

Marin County Flood Control and Water Conservation District

FLOOD CONTROL ZONE 3 ADVISORY BOARD MEETING

JUNE 27, 2016

STAFF REPORT

Item 1. Approval of Meeting Minutes: March 17, 2016

Recommended Action: Approve 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. Zone Engineer's Report

a. FEMA Hazard Mitigation Funding Opportunity

Last fall, the California Valley and Butte Fires led to the declaration of a major disaster. As a result, the Federal Emergency Management Agency (FEMA) has made available hazard mitigation assistance to the State of California Office of Emergency Services (Cal OES). The District submitted an application on June 16 to use this funding for potential home elevation projects in Zone 3.

Twenty-three homeowners from Zone 3 submitted the required paperwork for eligibility consideration for this program. Under this program, individual homeowners can raise their homes above the FEMA base flood elevation with 75% of their eligible costs reimbursed by the federal government. Application costs are potentially reimbursable at this same rate if the grant is awarded. Application costs per house were estimated to be \$1,000.

b. Coyote Creek Levee Update

i. Coyote Creek Levee Evaluation Project Report

The public comment period for the Coyote Creek Levee Evaluation Project reports ended on February 26. The reports are finalized and posted on the County website. Questions and comments received at the 2/1/16 meeting, during the comment period, and following posting of the final reports, will be posted with responses once they are compiled.

A few select findings from the evaluation:

- Overtopping of the concrete channel (right and left banks) may occur upstream of Ross Drive with high runoff conditions.
- Overtopping of the earthen channel (right and left banks) may occur under high tide conditions near Flamingo Road Bridge.
- Overtopping of Nyhan creek (right and left banks) between Marin Ave and Enterprise Concourse may occur under high tide and/or high runoff conditions.
- Costs to provide a level of protection against the original design flow water surface elevation could exceed \$10 million.

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- Costs to build a FEMA accredited levee (reduces flood insurance rates) would likely exceed \$20 million, not including required interior drainage work. Costs increase significantly with considering sea level rise protection.
- Next steps for consideration will be determining the scope of a potential project.

ii. USACE Rehabilitation & Inspection Program Compliance

In 2012 the U.S. Army Corps of Engineers (Corps) notified staff that, based on their assessment of the Coyote Creek Flood Control Project (Project), the Project's right (i.e., south) bank did not meet all of the criteria necessary to achieve a minimally acceptable rating in the Corp's Rehabilitation and Inspection program (RIP). The Corps' assessment also indicated that the Project's left (i.e., north) bank did meet all of the criteria necessary to achieve a minimally acceptable rating. Since that time staff has been working with the Corps to ensure that the right bank attains no less than a minimally acceptable rating. A minimally acceptable rating or higher in the RIP is required for the District to be reimbursed for the cost of repairs to the Project following a federally declared emergency.

The specific items identified in the 2012 inspection as basis for an unacceptable rating were:

- Encroachments on levee embankments such as structures and vegetation.
- Culverts/discharge pipes penetrating the creek bank and within the interior drainage system were in unknown condition.

To address these items, to date staff has:

- resurveyed the Project,
- provided a draft update of the Project's Operation & Maintenance (O&M) Manual to the Corps,
- updated the O&M manual's plans set, including pump stations and pipes, under a grant from the CA Department of Water Resources (DWR),
- prepared a draft emergency action plan, also under the DWR grant,
- maintained vegetation which was identified as a concern,
- completed a video inspection of pipes draining to the concrete channel and earthen levees (where reaming wasn't required),
- and drafted a preliminary work plan for the remaining work needed to achieve a minimally acceptable rating on the Project's right bank.

Additionally, in 2013 the District submitted a letter of intent (LOI) to create a System-wide Improvement Framework (SWIF) plan and received Corps' approval of the LOI. The District has until August of 2016 to create its SWIF plan, which will include a description of the tasks and schedule for addressing items currently not meeting the criteria necessary to receive a minimally acceptable rating.

The District received the Corps' approval of the LOI so Coyote Creek will remain eligible for reimbursement for the cost of repairs to the project following a federally declared emergency while the SWIF is being created and, following the SWIF's approval, while improvements are being carried out. Work performed under the SWIF will include completion of updates to the project's O&M Manual, creation of an emergency action plan, resolve encroachments on the levee and floodwall, and inspect, rehabilitate or abandon (as appropriate) pipes which penetrate the levee. Much of this work was funded through the recently completed Coyote Creek Levee Evaluation Grant which, in addition to the levee evaluation itself, funded updating the plans set in the O&M Manual, and drafting of the emergency action plan.

