Flood Control Zone 7 Santa Venetia Newsletter

Fall 2018 Volume 1, Number 4

High Tides lap against the TRB

Zone Activities Report

The following are updates from the Marin County Flood Control & Water Conservation District (District) – Flood Control Zone 7 (Zone 7). The next Zone 7 advisory board meeting will be scheduled in February, or as soon after that a quorum can be gathered. For more information visit ***www.marinwatersheds.org*** navigate to the Zone 7 or Gallinas Creek Watershed page and click "Stay Connected with Zone 7".

Timber-Reinforced Berm Improvement Project:

Planning is moving forward on the proposed Timber-Reinforced Berm (TRB) Improvement Project designed to protect Santa Venetia from 100-year floods and reduce future maintenance costs. The existing timber berm that sits behind the homes on Vendola Drive was installed by Zone 7 after flooding in 1983. While the old TRB system has worked so far for high tides, the wood is deteriorating and rising sea level and sinking land elevations combine to threaten its ability to protect the community from flooding.

The existing TRBs consist of two vertical panels of wood separated approximately 3 feet from each other that run parallel to the levee crest. The panels are fastened to wooden posts that extend into the levee about 2-4 feet deep. The area between the two wood panels is filled with compacted, less-pervious soils.

Zone 7 previously partnered with the U.S. Army Corps of Engineers and California Department of Water Resources to perform a study assessing the levee conditions. Outcomes of this study are presented in a report by Kleinfelder on the evaluation of the Las Gallinas Levee System dated July 3, 2013.

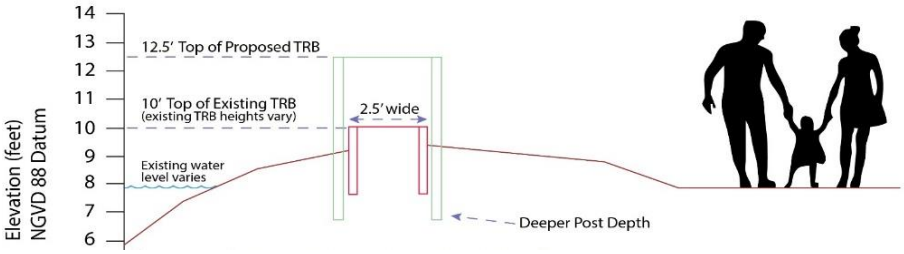
The existing TRBs show signs of aging and low top of berm elevations due to settlement of the levee system. In some areas these TRBs do not meet the 10-year flood Water Surface Elevation plus 1-foot of freeboard. According to the levee evaluation, failure in the form of overturning or collapse of the TRB is likely to occur before water levels overtop it. Following these studies, the Zone has prioritized a project that would improve the level of protection of the levee system.

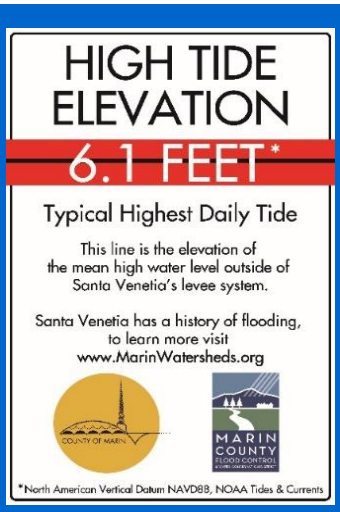
The footprint of the new TRB would be roughly the same as the existing TRB and levee but it would be one to three feet taller so that it is at consistent height along its entire length. It would be renovated with durable new composite material and new posts, making it highly resistant to corrosion, decay, rot and pest infestation. The posts would also be more deeply anchored to resist overturning.

