MARIN COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT

GALLINAS LEVEE UPGRADE PROJECT INITIAL STUDY

I. BACKGROUND

A. Project Sponsor's Name and Address:

Marin County Flood Control and Water Conservation District, Zone 7

3501 Civic Center Dr., Suite 304
San Rafael, CA 94903

B. Lead Agency Name and Address: **Marin County Flood Control and Water Conservation District, Zone 7**

3501 Civic Center Dr., Suite 304
San Rafael, CA 94903

C. Agency Contact: **Laurie Williams, Senior Watershed Planner**

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lwilliams@marincounty.org

II. PROJECT DESCRIPTION

A. Project Title: **Gallinas Levee Upgrade Project**

B. Type of Application(s): **n.a.**

C. Project Location: **Gallinas Levee, between South Fork Gallinas Creek and Vendola Drive, Santa Venetia (Unincorporated Marin County). Multiple Assessor's Parcels.**

D. General Plan Designation: **SF-6**

E. Zoning: **R1-B1**

F. Description of Project:

PROJECT BACKGROUND

The Marin County Flood Control and Water Conservation District Zone 7 (the District)[1] is proposing to implement the Gallinas Levee Upgrade Project (the Project). The Project would rebuild an existing wooden structure – the Timber-Reinforced Berm, or TRB – that is a crucial component of the levee system that protects the Santa Venetia neighborhood from flooding, and would make other improvements to the levee system.

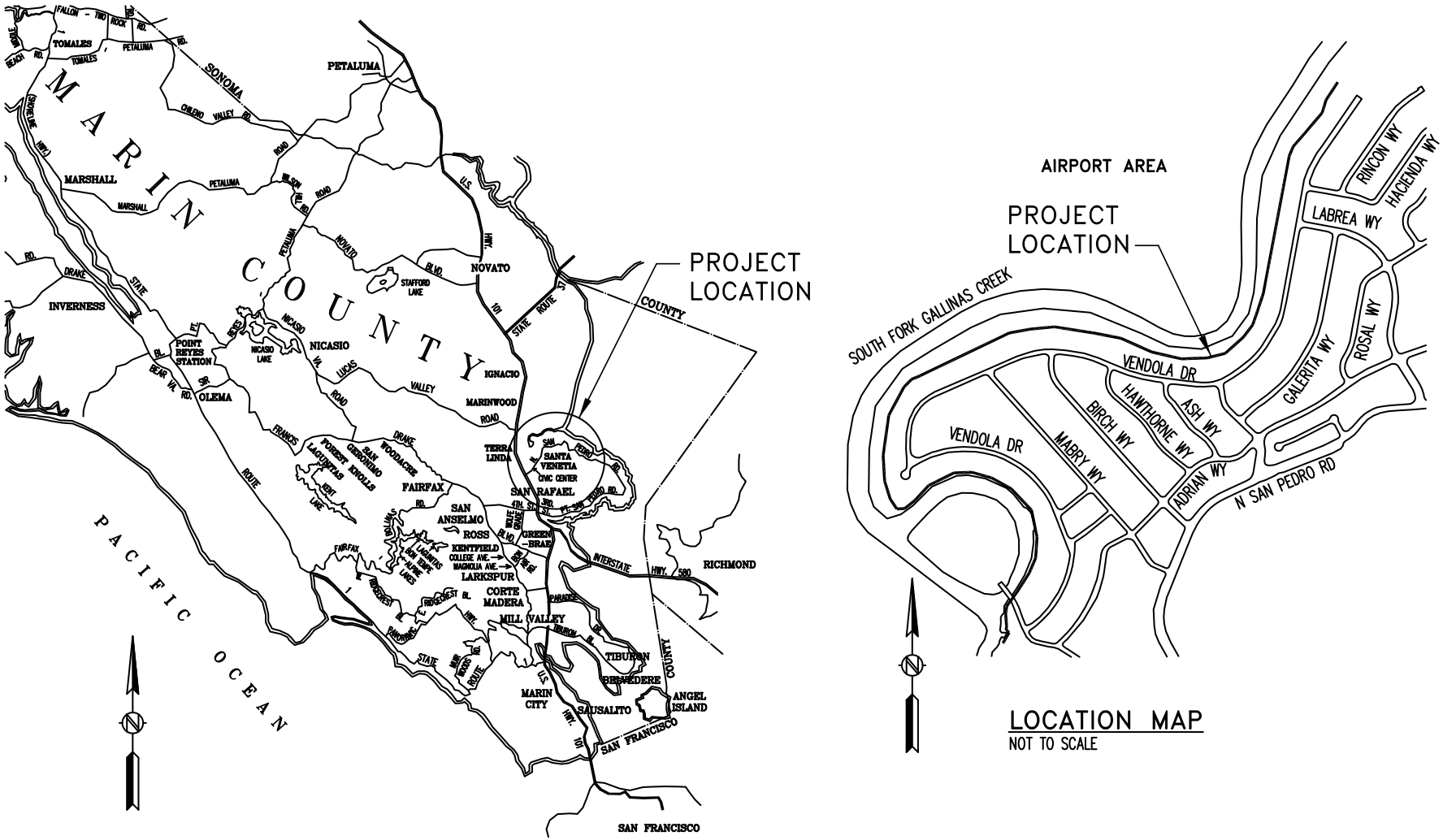
Santa Venetia, a residential neighborhood of about 900 homes, is located in unincorporated Marin County along the South bank of South Fork Gallinas Creek, just upstream of where the creek flows into San Pablo Bay (**Figure 1, Location** and **Figure 2, Aerial Photo**). The neighborhood, which was built in the early to mid-20th century, is protected from flooding by an aging and subsiding system of levees, berms, and pump stations. Without these facilities, widespread and damaging tidal floods would be a regular occurrence.

