

Appendix 10

People and Water

Contents

People and Water	page 1
Theme Subcommittee Members	page 1
Engagement Process	page 2
Available Research, Data, and Tools	page 3
Research Needs and Gaps	page 11
Gaps in Research, Data, and Tools Related to Flood-MAR	page 14
Prioritization Process	page 27
Top Three Research, Data, and Tools Actions	page 27
Next Steps	page 30

People and Water

Theme Subcommittee Members

The Flood-MAR People and Water Subcommittee consists of two co-chairs and nine subcommittee members. Subcommittee members are listed by name and affiliation below.

Position	Name	Affiliation
Co-Chair	Mike Antos	Stantec
Co-Chair	Jose Alarcon	California Department of Water Resources
Subcommittee Member	Ana Garcia	Environmental Defense Fund
Subcommittee Member	Heather Lukacs	Community Water Center
Subcommittee Member	Debi Ores	Community Water Center
Subcommittee Member	Valerie Olson	University of California, Irvine Anthropology
Subcommittee Member	Michele Romolini	Loyola Marymount University
Subcommittee Member	Erik Porse	California State University (CSU), Sacramento
Subcommittee Member	Jeremiah Puget	North Coast Regional Water Quality Control Board (RWQCB)
Subcommittee Member	Dr. Ajay Singh	CSU Sacramento
Subcommittee Member	Charles Striplen	North Coast RWQCB

Engagement Process

The theme co-chairs identified professionals with expertise in California community engagement and requested their participation with this theme. Two conference calls were scheduled a few weeks apart in early 2019. The first conference call introduced the objectives of the Flood-MAR Research Advisory Committee (RAC) and initiated the brainstorming for both existing and needed Research, Data, and Tools that would facilitate the expansion and implementation of Statewide Flood-MAR opportunities.

Notes from the first meeting were distributed by the co-chairs to the subcommittee via email requesting each of the subcommittee members to prioritize the identified gaps and identify the relationship of those gaps to other Flood-MAR themes. A straw-man proposal of the gap prioritization was developed first by the co-chairs, and with input from the subcommittee members on the second conference call the gap priorities were re-ranked.

Following the second RAC meeting where all thirteen themes discussed their priorities, a follow-up conference call was held with this subcommittee to discuss the second RAC meeting and gaps identified by other themes. The co-chairs then sought input on whether the prioritized gaps needed to be re-prioritized.

Available Research, Data, and Tools

The tables below summarize the available research, data, and tools related to the People and Water theme. This information presented is based on subcommittee members suggestions.

Table 1 Delta Social Science Task Force (Delta - SSTF)

Category: Research

Scale: State

Availability: Available?

Other Themes That Will Benefit:

6. Land Use Planning & Management

12. Local, State, Federal Policies and other Legal Considerations

Public Benefits Informed By:

Flood risk reduction, drought preparedness, aquifer replenishment, recreation and aesthetics.

Implementation Factors:

Governance and coordination, funding and incentives, site suitability.

Description, including Connection to Flood-MAR:

The Delta – SSTF is charged with developing a strategic plan to strengthen and integrate social sciences into the science, management, and policy landscape of the Delta. Once established, this seems like a potential resource for bringing social science into decision-making about Flood-MAR.

Table 2 Motivations and Barriers

Category: Research

Scale: State

Availability: Available

Other Themes That Will Benefit:

6.Land Use Planning and Management

8. Recharge and Extraction Methods

13. Tool and Application Development

Public Benefits Informed By:

Aquifer replenishment, ecosystem enhancement, drought preparedness, flood risk reduction.

Implementation Factors:

Groundwater use, source water, conveyance, site suitability, feasibility analysis

Description, including Connection to Flood-MAR:

Dr. Ajay Singh is publishing a paper in Journal of Soil and Water Conservation (in review) with a description of motivations and barriers to implementing Flood-MAR practices.

What are the motivations and barriers to adopt recharge practices and/or participate in groundwater recharge programs during fallow season?

Literature has focused primarily on adoption of irrigation practices or modelling groundwater recharge (High Plains, etc.). There is a gap in adoption of innovations (practices and technology) which facilitates groundwater recharge.

Table 3 Human Right to Water Portal

Category: Data
Scale: State
Availability: Available

Other Themes That Will Benefit:
7. Infrastructure Conveyance and Hydraulics

Public Benefits Informed By:
Water distribution.

