FLOOD ZONE 9 ADVISORY BOARD MEEETING
MARCH 31, 2022

We acknowledge the land we are on today as the traditional territory of the Coast Miwok and the federally recognized tribe the Federated Indians of Graton Rancheria. We thank the Coast Miwok who were the stewards to the land and water here before us and those who are here now for sharing their ancestral homeland with us. For more information: https://native-land.ca/resources/territory-acknowledgement/

Item 1. Approval of Meeting Minutes for March 10, 2021
https://www.marinwatersheds.org/sites/default/files/2022-02/FCZ9%20AB%20DRAFT%20Meeting%20Minutes%20031021.pdf

Recommended Action: Approve the minutes.

Item 2. Open Time for Items Not on the Agenda
Comments will be heard for items not on the agenda (limited to three minutes per speaker).

Item 3. San Anselmo Flood Risk Reduction Project
The San Anselmo Flood Risk Reduction (SAFRR) Project consists of three components: (1) design of the Sunnyside Flood Diversion and Storage (FDS) Basin at 3000 Sir Francis Drake Blvd; (2) the removal of a building bridge at 634 San Anselmo Avenue and creek bank stabilization within San Anselmo Creek (BB2); and (3) flood mitigation measures for downstream privately owned structures that may see impacts from the project. The District's design team led by Stetson Engineers in conjunction with the District's environmental consultant, ESA, produced and submitted design and plan sheets and permit applications for the SAFRR project to the State and Federal regulatory agencies. Now that the 90% plan set is available, these were also shared with the same agencies and staff have been working tirelessly to secure all permits prior to work beginning in the creek this spring. The District has secured permit approvals from the Regional Water Quality Control Board, California Department of Fish and Wildlife and the US Army Corps of Engineers. The focus of the permit negotiations with the regulatory agencies was focused on the extent of environmental mitigation and monitoring required as a result of the project. The following is an update of the progress of each of the project elements:

Milestone	Timeline
Permit applications submitted	May 2020
BB2 building demolition completed	June 2020
FDS Part 1 Construction completed	November 2020
90% SAFRR engineering design plans	February 2021
Permit approvals	March 2022
100% design plans for FDS	July 2021
FDS Part 2 Construction bidding and award	Spring/summer 2021
FDS Part 2 Construction	September 2021 to October 2022
100% design plans and specs for BB2 project	May 2022*
BB2 construction bidding, award and construction	TBD see B below*
BB2 flood mitigation design and construction	To be determined

A. Sunnyside Flood Diversion and Storage Basin (FDS)

The schedule for completion of the detention basin was split into two phases to conduct most of the hauling of soil during the pandemic shutdown. Part 1 was completed in November 2020 and included grading for the basin outside of the creek. The Stetson design team completed final design of the passive FDS project in July 2021. The construction plans, specifications and estimate for Part 2 were released for bid in July 2021. Bids were formally opened in August 2021 and a contract was awarded to Ghilotti Bros., Inc. (GBI) by the District Board of Supervisors on July 27, 2021. The bid price of $3.9 million was about $0.7 million below the construction cost estimate. Construction started in September 2021 and the basin is scheduled to be completed and operational by October 2022. Upon completion, the FDS basin will include a side weir to allow flood waters to enter the basin passively upstream of the access bridge, a perimeter embankment around the basin, and outlet works to drain the basin after a flood event. The project will also include the planting of native trees, shrubs and grasses at the site that will comply with environmental mitigation requirements mandated by the permitting agencies.

B. 630-636 San Anselmo Avenue (removal of Building Bridge #2)

Following tenant relocation, the existing buildings on top of the deck of the supporting concrete bridge were demolished in the summer of 2020. The concrete slab foundation that spans the creek will remain in place until final permit approval and the Federal Emergency Management Agency (FEMA) no rise certification is approved.