Historically, Santa Venetia was a tidal marsh, and the neighborhood was built over marsh deposits. These consist of a thick sequence of soft, compressible sediments, generally referred to as "Bay mud." As the Bay mud consolidates and dries out, it compresses, resulting in subsidence of the land surface. Now, most of the Santa Venetia neighborhood lies below sea level.

Development of the marsh, including construction of an earthen and concrete levee and interior drainage system, began in 1914. Still, periodic overtopping of the levee occurred. Extensive flooding in the 1940s and 1950s led to the creation of Zone 7 of the Marin County Flood Control and Water Conservation District in the 1960s. The current levee was completed with development of the Santa Venetia neighborhood in the 1950s and 1960s (Kleinfelder, 2014). Five pump stations were incrementally installed along the neighborhood's storm drain network to move interior drainage through the levee. During a January 1982 flood event, 50 homes were flooded. In January 1983, 160 homes were flooded, and in December 1983, 100 homes were flooded.

Following these floods, the District completed construction of the TRB on top of the earthen levee to increase its height (**Figure 3, General Site Plan**). The TRB is an approximately 7,000-foot long wooden box structure about 2.5-3.2 feet wide and raised about 1-4 feet above the earthen levee crest. The TRB is constructed of redwood planks fastened to redwood posts sunk approximately 2 to 4 feet into the earthen levee. The box structure is backfilled with a mixture of gravel, sand, silt, and clay soils. There are several variations of the structure along its length (**Figure 4, Existing TRB**).

[1] The District is a distinct governmental body separate from the County of Marin. The District is governed by the District Board of Supervisors (made up of members of the County Board of Supervisors) and County employees are ex officio staff members of the District.

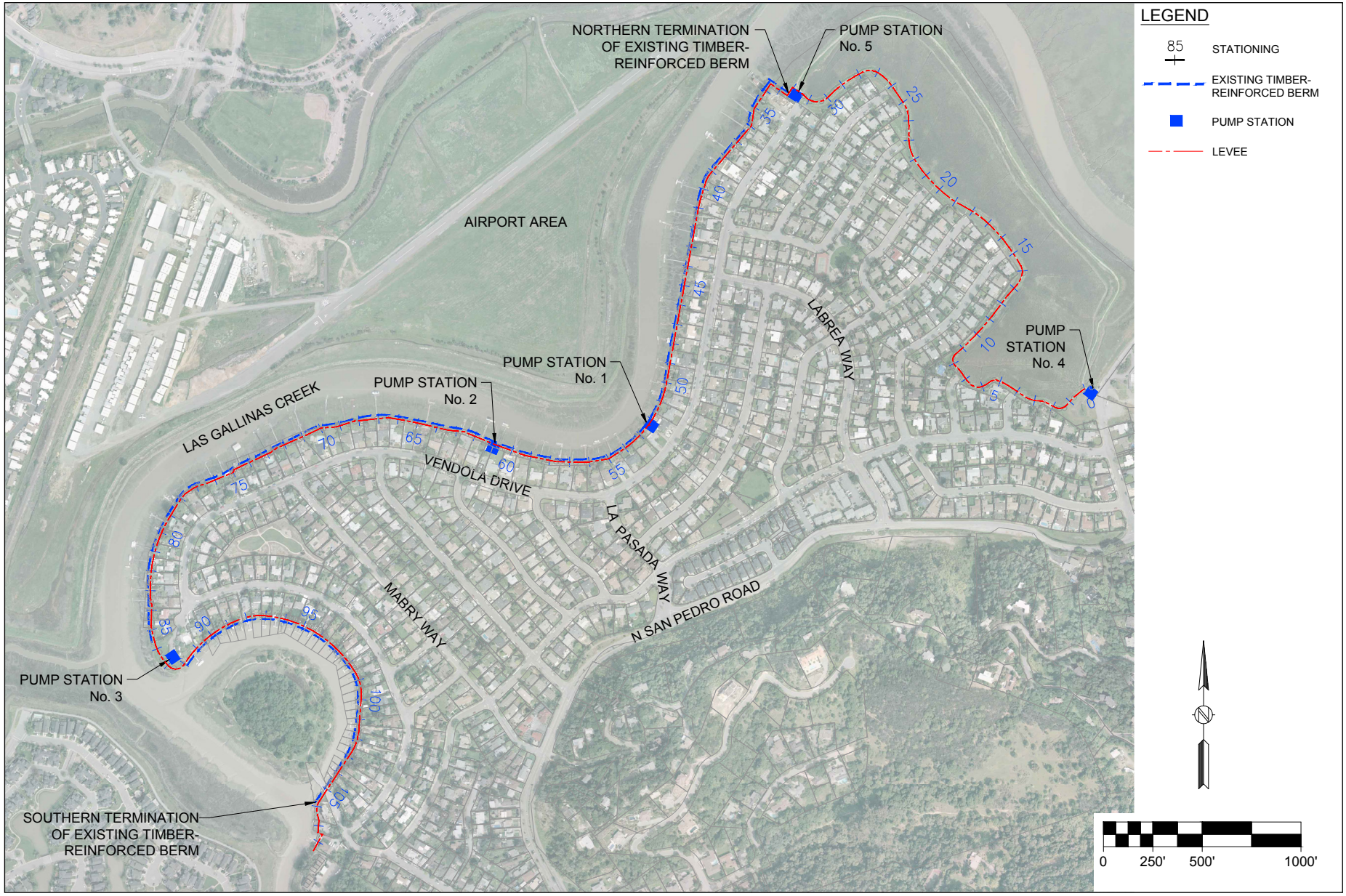


SOURCE: Kleinfelder, Inc., 2016

Figure 1
Project Location

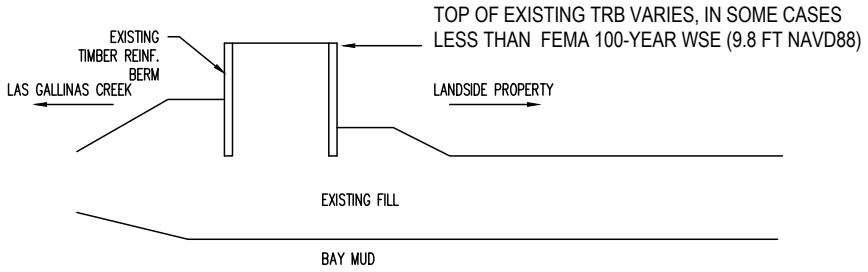
SOURCE: Kleinfelder, Inc., 2016; Base-Google Earth, 2019