Implementation Factors:
Governance and coordination, source water, conveyance.

Description, including Connection to Flood-MAR:
Hosted by the California State Water Resources Control Board

Table 4 Unincorporated Disadvantage Communities

Category: Data
Scale: State
Availability: Available

Other Themes That Will Benefit:
6. Land Use Management

Public Benefits Informed By:
Water quality improvement, climate change adaptation.

Implementation Factors:
Governance and coordination, funding and incentives.

Description, including Connection to Flood-MAR:
UC Davis study on water access for Disadvantaged Unincorporated Communities (a selected sample of the Central Valley). In addition, LAFCO's are legislatively tasked with identifying unincorporated disadvantaged communities, and is a likely data source.

Table 5 DWR’s Water Plan Resource Management Strategies

Category: Data

Scale: State

Availability: Available

Other Themes That Will Benefit:

3. Infrastructure Conveyance and Hydraulics

6. Land Use Planning and Management

11. Economic Analysis

Public Benefits Informed By:

Water quality improvement, conveyance.

Implementation Factors:

Governance and coordination, funding and incentives, conveyance, feasibility analysis.

Description, including Connection to Flood-MAR:

DWR – California Water Plan: Resource Management Strategies (RMS), published July 29, 2016.

Economic Incentives; Outreach and Engagement; Water and Culture; Water-Dependent Recreation

Table 6 OEHHA Vulnerability and Access to Safe Water

Category: Tool

Scale: State

Availability: Available

Other Themes That Will Benefit:

3. Infrastructure Conveyance and Hydraulics

12. Local, State, Federal Policies and Legal Considerations

13. Tool and Application Development

Public Benefits Informed By:

Fair water distribution, climate change adaptation.

Implementation Factors:

Governance and coordination, source water.

Description, including Connection to Flood-MAR:

The Office of Environmental Health Hazard Assessment (OEHHA) is developing a tool to assess vulnerability and the Human Right to Water, building on the retailer's data set.

Table 7 CAL EnviroScreen 3.0

Category: Tool

Scale: State

Availability: Available

Other Themes That Will Benefit:

6.Land Use Planning and Management

7. Water Quality

9.Environment

13.Tool and Application Development

Public Benefits Informed By:

Water quality improvement, enhance disadvantage communities with safer water.

Implementation Factors:

Governance and coordination, source water, conveyance.

Description, including Connection to Flood-MAR:

The Office of Environmental Health Hazard Assessment (OEHHA) - CalEnviroScreen 3.0. CalEnviroScreen identifies California communities by census tract that are disproportionately burdened by, and vulnerable to, multiple sources of pollution. Mike Reibel and Madelyn Glickfeld have been working to demonstrate the shortcomings of CalEnviroScreen to identify disadvantaged community areas with a water district and GIS methods to compensate. A white paper drafted with analysis from Los Angeles County is available.

Table 8 DWR Disadvantaged Community Tool

Category: Tool

Scale: State

Availability: Available

Other Themes That Will Benefit:

3. Infrastructure Conveyance and Hydraulics

9. Environment

13. Tool and Application Development

Public Benefits Informed By:

Water quality improvement.

Implementation Factors:

Governance and coordination, source water, site suitability, feasibility analysis.

Description, including Connection to Flood-MAR:

Mapping tool, showing location of disadvantaged communities based on median household income (MHI) data.

Table 9 Drinking Water Vulnerability Tool

Category: Tool

Scale: State

Availability: Available

Other Themes That Will Benefit:

6. Land Use Planning and Management

7. Water Quality; Soils, Geology, and Aquifer Characterization

13. Tool and Application Development

Public Benefits Informed By:

Water quality improvement, site preservation, ecosystem enhancement.

Implementation Factors:

Governance and coordination, source water, site suitability.

Description, including Connection to Flood-MAR:

The Community Water Center (CWC) is developing a drinking water vulnerability tool, which I am sure Heather or Debi could provide further information about. Helen Dahlke at UC Davis mentioned that she is working to identify suitable recharge locations near disadvantaged communities for the tool.

Table 10 Trust The Tap

Category: Research

Scale: State

Availability: Available

Other Themes That Will Benefit:

3 .Infrastructure Conveyance and Hydraulics

7. Water Quality

9. Environment

12. Local, State, Federal Policies and other Legal Considerations

13. Tool and Application Development

Public Benefits Informed By:

Water quality improvement, ecosystem enhancement.