The District's design team is currently preparing 100% design plans, specifications and estimate for the removal of the building bridge. The District is working closely with The Town of San Anselmo and RHAA, their design team, to incorporate certain elements of the Reimagine Creek Park (RCP) vision into the SAFRR project design. The elements that are not part of the flood mitigation project will be paid separately by the Town. The District plans will include reconstructing the right bank retaining wall in place to create space for a new pedestrian plaza along San Anselmo Avenue. The release for bid and award is planned in May 2023 but will depend on FEMA authorization (see Section C) and project bids coming in within available funding.

The current project design incorporates a new structure that is designed to constrict flow (also referred to as a baffle). The baffle is needed to comply with FEMA's no rise guidelines. The BB2 bridge foundation currently spans San Anselmo Creek and is a major obstruction to flow. Because the project is located within a FEMA regulatory floodway, FEMA will not authorize any project that results in a rise in flood waters of 0.00 feet or above during a 100-year flood (1% chance of exceedance in any given year). Any project, even removal of an obstruction to flow, that causes a rise that touches a structure in the floodway downstream will require mitigation to that structure. To construct the BB2 project in a way that causes no rise, the District is working with their engineering consultants to design a temporary constriction (called a "baffle") to be installed once the older building structure is removed. This concrete constriction structure, or baffle, would remain in place until the District can secure the mitigation needed either by detention upstream or measures downstream or a combination of both. District staff have been working closely with FEMA, the District's engineering consultants, and FEMA's mapping consultants in Washington DC to

perform modeling for a baffle design that results in no-rise during a 100-year flow event. The application to FEMA is scheduled to be submitted by May but the timeline for approval may be up to 9 months. The District is applying for an expedited approval process from FEMA.

The Town of San Anselmo participates in FEMA's Community Rating System (CRS) . The CRS is a voluntary program that encourages and rewards communities for going beyond the minimum requirements of FEMA's National Flood Insurance Program. By participating in CRS, the Town earns flood insurance premium reduction for its residents. The CRS efforts funded by the Town can result in reductions in flood insurance rates for those property owners who pay for federal flood insurance. The relocation of the tenants and removal of the buildings located at 630-636 San Anselmo Avenue as part of the SAFRR Project has resulted in the Town being credited to a level which translates into a 15% reduction in flood insurance rates within Town limits.

Installation of a new concrete baffle downtown would negate any upstream flood benefits while in place (staff are verifying with FEMA that this would not impact flood insurance rates). This constriction can be removed once all downstream mitigation measures are constructed and signed off by FEMA and the respective Town Floodplain administrators as part of a Conditional Letter of Map Revision. Using FEMA's effective model, up to 20 properties have been identified as impacted downstream in San Anselmo and Ross. Flood mitigation can also be achieved by incorporating detention upstream of BB2 or a combination of these measures. Installation of the baffle would allow the banks of San Anselmo creek to be stabilized, daylighting a small section of the creek. Removal of the aged BB2 would allow the design process for ReImagine Creek Park to continue.

From its inception, the Ross Valley Program proposed detention throughout the watershed to achieve containment of the 100-year flow but to date only one basin is in construction: the FDS site in upper Fairfax at the former Sunnyside Nursery. Hydraulic modeling shows the need to detain at least 480 acre-feet of flood storage throughout the watershed to mitigate the 100-year flow. Preliminary estimates show about 270-acre-feet of detention storage is needed to mitigate any increase in the 100-year flow downstream with the removal of the building bridge 2 alone. Given the absence of detention, the District has identified conceptual measures to mitigate any rise by raising or flood proofing individual commercial and residential structures impacted downstream of BB2.

C. Private Property Structure Flood Risk Mitigation

The District has been in contact with the three residential homeowners identified as requiring flood mitigation within their private properties due to impacts from the project per the certified project EIR consistent with the 2/19/20 technical memorandum. District staff have also identified structures that are potentially impacted consistent with FEMA's no-rise guidance. In addition to the EIR, the FEMA regulations require either no-rise or mitigation for any structures impacted by a rise from the 100-year flood as confirmed using the FEMA flood model. Use of the FEMA model identified 20 properties that would potentially be impacted and require mitigation to comply with Federal requirements.