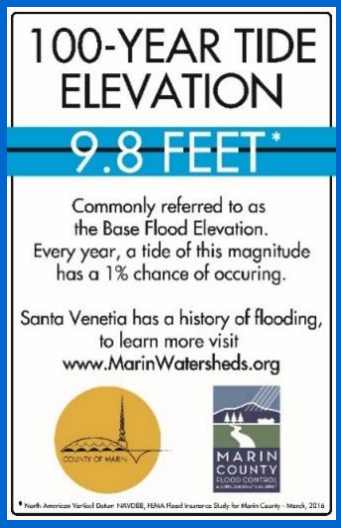
The goal of the project is to provide protection to Zone 7 from flooding from the 100-year still-water tide elevation until 2050. The design elevation of the improved TRB would be 12.5 feet NAVD88 datum. The current FEMA-determined 100-year still-water tide elevation is 9.8 feet NAVD88. Given BayWAVE predictions of 20 inches of sea level rise and Kleinfelder projections of about 12 inches of levee subsidence, both the TRB top and 100-year flood elevation are estimated to be 11.5 feet NAVD88 by 2050. (See p.7 sidebar for datum glossary.) Longer-term sea level rise adaptation planning for Santa Venetia should occur before 2050 and consider the effect of already high - and rising - infrastructure costs.

The design and construction project cost is estimated to be $4 million. In November 2017 staff submitted an application to FEMA's Hazard Mitigation Grant Program for $3,000,000, which requires a 25% match. Not included in this cost is the acquisition of easements to provide construction and maintenance access along the TRB.

Comparison between Current and Proposed Timber-Reinforced Berm (TRB) and Proposed Easements







Summary of Recent Advisory Board Actions:

Zone 7 Advisory Board (AB) last met on July 24, 2018. Actions taken included

- Approval of FY2018-19 budget.
- Formation of an ad-hoc sub-committee to help with public outreach and High-Water Mark signs.

Four actions were specific to the proposed TRB project:

- Recommend that staff work with up to two volunteering property owners to construct a demonstration project.
- Recommend that staff work with the County Department of Finance to identify a loan option with the most favorable terms for interest and repayment period feasible, to support the TRB project.
- Recommend staff prepare for a potential revenue measure for Flood Zone 7 for November 2019 ballot.
- Request a contribution from the County of $840,000 contingent on 1) receipt of the FEMA grant and 2) voter-approval of additional revenue to support the TRB and other levee safety projects.

As previously mentioned, the next Zone 7 AB meeting date has not been set but is anticipated in February 2019.

High Water Mark Signs:

You might have noticed a few of the new High-Water Mark signs around the neighborhood. Santa Venetia is unique in Marin as a neighborhood below sea level and it is important that residents and visitors remember this, especially as we head into the winter rainy season. Zone 7, at the recommendation of the Advisory Board, has installed these signs to provide helpful references in considering personal safety, storing valuables, and even the possibility of raising entire houses.

The line on each of these three signs indicate the elevation of the tidal water outside the levee under different conditions. The red line, high tide elevation, is the height of the average high tide. Believe it or not there are some parts of the neighborhood that are several feet below this elevation. The green line is the bay's '10-year tide' elevation. This means there is a 10% chance of this level of tidal elevation occurring in any given year, and is approximately the elevation of the flooding that occurred in 1982/1983. The sign with the blue line indicates FEMA's new 'Base Flood Elevation', or 100-year tide elevation, which has a 1 percent chance of occurring in any given year. The system of levees that protects the community is lower than this elevation in several places.

Pump Station 2 grate before annual maintenance

Looking into the wet well during reinstallation of the pump at station 4

New trash rack at Pump Station 4 inlet

Annual and Preventive Maintenance

The District follows an annual program of facility maintenance to ensure that all components of flood control infrastructure are in good working order. In Zone 7 this includes pump station mechanical systems, drainage system vegetation maintenance, repairs and levee and Timber-Reinforced Berm (TRB) maintenance.

Pump Station (PS) Maintenance:

Although minor annual pump maintenance occurs every year, the District rotates major maintenance on pumps, pulling each one every six years for a complete inspection, overhaul and repairs as necessary for optimal performance. This year four pumps in Zone 7 were due for this major maintenance service. The bid for maintenance was won by Koffler, an electrical-mechanical systems repair company in San Leandro.

