

Welcome to the Levee Owners Workshop

Hosted by the U.S. Army Corps of Engineers
September 26, 2024



U.S. ARMY



US Army Corps
of Engineers®





00:13



Chat



People



Raise



React



View



Rooms



Apps



More



Camera



Mic



Share



Leave

Chat

Raise
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Settings

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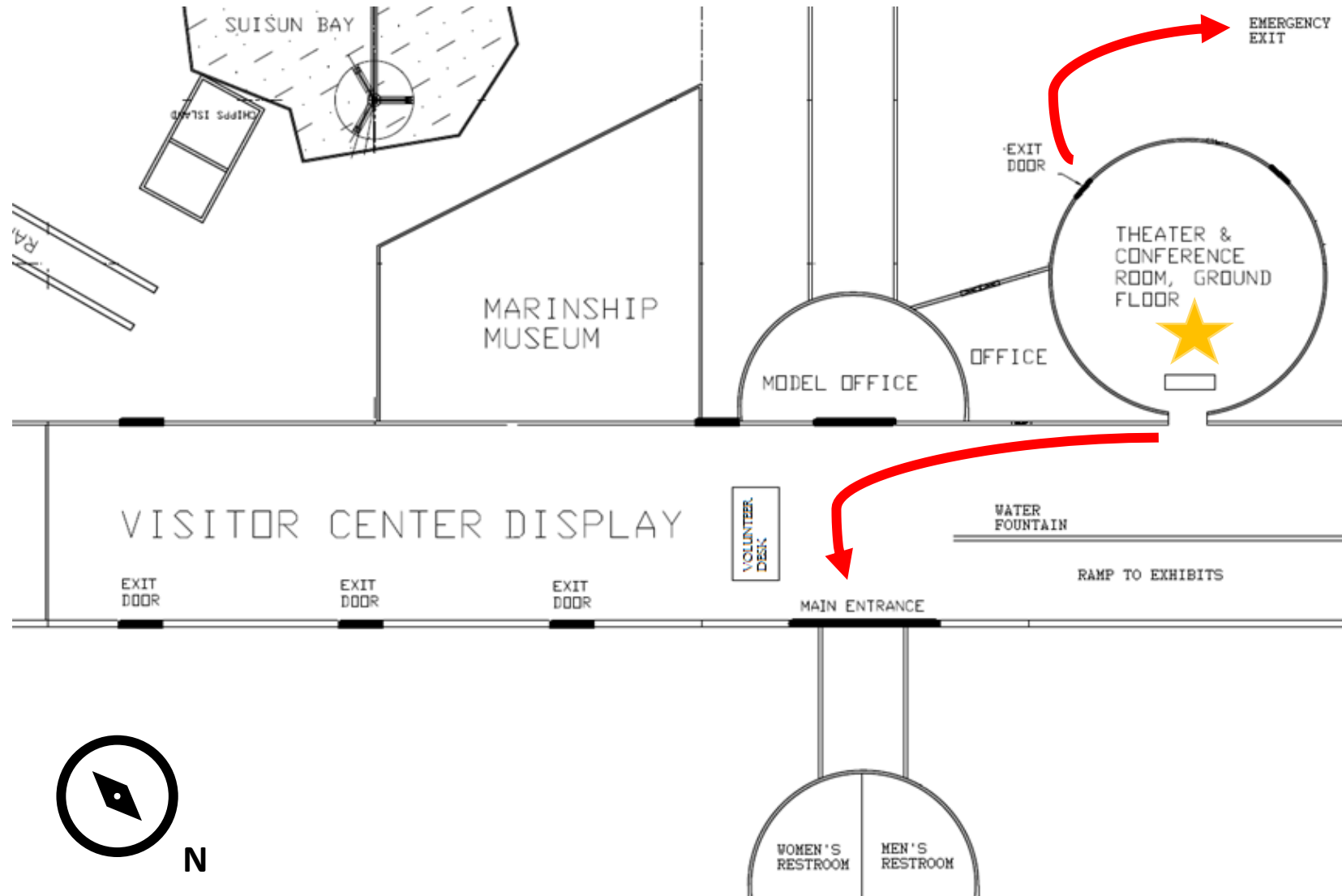


US Army Corps
of Engineers





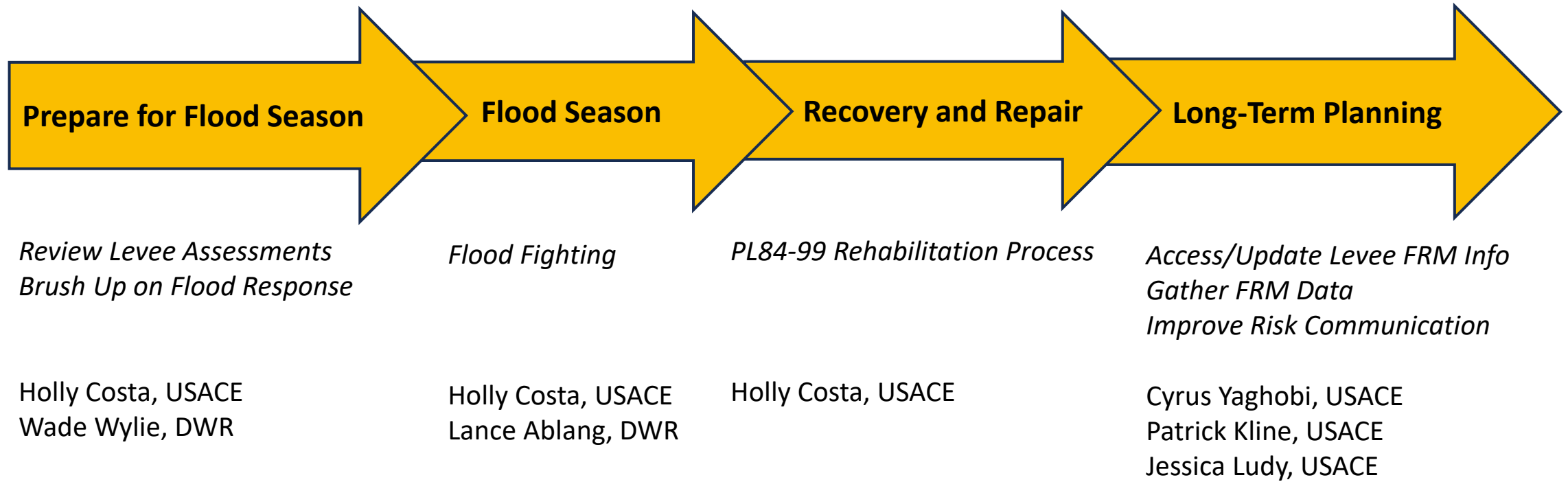
Safety Moment





Purpose

Share useful and actionable information with levee owners and managers to prepare for this rainy season and make long-term plans for their levees.





Agenda

9:15 – 9:50	How You Can Prepare for the Rainy Season
9:50 – 10:20	How to Get Help with Flood Fighting
10:20 – 10:30	Break
10:30 – 11:15	Post-Flood System Recovery
11:15 – 12:00	Panel Discussion: Weathering a Rainy Season – Local Perspectives
12:00 – 1:00	Lunch
1:00 – 2:30	USACE Levee Safety Program
2:30 – 3:00	Silver Jackets and Technical Assistance
3:00 – 4:00	Q&A Breakout Sessions

Part 1: Be Ready for Flood Season

- How You Can Prepare for the Rainy Season
- How to Get Help with Flood Fighting
- How to Recover Your Levee System
- Panel Discussion: Weathering a Rainy Season



How You Can Prepare for the Rainy Season

Holly Costa
Emergency Management
USACE San Francisco District

Wade Wylie
Flood Project Inspections, Division of Flood Operations
Department of Water Resources - Flood Operations Center





Blue Sky Best Management Practices

Know your levee

Review recent reports on levee/channel conditions

- Know where your weak spots are - areas that may require flood fight
- New/recent encroachments
- Note: Annual Inspection is requirement of PL84-99 program

Review National Levee Database info for your system

- Make sure info is accurate
- Review inundation mapping



Blue Sky Best Management Practices

Know your response plans

Review your O&M manuals and Emergency Action Plans

- What are your response protocols

Inventory your flood fight materials supplies

- Consider pre-positioning supplies in critical areas

Refresh flood fight training with your personnel

Ensure you have most up-to-date contact info for DWR, CalOES and USACE



Interagency Preparedness Resources

- NWS Storm Briefings
- DWR Preseason Flood Coordination Meetings
- Regional Trainings
- CA Flood Preparedness Week – Oct 19-26, 2024
 - <https://water.ca.gov/What-We-Do/Flood-Preparedness/Flood-Preparedness-Week>

Flood Fight Materials

California Department of Water Resources Division of Flood Operations



CALIFORNIA DEPARTMENT OF WATER RESOURCES
Wade Wylie, Supervising Engineer, Flood Project Inspections,
Division of Flood Operations, Flood Responder

Today's Presentation

- Review DWR's Available Flood Fight Materials
- Storage Facility Locations
- Flood Fight Containers and Their Contents
- Logistical Process To Access Materials
- Flood Fight Methods Course



Flood Fight Materials

- Sandbags
- Plastic Sheeting
- Wooden Stakes
- Twine
- DWR Buttons
- Grommets (new)



Innovative Flood Fight Material

Muscle Wall



Silt Sox



Super Sacks



Warehouse Storage

9 Warehouse locations:

- NorCal (3)
- Central Valley(2)
- Delta (3)
- SoCal (1)



- Large Quantities Of FFM
- Climate Controlled To Ensure Materials Are Ready For Use



Flood Fight Material Containers (191)

- Mobile And Can Be Prepositioned
- Many in Vulnerable Locations Already
- All Have Same Contents
 - One Mile Wave Wash Protection
 - Sandbags, Plastic Sheeting, Twine, Wooden Stakes, and DWR Buttons
- Access Requires FOC Approval
- In Kind Replacement May Be Required



Logistics

- OA Requests from FOC
- Provide own material handling and transport
- Account for total weight of FFM requested
- OA should help with material handling and transport-Or CALOES



Flood Fighting Methods Training

**California Department of Water Resources
Division of Flood Operations**



Training Benefits



- Regularly Taught to CCC, Cal Fire, LMA's
- Teaches: Flood Threat Identification and mitigation, Flood preparedness and crew management
- Tried and Tested methods that work
- Courses are free
- 30 students
- 8 hr: 2-part course:
 - Lecture: morning
 - Field Work: Afternoon
- Refresh Training Annually



Morning Classroom Instruction

- You Will Need To Provide:
 - Classroom
 - Projector Or Large TV



- Examples Of Past Flood Fighting Events
- Identification Of Flood Related Threats
- Mitigation Of Related Threats



CALIFORNIA DEPARTMENT OF WATER RESOURCES



Afternoon Hands-On Instruction



- Build flood fight structures
- Demonstrate flood fight crew management



➤ Host Provides Location and Flood Fight Materials Including Sand



Flood Fighting Methods Training

Schedule Your Training Soon

Flood Fight Methods Books are available

**Flood Operations Center (FOC)
(916) 574-2619**

flood_center@water.ca.gov





Questions and Comments

Holly Costa
Emergency Management Chief
CESPN-EOC@usace.army.mil
415-289-3080

Wade Wylie
Supervising Engineer
Flood Project Inspections, Division of Flood Operations, Flood Responder
george.wylie@water.ca.gov

How to Get Help with Flood Fighting

Lance Ablang
Department of Water Resources
State-Federal Flood Operations Center

Holly Costa
Emergency Management
USACE San Francisco District



CALIFORNIA DEPARTMENT OF WATER RESOURCES

Flood Operations Center

Overview and Updates

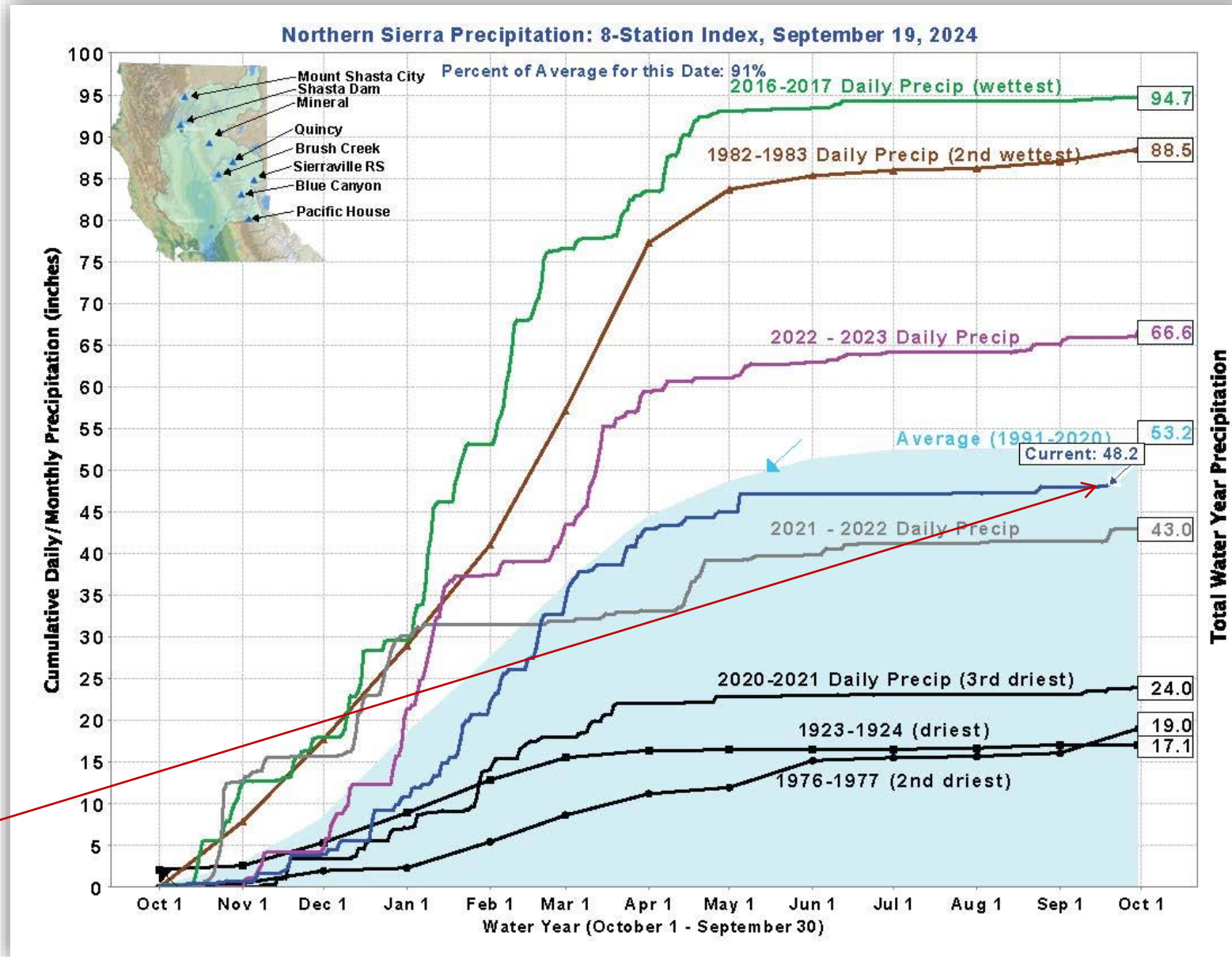
Lance Ablang, PE
State-Federal Flood Operations Center
Division of Flood Operations



2024 Water Year

Northern Sierra Precipitation
8-Station Index
48.2 inches
(91% of average)

