comparisons. We will collect race and ethnicity data in two separate questions to match the ACS survey format, and we will combine race/ethnicity data for analyses according to methodology used by the Bay Area Equity Atlas. This methodology involves creating mutually exclusive categories by grouping everyone who identifies as being of Hispanic origin in the Hispanic/Latino category, which results in data for the six major racial/ethnic categories within the Census (White, Black/African American, Hispanic/Latino, Asian/Pacific Islander, Native American, and Mixed/other race).

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Appendices

Appendix A: Representation in wetland decision-making survey questions

Appendix B: Representation in wetland decision-making survey distribution materials

- Full list of groups to survey
- Survey overview slides for in-meeting distribution
- Template for email distribution