The #1 pump at station 2 was pulled and serviced. Service includes disconnecting the electrical and mechanical components and lifting the pump out with a crane. In the shop the components are disassembled and sandblasted, at which point they get inspected, cleaned, greased and reassembled. The #2 pump at station 4 was serviced and received a new impeller. The #2 & 3 pumps at station 5 were deemed too old and worn out for service and were thus replaced with new pumps. Koffler charged the zone $75,400 for all this work.

The County's garage services each of the zone's back-up generators every year, which includes diesel engines at pump stations 1, 2 & 5, a diesel engine for mechanical right-angle pump at station 3, and a natural gas engine for generator at station 4. The garage also serviced the seven portable trailer mounted diesel pumps and the portable gasoline pumps that are used in Zone 7. Generators are load tested every three years and the four generators all passed.

Additional pump station maintenance occurred at station 4 this year. The bottom of the wet well ladder had corroded away and was replaced. The trash rack at the wet well intake had corroded and had an unacceptably large hole, so a new trash rack grate was fabricated and installed (see sidebar photo). Additionally, cattails were found growing inside the trash rack and the inlet area was cleaned and accumulated sediment removed. Corrosion around the pump discharge was causing pumped storm water to spill out adjacent to the pump station building so a metal collar was added to the outfall. These three repairs together cost about $5,000.

Timber Reinforced Berm in need of repairs

After TRB reconstruction

At PS No. 5 a wooden gate post was replaced by Marin County Parks at no cost to the Zone and the station name sign was replaced by the County Roads.

Meadow Way Check Valve:

Adjacent to the bridge leading to Santa Margarita Island, a low spot exists that has historically been drained by manually opening and closing a sliding check valve at low tide and supplemented with a portable pump station during storms. This year a check valve was installed to reduce the need for manual operation of the tide gate here and may facilitate the use of a smaller portable pump during storms in this location.

Vegetation Maintenance:

Regular vegetation maintenance has been performed within existing easements held by the District throughout all Flood Control Zones. The work typically occurs in August and September of each year and the goals include both fire fuel reduction and maximizing stormwater flow capacity. Ditches maintained in Zone 7 include: the ditch behind homes between Birch and Mabry Way, Santa Venetia Marsh Levee toe drain ("Estancia Ditch"), and Castro Ditch.

Levee and Berm Maintenance & Rodent Control:

Maintenance: The District continues to spend a budgeted $50,000 per year on repairing and replacing prioritized sections of the TRB. Prioritization of repairs has been based on inspections that occurred in 2016 and the majority of the urgent sites identified have been repaired. Another round of inspections for the Timber Reinforced Berm is planned for the coming year.

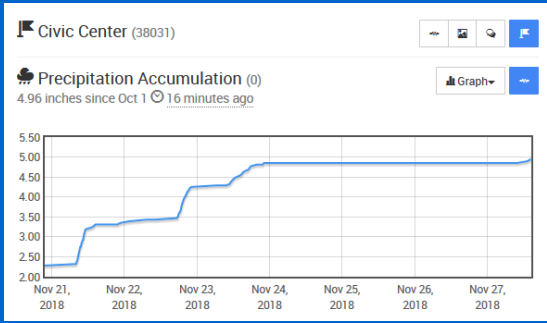
Rodents: Rodent control efforts on the earthen levees are ongoing and are conducted in accordance with the County's Integrated Pest Management policy. Abatement and bentonite pumping cost a total of $27,008 last year. Residents who notice rodent activity can contact the District to request information on how to manage burrowing rodents in their yards and/or report problems in nearby levees.