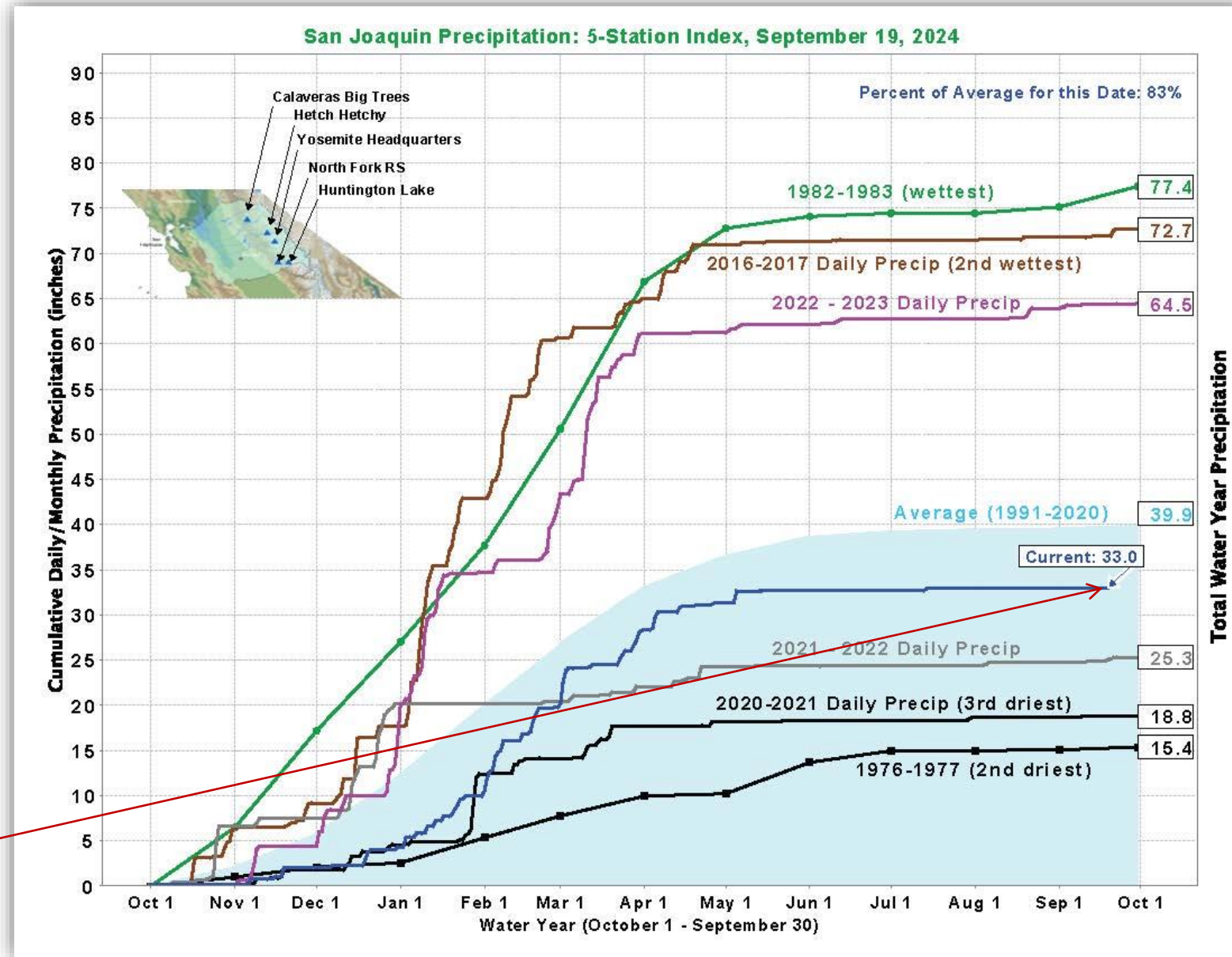
2024 Water Year



2024 Water Year

*San Joaquin Precipitation
5-Station Index
33.0 inches
(83% of average)*

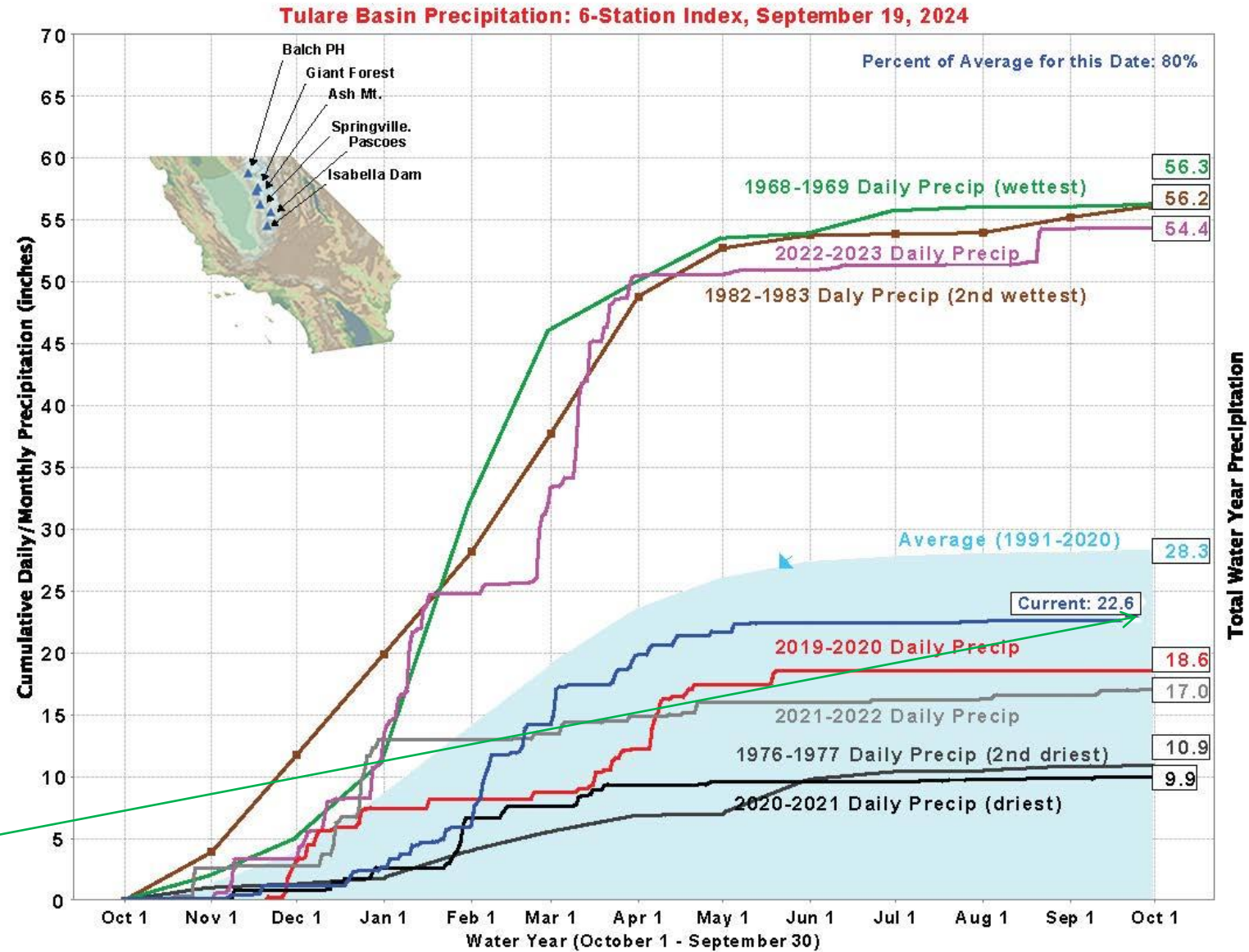
2024 Water Year



2024 Water Year

*Tulare Basin Precipitation
6-Station Index
22.6 inches
(80% of average)*

2024 Water Year







DWR's Mission

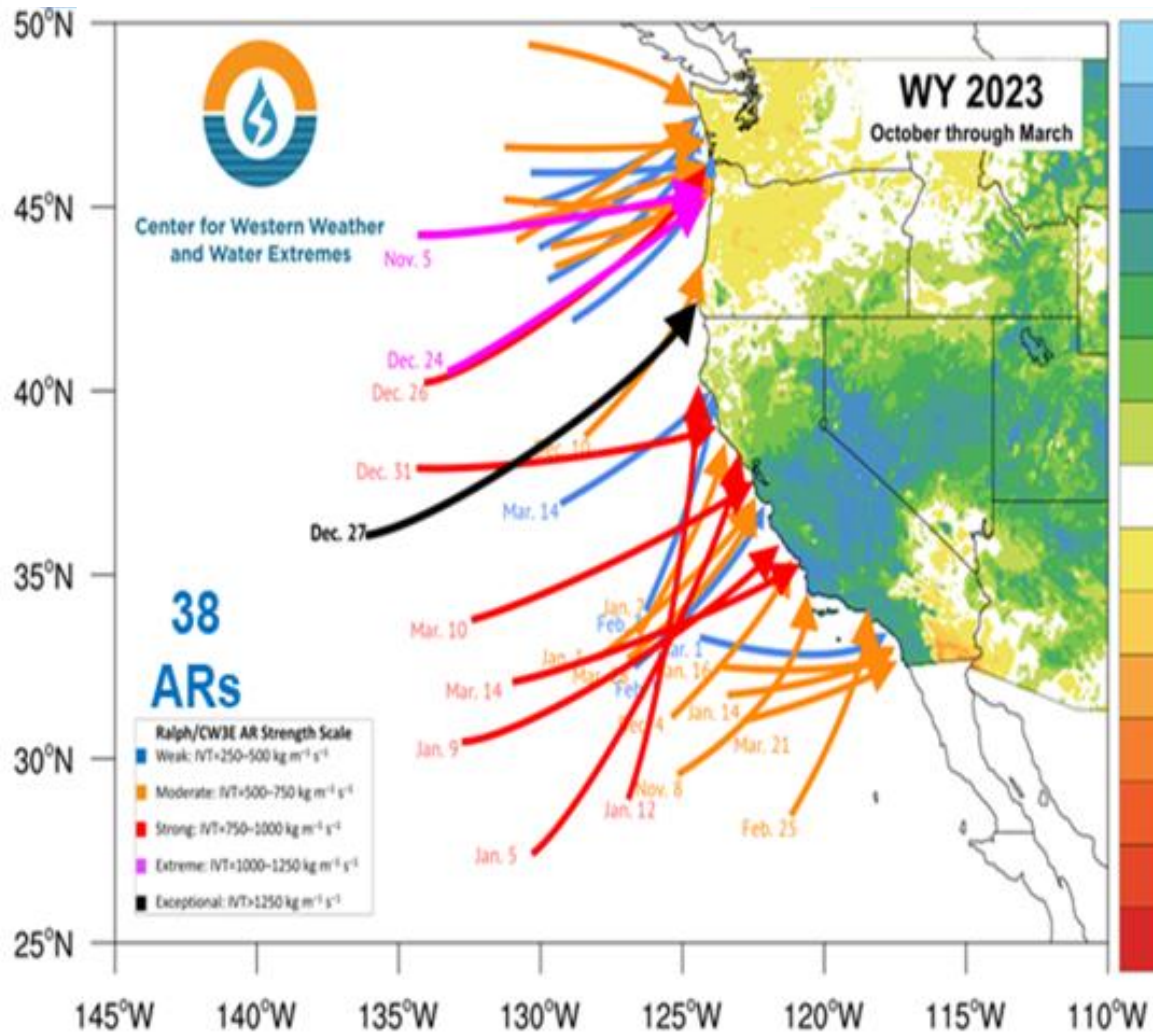
Protect:

- Life, property, and infrastructure
- Water quality and water supply
- Environment

Authority – derived from:

- CA Emergency Services Act (Govt. Code 8607)
- State Emergency Plan
- CA Water Code Section 128

Water Year 2023 Compared to Water Year 2024





DWR 2023 Response

- Flood Operation Center (FOC) activated twice:
 - Jan. 3 to Jan. 20
 - March 9 to June 16

118 days, 266 total staff
- Assistance provided
 - Flood fight specialists
 - Geotechnical engineers
 - Flood fight materials
 - River, reservoir, and snowmelt forecasting
 - Oversaw CCC crews
 - Incident Command Teams
 - Liaisons to multiple EOCs
 - Mapping and modeling
 - Emergency construction



DWR 2024 Response

- FOC activated:
 - Feb. 3 to Feb. 8

6 days, 64 total staff
- Assistance provided
 - Flood fight specialists
 - Forecasts

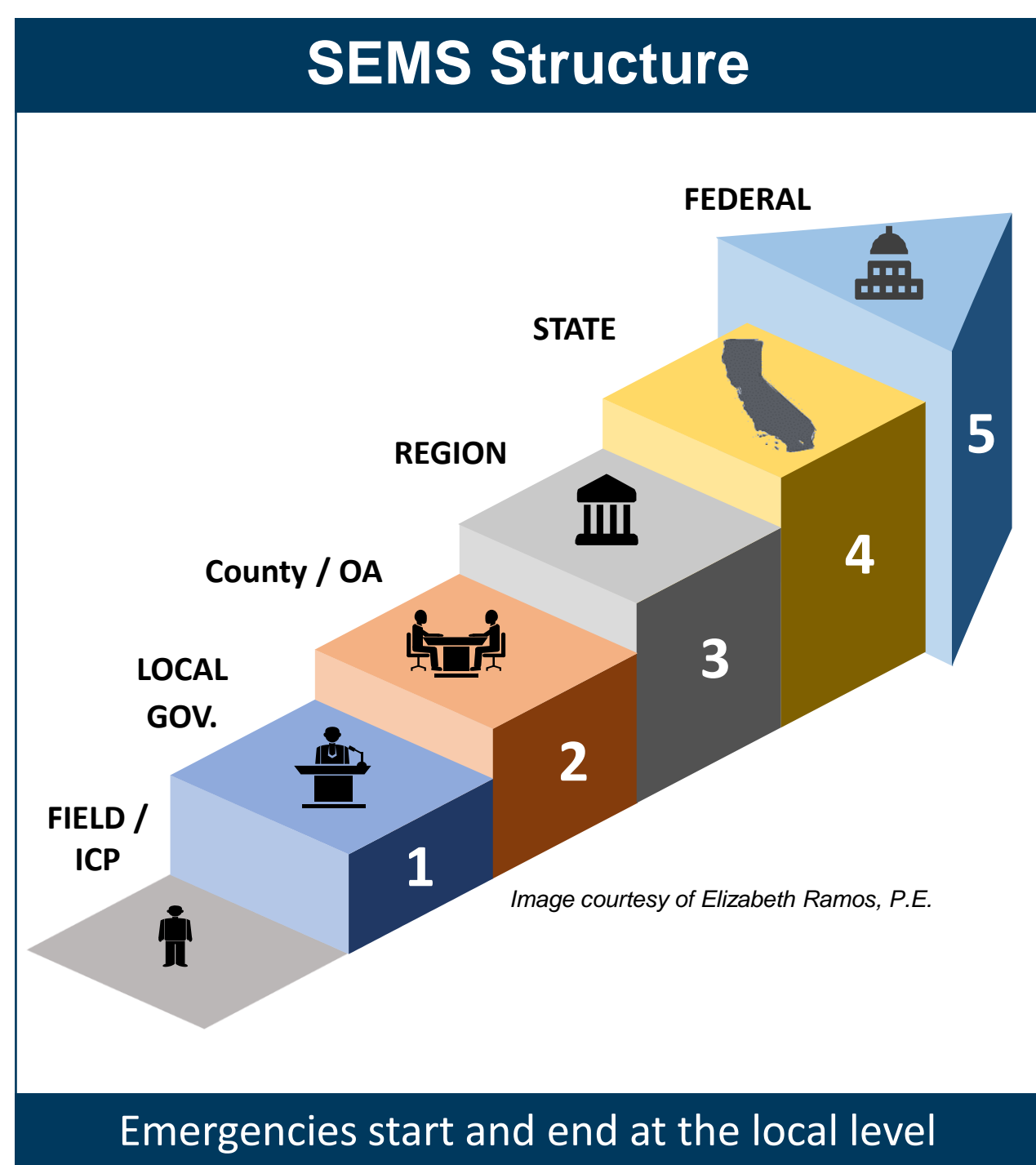
Flood Operation Center (FOC) Coordination

Provides:

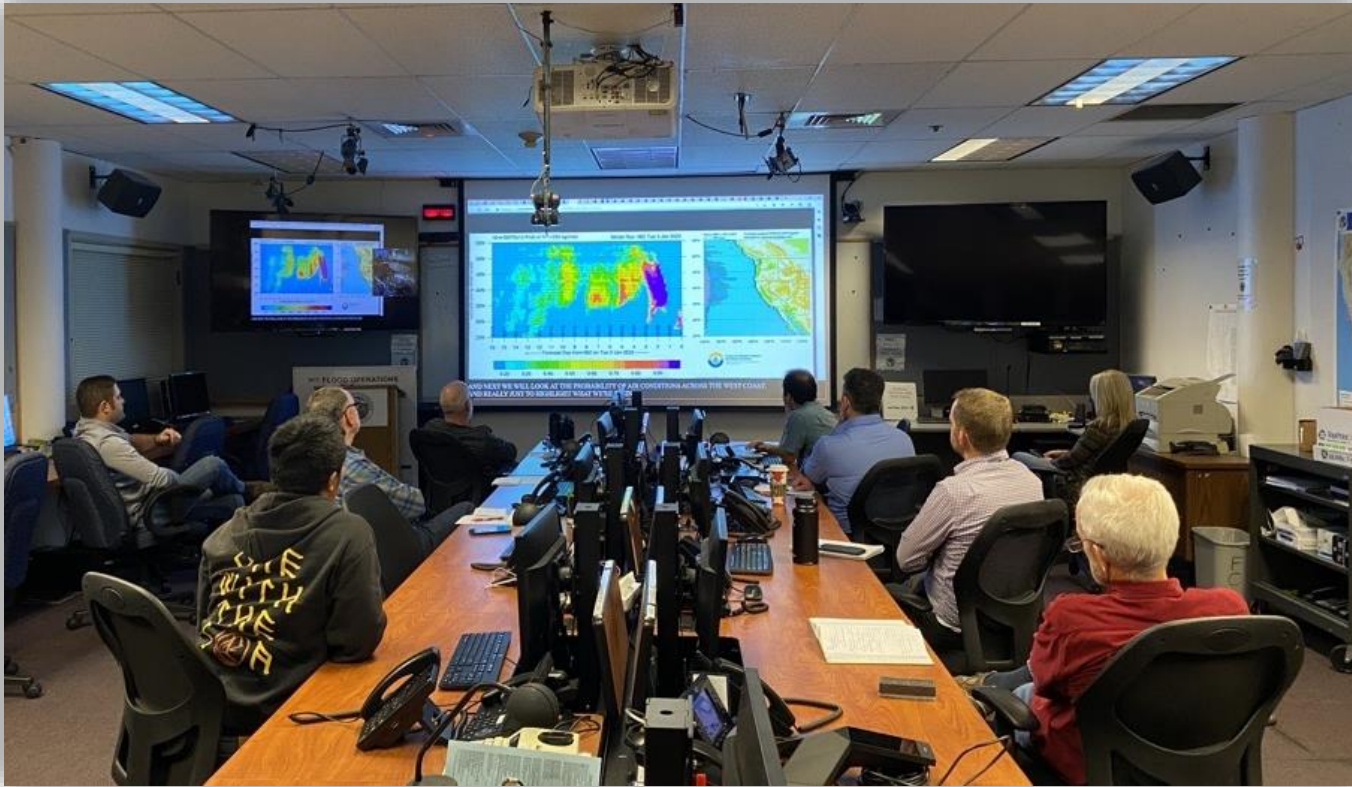
- Situational awareness
- Technical and direct assistance
- Conduit for federal assistance under Public Law 84-99

Does NOT:

- Declare emergencies
- Order evacuations
- Repair levees



DWR / NWS Weather and Hydrology Briefings

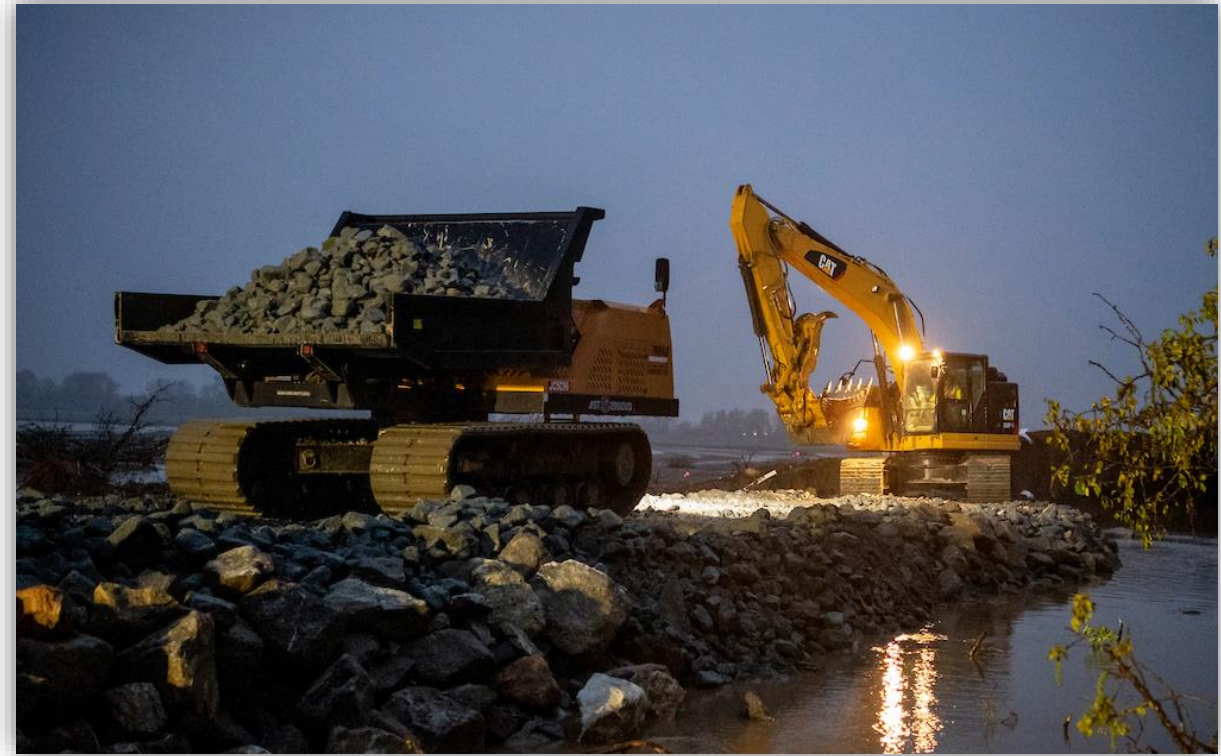


- Available live via MS Teams
- To request access:
flood.webmaster@water.ca.gov
- Recorded briefings are posted online

Flood Emergency Assistance

DWR is the lead state agency for flood emergency response

Technical Assistance –
Always provided upon request



Direct Assistance –
May or may not be provided based on the
FTMP

Current FOC Activation Levels

Activation Level	Description
Routine Operations	Routine FOC Operations
Extended Hours	Routine FOC Operations needing extended hours to ensure task coverage
Flood Alert	Activated FOC under ICS structure with partially-staffed sections
Flood Mobilization	Activated FOC under ICS structure with fully-staffed sections. All DWR employees may be called upon.