Figure 2
Aerial Photo of Project Area



SOURCE: Kleinfelder, Inc., 2016

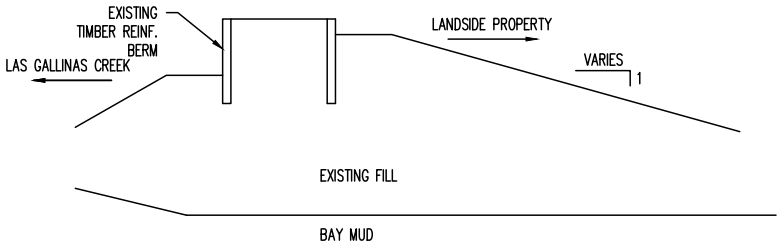
Figure 3
General Site Plan



TYPICAL EXISTING SECTION #1
TIMBER REINFORCED BERM WITH
NO LANDSIDE SOIL BUTTRESS

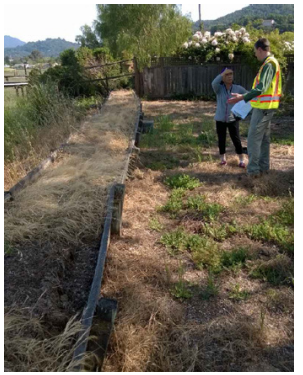
NOT TO SCALE

EXAMPLE OF EXISTING SECTION #1
(305 VENDOLA)



TYPICAL EXISTING SECTION #2
TIMBER REINFORCED BERM WITH
SLOPED LANDSIDE SOIL BUTTRESS

NOT TO SCALE



EXAMPLE OF EXISTING SECTION #2
(703 VENDOLA)

SOURCE: Kleinfelder, Inc., 2016

Figure 4
Existing Timber Reinforced Berm:
Sections and Photos

When built, the TRB was an urgent response to raise the elevation of the levee without significant increase in the footprint of the levee. Since the TRB's construction over 35 years ago, widespread levee overtopping has not occurred; nor have tide elevations reached the heights that occurred in 1982 and 1983. The TRB, however, shows signs of aging and subsidence. In addition to the risk of overtopping, failure of the TRB may also occur via erosion and/or sliding of the underlying earthen levee, overturning or sliding of the TRB structure, and deterioration of the wood panels. According to a levee improvement alternatives analysis commissioned by the District, under current conditions, "winter storms coupled with high tides could overtop the existing levee and TRB system leading to significant damage to adjacent properties and/or localized potential failure of the system" (Kleinfelder, 2014, page 18). Furthermore, a US Army Corps of Engineers report references this analysis to sum-up the fragility of the existing levee system: "while the wall has held up against prior floods, a recent geotechnical report (Kleinfelder, 2013) estimates that there is a significant chance [up to 90%] that the floodwall could fail before being overtopped under the current conditions" (USACE, 2014, page 10). Areas of low elevation relative to tides and areas of deteriorating timbers are its primary vulnerabilities. During a 2017 storm event, portions of the TRB and underlying levee were damaged, though extensive flooding did not occur.

In March 2016, the Federal Emergency Management Agency (FEMA) completed its San Francisco Bay Coastal Study, which resulted in an approximately 1-foot increase in base flood elevation (BFE)[2] for the community, to 9.8 feet[3] (FEMA, 2016; **Figure 5, FIRM Map**). With this reassessment of flood elevation, portions of the TRB are now below the BFE,[4] meaning that portions of the TRB would be overtopped in the FEMA-defined 100-year flood, resulting in flooding within the Santa Venetia neighborhood.

The trend of rising flood elevation is expected to continue with climate change and rising sea level. In 2017, the County completed a sea level rise vulnerability assessment for shoreline communities, including Santa Venetia (Marin County, 2017). The study assumed 20 inches of sea level rise by the year 2050. Based on this prediction, by 2050, the stillwater elevation (that is, the elevation of the 100-year flood, not taking into account waves, storm surge, or other effects), is predicted to increase to 11.5 feet above NAVD88.[5]