Precipitation and Stream Gauges:

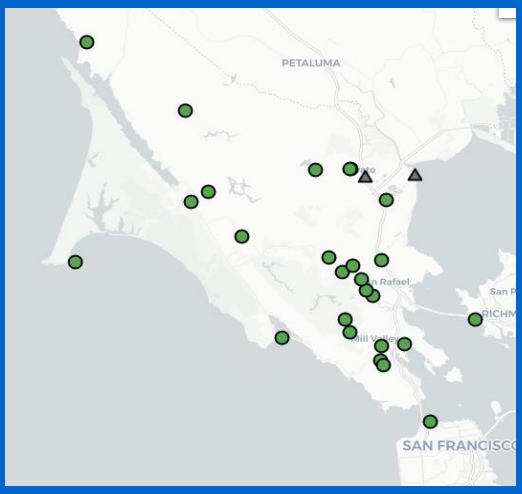
Through a California Department of Water Resources (DWR) grant for Flood Emergency Response Projects, a new gauge has been installed at the Marin Civic Center garage which provides real-time rain data to the District, the County, other agencies, and residents on the website www.marin.onerain.com. This will improve situational awareness during rain storms in Flood Zones 6 and 7, and potentially supports future studies and designs. Prior studies and designs for Zone 7 were supported by data from a District

View real-time and forecasted precipitation accumulation at the Civic Center at

https://marin.onerain.com



Since the expansion of the system, precipitation and streamflow gauges are located at sites across the County as depicted below.



Upcoming King Tides:
December 22 and 23, 2018
January 20 and 21, 2019

gauge in Novato but given Marin's many varied microclimates this new closer gauge will provide increased accuracy.

The contract with High Sierra for installation of the new Civic Center gauge, and 8 other gauges across the county, went to the District Board of Supervisors on February 27th, 2018. This project doubled the size of the existing gauging network being maintained by the District. $87,000 of this installation work is funded through the DWR grant, and the remaining $35,470 is from the County General Fund emergency preparedness funds (one-time installation costs only). Ongoing annual maintenance costs associated with the Civic Center gauge are estimated at $3,000. Based on the recommendations of the various Zone advisory boards these costs will be split between Zone 6, Zone 7, and the Las Gallinas Valley Sanitary District, for a total Zone 7-share estimate for this gauge of $750 per year. This is in addition to the existing gauge system maintenance budget.

Update on Non-District Programs

Marin County and San Rafael Airport MOU:

The County has negotiated a Memorandum of Understanding (MOU) with the San Rafael Airport to resolve conflicting boundary information, transfer maintenance for the levees surrounding the airport to become the responsibility of the airport, and to plan for future restoration of the land east of the runway. The next steps will include a lease between the County and the Airport, and a mapping process undertaken through the State Lands Commission. View the MOU and related information at the following website: *https://www.marincounty.org/depts/pw/divisions/projects/land-use/srairport*

McInnis Marsh Restoration Project:

Marin County Parks is proposing to restore subtidal and intertidal habitat at McInnis Marsh, a 180-acre area of diked wetlands located within Marin County's McInnis Park across Las Gallinas Creek on the North side of the airport. McInnis Marsh is currently diked and has little, if any, tidal interchange. The restoration project includes breaches into both Miller and Gallinas creeks. The goals of the project are to restore intertidal marsh habitat to support state and federal protected species, provide flood protection for McInnis Park and the Las Gallinas Valley Sanitary District, and improve a segment of the San Francisco Bay Trail between the park and the treatment ponds on the sanitary district's property.

Datum Elevations Referenced to NAVD 88 (in feet)

Top of Proposed TRB before settling	12.5
Estimated Elevation Of Proposed TRB in year 2050	11.5
Projected 100-year Water Surface in year 2050	11.5
Projected 100-year Water Surface in year 2030	10.6
Approx. Top of Existing TRB (as of 2006 survey)	9.7
FEMA 100-year Water Surface	9.8
Mean Higher High Water (MHHW) (Golden Gate)	5.9
Mean High Water (MHW) (Golden Gate)	5.3
Mean Sea Level (MSL) (Golden Gate)	3.2
Mean Low Water (MLW) (Golden Gate)	1.2
Mean Lower Low Water (MLLW) (Golden Gate)	0.1
North American Vertical Datum (NAVD88)	0.0
National Geodetic Vertical Datum (NGVD 29)	-2.7