Recommended FOC Activation Levels

Activation Level	Description
Routine Operations	Routine FOC Operations
Level 3	Enhanced Monitoring
Level 2	Partial Activation
Level 1	Full Activation

Resources

California Data Exchange Center (CDEC)

<http://cdec.water.ca.gov>

California Nevada River Forecast Center

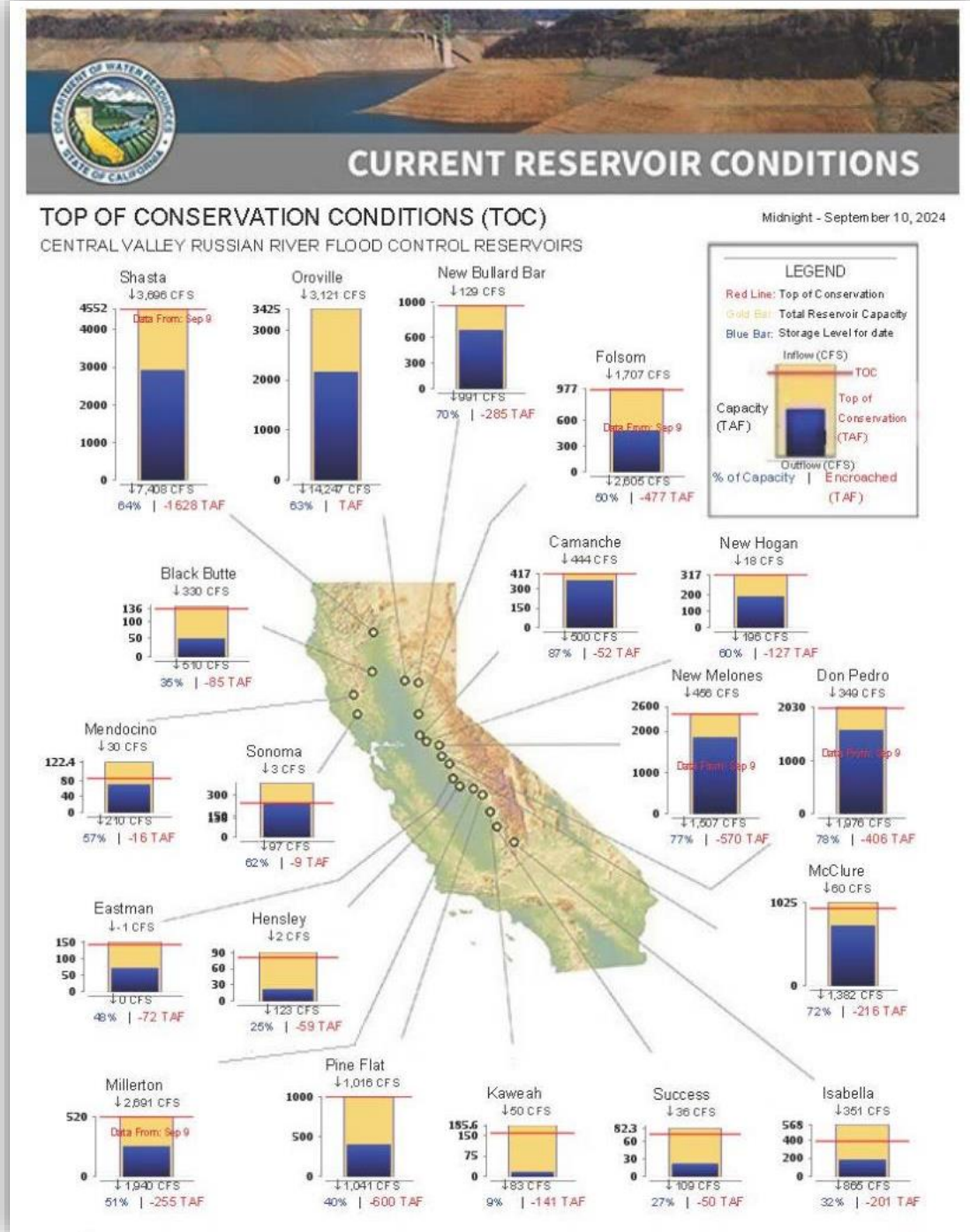
<http://www.cnrfc.noaa.gov/>

Division of Flood Management

<https://www.water.ca.gov/Programs/Flood-Management>

California Water Watch

<https://cww.water.ca.gov/>



Flood Fight Material Dashboard



Resources

California Data Exchange Center (CDEC)

<http://cdec.water.ca.gov>

California Nevada River Forecast Center

<http://www.cnrfc.noaa.gov/>

Division of Flood Management

<https://www.water.ca.gov/Programs/Flood-Management>

California Water Watch

<https://cww.water.ca.gov/>

Contact

State-Federal Flood Operations Center

3310 El Camino Ave., Suite 200
Sacramento, CA 95821-9000

(916) 574-2619

flood_center@water.ca.gov



USACE PL 84-99

Advance Measures

Policy: USACE may perform Advance Measures to protect against loss of life and significant damages due to an imminent threat of unusual flooding.

Technical Assistance: Provide technical review, advice, recommendations to plan and prepare for the threat

Direct Assistance: May include supplies, equipment, contracting for construction of temporary flood control (permanent if more cost effective).





USACE PL 84-99

Emergency Operations

- Field investigations
- Flood Fighting
 - Issuance of supplies and equipment
 - Direct flood fight operations
 - Award of emergency contracts
- Post Flood Response
 - Emergency Debris Removal
 - Temporary Restoration of Critical Transportation Routes and Public Services and Utilities





Questions and Comments

Holly Costa
Emergency Management Chief
CESPN-EOC@usace.army.mil
415-289-3080

Lance Ablang, PE
State-Federal Flood Operations Center, Division of Flood Operations
lance.ablang@water.ca.gov

Break!
Let's reconvene at 10:30



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How to Recover Your Levee System

Holly Costa
Emergency Management Chief
USACE San Francisco District





PL 84-99 Rehabilitation and Inspection Program

After a significant flooding event, the Corps may repair:

- Eligible non-federal flood control projects,
- Federally constructed flood control projects, and
- Federally constructed hurricane or shore protection projects damaged by coastal storm.

All projects requesting assistance must be **active** in the rehabilitation and inspections program at the time of the event to be eligible.

Note: USACE does not reimburse for repairs a sponsor has undertaken on their own



PL 84-99 Rehabilitation and Inspection Program

Eligibility:

- Need for repair work must not be a result of maintenance deficiencies
- The work must be economically justified (positive benefit-to-cost ratio)
- Proposed rehabilitation to restore the original level of flood protection
- Cost of repairs >\$15,000

Cost:

- Federal structures: Up to 100% federal cost
- Non-federal structures: 80% federal, 20% local sponsor cost
- Betterments are 100% local sponsor funded (if cost is greater than baseline repair)
- Cost share can be off-set by Work in Kind provided by Sponsor

Sponsor responsibilities:

- Executed project Cooperation Agreement
- Real estate /site access permissions
- Removal of all flood fight materials from repair site
- Encroachments, permitted or not, are not eligible under PL 84-99, and therefore either the sponsor or owner's responsibility to repair



Notification

San Francisco District will issue a Notice to Public Sponsors immediately after significant flood events to alert them that USACE Rehabilitation Assistance is available for damages incurred during this event.

Submittal deadline to apply for Rehabilitation Assistance is 30 calendar days from the date the flood waters recede to bankfull.



DEPARTMENT OF THE ARMY
SAN FRANCISCO DISTRICT, U.S. ARMY CORPS OF ENGINEERS
450 GOLDEN GATE AVE.
SAN FRANCISCO, CA 94102

NOTICE TO PUBLIC SPONSORS
APPLICATION PERIOD EXPIRES 17 MARCH 2023
REHABILITATION ASSISTANCE FOR FLOOD-DAMAGED
FLOOD CONTROL PROJECTS

Public Sponsors of flood risk reduction projects that sustained damages due to flooding during the period of 29 December 2022 to 20 January 2023, have until 17 March 2023 to apply for Public Law 84-99 Rehabilitation Assistance from the US Army Corps of Engineers (USACE), San Francisco District. The flood period and the application period apply to flooding in the following counties: Alameda, Contra Costa, Del Norte, Humboldt, Marin, Monterey, Napa, Santa Clara, Santa Cruz, Siskiyou, and Sonoma.

USACE has authority under Public Law 84-99 to supplement local efforts in the repair of both Federal (USACE-constructed, locally operated and maintained) and non-Federal (constructed by non-Federal interests or by the Work Projects Administration) flood risk reduction projects damaged by flood.

Criteria for rehabilitation assistance are as follows:

- a. For a non-Federal flood risk reduction project to be eligible for Rehabilitation Assistance, it must have been inspected, evaluated, and accepted into the USACE Rehabilitation and Inspection Program (i.e., granted Active status) prior to the onset of the flood, and still be Active at the time of the flood. It must be in Active status either by having received a rating of Acceptable or Minimally Acceptable on its latest Continuing Eligibility Inspection, or the project must have a System-Wide Improvement Framework Letter of Intent (SWIF LOI) approved by the Director of Contingency Operations and Homeland Security (DCO/HS) at USACE Headquarters.
- b. For a Federal flood risk reduction project to be eligible for Rehabilitation Assistance, it must be in an Active status by having received a rating of Acceptable or Minimally Acceptable on its last Inspection of Completed Works inspection, or the system must have a SWIF LOI approved by the DCO/HS at USACE Headquarters.
- c. Rehabilitation Assistance will be provided by the USACE only when the work is economically justifiable, the damage was sustained during the recent flood event, and the cost of repairs is more than \$15,000.
- d. Rehabilitation Assistance for a non-Federal project is cost shared between the Public Sponsor and the USACE. The Public Sponsor must provide 20 percent of the cost of the Rehabilitation Assistance.

All requests for assistance made to USACE will be coordinated with the Federal Emergency Management Agency and the Natural Resources Conservation Service to prevent duplication of benefits.

If the Public Sponsor believes that its project may qualify for Rehabilitation Assistance, a written request must be submitted to USACE at the address above using the enclosed form.



Requesting Repair Assistance

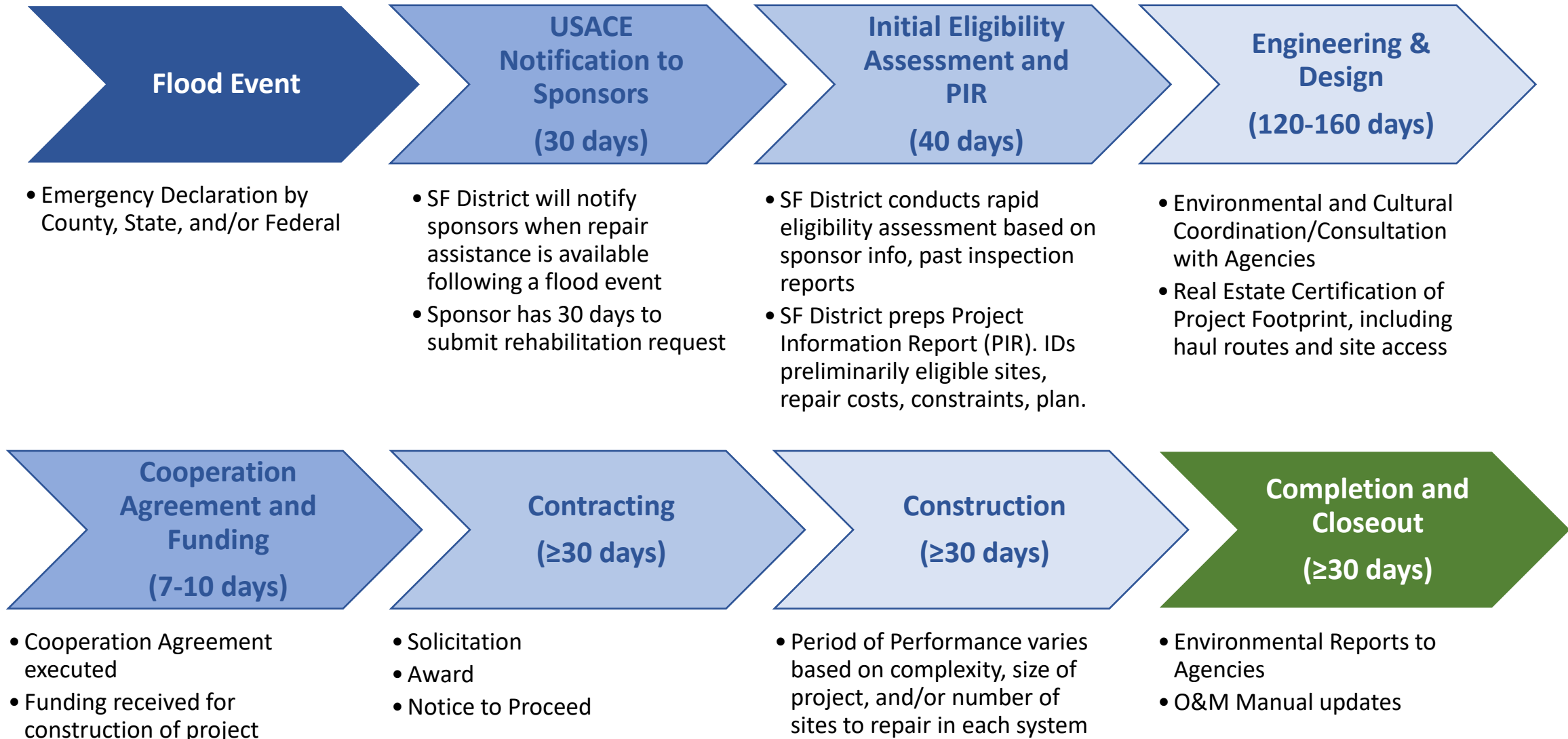
A written request must be submitted to USACE and include:

- Sponsor/POC name, telephone number, and mailing address
- Legal name of the flood risk reduction project;
- Date and results of the last inspection by the USACE;
- Location of the flood risk reduction project by township, section, range, city, and county;
- Location(s) of the damaged section(s), and extent of the damage at each location
- Aerial satellite location map with circled damaged location(s);
- Photos of the storm related damages;
- Most recent photos of the damaged location(s) prior to storm related damages
- Waterway causing the flood

Note: maintain consistency in naming conventions for requested repair sites



PL84-99 Rehabilitation Process





Conducting Repairs Yourself?

USACE Permissions needed:

- If dewatering or changing scope of project (404 Clean Water Act Permit)
- If changing scope of federally constructed project or repairing encroachments not previously granted under 408 Program (408 Permission)

USACE Permissions not needed:

- If mowing, applying herbicide, or cutting/trimming of trees/vegetation as long as there **is not** soil disturbance associated with the work such that we would consider it a discharge of fill. (Sect. 404 of Clean Water Act)
- If mowing, applying herbicide, or cutting/trimming of trees/vegetation to the extent that the work **does not** affect course, location and condition of a navigable water in a manner that impacts its navigable capacity. (Section 10 of the Rivers and Harbors Act)

Remember! Any changes in design or operability need to be recorded in O&M Manual



Questions and Comments

Holly Costa
Emergency Management Chief
CESPN-EOC@usace.army.mil
415-289-3080

Weathering a Rainy Season: Local Perspectives from on-the-ground

Panel Discussion



Dr. Mark Strudley
Executive Director
Pajaro Regional Flood Management Agency



Joe Seto
Principal Engineer (Retired)
Alameda County Flood Control, Zone 7



Paul Detjens
Capital Program Manager and Senior Civil Engineer (Retired)
Contra Costa County Flood Control and Water Conservation District



Lunch! We'll reconvene at 1:00



Part 2: Long-Term Planning For Your Levee System

USACE Levee Safety Program
National Levee Database
Silver Jackets & Technical Assistance



USACE Levee Safety Program Resources

Cyrus Yaghobi, PE
Levee Safety and Dam Safety Program Manager
USACE - San Francisco District





Agenda

Part One: Program Overview

1. USACE Levee Safety Program
2. USACE Levee Inspection
3. Risk Framework for Levees
4. Risk Assessment
5. Risk Management
6. Risk Communication
7. USACE Training Opportunities for Non-Federal Sponsors

Part Two: What's New Since Last Year?

1. USACE Levee Safety Toolbox
2. National Levee Safety Program
3. Levee Review
4. Levee Risk Management System
5. Reference





USACE Levee Safety Program

Levee Safety Program

- Developed for managing the flood risk associated with levees.
- Combined effort between the sponsor/levee owner and federal government to understand and efficiently manage & maintain the flood risk inherent to a levee.