For the properties identified as impacted consistent with the Project EIR and FEMA's no rise

requirements, staff have worked with engineering consultants to identify feasible flood mitigation measures and approximate costs. Any measures implemented would need to be acceptable to both the District and the private property owners. Homeowners would be asked to approve the proposed mitigation as part of a written agreement, and any mitigation funding provided to the owners, previously recommended by the Advisory Board, would also require action by the Marin County Flood Control & Water Conservation District Board of Supervisors. One of the three owners, residing at 56 Lincoln Park in the Town of San Anselmo, is ready to raise their structure and has signed an agreement with the District to provide up to $71,976 to raise the office/garage finished floor of the structure at least 1-foot above the 100-year flood. This property owner secured architects and other design professionals reliant on the offer of a funding agreement with the District.

Flood mitigation measures would include construction work on privately-owned homes including many that were constructed in the early 20th century. To comply with FEMA's no-rise requirement, any rise that impacts a structure would need to be mitigated. FEMA has informed the District that if an owner refused to implement flood mitigation measures to be paid for by the District, the only way to proceed would involve purchase of the property, either voluntarily or through eminent domain.

Previously, the District had recommended setting aside $3.0M in an administrative designation for future residential and commercial flood mitigation work related to the San Anselmo Flood Risk Reduction project. Based on actual costs to raise homes through the County's Structure Elevation program, funded through a FEMA Local Hazard Mitigation Grant, it is evident that additional funds will be needed to raise and/or modify up to 20 structures. For example, the 2021 cost to raise a single-story family home in Ross was approximately $700,000 and a split-level home up to $1.5 million. Proceeding with a project to replace the older building bridge two with a new concrete baffle structure will ensure compliance with FEMA's no rise requirement. The $3.0M will be held in reserve for the San Anselmo Flood Risk Reduction Project, the Corte Madera Flood Risk Management Project and/or other flood mitigation projects.

Project updates will continue to be provided at future meetings and on the project page: https://www.marinwatersheds.org/resources/projects/san-anselmo-flood-risk-reduction-safrr-project.

Summary:
Given that FEMA stated they would need up to nine months to process the no rise application, the earliest that the removal of BB2 could be scheduled is Summer 2023. The engineer's cost estimate to remove the bridge foundation including slope stabilization, re-vegetation and installation of a new temporary concrete baffle is $4.2M. There are funds available to construct the project. In addition to the no rise certification from FEMA, the project will require an addendum to the 2018 approved EIR and updates to the State and Federal permits.

District staff are working with the engineering consultant to prepare a final design plan set and specification for removal of the BB2 project with construction of a flow restriction structure or baffle. The final design should be available in May. Completion of the project would remove the

aged building bridge two structure, daylighting a small section of San Anselmo Creek, stabilize the creek bank slopes and allow the Town to continue with their ReImagine Creek Park project. The earliest this project could be constructed is summer 2023. When either upstream flood storage and/or downstream structure mitigation measures are completed, the concrete baffle can be removed.

Item 4. Corte Madera Creek Flood Risk Management Project

The Marin County Flood Control and Water Conservation District (District) proposed the Corte Madera Creek Flood Risk Management Project, Phase 1 to reduce the 25-year flood risk along Corte Madera Creek in the Town of Ross and unincorporated Kentfield and to enhance natural stream functions. The project is located in the Corte Madera Creek watershed within the Town of Ross and census-designated place of Kentfield in Marin County. The Project area is divided into three units, as identified from the original construction by the US Army Corps of Engineers, from upstream to downstream: Unit 4, Unit 3, and Unit 2. Corte Madera Creek within the project area is a concrete lined channel in Unit 3 and Unit 2 and currently has a natural bottom in Unit 4. The project area is approximately 1.4 miles long. The proposed project includes elements that would increase flow conveyance capacity, provide flood protection, and/or enhance habitat within Corte Madera Creek.

District staff have been working with the Town of Ross, Friends of Corte Madera Creek, and other stakeholders to continue moving forward with the project design, permitting, and Environmental Impact Report (EIR). The EIR was certified by the District Board of Supervisors on August 17, 2021.