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The schedule for completing this work will be detailed in the SWIF and the majority of items are expected to be completed within a two year timeframe following the Corps' approval of the SWIF.

iii. Next Steps for Coyote Creek

- Following up on the Coyote Creek Levee Evaluation Project, staff recommends that the Advisory Board authorize a community survey of Tam Valley residents to gauge levels of flood protection and aesthetic variables involved with selecting a project. This survey will help determine what type of improvements the TAM Valley community wants to consider (i.e: level of flood protection, floodwall height, levee width, potential parcel tax threshold.) Please see below for more detail.
- Survey and model the Middle and Lower reaches of Coyote Creek to determine existing condition of sedimentation in the channel. These reaches span from just east of Ross Drive to Richardson Bay. This survey will be used to update the existing creek model (prepared for the levee evaluation) in order to identify any need and utility of sediment removal. Please see below for more detail.
- The Corps of Engineers will be conducting an inspection of the Coyote Creek Flood Control Project in July. District staff will be involved in this inspection, and will report back to the Board.
- Sediment removal in the concrete box section of Coyote Creek is tentatively scheduled to occur in September. The concrete box section of the channel spans from Maple Street to just east of Ross Drive. Staff is in the process of procuring the permits required to complete this work. An estimated 560 cubic yards of material would be removed. Please see below for more detail.
- Rehabilitate four penetrating pipes in Coyote Creek, and abandon 3 penetrating pipes in Coyote Creek. This work is part of the proposed draft SWIF plan.
- Clean, ream as necessary, and inspect 54 pipes that drain directly to Coyote Creek. This work is part of the proposed draft SWIF plan.
- Utilize recently purchased muscle walls and/or sandbags in areas that were identified as more likely to overtop when high water levels are anticipated.
- Following completion of the Southern Marin Watershed Guide, discuss process for arriving at preferred improvement alternatives and funding strategies (see item 5). This may include a community survey and/or other additional outreach specific to the Coyote Creek levee and project alternatives.
- Finalize the SWIF work plan and begin first phase of implementation.

c. Tam Valley Community Survey

Following up on the Coyote Creek Levee Evaluation Project, staff recommends that the Advisory Board authorize a community survey of Tam Valley residents to gauge levels of flood protection and aesthetic variables involved with selecting a project. This survey will help determine what type of improvements the TAM Valley community wants to consider (i.e: level of flood protection, floodwall height, levee width, potential parcel tax threshold.)

The survey would be a USPS mailer and online survey conducted by District staff, and is estimated to cost \$5,000.

In conjunction with this survey, staff recommends that a community meeting be held in Tam Valley. This meeting would include a staff presentation on the history of flooding in the area,

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possible projects to address flooding, a presentation of the recently completed Coyote Creek Levee Evaluation Project, and potential next steps for Coyote Creek.

d. Coyote Creek Sediment Removal in Concrete Channel

Based on a 2013 survey and the creek model created for the Coyote Creek Levee evaluation, a portion of the Upper Reach of Coyote Creek - both sides of the concrete channel from Laurel Way to downstream of Ross Drive - could overtop with the USACE design conditions (20-year flow with 1960s Tidal Mean High Water Downstream Boundary of 5.4 feet NAVD88). To reduce the probability of overtopping, staff is planning to remove sediment from the concrete channel in September 2016.

The concrete box section of the channel spans from Maple Street to just east of Ross Drive. Staff is in the process of procuring the permits required to complete this work. An estimated 560 cubic yards of material would be removed.

e. Survey and Model the Middle and Lower reaches of Coyote Creek

In 2012, the District hired Philip Williams & Associates (PWA) to evaluate the need for dredging Coyote Creek. The PWA study recommended that the District survey the earthen reaches every two years and model flow regimes as needed based the results of the survey. The PWA report includes threshold values per sub-reach for freeboard requirements. If these threshold values are exceeded, that would trigger dredging.

The survey used in the Coyote Creek Levee Evaluation Study was conducted in 2013. Staff supports conducting a survey this year, as recommended by PWA. Staff will bring the results of the survey back to your Board for a recommendation regarding whether or not to proceed with sediment removal in the earthen channel.

f. Update on Marin City Drainage Study RFP

The Marin City Drainage Study RFP was released on February 19 after review by Caltrans. The selected consultant will develop an urban drainage model for the Marin City watershed to evaluate the current level of flood protection, identify potential areas for improvement in the current system, and develop a range of practical and self-mitigating modifications. A primary goal of the project is to increase the level of flood protection for southbound Interstate 101 and the area around the Donahue Street/North Bridge Boulevard interchange. District staff has conducted interviews with seven potential consulting firms for the Study.