Main Activities

- Develop inventory of levees (NLD)
- Perform inspections & risk assessments
- Sharing levee information
 - Develop the flood risk awareness by local officials & sponsors management to effectively manage and reduce risk.
 - Promote the awareness of the inherent flood risk of levees amongst residents.

Guiding Principles

- Life safety is the number ONE priority.
- Property and environmental protection.
- Provide risk-management information that will allow wise investment of resources.
- USACE and sponsor working together by maintaining efficient communication and transparency.
- Flexibility in adapting policies and procedures based on science and best practices.



USACE Levee Safety Program

Funding & Scheduling Constraints

- Distributing the workload evenly throughout the year
- Grouping projects in the same vicinity
- Formal inspections during dry season recommended (WSE should be lower than the toe)
- Delays to formal inspection can lead to screening's delay
- ICW funding sometimes delayed to the December-January
- FCCE funding usually comes in March-April timeframe





USACE Levee Inspections

Types of Inspections

1. Formal Inspections (once every five years)
2. Special Inspections (as needed)
3. Site Visits (as needed, minimum of once every five years)

Formal Inspection Notification to the Sponsor

1. Annual Schedule Update/Notification (this workshop)
2. Minimum One-Month Notice

Sponsor's Role

1. Fill Pre-Inspection Forms
2. Vegetation & Other Maintenance
3. Culverts, Relief Wells, Pump Houses & Other Major Features Inspection Reports
4. Provide Access to All Features of the System
5. Provide Existing Information and Participate in Review



USACE Levee Inspections

Table 1. Summary of Levee Site Visits and Inspections

Activity	Site Visit	Formal Inspections	Special Inspections
Definition/ Intent	<ul style="list-style-type: none">• An optional collaborative activity to observe or verify changed conditions, provide technical advice and respond to sponsor's questions, capture progress of levee management measures, and inform the next inspection and/or risk assessment.• Provides flexibility for sponsors and USACE districts to engage and conduct a visual observation of the levee system between scheduled inspections.• Not intended to be as detailed as an inspection nor require extensive documentation.	<ul style="list-style-type: none">• A pre-scheduled, comprehensive inspection.• Documents the condition of the levee, assesses progress of levee management activities, informs risk assessments and related recommendations, and includes specific evaluations or testing, such as exercising closures or testing pump station components.• Used to inform eligibility for PL 84-99 Rehabilitation Program.	<ul style="list-style-type: none">• Unscheduled inspections conducted as needed due to changed conditions or to document levee performance.• Document changed conditions (from activities such as construction or interim risk reduction measures) or post event conditions (from flood events, earthquakes, sabotage, or other unusual events).• The scope and level of effort should align with those of a formal inspection but with a focus on the specific area(s) that have been impacted by the change in condition or where observations from the most recent flood event are necessary.



Risk Assessment

What is risk?

- What are the hazards and how likely are they to occur?

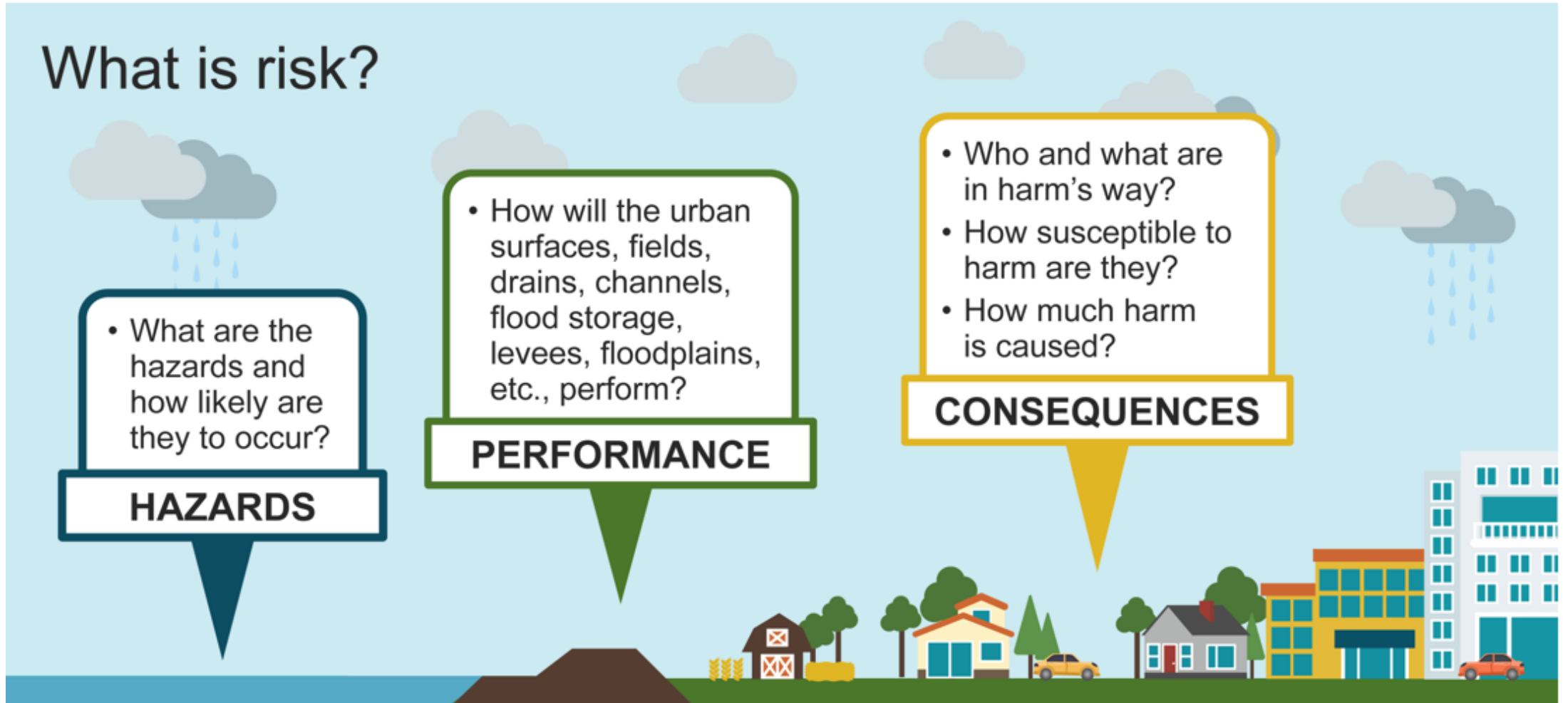
HAZARDS

- How will the urban surfaces, fields, drains, channels, flood storage, levees, floodplains, etc., perform?

PERFORMANCE

- Who and what are in harm's way?
- How susceptible to harm are they?
- How much harm is caused?

CONSEQUENCES





USACE Risk Framework

Three Components of Risk Framework

1. Risk Assessment

- a) TRG1 – Understanding the Risk

2. Risk Management

- a) TRG 3 – Fulfilling Daily Responsibility
- b) TRG 4 – Actions to Reduce Risk

3. Risk Communication

- a) TRG2 – Building Risk Awareness

Benefits

- Evaluate the levees' risks to people, economy and environment.
- Assist in identifying highest risk deficiencies and maximize risk reduction benefits.
- Provide credibility to the decision process, selection of solutions, priorities and investment.
- Increase awareness amongst maintainers and residents living behind levees.



Risk Assessment

Main Components:

Hazard

- How high (water surface), fast (flow), long (duration)? Flood & Earthquake?
- Expected Frequency?

Performance

- Identify potential levee failure scenarios.
- Overtopping, seepage, erosion and other forms of breach.

Consequence

- Estimate the warning time, impact and magnitude from flood.
- People, property and environment.

Result

- Better understanding of the system risk (hazards, performance and consequences).
- Improve decision making.
- Levee Safety Action Classification Rating 1 to 5 (SPN ICW Systems are mostly LSAC 4 or 3. LSAC1 is highest risk.)



Risk Management

Levee Risk Management is a Component of Flood Management

- Levee Risk Management requires: Risk identification, evaluation, alternative selection and implementation with monitoring of effectiveness.
- Shared responsibility: Federal, state Agencies, local governments and tribal agencies. As well as private individuals (residents, land & business owners).
- Best outcome generally requires combined efforts by various entities.
- USACE through various programs can perform feasibility studies, provide technical & planning assistance, risk assessment information and support with community and partners regarding effective management of levee related flood risk.

RISK MANAGEMENT REDUCES LEVEE RELATED FLOOD RISK BUT DOES NOT ELIMINATE THE RISK.



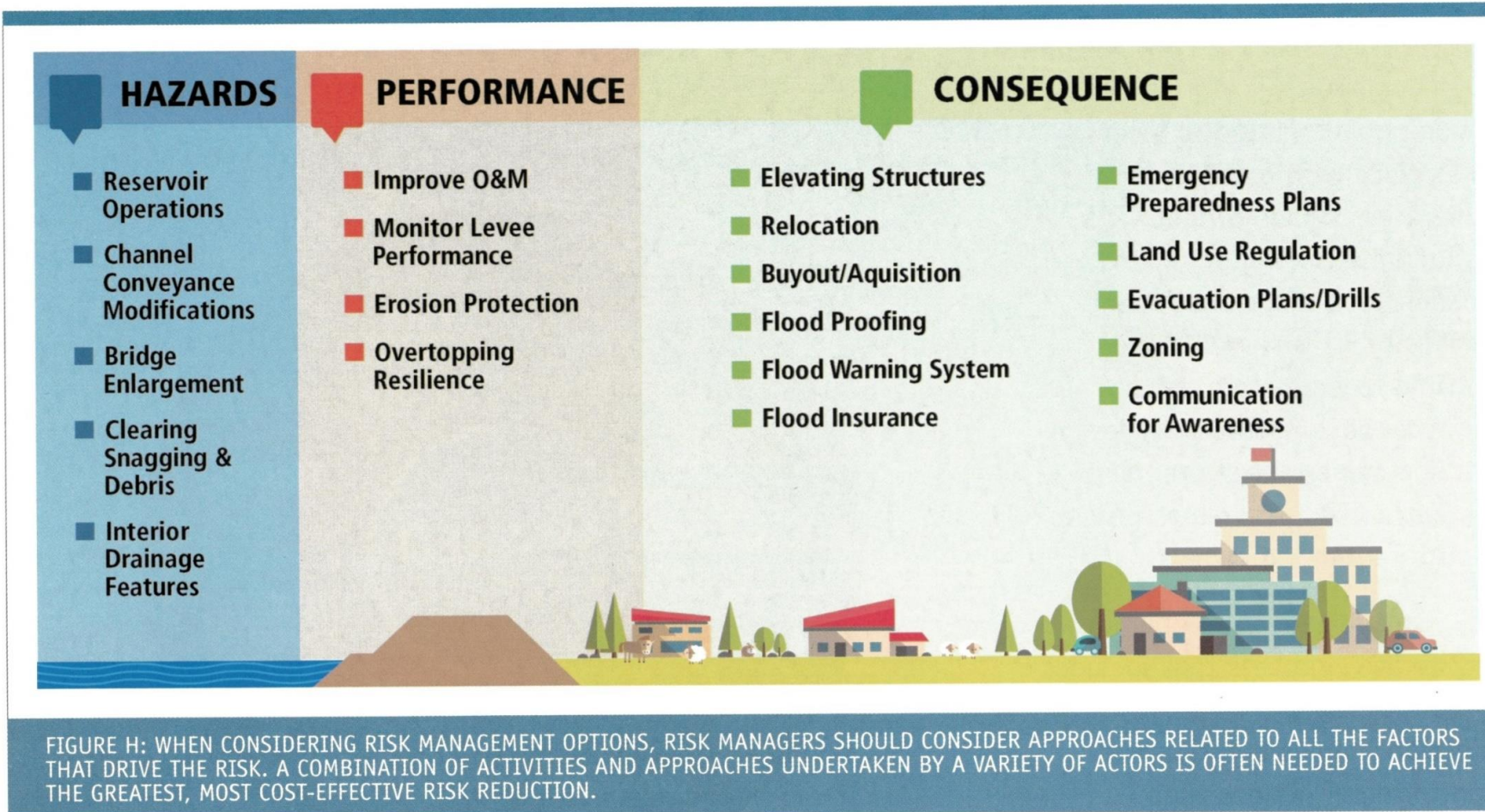
Risk Management

Roles and Responsibilities Overview





Risk Management – How to Reduce Risk



Note: Emergency Action Plans and Emergency Evacuation Plans are very cost-effective ways to significantly reduce the remaining risk.



Risk Communication

Key Concepts

- Iterative & open 2-way exchange of information related to risk (amongst individuals, groups, and institutions).
- Fundamental for the risk assessment and management.
- Utilize to build knowledge & awareness, inform decisions, support preparedness, and plan in-advance of flood emergencies
- It's essential for the community, state and local government agencies and stakeholders.
- **Crisis Communication: directive/one-directional messaging during an emergency**



USACE Support:

- Assist and coordinate with sponsors' levee & flood risk communication.
- Make levee information accessible through National Levee Database.
- Work together with FEMA on life safety, reduction of property damages and communicating risk.
- Guidance or communications support through Silver Jackets or Technical Assistance



Key Historical Events



Teton Dam, 1976



Hurricane Katrina, 2005



Oroville Dam and Spillway (CA), 2017



(DSL) 101: Fundamentals of Risk in Dam and Levee Safety

- Local sponsor's role and engagement in USACE pilot training programs
- Risk assessment
- Incorporation of risk informed approach with traditional design



What's New Since Last Year?



What's New

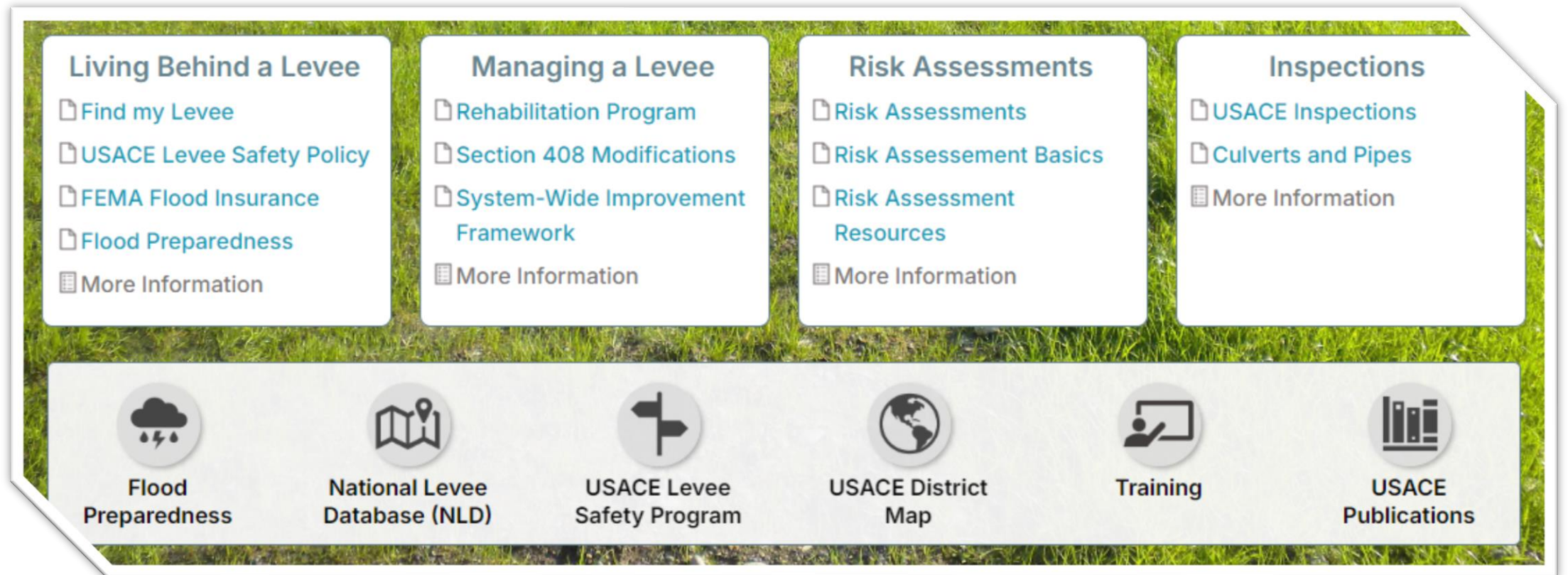
- **USACE Levee Safety Toolbox (open to everyone)**
- **National Levee Safety Guidelines (open for review) & Levee Review**
- **Levee Risk Management System**
- **Section 133 of WRDA 2020**, later amended in 2022, enable USACE to cost-share the rehabilitation of an “ELIGIBLE” federal or non-federal pump station





USACE Levee Safety Toolbox

- <https://usace-leveesafety.sec.usace.army.mil/>





National Levee Safety Program

- <https://www.leveesafety.org/>

Draft Documents for Review:

- Best Practices for Vegetation Management on Levees
- National Levee Safety Guidelines: Roadmap

Additional Documents:

- Connection Series Fact Sheet: The National Levee Safety Guidelines –
- What They Mean for USACE and FEMA Levee-related Programs
- Understanding Risk Assessment Fact Sheet





National Levee Safety Program – Levee Review

<https://www.leveesafety.org/pages/levee-review>

How to Participate in a Levee Review

For more information about the levee review process or to sign up, please email hq-leveesafety@usace.army.mil.



Multidisciplinary team conducts a risk assessment with levee owners in California in the spring of 2024.

"DWR encourages local levee owners to volunteer for this program. It is beneficial for levee owners [of non-federal levees] to update their levee data in the NLD, be provided with information that can assist with operation and maintenance activities, better understand levee conditions, and receive preliminary cost estimates for recommendations based on the levee review results."