The project has funding from a CA Department of Water Resources Grant that expires March 31, 2023, which requires construction of the project to be completed by the end of December 2022. The project will be bid as two contracts as outlined in the **current schedule** (subject to change) below. The District is also pursuing a request to extend the grant timeline to 2024. The first of the two construction projects for the new stormwater pump station and the maintenance access ramp in the Granton Park neighborhood was approved by the District Board of Supervisors on March 15, 2022 and is currently out to bid with proposals due by April 19, 2022. Plans and Specifications for this project are available to view free of charge on the County's new online bidding process through Bid Express. https://www.bidexpress.com/businesses/53528/home.

Contract 1: Pump Station/ Ramp Milestones	**Timeline**	**Contract 2: In-channel Improvements Milestones**	**Timeline**
100% Plans & Specs	February 2022	100% Plans & Specs	April 2022
Bidding	March 2022	Bidding	May 2022
Permits	N/A	Permits/ Agreements	June 2022
Real Estate Easements	April 2022	Real Estate Easements	April 2022
Construction Award	April 2022	Construction Award	July 2022
Construction Starts	May 2022	Construction Starts	July 2022
Construction completed	November 2022	Construction completed	December 2022

Some of the in-channel improvements do cause minor water surface elevation rise within the existing concrete channel, and therefore need to be approved by FEMA and the Town of Ross and the County's respective floodplain administrators. The projects will go follow a Conditional Letter of Map Revision process similar to the SAFRR project, which is expected to take from 6 to 9 months and will therefore likely delay the construction of these project components to the 2023 construction season. These components include removal of the existing wooden fish ladder structure, and replacement of the transition structure between the upstream natural channel and the existing concrete channel plus any work to raise the height of the existing concrete channel walls downstream. Work downstream of the Lagunitas Road bridge which includes widening the channel along the right bank looking downstream and grading of the channel bed is also likely to be postponed until 2023.

The CMC FRM EIR includes the restoration of the concrete channel restoration that the Friends of CMC have been managing, with funding from a State of CA Coastal Conservancy grant, at the downstream end of the concrete channel next to College of Marin. This project was approved to be included with the existing DWR grant for construction, but unfortunately the existing FEMA model had an error misrepresenting the existing concrete channel width. This error is being corrected but will need review and certification from FEMA to proceed to ensure no rise of 0.00'. This means the project will be delayed into the 2023 construction season. Information on the project can be found on Friends of Corte Madera Creek's website: https://friendsofcortemaderacreek.org/new_site/

Recommended Action: Recommend the District Board of Supervisors increase appropriations in the Zone 9 construction budget by up to $10,000,000 for construction of the project including contingency. The increase in appropriations will equal the amount of the final approved construction award agreement(s), and if more is needed the advisory board will be updated in advance. A short-term loan may be required as part of the contract award.

Item 5. Phoenix Lake

Many residents commented after the 12+ hours of rain that fell during the 10/24/21 atmospheric river- that Phoenix Lake may have prevented flooding in the Ross Valley due to the fact the lake level was very low prior to the storm. According to Marin Water storage data and observations by the Town of Ross PW director and community members, Phoenix Lake rose 27 feet during the storm. Approximately 311 acre-feet of storage was provided prior to the reservoir spilling between 2 and 3 p.m. Sunday afternoon. District staff asked GHD hydraulic engineers to model the event to evaluate potential flood benefits downstream. A hydrology model run was prepared in HEC-HMS, based on the County, NOAA, and MMWD rain gauges data for the 10/24/2021 storm. Figure 1 plotted the estimated creek flow right downstream of Phoenix Lake, from the model run between 10/23 /2021 and 10/26/2021. Solid blue line is flow accounted for lake storage for detention, dashed blue line is flow without lake storage for detention. This model run assumed the 30" low elevation outlet is closed, the project team reached out to Marin Water to verify.