Implementation Factors:

Funding and incentives, source water, site suitability, feasibility analysis.

Description, including Connection to Flood-MAR:

Mike Antos: Based on my experience developing qualitative listening-based data collection with "disadvantaged" communities in the Santa Ana watershed, I note that we might have an opportunity not just to address gaps around "building trust" around water systems or to identifying injustice around contaminated systems but to do systematic qualitative research around why particular communities "distrust the tap," including why communities that water agencies claim have "good" water still distrust their taps, submit evidence of its unhealthiness, and continue to buy water from water stores. This might allow for better more evidence-based "Trust the Tap" and trust building campaigns.

Research Needs and Gaps

The tables below summarize needs and gaps in research, data, and tools related to People and Water theme. These needs and gaps were determined by the subcommittee members.

Table 11 Identify and Prioritize Areas of Poor Groundwater Quality that Could Benefit from Flood-MAR

Category: Research
Scale: State
Availability: Gap

Other Themes That Will Benefit:

- 5. Soils, Geology, and Aquifer Characterization
- 6. Land Use Planning and Management
- 13. Tool and Application Development

Public Benefits Informed By:

Working landscape preservation and stewardship, water quality improvement.

Implementation Factors:

Conveyance, groundwater use, feasibility analysis.

Description, including Connection to Flood-MAR:

Identify and prioritize areans and regions where existing areas where disadvantages community members are reliant on poor quality groundwater that could be improved by Flood-MAR.

Website:
Contact:
Email:

Table 12 Equitable Distribution of Benefits and Impacts Across All Themes

Category: Research

Scale: State

Availability: Gap

Other Themes That Will Benefit:

1. Hydrology
 2. Reservoir Operations
 3. Infrastructure Conveyance and Hydraulics
 4. Crop Suitability
 5. Soils, Geology, and Aquifer
 6. Land Use Planning and Management
 7. Water Quality
 8. Recharge and Extraction Methods
 9. Environment
 10. People and Water
 11. Economic Analysis
 12. Policy
 13. Tool and Application Development
-

Public Benefits Informed By:

Water quality improvements, climate change adaptation.

Implementation Factors:

Governance and coordination, conveyance, funding and incentives.

Description, including Connection to Flood-MAR:

- How are potential resources allocated? What is the decision-making process, and how are project locations selected? What is the nature of the project – seek public input on how projects are done.
 - Understand who will be the most positively and negatively affected – acknowledge that both impacts and benefits should be fairly distributed among socioeconomic groups. Develop a set of recommended strategies for Flood-MAR, after identifying groups within the impact area, engage early and often. Integrate issues of equity into other Flood-MAR research themes.
 - Data – vulnerability assessment: data help is needed in socioeconomic realms.
 - Specific criteria and policy fall into the scheme of things. Understand what policy levers are available to make sure that equity is usefully considered for modeling; what is the scale of modeling and facilitating transactions?
 - Develop a stand alone matrix of opportunities for constraints/needs/incentives based on disadvantaged communities area of impacts. The current policy environment has been developed around setting resources aside based on
-

census blocks. How do the benefits relate across different spatial areas of data collection and actual project implementation.

- Current condition and future condition vulnerability – how to overcome current and future needs and Climate change vulnerabilities; tree mortality – parks.

Website:

Contact:

Email:

Table 13 Engagement Methods

Category: Research

Scale: State

Availability: Gap

Other Themes That Will Benefit:

12. Local, State, Federal Policies and other Legal Considerations

Public Benefits Informed By:

Water management.

Implementation Factors:

Governance and coordination, funding and incentives.

Description, including Connection to Flood-MAR:

Develop community engagement methods in a productive learning environment to build trust between agencies and local communities.

Identify existing agencies that are good with community engagement in the planning process.

Website:

Contact:

Email:

Gaps in Research, Data, and Tools Related to Flood-MAR

Listed below are the gaps in research, data, and tools related to Flood-MAR. These needs and gaps were determined by the subcommittee members.

Table 14 Tribal Water and Culture Needs

Category: Research

Scale: Local

Availability: Gap

Other Themes That Will Benefit:

4. Crop Sustainability
 5. Soils, Geology, and Aquifer Characterization
 9. Environment
-

Public Benefits Informed By:

Ecosystem enhancement.