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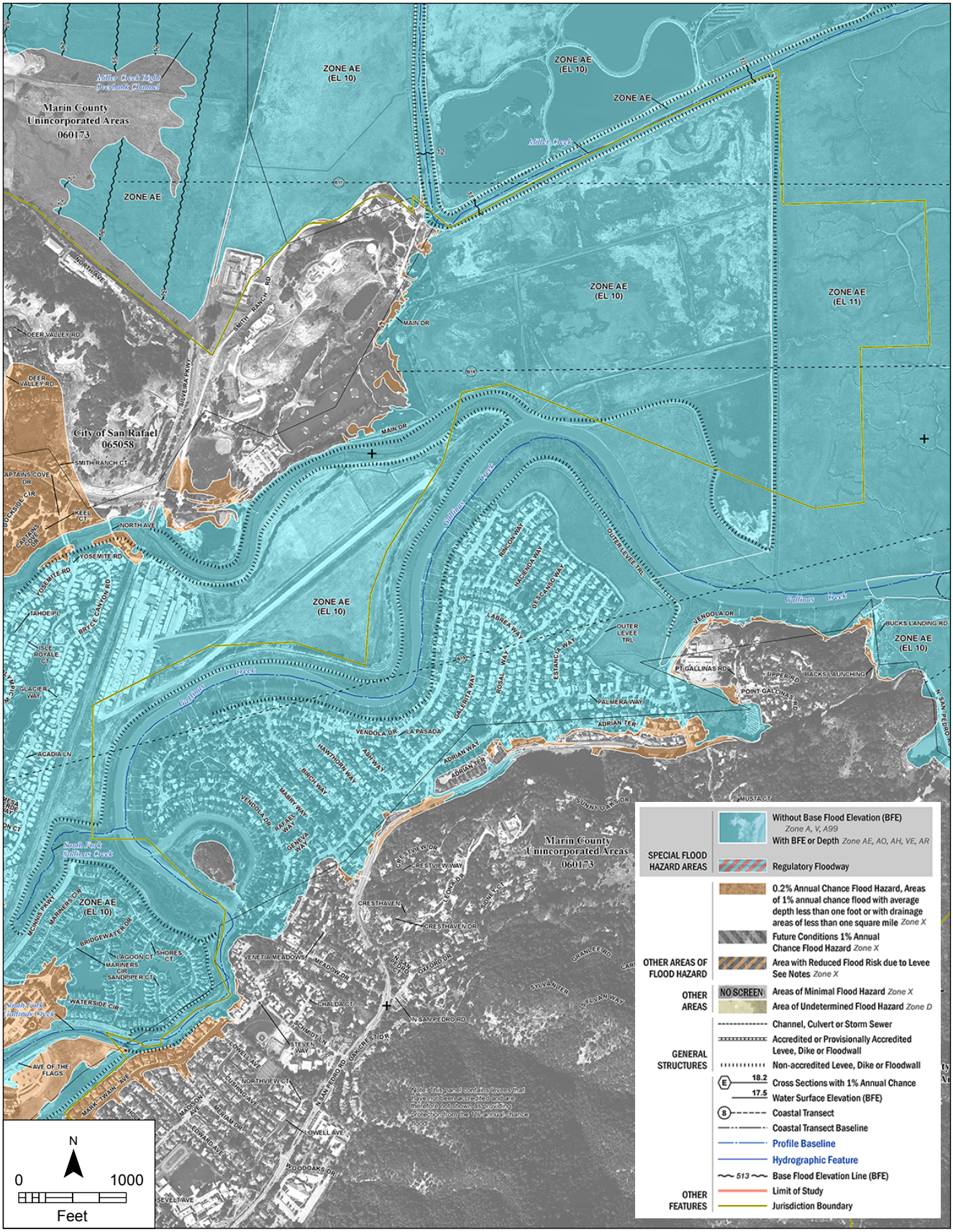
[2] Base Flood Elevation (BFE) is FEMA's predicted height of the 100-year flood (that is, a flood with a 1% chance of occurring each year).

[3] Unless otherwise noted, all elevations in this document are referenced to the North American Vertical Datum of 1988 (NAVD88), the standard model of the earth's surface used to establish land surface elevation and sea level. NAVD88 elevation of zero (0) is slightly different than Mean Lower Low Water, which is the average observed height of the daily lower low tide at a particular location.

[4] The last elevation survey of the Gallinas Levee found that the height of the existing TRB ranges from 8.1 to 10.4 feet above MLLW. This survey, however, was conducted over 10 years ago and is outdated: it is likely that the levee has continued to subside, resulting in a lowering of the height of the TRB. A new elevation survey is planned for the spring of 2019.

[5] The State of California's Sea Level Rise Guidance, 2018 Update provides probabilistic projections of different sea level rise scenarios. The "likely range" (66% chance) is 0.6-1.1 feet (7.2 to 13.2 inches) by 2050. There is a 1 in 200 chance (0.5% chance) of 1.9 feet (22.8 inches) of sea level rise by 2050, and a 1 in 20 chance (5% chance) of 1.4 feet (16.8 inches) rise (State of California, Ocean Protection Council, 2018, Table 1).



SOURCE: FEMA, 2016

Figure 5
Flood Insurance Rate Map (FIRM)
of the Project Area

Every four years since 1962, the County and the District have monitored levee settlement. Recent measurements indicate that subsidence is slowing, but still ongoing. Subsidence is expected to continue, resulting in a lowering of the elevation of the levee structure by a predicted 12 inches by 2050 (Kleinfelder, 2014). With the combination of the subsiding earthen levee, the deteriorating TRB, and rising sea level, the risk of tidal flooding to the community is continually increasing.

The District has an ongoing maintenance program that includes regular inspections, raising low portions of the levee, and repairing failing sections of the TRB. Because most of the levee is located on private residential properties, the District enters into 5-year right-to-enter agreements with each property owner. Typically, only 2-5 individual properties have their distressed portion of the TRB replaced by the District each year, due to funding limitations.

The Santa Venetia Marsh Preserve, which is adjacent to and northeast of the Santa Venetia Neighborhood (Figures 2 and 3), is separated from South Fork Gallinas Creek by an old earthen levee. This “outer” levee has been breached to allow tidal circulation within the marsh. The Preserve is separated from the Santa Venetia neighborhood by an “inner” levee. A hiking trail extends along the top of the inner and outer levees to circle the Preserve. The inner levee is generally wider and higher than the levee between the neighborhood and Gallinas Creek, where the TRB exists. The levee around the Preserve is maintained by Marin County Parks and Open Space District, which manages the Preserve, and the District. According to a recent geotechnical study (Kleinfelder 2013), the inner levee has considerably less potential for failure due to its height and construction, and therefore there are no plans to improve it at this time.

PROJECT OBJECTIVES

The objectives of the Gallinas Levee Upgrade Project are as follows:

1. Reduce the risk of tidal flooding in the Santa Venetia neighborhood due to a 100-year tidal elevation until the year 2050.