Staff does not recommend proceeding with awarding the contract until a grant agreement is reached with the Transportation Authority of Marin (TAM) for the Lifeline Grant which will provide a 50% funding match for this work. The District is currently reviewing the draft grant agreement and it is anticipated that the final funding agreement and consultant contract will be submitted to the Board of Supervisors in July or August.

g. Projects in Mill Valley

At the 3/17/16 meeting your Board recommended approval of the request from the City of Mill Valley for grant funding. The programs and projects to be funded include expanding the annual creek maintenance program, completing flood studies, and constructing drainage

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improvements associated with the Miller Avenue Streetscape Project which began this month. Draft funding agreements have been prepared and are scheduled to be presented to the Board of Supervisors on July 19, 2016.

Item 4. Watershed Program Update

a. Southern Marin Watershed Guide

The Southern Marin Watershed Guide (WG) was made available for comments on our website and through our email lists. Comments have been incorporated and a new draft with maps is expected in June. The guide is available for viewing at http://www.marinwatersheds.org/southern_marin.html.

b. Draft Project List

A draft project list has been shared in the attachments to this packet and the current project list will be reviewed and revised as we present the list to the public. The list is intended to be a working list that currently reflects our best knowledge based on a review of studies and reports that have been completed, but never constructed.

c. Richardson Bay Shoreline Study: Sea Level Rise Impacts Assessment and Concept Level Alternatives Evaluation

The Shoreline Study was presented at a November 18, 2015 community meeting. The comment period for the Shoreline Study closed on May 1, 2016. While the study is being finalized, a draft of the Shoreline Study can be viewed at http://www.marinwatersheds.org/southern_marin.html.

d. Video of Arroyo Corte Madera del Presidio Watershed

A video of the Arroyo Corte Madera del Presidio (ACMdP) watershed has been produced to illustrate how topography and land use influences the flow of storm water on its way to the bay. The 8-10 minute video integrates low altitude aerial imagery with hand held footage to provide a cohesive image of how flood water courses through the watershed from its headwaters to Richardson Bay. Ground level footage of choke points and other areas of known flooding have been incorporated. The purpose of the video is to highlight the causes of flooding as well as potential strategies for reducing flood risk.

e. Marin Bay Waterfront Adaptation Vulnerability Evaluation (BayWAVE)

Marin BayWAVE is a focused vulnerability assessment (VA) of the bayside shoreline from the Golden Gate Bridge to the northern end of Novato at the county line. BayWAVE will evaluate the extent of impacted assets, assess the sensitivity and adaptability of selected assets, and work with the local cities and towns to plan implementation of adaptation strategies. Assets are defined as built and natural features from roads, utilities, and parcels, to natural resources and recreation.

The fundamental goal of the BayWAVE project is to increase awareness and preparation for future sea level rise (SLR) impacts by using this coordinated, multi-jurisdictional

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assessment. The vulnerability assessment will describe the impacts given sea level rise scenarios for each community and asset. The Richardson Bay Shoreline Study above is a more focused evaluation of the alternatives, which BayWAVE will not do as part of the vulnerability assessment. For more information about BayWAVE, visit www.MarinSLR.org.

Item 5. Schedule Next Meetings

Staff recommends the next regular meeting be held on November 17.

Southern Marin Watersheds: DRAFT List of Potential Projects (2016)

Updated: 6/8/16

This list of potential projects summarizes flood risk reduction projects in the Southern Marin Watershed Program area which are in the study, design, or engineering phase of development. It includes new projects and conceptual projects which, if constructed, would provide for significant modifications to existing facilities; however, the list does not reflect the current needs of existing facilities which are met through the District's operation and maintenance program. As of FY 2015-16, ongoing maintenance of existing facilities is budgeted at \$1,000,000 in Zone 3 and \$500,000 in Zone 4, and accounts for approximately two-thirds of the annual budget. There is a need for ongoing maintenance and many of our existing facilities and infrastructure is approaching the end of their designed life and will need upgrades. Total operation and maintenance costs in both zones are expected to increase with the construction of any new projects.