Levee Risk Management Systems

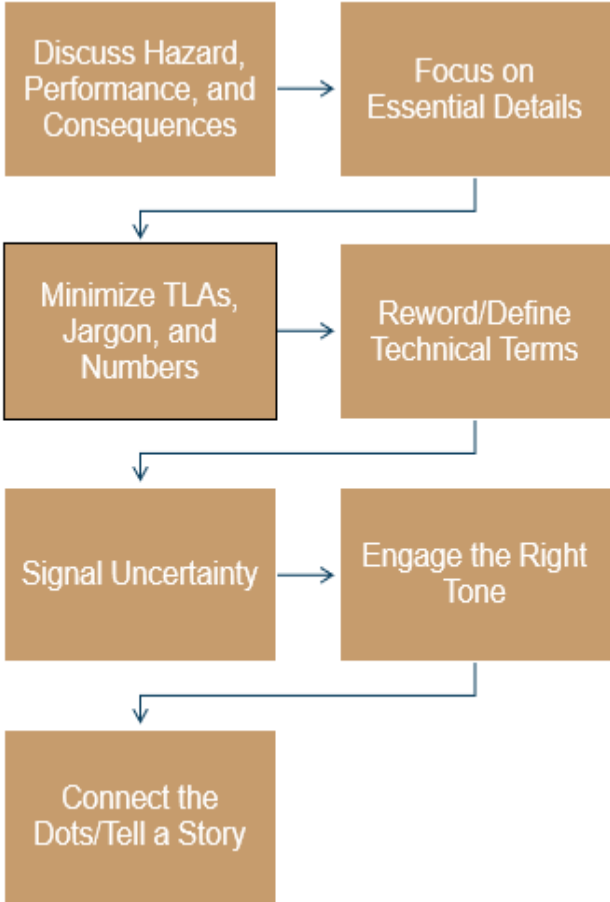
- Upon Completion Included in the National Levee Database:
<https://nld.sec.usace.army.mil/>
- Outcome of Teamwork Between USACE, Sponsors, and Other Partner
- Include the Right Information: Big Picture, Risk-Informed, Easy to Access and Follow-up
- Planning for Success
- Get Out In Front of Difficult Topics





Levee Risk Management Systems Examples

Recommended Actions - List in Priority Order								
Priority	Tracking No.	FY	Category	Recommendation	Responsible Party	Applicable Segment	Status	Notes
Very High	FY23-2	2024	Performance	Backfill the open excavation at levee toe at Station 10+50 with fine-grained soil in compacted lifts.	Louisiana	300004999998	Not Started	Excavation noted during 2023 Site Visit. Evidence of prior seepage in the area indicates the urgency to make repairs.
High	FY23-4	2024	Performance	Repair/remediate floodwall displacement at Station 02+50. Create interim EAP to address area at increased flood risk. Perform floodwall stability analysis for current displaced condition. Maintain annual displacement measurements.	Louisiana	300004999998	In Progress	Increased displacement noted between 2018 and 2023 formal inspections. USACE Technical Assistance Request from sponsor.
High	FY23-3	2024	Consequence	Develop a levee-specific Emergency Action Plan identifying key stakeholder responsibilities, emergency contacts, and emergency action triggers.	Louisiana	Entire System	In Progress	Risk Assessment Recommendation
Moderate	FY23-5	2024	Hazard	Perform crest survey along non-project segment to determine overtopping frequency.	Big Easy Segment #1 Maintenance Organization	Entire System	Not Started	USACE Technical Assistance Request from RR.
Moderate	FY23-1	2024	Hazard	Provide overtopping erosion protection at identified overtopping location (Station 25+60).	Louisiana	Entire System	Not Started	Risk Assessment Recommendation





References

- USACE Flood Risk Management Authorities: <https://www.iwr.usace.army.mil/Missions/Flood-Risk-Management/Flood-Risk-Management-Program/Frequently-Asked-Questions/FAQ-USACE-FRM-Authorities/>
- Engineering Circular (EC) [1165-2-218](#), USACE Levee Safety Program, 22 April 2021.
- Engineer Regulation (ER) 1105-2-101, Risk Assessment for Flood Risk Management Studies, 15 July 2019.
- Engineering and Construction Bulletin (ECB) No. 2022-7, Interim Approach for Risk-Informed Design for Dam Levee Projects, 20 Oct 2022.
- USACE HQ Levee Inspections & Site Visits Standard Operating Procedures, December 2022
- Engineer Manual (EM) 1110-2-2902, Engineering and Design, Conduits, Culverts, and Pipes; 31 March 1998
- DLS 101: Evolution of Risk Assessment: https://rise.articulate.com/share/8Jow4fG29A56VOt1fRgOdNJ-E6_UFiHa#/lessons/d3glqYqxQ13mXwSbSuCEUOFkJ3Ykp99X
- USACE LS Toolbox: <https://usace-leveesafety.sec.usace.army.mil/>



Questions and Comments

Cyrus Yaghobi, P.E.
Levee and Dam Safety Program Manager
Cyrus.M.Yaghobi@usace.army.mil
(916) 557-6681

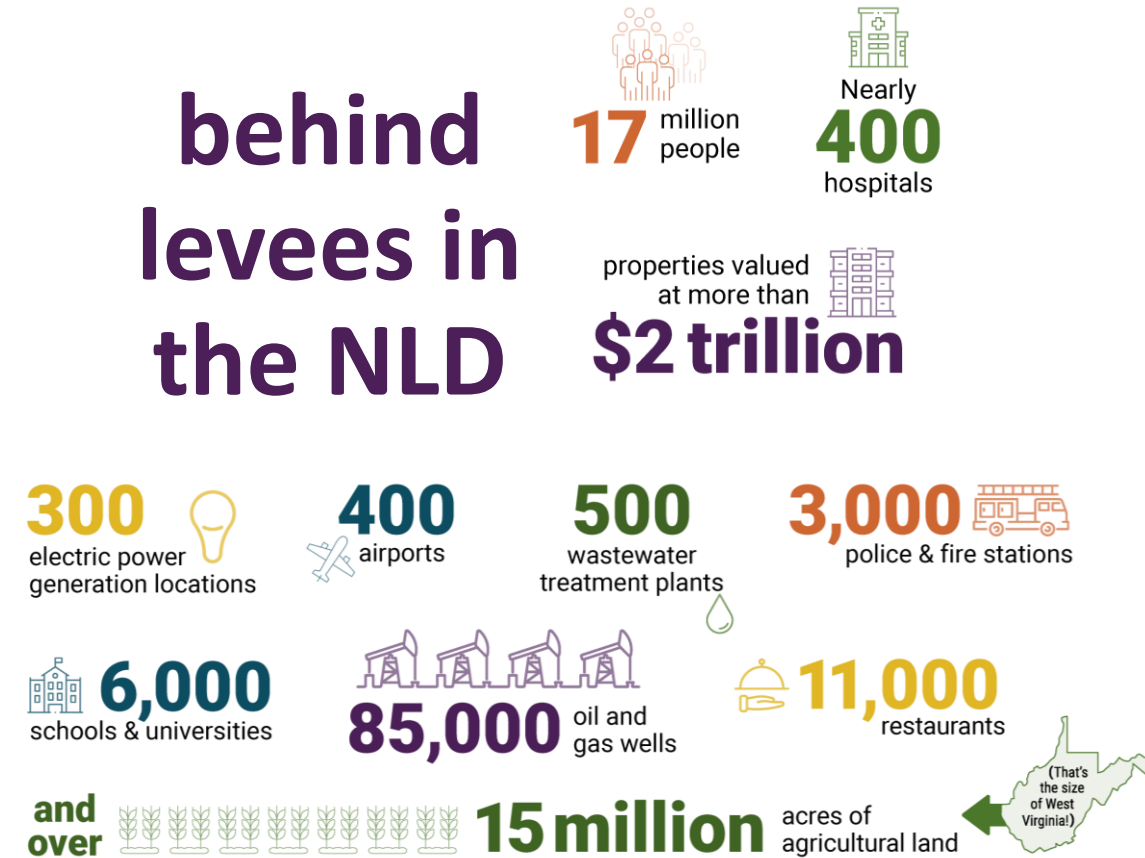
Redesigned National Levee Safety Database

Patrick Kline
NLD Technical Support
USACE Kansas City District



About the NLD

- Public since 2011
- Captures all known levees in the U.S.
- Hosted and maintained by the U.S. Army Corps of Engineers
- Data published in partnership with federal, state, tribal, local, and private entities



Why the Change

- Interest in increasing community awareness and understanding of levees
- Desire to improve available data and procedures to submit new or updated data
- Request for the public site to support a wider set of users



Share your feedback by emailing
NLD@usace.army.mil

What's Changed

- A new public homepage page with an updated look and feel
- A streamlined public summary page for each levee
- New informational pages about flooding, levees, and the National Levee Database
- A new URL – nld.sec.usace.army.mil
- New procedures to obtain a user account for more advanced users
- Logged in user tabs reorganized for data groupings
- Added more restrictive role-based views for Inspections and LRMS

What's Has Not Changed

- Logged in users will continue to get the tabbed data management and data mining views
 - Summary tab removed and link to new public summary page added
- Inspections workflow remains unchanged

What's Changes still to come

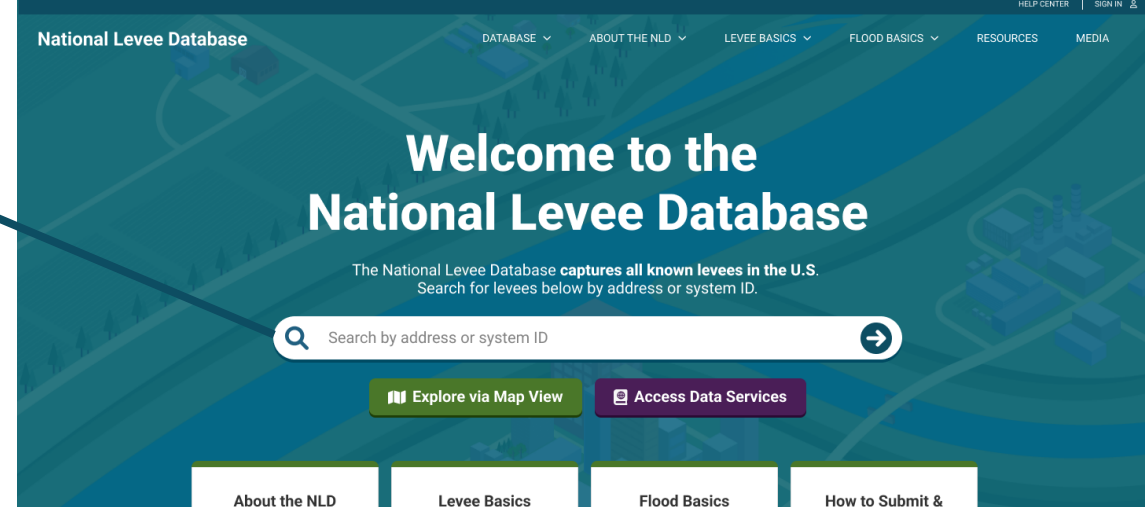
- Portfolio and data report changes to remove legacy fields and add current
 - Formal/Site Visits
- Add consequence fields back to Risk tab, including the new consequence categories
- Various bug fixes for a few fields where the edit workflow not working after new deployment

New Look and Feel

DIRECT ACCESS
to search functions and data

CONNECT
to more info about floods, levees, and the NLD

LIVE
statistics



DIRECTLY SUBMIT
new or updated data

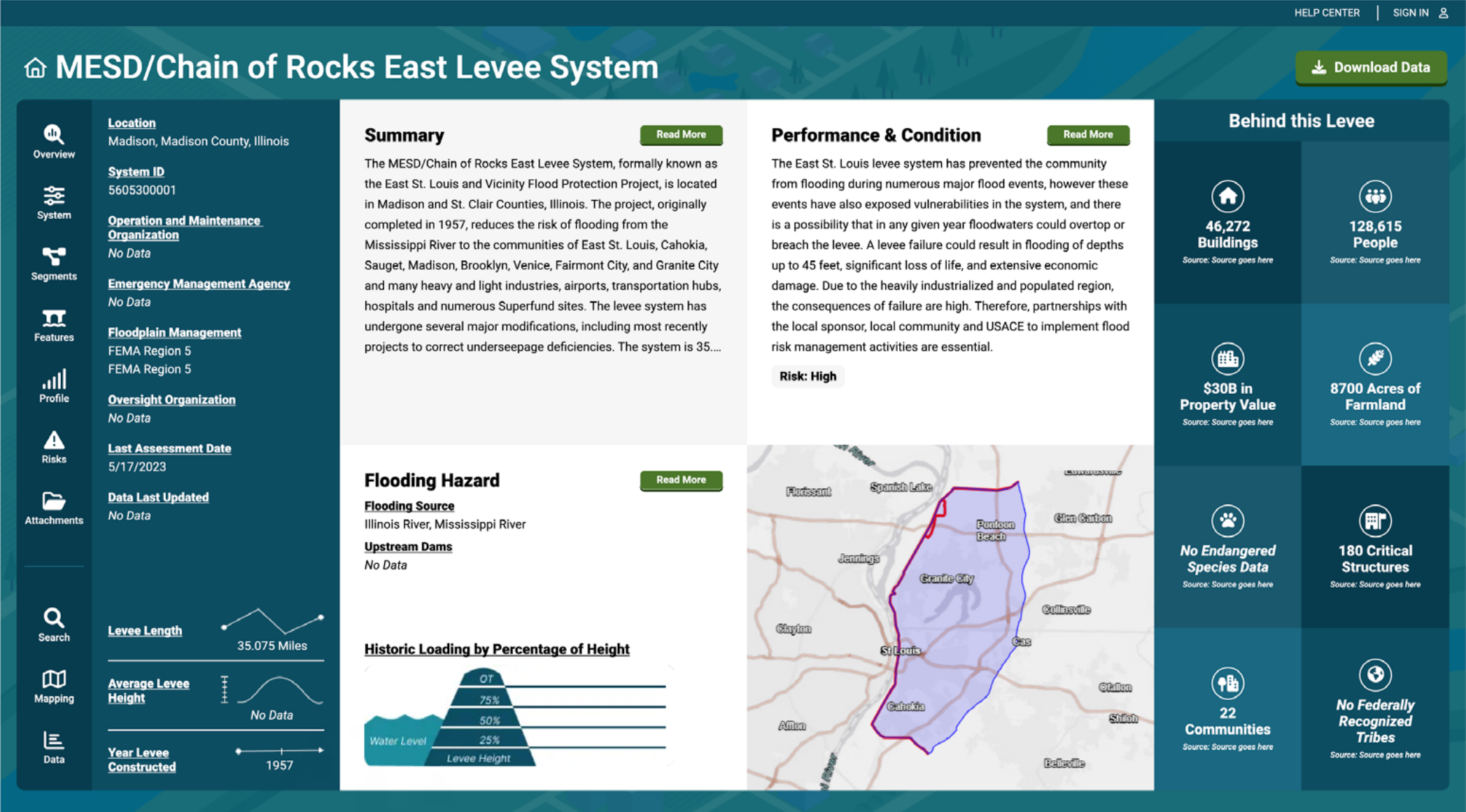
Do I Live Behind a Levee?

Enter your address to determine if you live behind a levee inside the potential inundation area. If you are behind a levee the search results panel will display with the levee(s) records.

SEARCH
by your address



New Levee Summary Page



New Pages

Levee Basics

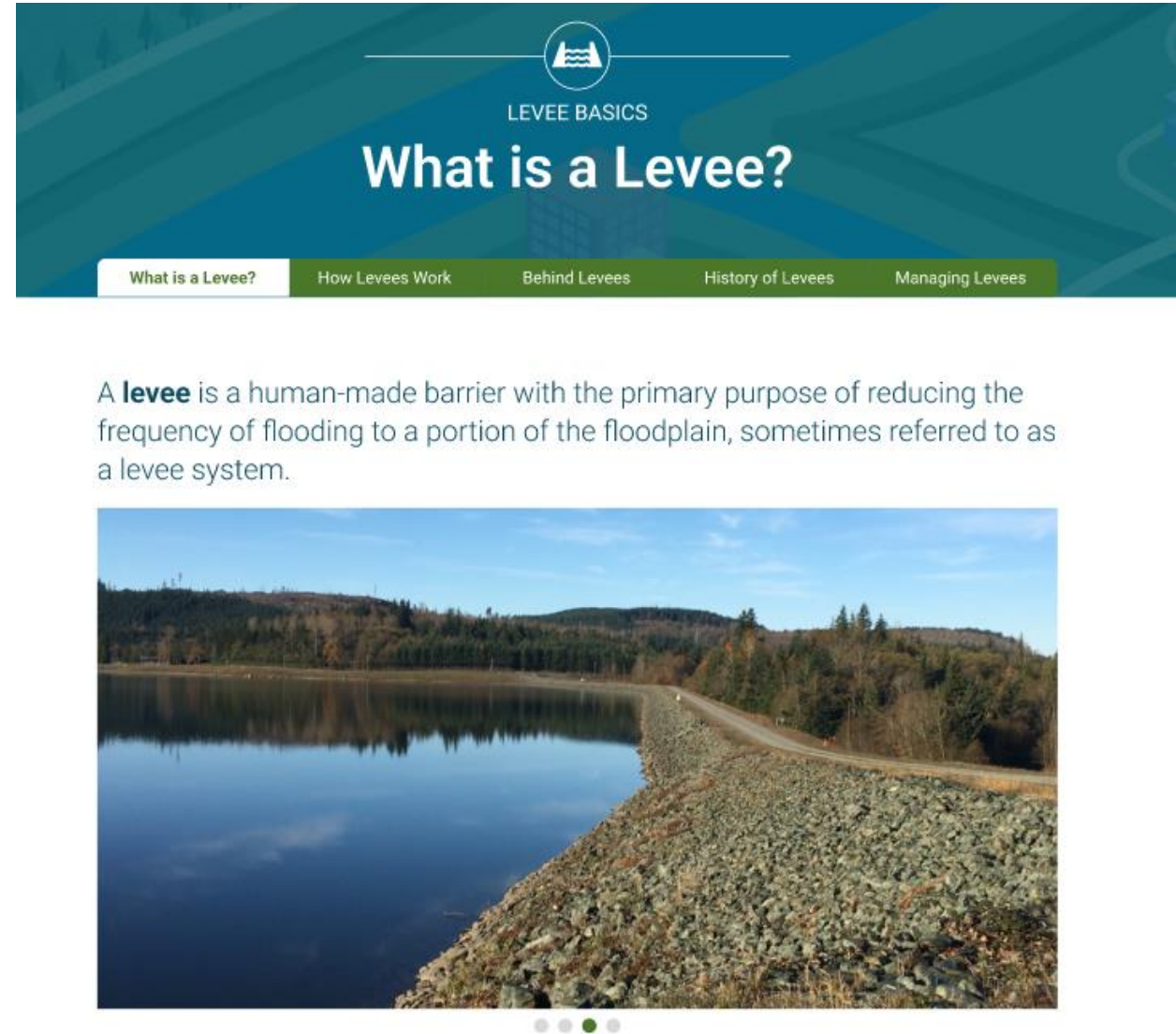
Explore what kinds of levees there are, how they work, and what levees look like in communities nationwide

Flood Basics

Floods can happen anywhere – learn how you, your family, and your community can prepare

About the NLD

Learn more about the history and mission of the NLD



Timely Data Updates

- Submit new or updated data from the homepage, or a levee's summary page
- NLD Help Desk reviews and coordinates requests
- More info on data type and quality is available on NLD

How to Submit & Update Data

If you notice data that is out of date or incorrect, you are able to submit a data change request. Learn how here.