2. Increase the stability and reliability of the levee and TRB with new construction and facilitate future maintenance.

3. Protect and promote healthy native habitat where the Project borders the marsh.

PROJECT DESCRIPTION

The Gallinas Levee Upgrade Project would be undertaken by the District, and the District would obtain easements from property owners upon whose land the TRB is located. These easements would allow access for TRB construction and ongoing maintenance. The primary component of the Project would involve reconstruction and expansion of the TRB. The level of protection targeted is the 100-year BFE plus up to about 2.5 feet to account for land settlement and sea level rise projections between now and 2050. This increased level of protection is to be accomplished through raising the existing TRB to meet an elevation of 12.5 feet above MLLW. A new TRB would be built on those portions of the existing earthen levee which do not

currently have a TRB, to meet the design elevation. Additionally, the Project proposes to increase the durability and extend the life of the TRB through implementation of a more robust design and materials. The District has developed concepts for several variations of the TRB design, with the version to be selected for any particular location based on site conditions (**Figure 6, Optional Designs for the TRB**).

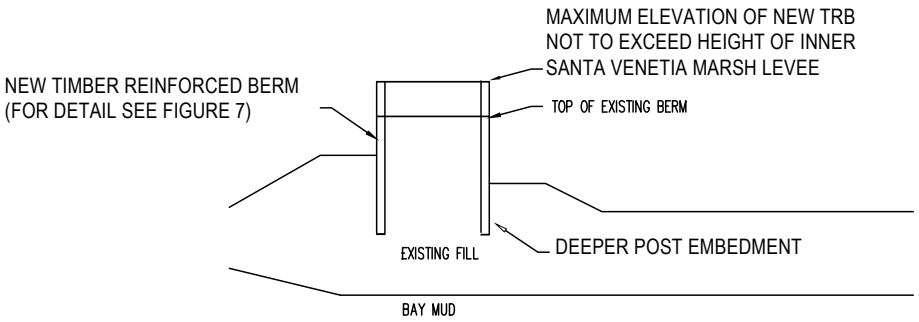
The TRB will be designed to soften the habitat transition across its section by providing structure and opportunities for native vegetation to grow against the marsh face. These living shoreline and sea level rise adaptation features might include wooden lattice affixed to the TRB or a planting strip along the TRB facing the creek.

Nearly 700 homes within Santa Venetia, which are currently within the FEMA 100-year flood zone, would directly benefit from this Project, as it would significantly decrease the risk of levee overtopping, levee failure, and resultant flooding of the neighborhood (Figure 5). After implementing this Project, these homes would be protected from a 100-year tidal water surface elevation.

Long-term maintenance would consist of a continuation of the existing program. The District, however, intends to replace the current 5-year right to enter agreements with permanent maintenance easements along the TRB to be acquired from private property owners. As with the existing TRB maintenance program, ongoing repair/rehabilitation of the facility would likely occur on an as-needed basis. It is expected that, following improvements to the TRB, the ongoing maintenance program would be considerably less costly.

An additional component of the Project addresses two pipes that penetrate the levee: reinforcement of a 42-inch discharge pipe from Pump Station No. 2, and safe abandonment of an 18-inch former stormdrain adjacent to Pump Station No. 5 (Figure 3). These are both corrugated metal pipes (CMP), which are prone to corrosion from saltwater. While corrosion in visible parts of these pipes has not been observed, they are at the end of their expected design lives. Corroded pipes can lead to water eroding the levee in the vicinity of the pipes. The CMP at Pump Station No. 2 was likely constructed along with the station itself in 1963, 56 years ago. This makes the CMP 6 years older than its expected useful life, which is typically 50 years. Other parts of the pump station have since been replaced as needed. To ensure that the outfall pipe continues to function and serve this critical facility, the Project includes trenchless reinforcement of the pipe.

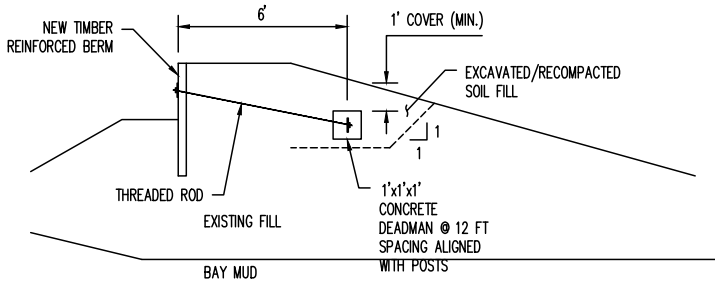
A pipe adjacent to Pump Station No. 5 drained the associated watershed prior to the pump station's construction in 1985. The pipe only worked at low tides when the tide gate would open. It was useful to keep the pipe and gate in the years following pump station construction to act as a back-up exit for water should the pump station and generator be out-of-service or overwhelmed. Later, the street drains along Vendola Drive were modified such that Pump Station No. 5 was connected to the renovated Pump Station No. 1. Pump Station No. 1 now serves as a back-up if Pump Station No. 5 is out-of-service or overwhelmed. The existence of the CMP and tide gate are now an unnecessary maintenance expense and risk.