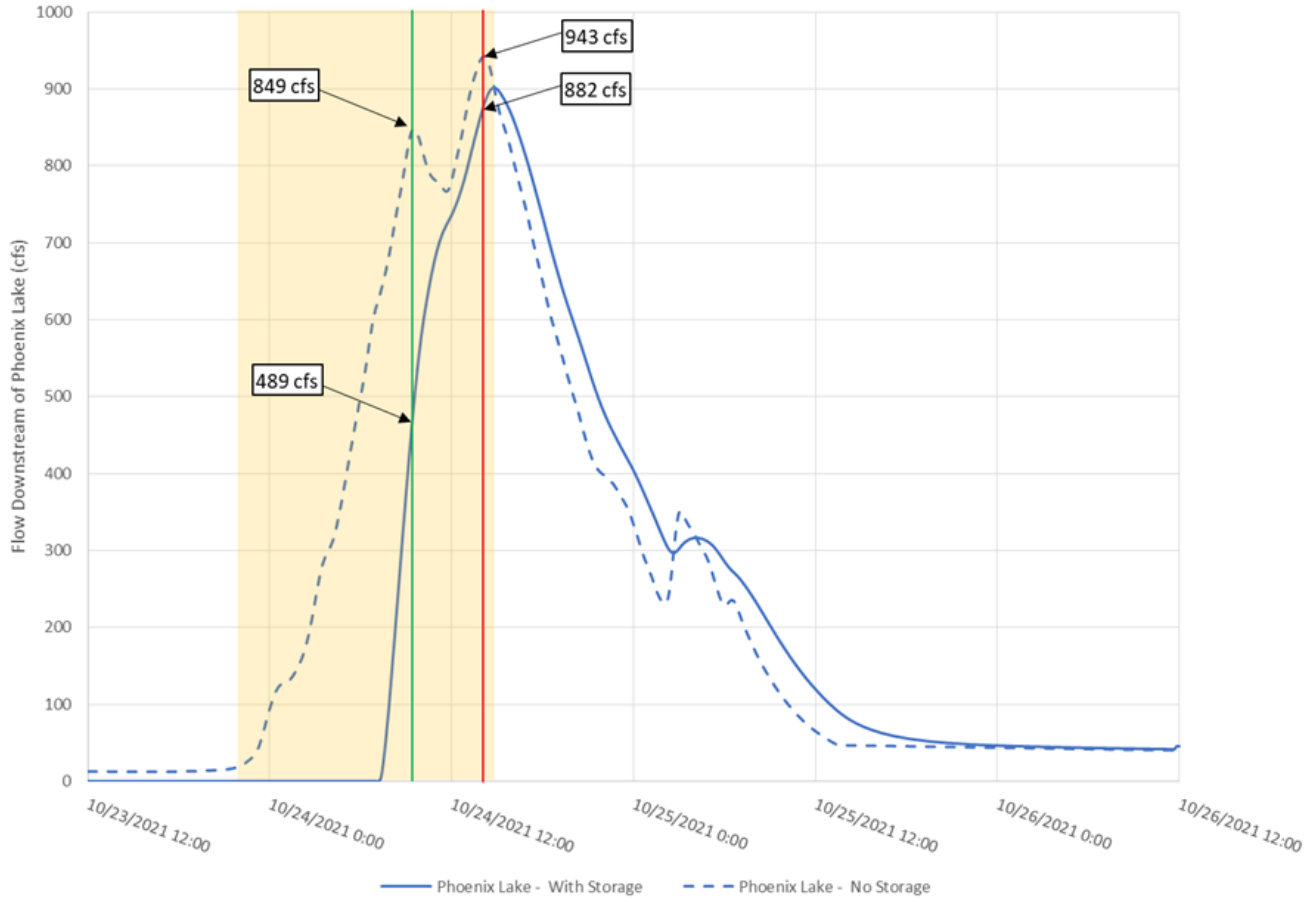
Figure 1 shows that the lake filled up during the rising limb of the storm (yellow shaded area). During the first smaller peak in the morning of 10/24/2021 (green vertical line), the lake provided significant

flow reduction benefit, reducing the peak flow from 849 cfs to 489 cfs, over 360 cfs or 40% peak flow reduction. However, during the peak of the storm in the early afternoon (red vertical line), the lake provided much less flow reduction benefit, likely due to limited remaining storage capacity at the lake. The peak flow reduction was from 943 cfs to 882 cfs, about 61 cfs or 6% peak flow reduction. As a comparison, the peak flow of this storm at Ross Gauge is 3,137 cfs, at around 3:18 pm on 10/24/2021. The result of this hydrology model run showed Phoenix Lake did not significantly reduce the peak storm flow in the afternoon of 10/24/2021.