Implementation Factors:

Source water, site suitability, feasibility analysis.

Description, including Connection to Flood-MAR:

In partnership with or led by Tribal members, research/document how Flood-MAR projects may support tribes and/or impact tribes, such as:

- Cultural beneficial water uses
- Subsistence and ceremonial uses of water
- Tribal cultural resources, etc.

Assess how Flood-MAR projects can utilize tribal ecological knowledge to better implement Flood-MAR efforts.

Table 15 Identify Drinking Water Protection Zones

Category: Research

Scale: State

Availability: Gap

Other Themes That Will Benefit:

6. Land Use Planning and Management

7. Water Quality

8. Recharge and Extraction Methods

Public Benefits Informed By:

Water quality improvement, recreation and aesthetics.

Implementation Factors:

Source water, site suitability, governance and coordination.

Description, including Connection to Flood-MAR:

Currently, drinking water protection zones are being proposed (February 2019) as part of groundwater sustainability plans to prevent potential adverse impacts on water quality from pumping and recharge projects. Ensure this process does not prevent Flood-MAR projects that could remediate or support remediation of poor groundwater quality in a disadvantaged community reliant on groundwater. Ensure that “drinking water protections zones” are equitably distributed, and guard against existing environmental injustices being reinforced by how these spaces are designated.

Table 16 High-Priority Recharge Zones

Category: Research

Scale: State

Availability: Gap

Other Themes That Will Benefit:

- 7. Water Quality
 - 8. Recharge and Extraction Methods
 - 9. Environment
-

Public Benefits Informed By:

Water quality improvement, ecosystem enhancement.

Implementation Factors:

Source water, recharge method, site suitability.

Description, including Connection to Flood-MAR:

Along with identifying zones needing special protection to prevent new groundwater contamination, identify zones which would most benefit from new sources of clean recharge.

Spatially prioritize candidate sites to include areas where additional recharge would benefit communities lacking access to safe drinking water.

Table 17 Societal Willingness

Category: Research

Scale: State

Availability: Gap

Other Themes That Will Benefit:

12. Local, State, Federal Policies and Legal Considerations

Public Benefits Informed By:

Working landscapes preservation and stewardship.

Implementation Factors:

Funding and incentives, site suitability, governance and coordination.

Description, including Connection to Flood-MAR:

Understand reasons why certain groups / landowners would be willing or unwilling to participate in the Flood-MAR program. In addition to private property owner studies, research is needed to document both who uses public land, and how they can be reached for engagement in developing Flood-MAR projects on public land. This can also help improve trust and build relationships.

Table 18 Factors Influencing Land Use Decisions

Category: Research

Scale: State

Availability: Gap

Other Themes That Will Benefit:

6. Land Use Planning and Management

Public Benefits Informed By:

Working landscape preservation and stewardship, climate change adaptation.

Implementation Factors:

Governance and coordination.

Description, including Connection to Flood-MAR:

What are the different types of conservation practices currently happening on working landscapes?

Develop an understanding of community involvement with the landscape at various scales.

Table 19 Identify, Share and Teach about Local and Regional Planning Processes which have Effectively Engaged with Tribes and Other Underrepresented Communities

Category: Data

Scale: State

Availability: Gap

Other Themes That Will Benefit:

6. Land Use Planning and Management

12. Local, State, Federal Policies and other Legal Considerations

Public Benefits Informed By:

Working landscape preservation and stewardship.

Implementation Factors:

Governance and coordination, funding and incentives.

Description, including Connection to Flood-MAR:

Identify, share and teach best practices from planning processes with effective engagement between water managers and Tribal and/or underrepresented communities.

Example: North Coast Resources Partnership - IRWMP process, SAWPA Disadvantaged Community Involvement Program

Table 20 Develop Tool for Uncovering Sphere of Influence for Flood-MAR Projects

Category: Data

Scale: State

Availability: Gap

Other Themes That Will Benefit:

1. Hydrology Observation and Prediction
 3. Infrastructure Conveyance and Hydraulics
 5. Soils Geology, and Aquifer Characterization
 6. Land Use Planning Management
-

Public Benefits Informed By:

Drought preparedness, ecosystem enhancement.

Implementation Factors:

Recharge method, groundwater use, feasibility analysis, source water, governance and coordination.