TYPICAL PROPOSED SECTION #1 RECONSTRUCTED TIMBER REINFORCED BERM WITH NO LANDSIDE SOIL BUTTRESS

NOT TO SCALE

EXAMPLE PHOTO OF SECTION #1 (303 VENDOLA)



TYPICAL PROPOSED SECTION #2 RECONSTRUCTED TIMBER REINFORCED BERM WITH OPTIONAL DEADMAN, SLOPED LANDSIDE SOIL BUTTRESS

NOT TO SCALE

EXAMPLE PHOTO OF SECTION # 2

SOURCE: Kleinfelder, Inc., 2016

Figure 6
Optional Designs for Timber
Reinforced Berm Replacement

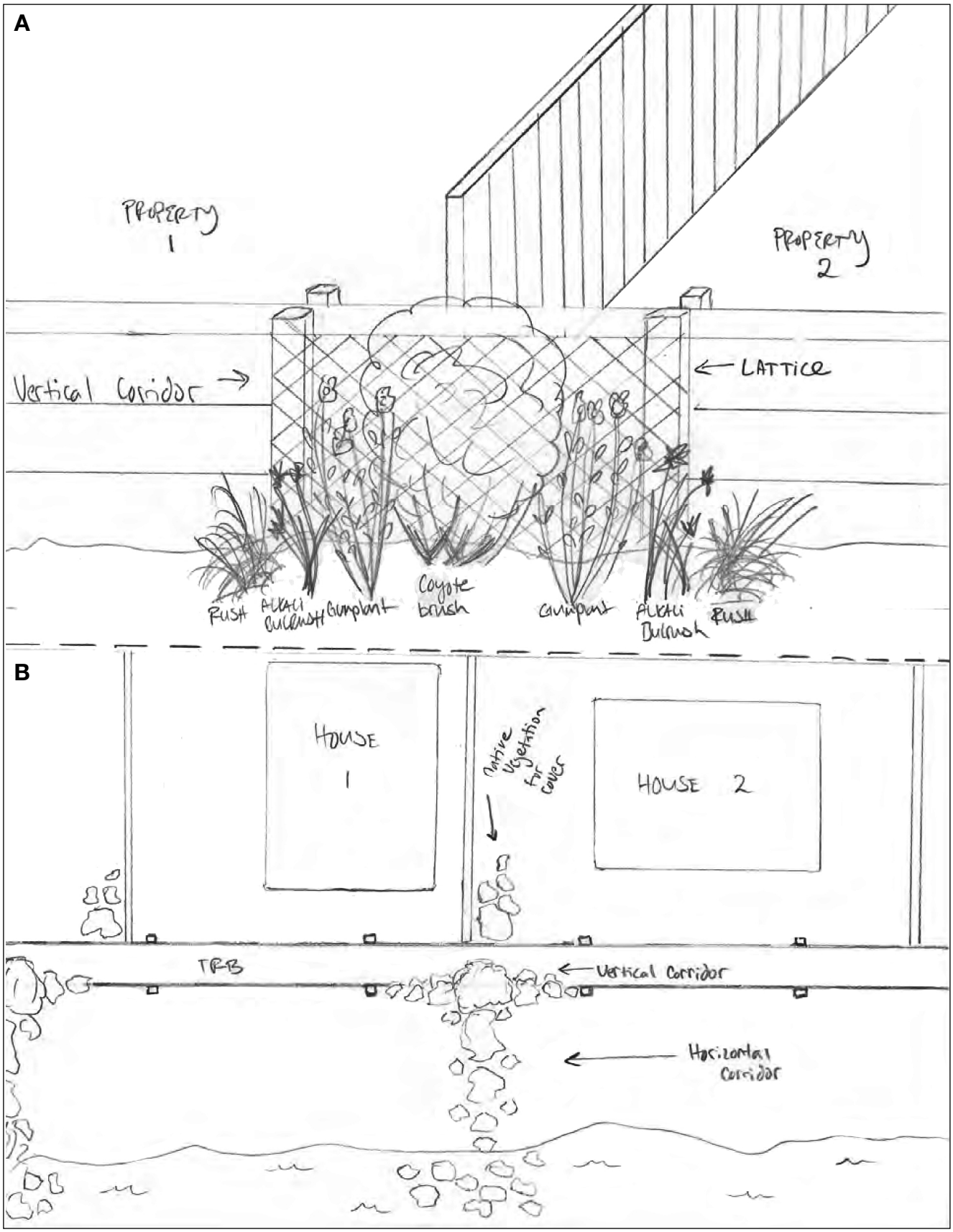
PROJECT LOCATION

The Project is located within the Santa Venetia neighborhood, an unincorporated community located near the City of San Rafael in Marin County, California (Figure 1). The neighborhood is located east of the US 101 freeway, and is accessed via North San Pedro Road. It is a low-lying neighborhood of single family and multi-family residences. The neighborhood is just to the east of the Marin County Civic Center. Bordering the neighborhood on its northeastern edge is the Santa Venetia Marsh Preserve, and further to the east and southeast is China Camp State Park. The neighborhood is bordered on its northern and northeastern edge by South Fork Gallinas Creek, which is tidally influenced in this reach. Across the creek is the San Rafael Airport, also known as the Marin Ranch Airport or the Smith Ranch Airport, a private, general aviation airport. There is a section of TRB approximately 200 feet long and a section of the Pump Station No. 2 outfall approximately 30 feet long that may be on property claimed to be owned by the San Rafael Airport. The airport and County entered into a Memorandum of Understanding (MOU) on September 18, 2018, which provided, among other things, that the Airport would waive certain rights related to public and private activities on this parcel. Therefore, it is anticipated that the Airport will not prohibit Project activities.

The planned work is along the top of the existing earthen levee system situated behind residences adjacent to South Fork Gallinas Creek. The Project extends approximately 7,000 linear feet from #5 Vendola Drive to #825 Vendola Drive (Figure 3). All access would be from the land side of the levee between houses, pursuant to access agreements with property owners, or through publicly-owned parcels such as the pump stations. To protect sensitive biological resources and water quality, work would stay out of the marsh and above the high tide line. The marsh face of the TRB, that is, the row of posts and panels facing the creek, would generally be reconstructed in its current location and changes in width or alternative designs, such as a single wall with a buried anchor and sloping backfill, would occur within 10-feet of the marsh face. Living shoreline features **(Figure 7)** would be located between the marsh face of the TRB and the high tide line. Construction would be confined to a 15 or 20-foot strip along the levee crest. Staging areas would be minimal and limited to portions of the backyards of the residences immediately adjacent to the work area and Vendola Drive directly out front. Road closures are not anticipated. District property adjacent to an unused elementary school campus at 1565 Vendola Drive may also be used as a stockpiling area for construction materials.