Data Change Request

New Login Procedures

USER (ROLE)	LOGIN PROCESS	DATA AVAILABLE FOR ACCESS
PUBLIC USER	No account required	<ul style="list-style-type: none">• Informational and levee summary page for all levees• Search and mapping tools
ADVANCED USER	Account/role verification by USACE	<ul style="list-style-type: none">• All information available to the public.• Additional technical fields for all levees, such as design flow, river gage code, and slope.
LEVEE OWNER OR OPERATOR	Account/role verification by USACE	<ul style="list-style-type: none">• All information available to the public.• Additional technical fields for all levees.• Specific reports, analysis, and documents for their specific levee.
REGULATOR/MANAGER OF MULTIPLE LEVEES	Account/role verification by USACE	<ul style="list-style-type: none">• All information available to the public.• Additional technical fields for all levees.• Specific reports, analysis, and documents for their specific levee

Detailed Levee Data

Fields moved to login-view

- National Flood Insurance Program status
- Public Law 84-99 Rehabilitation Program status
- Levee Safety Action Classification
- Overtopping annual exceedance probability

Fields based on roles

- Inspections
- Levee Risk Management Summary
- Reports

The screenshot displays the 'National Levee Database' interface. The top navigation bar includes links for HOME, ADVANCED SEARCH, DASHBOARD, MAP, EXPLORE, and MORE. The main header shows the system name 'MESD / Chain of Rocks East Levee System' and the date 'Date Last Updated: 12/14/2023'. Below this, a breadcrumb trail indicates the location: 'Madison, Madison County, Illinois', 'USACE District: St. Louis', and 'FEMA Region: 5'. A tabbed interface at the top allows switching between SYSTEM, SEGMENTS, FEATURES, PROFILE, RISK, and ATTACHMENTS. The 'PROFILE' tab is active, showing a form with several sections: 'FIRM Status' (Accredited Levee System), 'USACE Rehabilitation Program' (Status: Active, SWIF Status: No Data Entered), 'Leveed Area' (Leveed Area Data Source: No Data Entered, Leveed Area Terrain Data Source Year: mm/dd/yyyy), 'Leveed Area Method' (Other (Specify in Notes)), 'Warning System' (No, Calculated), and 'Review Notes' (Levee Reviewed: No Data Entered, Data Change Rationale and Data Sources). On the right side of the profile form, there is a map view with 'Layer Controls' and a 'LEGEND'.

Tell Your Partners

- New website is available now
- New login procedures were implemented.
- Site includes new informational pages that explain the history of the NLD and the basics of levees and flooding
- Help us continually improve the site by sharing your feedback and ideas at NLD@usace.army.mil

How to Learn More

- Live demo for USACE staff – February 29
- Training webinar for NLD users – March 7
- Intro video – publicly available in March
- Feedback – shared at any time by emailing NLD@usace.army.mil

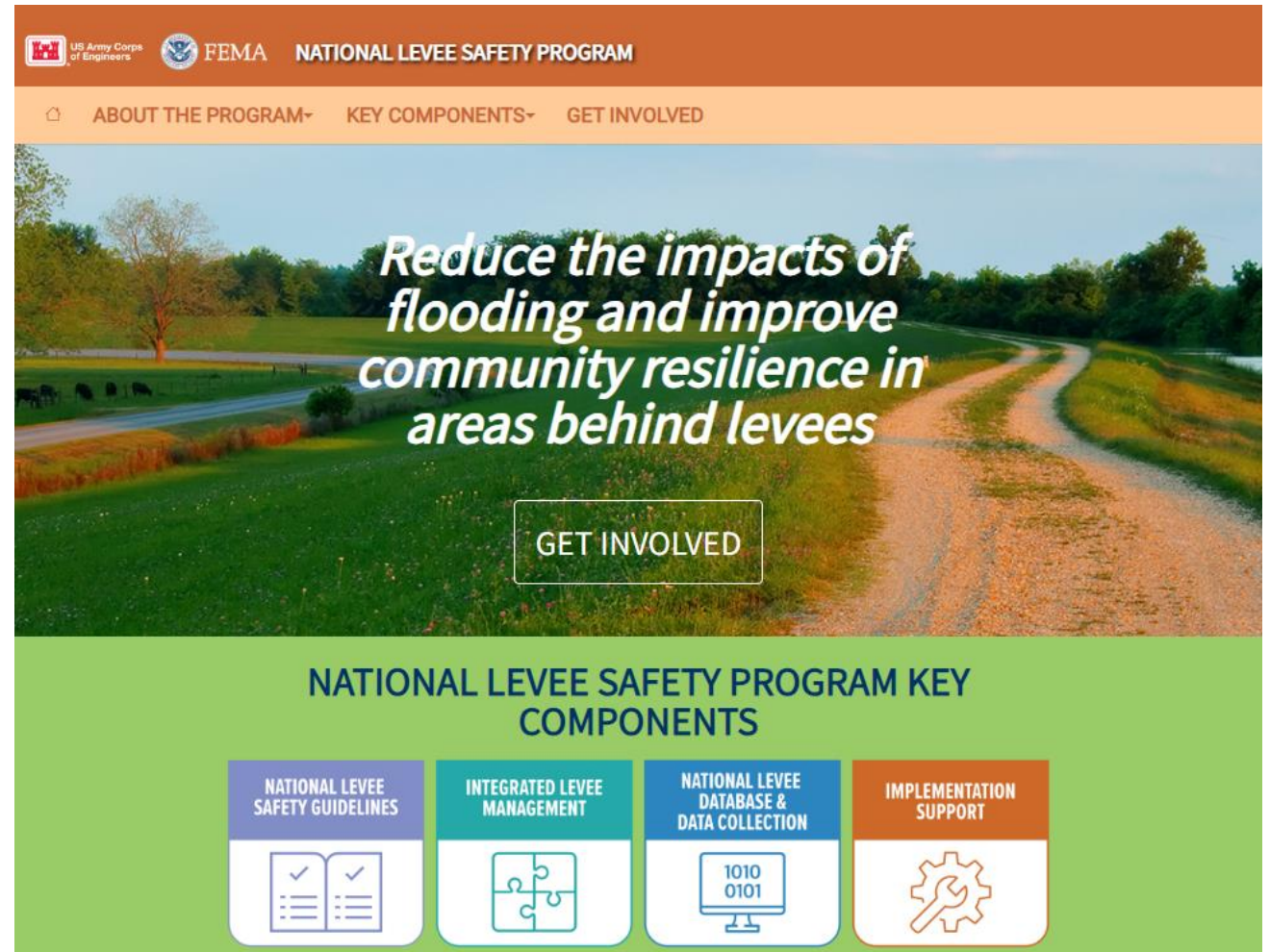
Stay Engaged

Feedback

Email NLD@usace.army.mil to share your feedback and ideas

National Levee Safety Program

This redesign was done based on feedback received during stakeholder engagement for the National Levee Safety Program. Read more about the program and upcoming opportunities to engage at leveesafety.org.



REDESIGNED LEVEE INSPECTION SYSTEM

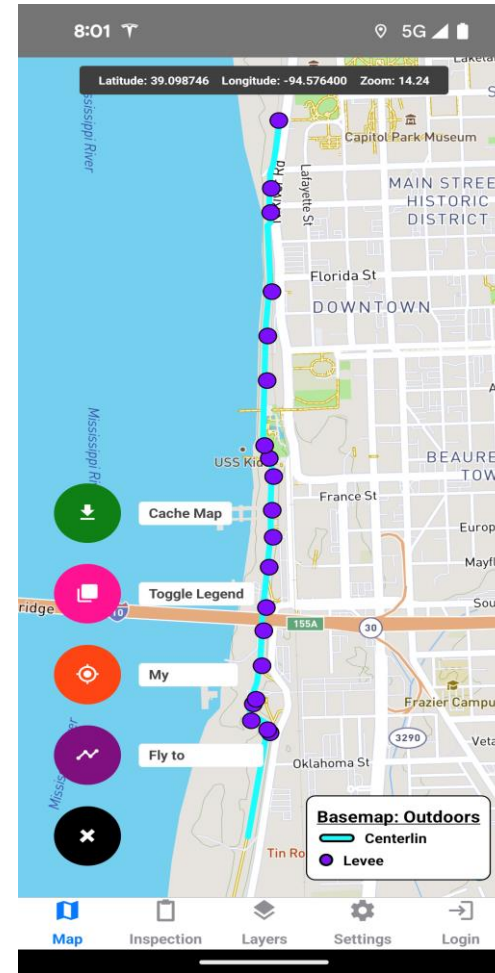


Patrick Kline, LIS Technical Support
SEP-2024

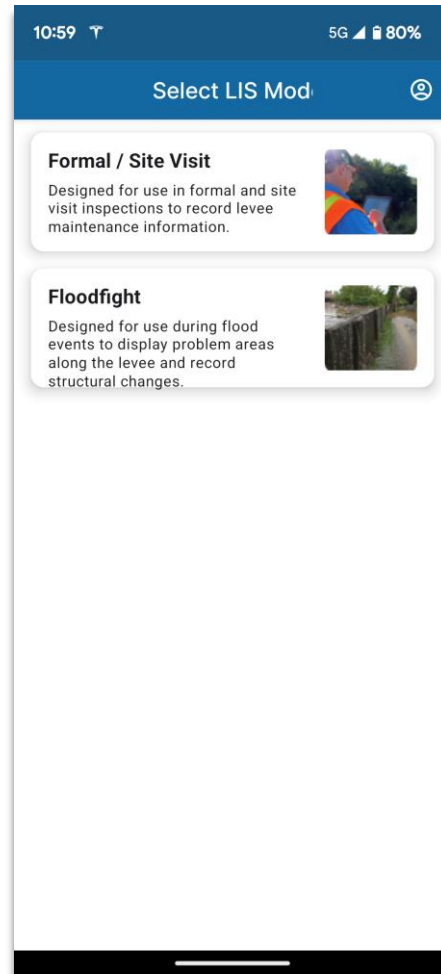
Previous Levee Inspection System



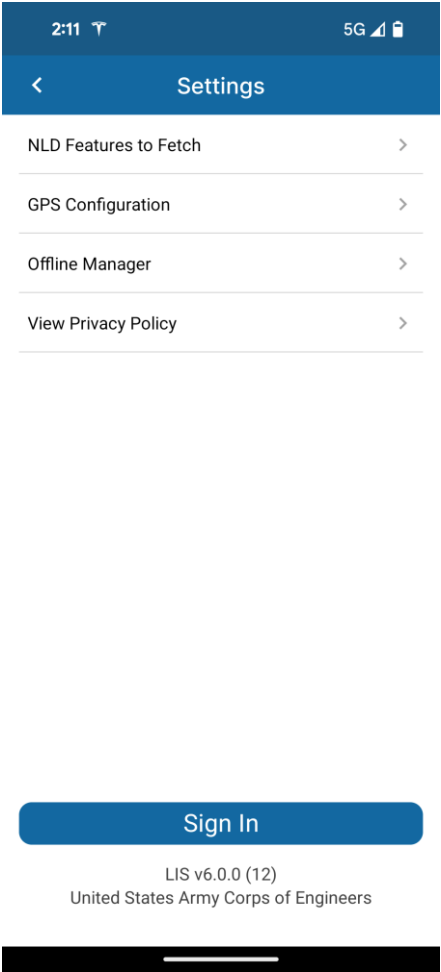
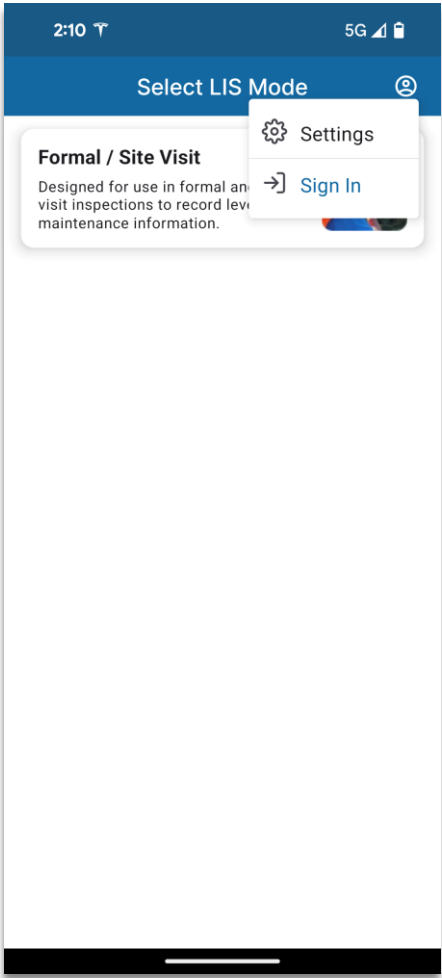
Previous Levee Inspection System



New Look and Feel Levee Inspection System



New Look and Feel Levee Inspection System



Settings

New Look and Feel Levee Inspection System

2:11 5G

< NLD Features to Fetch

Boreholes	<input checked="" type="checkbox"/>
Closure Structures	<input checked="" type="checkbox"/>
Cross Sections	<input checked="" type="checkbox"/>
Crossing Points	<input checked="" type="checkbox"/>
FRM Lines	<input checked="" type="checkbox"/>
Floodwalls	<input checked="" type="checkbox"/>
Gravity Drains	<input checked="" type="checkbox"/>
Piezometers	<input checked="" type="checkbox"/>
Pipe Gates	<input checked="" type="checkbox"/>
Pipes	<input checked="" type="checkbox"/>
Pump Stations	<input checked="" type="checkbox"/>
Relief Wells	<input checked="" type="checkbox"/>
Station Points	<input checked="" type="checkbox"/>

2:11 5G

< GPS Configuration

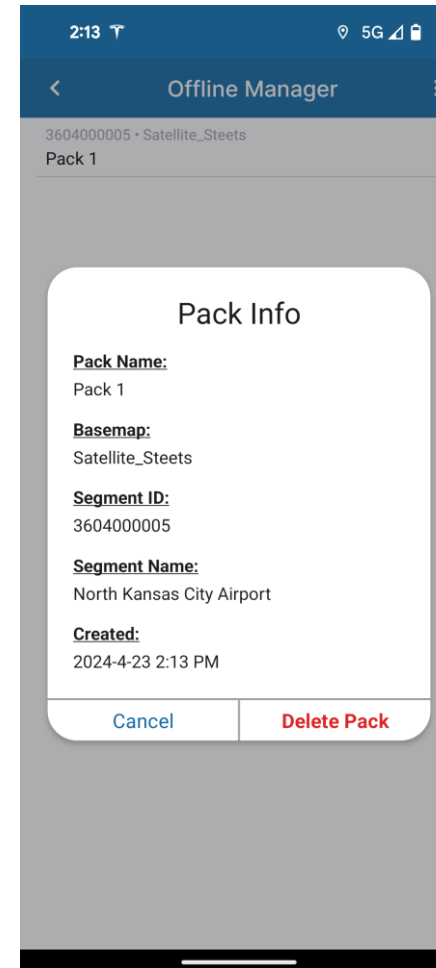
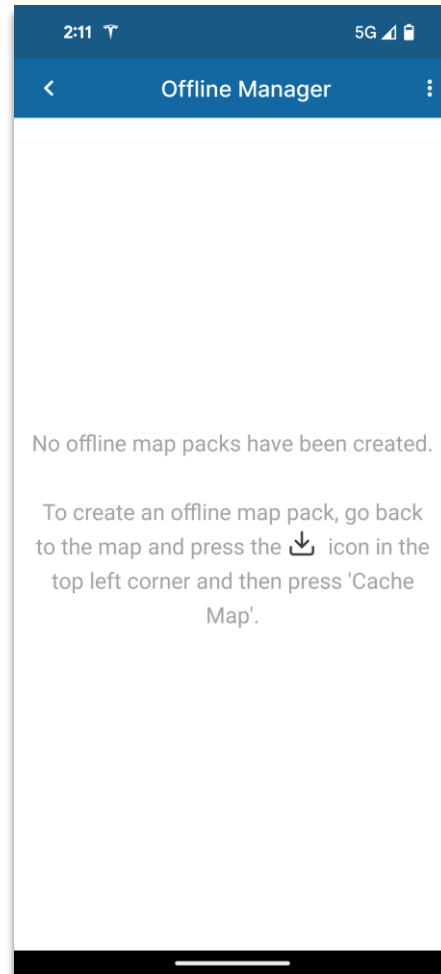
Minimum Vertice Distance (m) 20

Position Marker Size Medium

Position Marker Color Red

Settings

New Look and Feel Levee Inspection System



Settings

New Look and Feel Levee Inspection System



Map View

Collect Observation

New Look and Feel Levee Inspection System

2:15 5G

< Formal 2023 - Cycle A ⓘ

Observation: 2023-0001

Feature
Initial Eligibility ✓
Inactive feature category. Update required!