Description, including Connection to Flood-MAR:

Develop methodology that can identify the impact area of a proposed Flood-MAR project so that all communities impacted can be engaged early and often in decision-making.

The sphere of influence needs to consider source watersheds, flow path, infiltration site, groundwater basin, groundwater supply distribution area.

Table 21 Identify Flood-MAR Projects that can Benefit the Most Vulnerable Communities

Category: Data

Scale: State

Availability: Gap

Other Themes That Will Benefit:

- 4. Crop Sustainability
 - 6. Land Use Planning and Managing
 - 13. Tool and Application Development
-

Public Benefits Informed By:

Water quality improvements, public health.

Implementation Factors:

Funding and incentives, conveyance.

Description, including Connection to Flood-MAR:

Develop framework for identifying existing and future vulnerabilities faced by communities which can be overcome by investment in Flood-MAR projects. With this framework, prioritize locations where the majority of the benefits will be felt by the most vulnerable.

Table 22 Identify Flood-MAR Potential Benefits and Impacts

Category: Data

Scale: State

Availability: Gap

Other Themes That Will Benefit:

- 6. Land Use Planning and Management
 - 11. Economic Analysis
 - 13. Tool and Application Development
-

Public Benefits Informed By:

Ecosystem enhancement.

Implementation Factors:

Governance and coordination, site suitability, feasibility analysis.

Description, including Connection to Flood-MAR:

Develop list of the potential negative and positive impacts of Flood-MAR projects. Using that list, insist that the negative impacts of Flood-MAR projects are not felt disproportionately by disadvantaged or underrepresented communities.

Table 23 Tribal Sovereignty and Traditional Knowledge

Category: Data

Scale: State

Availability: Gap

Other Themes That Will Benefit:

4. Crop Suitability
 5. Soils, Geology, and Aquifer Characterization
 6. Land Use Planning and Management
-

Public Benefits Informed By:

Ecosystem enhancement, working landscapes preservation and stewardship, subsidence mitigation, water quality improvement.

Implementation Factors:

Governance and coordination, funding and incentives, site suitability, recharge method, feasibility analysis.

Description, including Connection to Flood-MAR:

There is an immediate need for consultation and engagement related to Tribal Sovereignty & traditional knowledge.

- Ensure Tribal communities are part of Flood-MAR research and policy development
 - Understand Tribal water opportunities and needs as it relates to Flood-MAR.
 - Develop and share understanding of traditional tribal knowledge of water management.
 - What are the Cultural beneficial water uses?
 - Consider if Flood-MAR supports subsistence and ceremonial uses of water.
 - Develop best practices for Flood-MAR projects where Tribes will be engaged or impacted. Ensure Tribes are identified as separate, and included as part of the equitable distribution of opportunities, impacts, and engagement.
 - Can tribal knowledge or practices enhance Flood-MAR's efficacy?
 - In the Flood-MAR planning process through engagement with tribes consider how tribal authorities may exercise groundwater rights in the future.
-

Table 24 Center of Expertise

Category: Tool

Scale: State

Availability: Gap

Other Themes That Will Benefit:

7. Tool and Data Development

9. Environment

12. Local, State, Federal Policies and other Legal Considerations

Public Benefits Informed By:

Climate change adaption, preserving and evolving plans.

Implementation Factors:

Governance and coordination, funding and incentives, groundwater use.

Description, including Connection to Flood-MAR:

Develop a center of expertise, housed at a California academic institution, to gather and share the social and political best practices and knowledge related to implementing a Flood-MAR project. Support deepening statewide capacity to work through intricacies of partnerships, competing interests, community health and long-term sustainability.

Table 25 Stewardship Mapping

Category: Tool

Scale: State

Availability: Gap

Other Themes That Will Benefit:

- 6. Land Use Planning and Managing
 - 7. Water Quality
 - 13. Tool and Application Development
-

Public Benefits Informed By:

Climate change adaptation, ecosystem enhancement, water quality improvements.

Implementation Factors:

Governance and coordination, funding and incentives, source water, conveyance, site suitability, groundwater use.

Description, including Connection to Flood-MAR:

Draw from existing Stew-Map methods, developed by the National Forest Service and partners like Loyola Marymount University, to provide a tool that reveals all the potential stakeholder organizations. An institutional map of who cares about what issues in which places. Very helpful in engagement efforts, particularly for something “new” like Flood-MAR.