In January of this year, Marin County Parks initiated the design phase that will result in a shovel-ready project in 2021, including a complete evaluation of the environmental impacts of the project. Included in the scope of this effort is hydraulic modeling and analysis of any potential for flood and erosion impacts to the adjacent areas, including the Santa Venetia community. Project website: *https://www.marincountyparks.org/depts/pk/our-work/parks-main-projects/mcinnis-marsh-restoration*

Community Rating System (CRS) Program:

The Community Rating System (CRS) is a voluntary program for National Flood Insurance Program (NFIP) participating communities. The goals of the CRS program are to reduce flood damages to insurable property, strengthen and support the insurance aspects of the NFIP, and encourage a comprehensive approach to floodplain management.

The County entered into the CRS program for the unincorporated communities in order to earn its property owners flood insurance premium discounts for the County's implementation of floodplain management practices that exceed the minimum requirements of the NFIP. The County was initially rated as Class 7 but has been working with FEMA to move to class 6, increasing the discount to property owners from 15% to 20%. This increased discount takes effect as individual policies renew after May 2018.

The Flood Control District encourages unincorporated area property owners to ask their insurers to prove that they received the CRS discount of 20%. For reference, the NFIP community identification number in Marin County is 06041C.

BayWAVE Sea Level Rise Vulnerability Assessment:

The vulnerability assessment is an informational document that catalogs impacts with six different sea level rise scenarios across the entire bay shoreline. The best available science was used to complete the report with a range of projections including those that we already face with high tides and storms.

Certain areas of Marin already deal with flooding on a regular basis and this report demonstrates the impacts across jurisdictional boundaries and along our shared resources, utilities, and infrastructure. Summary of the results for Santa Venetia is to the left in the blue sidebar. The Unincorporated Community Profiles document and the remainder of the report can be accessed on this website: *https://www.marincounty.org/main/baywave/vulnerability-assessment*

Contact Us

http://www.marinwatersheds.org

Marin County Public Works

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Civic Center Yard Service Center

Public Works - Roads

415-473-7388

Emergencies:

Sheriff's Communication Center

9-1-1 (emergencies)

415-479-2311 (non-emergencies)

CSA #6 South Fork Las Gallinas Creek Dredge:

The County of Marin Department of Public Works manages County Service Area #6 (CSA #6) for the Gallinas Creek community for recreational boating purposes. This dredging is done solely for navigational purposes, not for flood control. Prior dredging episodes occurred in 1966, 1973, 1981, and 1992-1994 and plans for the next dredge are largely complete.

The major remaining unknown component is the dredge sediment placement site. Staff have been working on sediment disposal with the owners at two potential local sediment placement sites: (1) Marin County Parks overseeing designs for the McInnis Marsh Restoration Project site; and (2) Las Gallinas Valley Sanitary District (LGVSD) for sediment placement in their agricultural fields adjacent to Miller Creek. The dredge is designed for recreational boating but it will have some flood benefit. However, the creek is fully tidal, with very little fluvial inflow, so the flood benefit from any dredge isn't significant.

Storm Response:

Before, during, and after significant storms, the District, with the help of the Conservation Corps North Bay, inspects and clears flood control facilities as needed. They are also available for emergency response to District maintained facilities to provide sandbagging and/or tarping of levees if needed.

The District keeps sand and bags, for authorized District emergency use only, at Pump Stations #2, #4, and #5. The District now also hosts a storage container owned by DWR for use during emergencies filled with flood fighting supplies. Supplies may be used by any agency but must be replaced in-kind afterwards.

Additionally, District crews make rounds to all the District pump stations to make sure they are in working order and closely monitor alarms from the pump stations to warn of emergency situations. The District also has a fleet of portable pumps which are maintained and tested prior to the winter season and some are pre-deployed in key locations, such as on Meadow Way and Estancia Way, where they are staged and ready for immediate use as needed.