Item
3. Segment / System Completion (A... ✓

Rating
Acceptable ✓

Location ✓

Associated NLD Feature ✓

Description

2:15 5G

Cancel Save

Place Point

Undo Add Photo

Feature ✓

Item ✓

Rating ✓

Location ✓

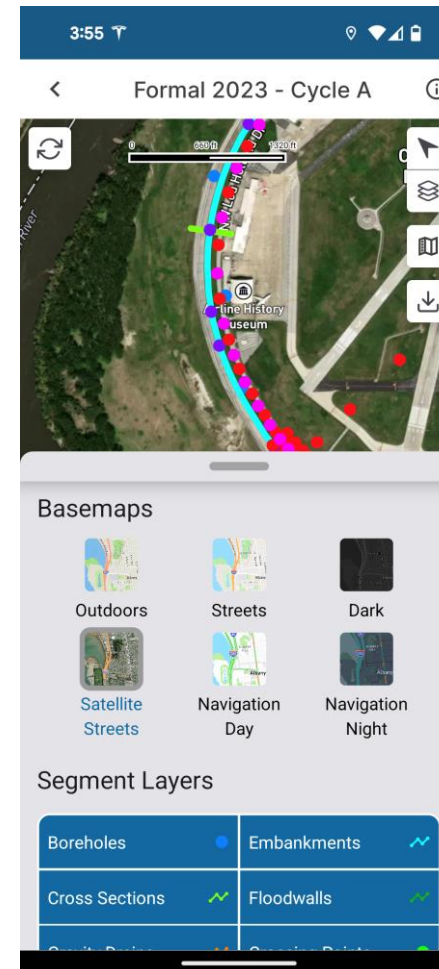
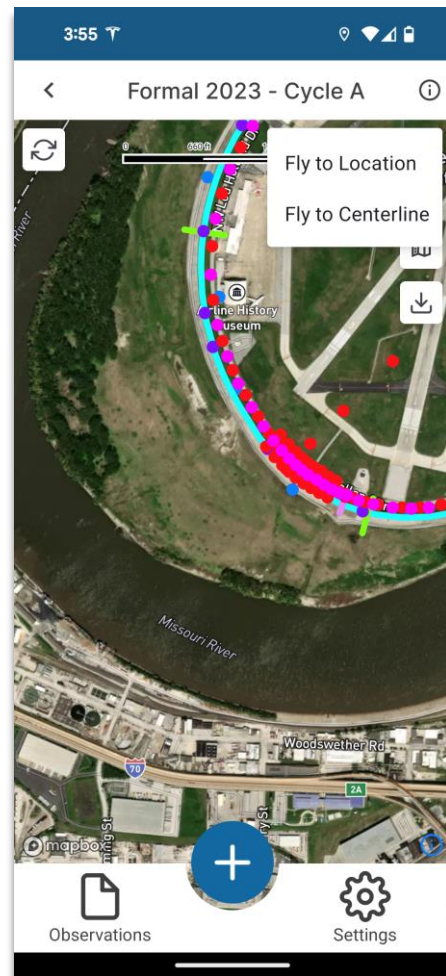
Associated NLD Feature ✓

Description

Map View

Collect Observation

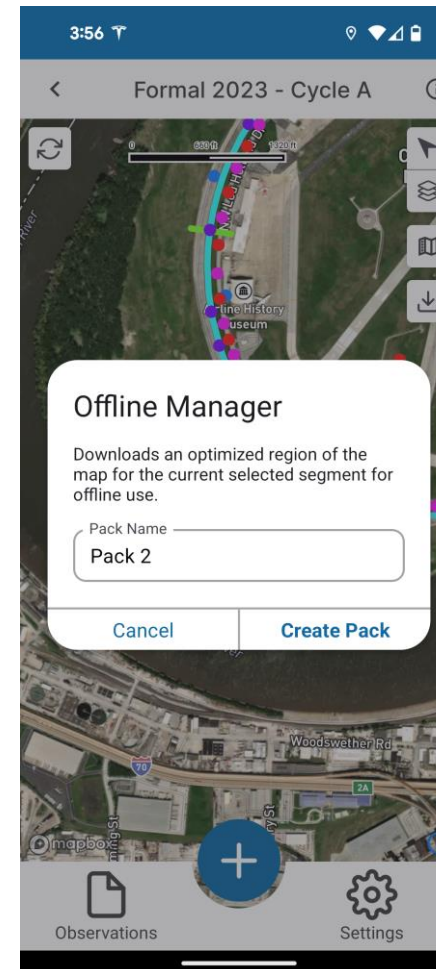
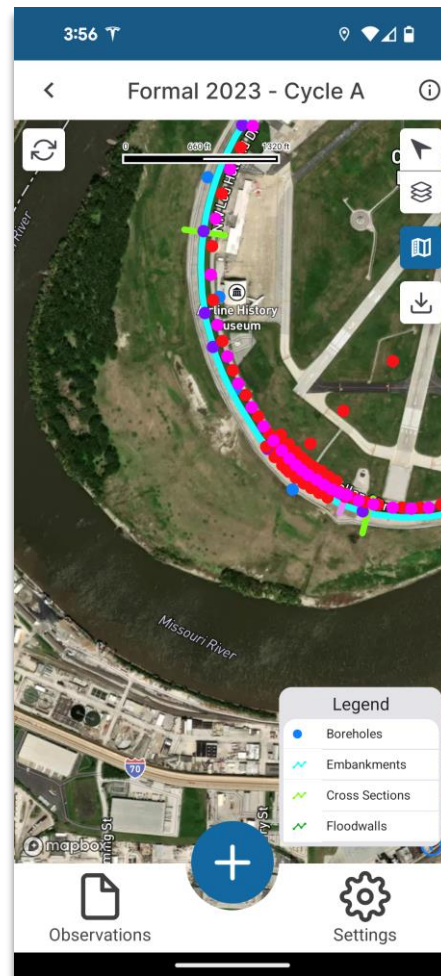
New Look and Feel Levee Inspection System



Map View

Fly to & Base Maps

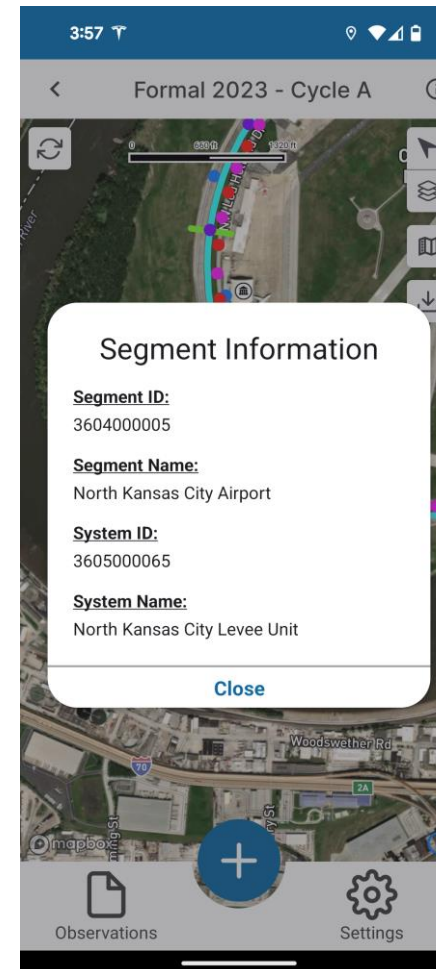
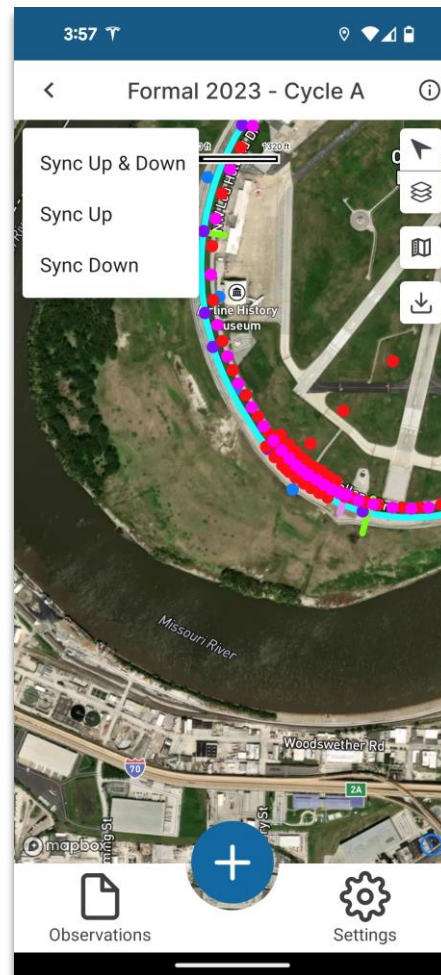
New Look and Feel Levee Inspection System



Map View

Legend & Offline Maps

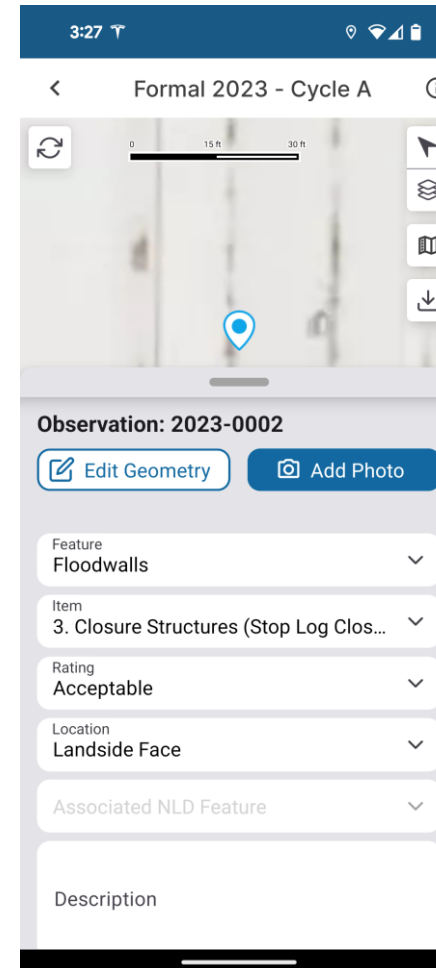
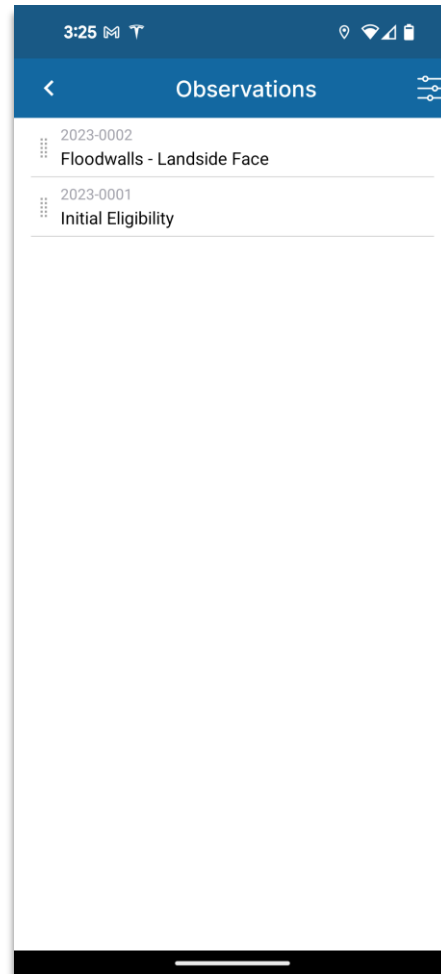
New Look and Feel Levee Inspection System



Map View

Sync & Segment Info

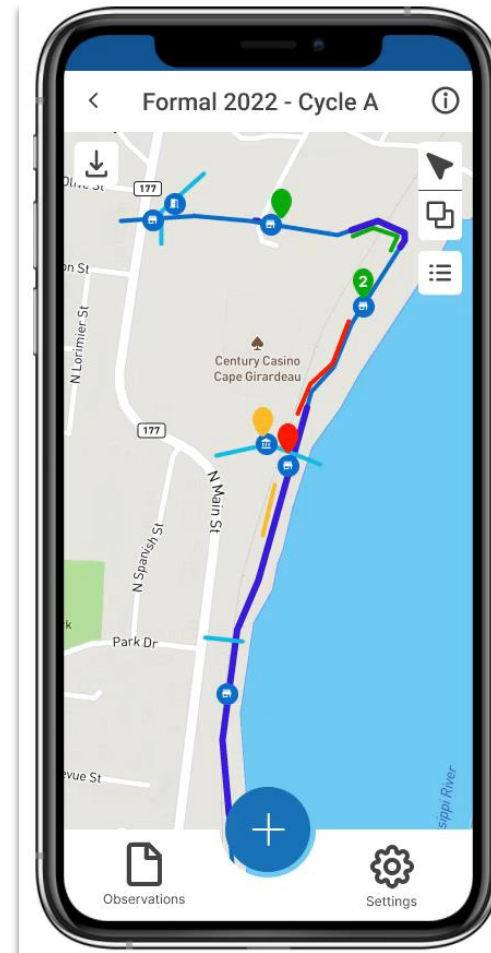
New Look and Feel Levee Inspection System



Map View

Obs Filter & Edit

New Look and Feel Levee Inspection System



Questions?

Live demo time permitting

Silver Jackets and Technical Assistance

Jessica Ludy
Flood Risk Management Program
USACE San Francisco District





Did you know the Corps offers direct technical assistance?



Comprehensive watershed planning

Flood risk mapping & modeling

Emergency Action Planning

Flood alerts & risk communication

Cultural resources protection

Training & capacity building

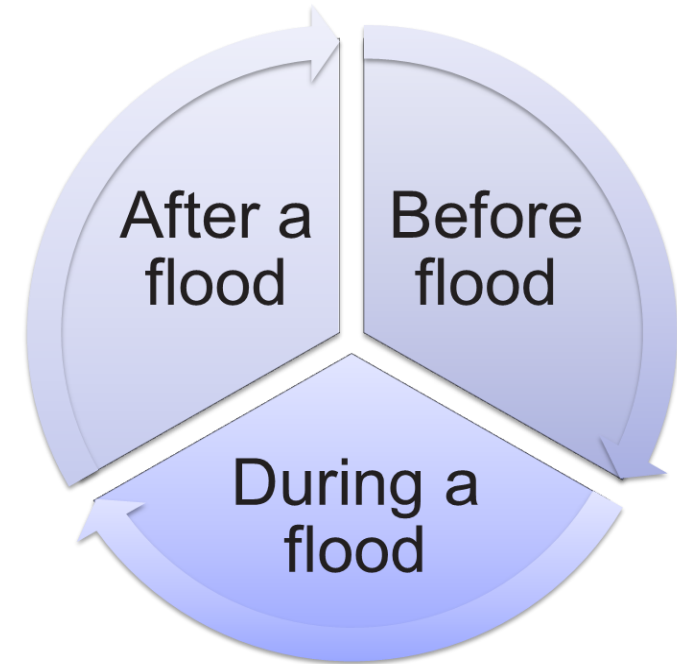
Data collection

Nontraditional projects for Tribal Nations



Silver Jackets Interagency Program

- Every state has a Silver Jackets Team with multiple agencies and orgs, levels of government
- We meet quarterly (and once/yr in person)
- Goal: improve flood safety with and for communities across the **flood risk management cycle**
- State- or Tribally Led Partnership, work **together** to identify and address priorities
- Great tool to get communities access to both resources & decision making
- Projects are similar to other technical assistance, but **BETTER** because *requires multiple partners to contribute time and knowledge.
- **OCTOBER 15 in Rancho Cordova!!**



CALIFORNIA DEPARTMENT OF
WATER RESOURCES



FEMA

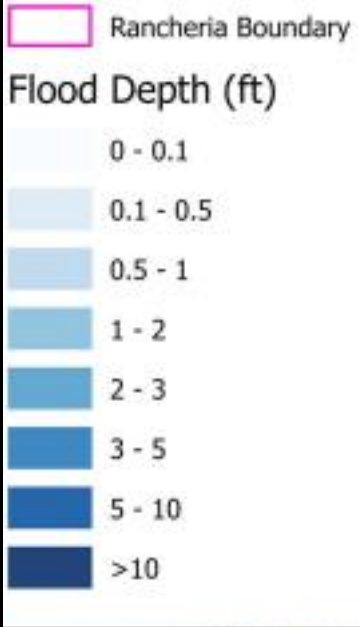


USGS
science for a changing world



Recent examples of technical assistance and Silver Jackets projects

Floodplain Mapping on Cahto Creek with Cahto Tribe of Laytonville Rancheria



DINÉ BIZAAD FLOOD RISK MESSAGING, NAVAJO NATION

Challenges

- Flash floods during monsoon season pose life safety concerns across the Navajo Nation.
- Many areas within Navajo Nation lack reliable TV & cellphone coverage.

Activities

- Translate Flood Risk PSAs into Diné Bizaad, ensure all Tribal members (young to elders) can understand the message.
- Continue the strong tradition of speaking & hearing Diné Bizaad across the Navajo Nation.



RADIO PSAs

- Radio stations are a primary way people get the news across the Navajo Nation.
- Team released Diné Bizaad & English language Flood Risk PSAs across the Navajo Nation.

English Language PSA

'Distant rainfall can make its way to you. Be aware and stay away from flood prone areas including ditches, washes, canyons, and streams. Six inches of moving water can cause a person to fall, and one foot of water can carry vehicles away. Protect yourself, protect your community.'

ROAD SIGNAGE

- Critical locations for signs identified in partnership with BIA & Navajo Nation Dept. of Transportation.
- Diné Bizaad & English language warning signs for roads that flood & roads that are closed.
- Mix of permanent & mobile road signs purchased from UNICOR.



Interagency team INCLUDES

- USACE SPA, NWS, BIA, Navajo Nation DOT, Dept. of EM, & Dept. of Water Resources

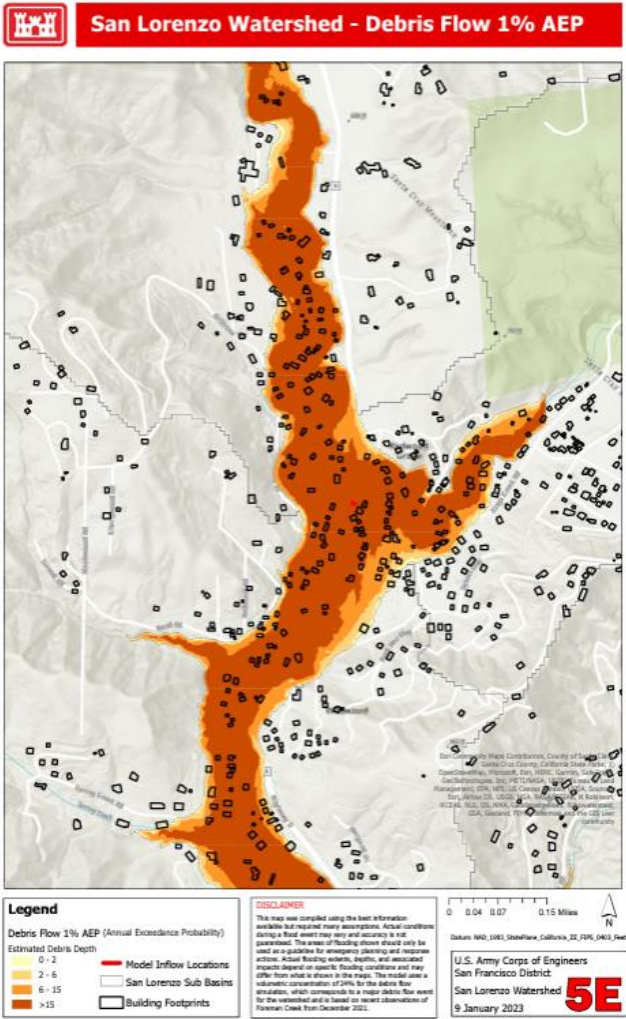




Mapping Debris-Flow After a Fire

77,000 evacuate San Mateo and Santa Cruz counties as CZU Lightning wildfire complex rages

By [Mallory Moench](#)
Updated Aug 21, 2020 9:32 p.m.