The pipe to be reinforced at Pump Station No. 2 extends through the levee perpendicular to the TRB between #401 and #405 Vendola Drive (Figure 3). It originates at the District pump station 120 feet inside of the levee crest and continues approximately 30 feet into the marsh. A trenchless technology is proposed to line the existing pipe, thus avoiding the need for excavation in the marsh. Still, the work would likely include construction of a temporary coffer dam extending approximately 40 feet beyond the levee into the marsh so that the inside of the pipe can be cleaned and accessed while dry.

The pipe to be abandoned at Pump Station No. 5 is approximately 100 feet long and runs between #825 Vendola Drive and the adjacent pump station building, perpendicular to Gallinas Creek (Figure 3). The pipe extends just barely to the



SOURCE: WRA Environmental Consultants

Figure 7
Living Shoreline Concept Drawings
A (Top): Lattice Structure, Perspective View
B (Bottom): Vertical and Horizontal Corridors, Plan View

marsh, but all of the work trenching and removing it can be done from dry ground, with work nearest the marsh taking place at low tide.

PROJECT ELEMENTS, DESIGN, CONSTRUCTION, AND MAINTENANCE

Access

Right-of-way, easements, and/or access agreements with property owners will be necessary for implementation and maintenance of the Project. The District has obtained 5-year right-to-enter agreements from private property owners as part of its program to inspect and maintain the existing TRB. Many of these agreements expire as early as June of 2020. The District will seek to enter into temporary construction access agreements and permanent maintenance easements with private property owners.

Temporary construction access would be approximately 20 feet wide along the levee, extending no further than the MHHW elevation on the outside (creek side) of the levee. Access easements through yards between the front and back of the houses along Vendola Drive would be sought where there is sufficient clearance between buildings. Approximately one access every three or four houses would be sufficient. In some locations, fences would have to be taken down, and then rebuilt following completion of the work. Permanent maintenance easements would be 10 feet wide along the top of the TRB. This is the minimum amount of room needed to conduct maintenance of the TRB.

The pipe to be abandoned adjacent to Pump Station No. 5 is entirely on land owned by the County of Marin, so no right-of-way agreements would be needed to undertake this element of the Project.

The outfall to Pump Station No. 2 traverses under approximately 100 feet of land owned by the Las Gallinas Valley Sanitary District on which the District has an existing easement; approximately 12 feet of State Tidelands granted to the County of Marin; and approximately 30 feet claimed to be owned by the San Rafael Airport but intended by the State to be held in trust for the public. Right-of-way acquisition is not anticipated to be needed, but the Las Gallinas Valley Sanitary District and San Rafael Airport would be notified before work takes place.

TRB Construction

Construction of new TRB sections where none currently exist, and reconstruction of existing sections would take place year-round for two to three years, although construction would not occur during periods of rainy weather and predicted high tides. TRB reconstruction would be performed a few properties at a time, due to homeowner access and coordination constraints, and the need to avoid exposure to extremely high tides. The exact number of properties where work would occur at a given time would depend on access and other logistics, but could be expected to be on the order of 3 to 5 houses at a time. Since each property has approximately 60 to 80 feet of levee, this would amount to about 200 to 400 linear feet at a time. The District´s Project manager will communicate directly with homeowners and residents about upcoming work and project phasing as work progresses.

Construction would be performed by one or more contractors under contract with the District. Construction steps and sequencing are shown in **Table 1**. After staging

materials and equipment for the first section of TRB to be reconstructed, the contractor would install temporary silt fencing along the high tide line and orange plastic fencing around the site for security and public safety. The existing TRB would be dismantled and the redwood members disposed offsite in a municipal landfill, or salvaged. The existing soil backfill between the wooden panels would either be temporarily stockpiled on the landside of the levee, close to the work area, or left in place and constructed around.

Table 1: Project Construction Activities and Sequencing: TRB Reconstruction

Construction Activity	Description
Mobilization	Contractor would gather and transport equipment and personnel to the site of the first set of homes; access and work areas would be marked or fenced. Construction office/stockpiling area would be established within a District-owned parcel near the currently-unused MacPhail School site.
Environmental Protection Measures	Contractor would install silt fence along high tide line and orange plastic fencing and temporary fencing around the site for security and public safety.
Coffer Dam Construction	None needed as construction activities will not occur when water levels are at the facility elevation.
Demolition	The existing TRB section would be dismantled and wood and hardware disposed at a municipal landfill (e.g. Redwood Landfill in Marin County) or salvaged. Where possible, posts would be pulled up with a mini excavator. The soil between the wooden panels would be temporarily stockpiled adjacent to the TRB locations and would be re-used, if appropriate, for filling the new TRBs. Fences above the TRB would be dismantled and saved when they can be reused.
Clearing and Grubbing	Contractor would remove trees, shrubs and grass/topsoil as necessary, within construction footprint. This material would be loaded into trucks and hauled offsite to a dump or recycling/compost center. Topsoil would be stockpiled onsite for replacement after grading is complete.
Construction activities	Bulkhead and Posts Installation: Contractor would use handheld or skid-steer mounted auger to drill new post holes. Posts would be set-in concrete and panels bolted to posts. TRB Backfilling: Contractor would backfill TRB with excavated material. Cement mixer truck with pump and boom truck would fill remaining voids with CDF.
Site Rehabilitation/ Cleanup	Contractor would remove silt fence, orange fence, and reconstruct private fences between houses.
Remobilization	Contractor would start over on the next section of TRB.
Demobilization/ Cleanup	Contractor would remove construction trailer and all equipment and supplies from site, and complete final cleanup.