Project Name	Description / Benefits	Watershed	Flooding Type		Potential Project Type												Current Stage	Status	Possible Next Steps	Construction Cost Estimate	Required Right of Way Secured? (Yes/No/Maybe)	Additional Remarks			
			Creek Overflow	Storm Drain Overflow	Stormwater Ponding	Tidal Inundation	Bypass	Channel Restoration	Creek Maintenance	Drainage Improvements	Fish Passage Barrier Removal	Floodwall / Levee	Habitat Enhancement	Increase Conveyance	Shoreline Adaptation	Structure Elevation							Stormwater Detention	Stormwater Pump	
ZONE 3 PROJECTS																									
Arroyo Corte Madera del Presidio Riverine Flood Risk Reduction Alternatives (detention basin, bridge replacements, bypass, channel conveyance improvements, flood walls, levees)	Provide flood protection against creek overflow within floodplain. Potential alternatives could be combined to achieve up to 100 year level of protection.	ACMdP	•																	Study	2012 Study Complete; additional study and public input required before beginning design. See Stetson Phase 2 Re-evaluation below.	(1) Update costs to reflect changes made to model following 2014 model calibration. (2) Community outreach, recommendations for preferred alternatives to take to further study/design	\$26M - \$50M (25 yr. level of protection to 100 yr. level of protection) Estimates lack costs for real estate, utilities and other elements required for design	Maybe (Depends on recommended alternative. Possibly for detention basin, some bridge replacements, and bypass. Existing ROW along creek is insufficient for construction of a levee/floodwalls.)	Stetson Engineers Inc. was hired by the City to perform the pre-design study which included development of a hydraulic model. The model has been improved by recalibrating it with recent storm data; previous alternatives and costs may now be reconsidered based on the revised model. A SOW to arrive at revised alternatives/cost estimates is being developed and work may commence in late-summer or early-fall 2015.
Stetson Phase 2 Re-evaluation of Conceptual Flood Reduction Measures on Arroyo Corte Madera del Presidio	Recompute flood frequency curves for the Stetson study. Flood reduction measures will be re-evaluated for the 25-, 50-, and 100-year levels of protection.	ACMdP	•																	Study	Funded FY 2016-7				
Comprehensive Flood Control and Drainage Master Plan	Evaluate flooding on tributaries to ACMdP and evaluate the storm drain system. Develop a capital improvement plan based on the findings.	ACMdP	•	x	•															Study	Funded FY 2016-7				
Miller Avenue Streetscape Project	Bypass storm drain from Montford to Reed Street/Valley Circle to reduce flooding at Montford. Tide gates along Miller Ave between the Redwoods and Pickleweed. (Reed Street to Camino Alto) Check valve on storm drain pipes at Almonte. Road elevation by 10 inches and construct a 6-inch berm to reduce tidal flooding on the road surface.	ACMdP	x	x	x	x	x					x								Construction	Contract expected early May with construction to begin in June		\$650,000	Yes	This project was listed to reflect the recent Zone No. 3 Advisory Board recommendation to fund these projects. Construction projects are not
Crest Marin Riverine Flood Risk Reduction Alternatives	Provide flood protection (25 yr) against creek overflow within floodplain.	Coyote Creek	•																	Study	Partially Complete, on hold until levee evaluation is completed	Update H&H and reassess potential improvement alternatives	\$3M - 4M	Maybe (Depends on chosen alternative)	Preliminary conceptual level plans completed by consultants.

Southern Marin Watershed Project List (2015)