Risk Assessment and Life Safety Analysis



US Army Corps
of Engineers

Sacramento District
South Pacific Division

Simplified Semi-Quantitative Risk Assessment Reclamation District 0017 (RD 0017) Levee System



December 2020

Simplified Semi-Quantitative Risk Assessment

RD 0017 Levee System



Figure 2 - RD 0017 Levee System

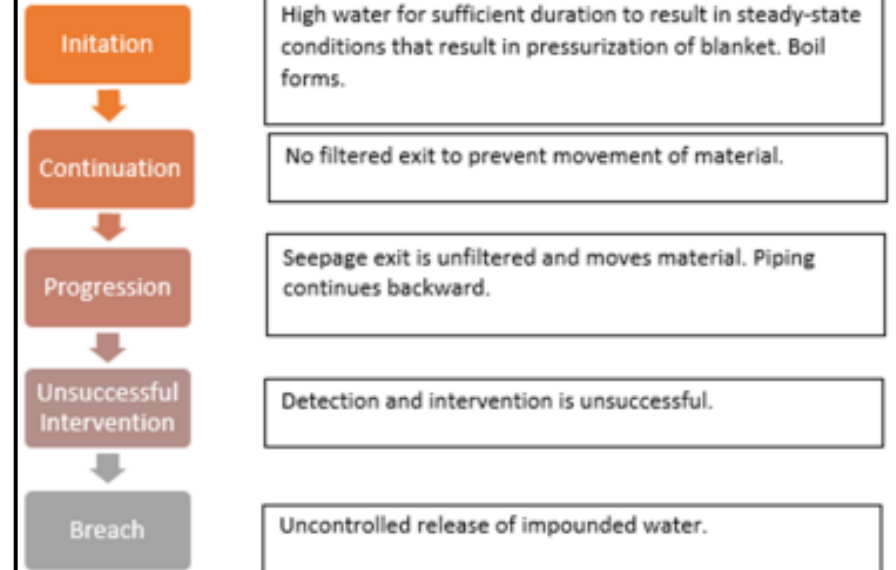
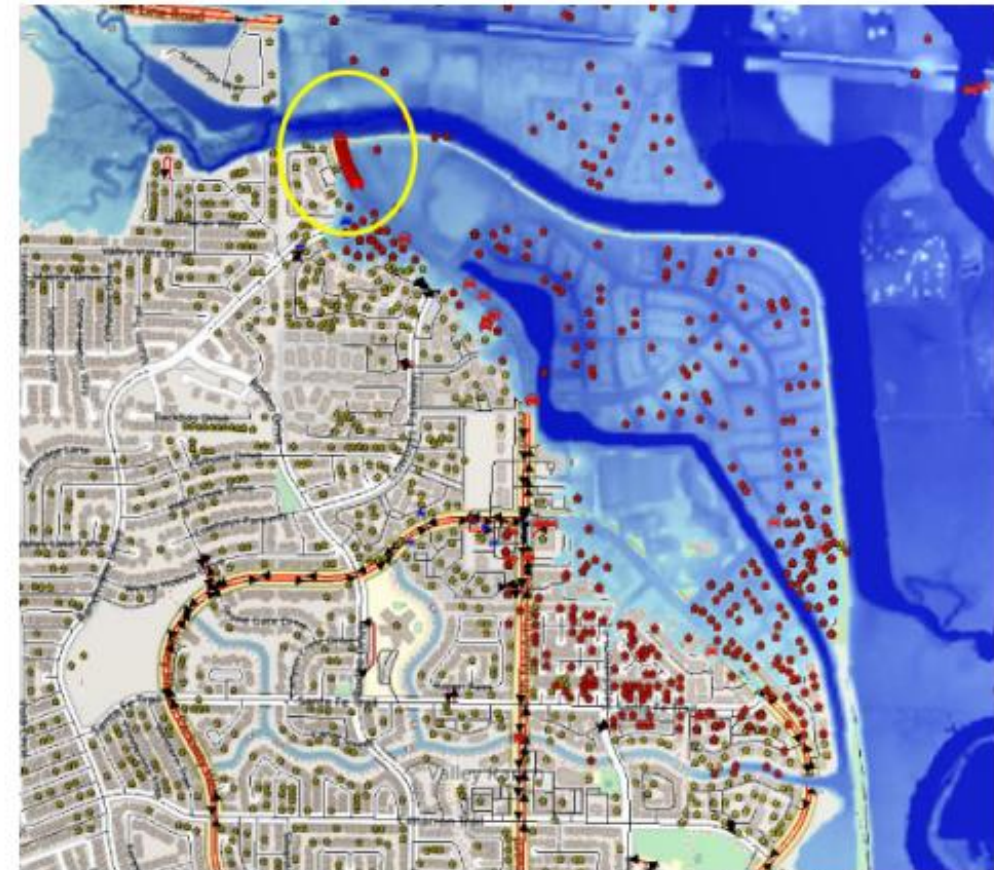
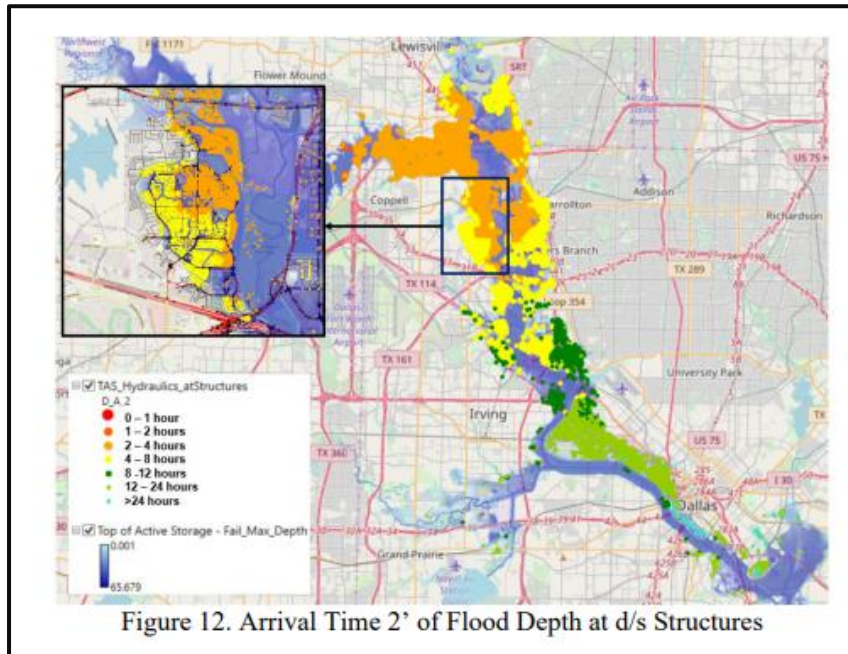
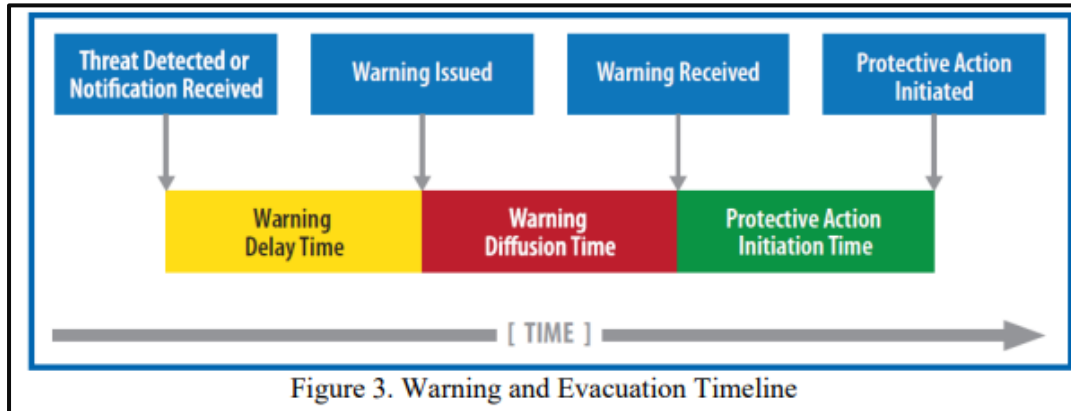


Figure 6 – Example Potential Failure Mode Event Tree



Evacuation Modeling and Life Sim





Marin City Flood Emergency Action Plan



MARIN CITY COMMUNITY SERVICES DISTRICT & CALIFORNIA DEPARTMENT OF WATER RESOURCES PRESENT

Marin City Flood Fighting Training

November 2, 2022
8:30 AM - 4 PM

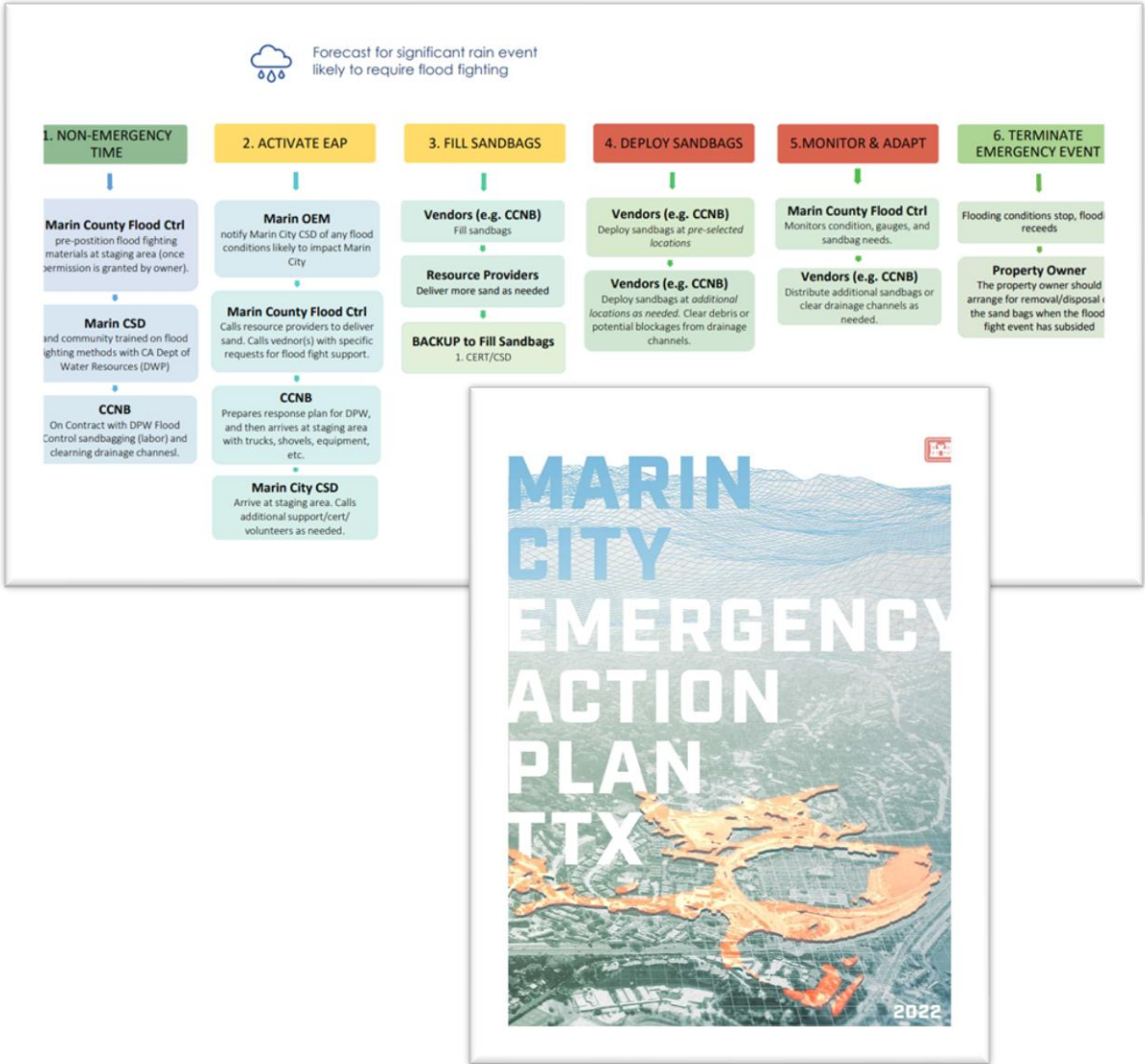
Marin City Community Services District
640 Drake Avenue, Marin City

You will learn how to...

- Access sand and sandbags before a storm.
- Fill and place sandbags around buildings to prevent flooding.
- Deploy muscle walls.
- Set up temporary levees.
- Dispose of sandbags.

Free training. Space limited. Register now.

Email: juanita.edwards@marincitycsd.com to reserve your spot.



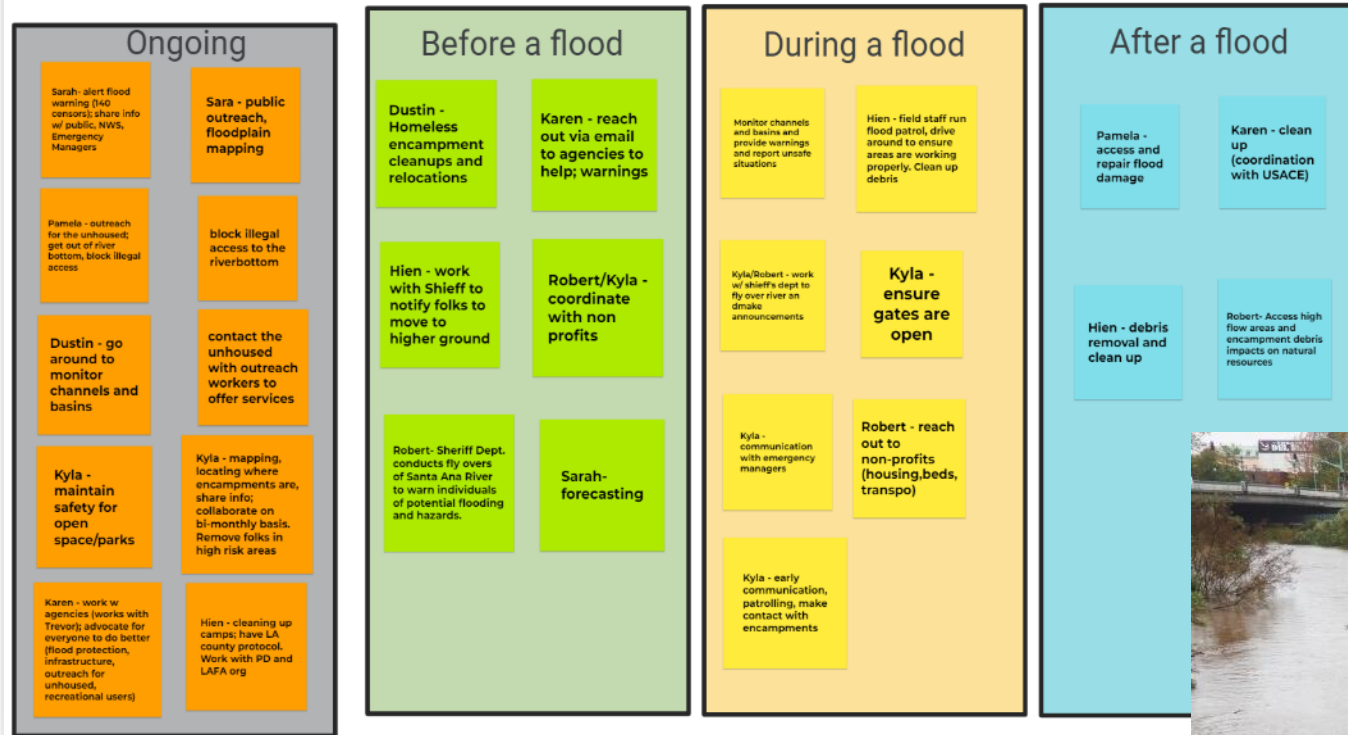


Flood Resilience With & For Unsheltered Communities

Breakout Session #1:

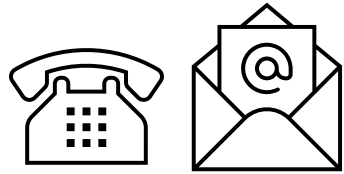
What part, if any, of your mission works with unsheltered communities?

What actions are you taking for unsheltered communities immediately before, during, and immediately after a flood?





How to Request Technical Assistance



1. Contact us with potential water resources needs or concerns!

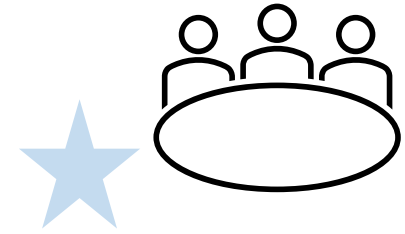
jessica.j.ludy@usace.army.mil



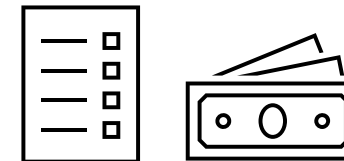
2. We will discuss with you and select best program



3. You submit letter of request
(we will give you template)



5. Project approved/funded!
Work with you to initiate it & then complete the work.



4. Co-create scope of work to meet your needs, USACE request funding



What **ROLE** does
TECHNICAL ASSISTANCE play
in advancing
Environmental Justice?

For Communities

Just Treatment

- Meets a direct need
- Increases access to resources
- Can lead to bigger projects and more resilience.

Meaningful Engagement

- Increases access to decision-making
- Connects them to to decision makers & political champions
- Builds understanding of government bureaucracy

TRUST



What **ROLE** does
TECHNICAL ASSISTANCE play
in advancing
Environmental Justice?

For us! (practitioners)

Just Treatment

- Builds our environmental justice literacy and expertise
- Awareness about communities and issues we may not have known about before
- Results in better policy and programming

Meaningful Engagement

- Teaches us how communities want us to work with them
- Human connection

TRUST



Questions and Comments

Jessica Ludy
Flood Risk Management Program Manager
Jessica.J.Ludy@usace.army.mil
(415) 732-9165

Part 3: Q&A – Breakout Sessions





Breakout Session!

Ask questions and learn more from USACE experts:

Table 1: Levee Inspections & Maintenance

Table 2: PL84-99 Program

Table 3: Technical Assistance

Table 4: Flood Fighting & Preparedness (DWR)

Table 5: USACE Regulatory and 408 Permitting