The small flow reduction in the 10/24/2021 afternoon peak is because the lake is filled up before the storm peak, so there is little remaining detention capacity to shave off the peak flow when it is needed. However, there was significant flow reduction during the 10/24/2021 morning peak when there was storage capacity available at the lake for flow detention. Therefore, Phoenix Lake could have potential benefit to reduce downstream flow, and similar to the FDS design at SAFRR, if Phoenix Lake can modify its design and operation to bypass flow before peak to maximize storage capacity during the peak of the storm, it could potentially be an effective detention basin. The District should revisit the Phoenix Lake detention basin concept, and its potential benefits to downstream watershed and flood flow reduction at Corte Madera Creek.

The County is in discussions with Marin Water engineering staff over the potential to utilize Phoenix Lake for flood protection as well as for water supply benefits.

Figure 1 - October 24, 2021 Storm Event at Phoenix Lake



Item 6. Hillview Pump Station & Stormdrain Improvements

The City of Larkspur (City) identified a need to improve the drainage system that captures stormwater runoff in the Hillview neighborhood and discharges it to lower Corte Madera Creek. Over time, the pre-existing outfall pipes became blocked by creek sediment which reduced the pipes' capacity to discharge the runoff. The City identified an opportunity to improve the drainage system as part of the Pump Station and Drain Improvements in the Hillview Neighborhood Improvements Project (Project). The Bon Air Road Bridge replacement (separate from this Project and funded by City and FHWA Bridge Program) included constructing a new pump station – which was just completed at the end of October – along Bon Air Road to pump drainage along Bon Air Road. As part of this Project, expanded capacity and additional storm drain connections to the new pump station are being constructed so that the Hillview's stormwater runoff can be directed to and accommodated by the Bon Air Road pump station. More details are available from the project webpage:

http://www.marinwatersheds.org/resources/projects/hillview-pump-station-stormdrain-improvements

A Memorandum of Agreement between Larkspur and the District was executed by the District Board of Supervisors on July 18, 2017, in the amount of $42,000 to help the City fund development of the conceptual design for this project. An additional Cooperative Agreement between the City and Marin County Flood Control & Water Conservation District (District) to provide up to $910,000 in reimbursement for final design and construction to the City for the project was approved by the Board on August 18, 2020.

As of January 2022, the City is continuing construction of storm drain improvements in the Hillview neighborhood which will connect to the new pump station. For the latest construction status please visit City of Larkspur Capital Project Updates at https://www.cityoflarkspur.org/Capital-Project-Updates.

Item 7. Winship Bridge

A status update on this project will be provided at the meeting.

Item 8. Proposed Fiscal Year 2022 – 2023 Baseline Budget

The County Administrator's Office requested that the zones recommend a baseline budget for the beginning of each fiscal year that does not include major project expenses. Baseline budgets are intended to be relatively consistent year to year. Major project expenditures will require separate actions from the AB and District BOS to adjust the budget as needed. As usual, the approved budget may always be adjusted as necessary as priorities and cost estimates for projects and studies planned for this coming fiscal year are more clearly identified. The Proposed Flood Zone 9 Baseline Budget for FY 2022-2023 can be viewed at: https://www.marinwatersheds.org/sites/default/files/2022-02/Proposed%20FZ9%20FY23%20Baseline%20Budget_1.pdf

In addition to the baseline budget, staff have also included a summary of expenses and revenue for the duration of the Zone 9 fee.

Recommended Action: Recommend the District Board of Supervisors adopt the proposed Zone 9 Baseline Budget for FY 2022-23.

Item 9. Next Meeting

Staff recommend that the advisory board meet at its next regular meeting in a year and convene special meetings in the interim as needed to support project progress and other needs that come up.