Questions to consider:

What is the organizational structure of each agency?

Who is in charge of making the decisions related to water planning?

How are the benefits and disadvantages distributed within each stewardship area?

Understand how information flows within the organizational planning area, and how could this be achieved at a regional scale?

Is there a need to develop a better data collection process and improvement over time... What would that look like? What would be an acceptable level of detail?

Identification of the experts and associations or organizations at the regional levels that facilitate engagement. Community Water Center / Amy Bowers (Yurok)/ Paula Britton (Cato)/ Dore Bietz (Me-Wuk)/ Sarah Ryan (Big Valley Pomo)/ Margaret Park (Agua Caliente) / Chris Devers (SLRIWA) / Chuck Striplen (Mutsun). Better resolution of disadvantaged communities information – currently information on disadvantaged communities only exists at Census Tract level; coarse information. Drinking water quality and proximity to sources of drinking water.

Private well communities.

Table 26 Identify Areas where there are Issues of Injustice in Drinking Water Contamination

Category: Tool

Scale: State

Availability: Gap

Other Themes That Will Benefit:

7.Water Quality

9.Environment

Public Benefits Informed By:

Water quality improvement.

Implementation Factors:

Source water, site suitability, groundwater use.

Description, including Connection to Flood-MAR:

Identify areas where there are issues of injustice in drinking water contamination.

Does this information already exist?

Develop indicators on drinking water quality

Contamination

Protection zones

Defining what constitutes undesirable results?

Table 27 Identify and Develop Tools for Building and Sustaining Trust through Engagement between Large and Small Water Systems

Category: Tool

Scale: State

Availability: Gap

Other Themes That Will Benefit:

- 1. Hydrology Observation and Prediction
 - 6. Land Use Planning and Management
 - 13. Tool and Application Development
-

Public Benefits Informed By:

Working landscape preservation and stewardship.

Implementation Factors:

Governance and coordination, source water, funding and incentives.

Description, including Connection to Flood-MAR:

Develop tools for facilitating engagement between larger agencies and smaller organizations – with an emphasis on building capacity at smaller organizations and building trust among different agencies.

Table 28 Leadership Institute for Small Water Systems

Category: Tool

Scale: State

Availability: Gap

Other Themes That Will Benefit:

- 12. Local, State, Federal Policies, and Other Legal Considerations
-

Public Benefits Informed By:

Management improvement.

Implementation Factors:

Governance and coordination, feasibility analysis.

Description, including Connection to Flood-MAR:

Need for module on strategic communication, a Leadership Institute for small water organizations that gives SWRCB certification.

Water Education for Latino Leaders (WELL), Cal Rural Water Association and Water Education Foundation all have programs similar to but not exactly this.

Prioritization Process

The objective of this research and development plan is to develop priorities by theme to maximize the implementation of Flood-MAR projects statewide. The co-chairs of this theme prioritized the identified gaps. The co-chairs prioritized the gaps in research, data and tools that would benefit the People and Water theme the most.

Top Three Research, Data, and Tools Actions

Action 1: Develop an ethical and just framework specifically focused on the Flood-MAR program.

Description and Connection to Flood-MAR: The principles of Research Justice must be woven into all aspects of Flood-MAR research and implementation strategies defined in each Flood-MAR R&D theme action. The development of Flood-MAR policies, programs, and projects should be established using the principles of a Water Ethics framework (similar to an ethics framework developed for public health programs). The adoption of these core tenets will ensure the Flood-MAR program, in its research and implementation phases explicitly confronts unjust conditions and resists unjust impacts across all social communities including tribes, disadvantaged communities, and agencies implementing Flood-MAR projects of various sizes within the affected communities. Communities currently suffering injustice can potentially be improved through Flood-MAR activities. Development of Flood-MAR projects could, if not carefully considered, place additional stress on overburdened communities.

Implementation Factors: 1. Governance and Coordination; 2. Funding and Incentives; 2. Source Water; 2. Conveyance; 2. Site Suitability; 2. Recharge Method and Site Management; 2. Groundwater Use; 2. Feasibility Analysis and Adaptive Management

Strategy for Implementation:

Product 1: A set of principles based on research justice, developed by California and required for all Flood-MAR research efforts.