Project Name	Description / Benefits	Watershed	Flooding Type		Potential Project Type													Current Stage	Status	Possible Next Steps	Construction Cost Estimate	Required Right of Way Secured? (Yes/No/Maybe)	Additional Remarks			
			Creek Overflow	Storm Drain Overflow	Stormwater Ponding	Tidal Inundation	Bypass	Channel Restoration	Creek Maintenance	Drainage Improvements	Fish Passage Barrier Removal	Floodwall / Levee	Habitat Enhancement	Increase Conveyance	Shoreline Adaptation	Structure Elevation	Stormwater Detention							Stormwater Pump		
Coyote Creek Levee Improvements	Provide flood protection against creek overflow within floodplain, including alternatives which would allow for removal of properties from SFHA.	Coyote Creek	•			•														Study	Study Complete	Selection and further development of preferred alternative following completion of pre-design	Cost estimates to meet Baseline flood protection range from \$10M to \$18M, depending on the scope of project selected. Costs for a FEMA Accredited design (reduces flood insurance) range from \$19M to \$57M. Costs for a FEMA Accredited design with Sea Level Rise range from \$25M to \$72M.	Maybe (Depends on chosen alternative)	Levee evaluation included assessment of, and recommendations for improvements to, existing facilities. The Baseline flood-protection scenario is designed for a 20-year flood event. The FEMA Accredited scenario could lead to a reduction in flood insurance premiums for homes in the area. The FEMA Accredited with Sea Level Rise option incorporates future sea level rise	
Marin City Drainage Improvements	Identify extent of existing flooding and potential alternatives which could help reduce existing flood risk.	Marin City		•	•	•														Pending Grant Award	Grant Award Pending Hydraulic Study to begin summer 2016	Selection and further development of preferred alternative following completion of pre-design	Preliminary cost est. available mid- to late-2016 (est.)	Maybe (Depends on chosen alternative)	Pre-design study to begin pending ratification of funding agreement with TAM. Following ratification of the agreement, a contractor will complete the SOW.	
Richardson Bay Shoreline Protection	Construct shoreline protection measures which reduce or eliminate tidal inundation of shoreline under various scenarios, including sea level rise.	Richardson Bay	•	•		•														Study	Draft Study Complete	Selection and further development of preferred alternative following completion of pre-design	Preliminary cost est.	No	<i>Richardson Bay Shoreline Study - Evaluation of Sea Level Rise Impacts and Adaptation Alternatives</i> (2015) posted to www.marinwatersheds.org . Additionally, the county is currently evaluating the vulnerability of the entire bay shoreline in a complementary project known as BayWAVE. BayWAVE's first phase will complete a vulnerability assessment and identify adaptation measures and other early actions. Implementation, funding, and planning changes will be further developed in Phase II.	
Bothin Marsh																										
Manzanita/Caltrans																										
Hydraulic Study of lower Ryan Creek and Pump Station	Make pump modifications and culvert replacements to reduce flooding inundation area and depths upstream of the pump station.	Ryan Creek	•	•																Study	Study Complete-2013	Selection and further development of preferred alternative, including cost estimates	Preliminary cost est. for the potential improvements were not included as part of the SOW	Maybe (Depends on chosen alternative)	Potential alternatives mentioned are those described in the report <i>Hydraulic Analysis of Lower Ryan Creek and Pump Station</i> completed by Stetson Engineers Inc. (2013) and include modifications to current stormwater pump intake as well as culvert improvements upstream of the pump station which may be at least partially outside of existing public ROW.	
Sutton Manor Creek Improvements	Identify extent of existing flooding and potential alternatives which could help reduce existing flood risk, including alternatives which would remove properties from the existing FEMA SFHA.	Sutton Manor-Strawberry	•	•	•	•														Study	Future	Develop SOW for pre-design evaluation to identify issues and potential alternatives	No preliminary cost estimates available	Maybe (Depends on recommended alternative)	Scope of work for a pre-design evaluation to identify issues and potential alternatives has not been initiated	
ZONE 4 PROJECTS																										
Cove Pump Station Improvements	Make pump and drainage modifications.	Bel Aire		•																Study	Draft Study is complete and released for public comment.	Recommendation and further development of preferred alternative.	Short Term Improvements: \$1.1 million Long Term Improvements: \$1.8 million to \$2.4 million	Maybe (Depends on recommended alternative)		
Karen Way Ditch Improvements	Modification to existing ditch which would establish a more uniform cross section and provide for increased flow capacity and greater ease of maintenance.	Bel Aire	•																	Study	Future	Create SOW for study to determine design details including ditch capacity and alignment.		Yes		
Strawberry Levee Improvements	Modifications to existing levees/embankment to provide a greater amount of flood protection from coastal inundation. Area of protection to include homes along Strawberry Circle.	Bel Aire				•														Study	Future	Create SOW for study to determine design details including levee cross section dimensions and alignment.	No preliminary cost est. available	Yes	Will likely require mitigation for the take of wetland vegetation; possibility for self-mitigating project to be pursued if possible.	

Southern Marin Watershed Project List (2015)

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			Creek Overflow	Storm Drain Overflow	Stormwater Ponding	Tidal Inundation	Bypass	Channel Restoration	Creek Maintenance	Drainage Improvements	Fish Passage Barrier Removal	Floodwall / Levee	Habitat Enhancement	Increase Conveyance	Shoreline Adaptation							Structure Elevation	Stormwater Detention	Stormwater Pump
West Creek Flood Wall	Install floodwall at creek bank in order to increase the level of flood protection.	Bel Aire	•																Design	On-hold at request of Advisory Board	Further development of preferred alternative, including revising cost estimate, followed by final design and environmental review	\$400K (2012)	No	ROW acquisition cost not reflected in cost estimate.

Study In Progress or Complete

Draft Study-Limited or No Costs Available