Product 2: A list of ethical principles developed by California for inclusion in the Flood-MAR program and throughout all state-supported Flood-MAR planning and implementation efforts.

Product 3: A project checklist with specific, measurable objectives and actions addressing environmental justice principles for all communities that drives decision-making during Flood-MAR project implementation.

Lead: Academia and graduate students, NGOs

Partners: NGO's, DWR, SWRCB, Consultants, IRWM Groups, GSAs, County Planning Agencies, Tribal Agencies, DAC Advocates

Estimated Timeline: 2 years **Estimated Cost:** \$1,000,000

Action 2: Develop an engagement practices document for Flood-MAR.

Description and Connection to Flood-MAR: Summarize existing information from the Tribal Policy-Advisor and Disadvantaged Communities Involvement Programs, and those identified in local, regional, State, and federal planning processes for engaging community discussion in Flood-MAR actions. Current practitioners (consultants & state agencies) that routinely engage with Tribes and disadvantaged communities know how to effectively and respectfully engage with water managers and members of the communities they serve. Creating a best practices document summarizing the specific, actionable tools which are currently being used will ensure these best practices are incorporated, taught, and practiced by agencies pursuing Flood-MAR.

Implementation Factors: 1. Governance and Coordination; 2. Funding and Incentives; 2. Source Water; 2. Conveyance; 2. Site Suitability; 2. Recharge Method and Site Management; 2. Groundwater Use; 2. Feasibility Analysis and Adaptive Management

Strategy for Implementation:

Product: Community Engagement Practices document

Lead: DWR

Partners: Consultants, State agencies, Tribes, Communities, IRWM, Counties, Tribe and disadvantaged community practitioners

Estimated Timeline: 2 years

Estimated Cost: \$1,000,000

Action 3: Develop a map overlaying the area's most feasible for recharge with groundwater dependent disadvantaged or underrepresented communities which would greatly benefit from Flood-MAR actions.

Description and Connection to Flood-MAR: Focus on areas which are groundwater dependent and face water shortages due to neighboring community withdrawals or legacy groundwater contamination. The success of Flood-MAR will rely heavily on ensuring feasible locations – including hydrologic, geomorphic, and institutional dimensions of feasibility. Social and equity analyses should be included in the feasibility analysis. A ranking of communities that are highly dependent on and could benefit the most from Flood-MAR and including need in the prioritization framework. Which agencies and communities could benefit the most from state, regional, institutional (and funding) support to employ Flood-MAR to overcome a critical water supply /quality need?

Implementation Factors: 1. Governance and Coordination; 2. Funding and Incentives; 2. Site Suitability; 2. Groundwater Use; 2. Feasibility Analysis and Adaptive Management

Strategy for Implementation:

Product: Map showing disadvantaged and underrepresented communities with high groundwater dependence and areas of high Flood-MAR feasibility.

Lead: DWR

Partners: Advocates, DWR - SGMA / Water Plan, GSAs, IRWMs, State of CA - Natural Resources Agency

Estimated Timeline: 1 year

Estimated Cost: \$250,000

Next Steps

The subcommittee felt that several over-arching threads of recommendations should be pursued simultaneously. First, the implementation of Flood-MAR Research Program must include *research justice* and *water ethics* frameworks – prioritizing the development of principles to inform all of the research that will be undertaken is necessary.

Second, the subcommittee felt it was critical that California quickly move to develop partnerships with the tribes of California about Flood-MAR. Tribal sovereignty and the high likelihood that Flood-MAR efforts will contact tribal communities demands an engagement be undertaken now, before the research program is implemented. Further, it is very likely that tribal knowledge and practice would contribute greatly to Flood-MAR research and later implementation and should be made central to the research program.

Next, the Flood-MAR program must place need high in the feasibility assessment tools. It is likely that the technically best locations for Flood-MAR will not intersect with the locations with the highest need. It is critical to ensure that the trade-off analyses and feasibility assessment tools are not blind to historic injustices, otherwise Flood-MAR research, guidance, and later implementation could blindly reinforce the unjust unequal investment across communities.

Lastly, the committee felt strongly that these social dimensions of Flood-MAR are significant both in their research need and academic rigor, but also in how important a role they will play supporting successful implementation of the research program and later implementation. It is encouraged that a center of excellence be placed within an academic institution somewhere in the state that can support the engagement of the social and behavioral sciences in the research program, and later in implementation.