The height of the TRB above the top of the levee would vary from place to place in order to achieve one consistent design elevation of no more than 12.5 feet. A new survey of the current height of the earthen levee, scheduled to be undertaken by the District in the spring of 2019, will determine the required height of the TRB. Currently, the TRB ranges from about 1 foot to about 3 ½ feet above the levee crest. Depending on the results of the new survey, the reconstructed TRB will need to be 1 foot to 3 feet higher, in order to achieve the design elevation.

Post holes, approximately 10-inches in diameter, would be drilled to depths of up to 8 feet, according to the height of the TRB and the existing backfill landward of the TRB location (**Figure 8, Detail 1**). This is substantially deeper than the existing structure, which has posts sunk between 2-4 feet into the earthen levee. The posts would be approximately 4" x 6" composite lumber, placed 3 or 4 feet apart measured from the outside of the posts, and spaced 4 or 6 feet on center along the levee crest (Figure 8, Details 1 and 4). After being placed in the posthole, the hole would be backfilled with concrete. The panels, also consisting of composite lumber, would be attached to the insides of the posts with galvanized steel fasteners. The panels would gain additional stability by the construction of cross beams spanning the gap between them and attaching them together (Figure 8, Details 1 and 2).

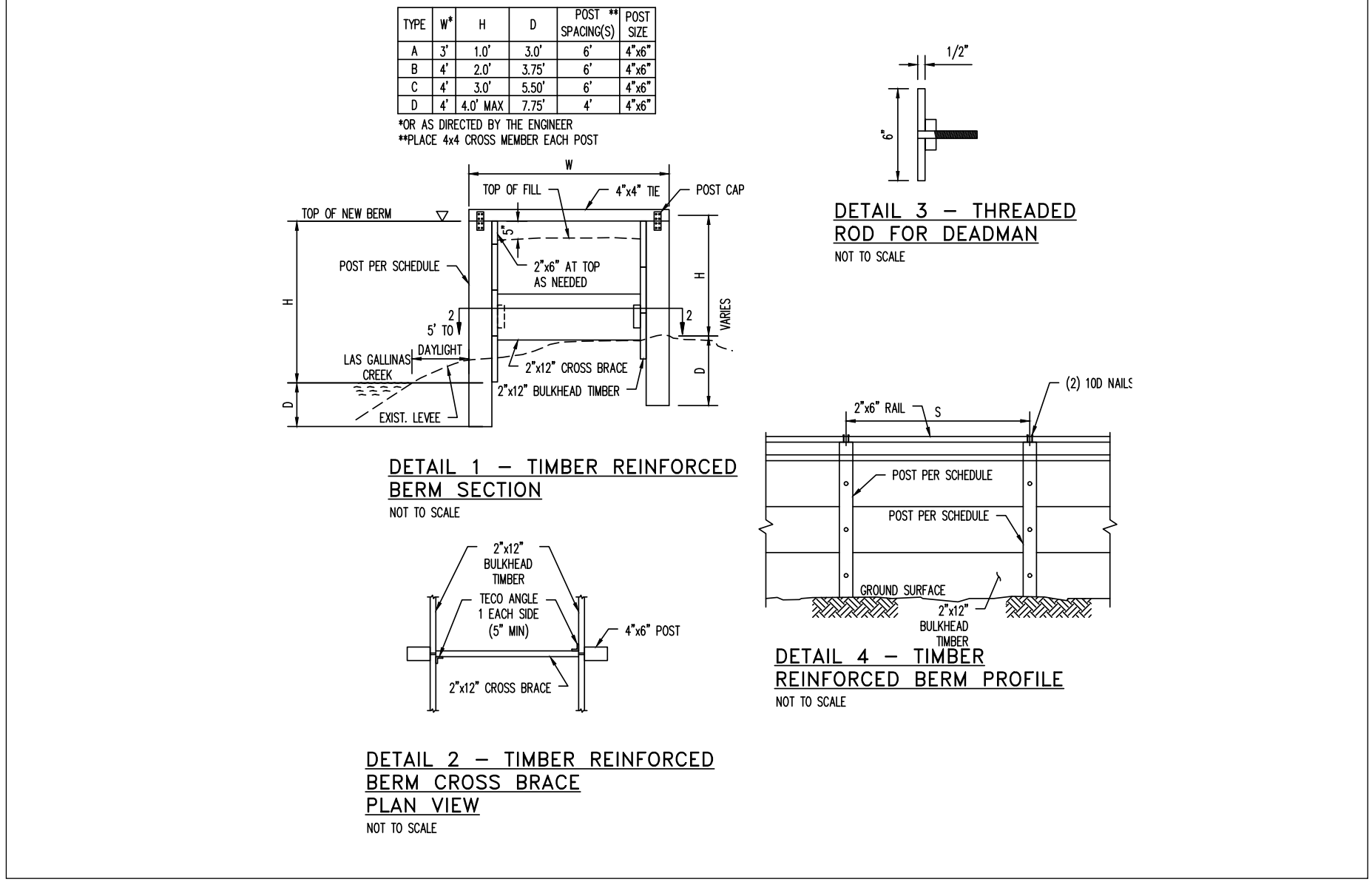
In some places where there is an opportunity to use a soil buttress, buried anchors or "deadmen" would be used in lieu of timber paneling on the landside. With this design, there would be only one line of posts and panels (Figure 6). The deadmen would consist of concrete anchors placed approximately 12 feet apart in the backfill on the landward side of the TRB, and connected to the TRB posts with a galvanized or stainless steel threaded rod. Up to 15 cubic yards of clean soil would be imported via motorized wheelbarrow and placed against the landside as a buttress and cover for the anchor. An estimated maximum of 30 homes are expected to opt for this increased buttressing.

In addition to the two basic TRB designs described above, other variations on these designs may also be used.

Because of the limited space available to mobilize equipment onsite, construction equipment would be relatively small and portable. Drilling would be performed using a gas-powered hand auger, or an auger mounted on a small skid-steer loader (a small tractor also known as a "skid-steer" or "Bobcat"). Once the posts are installed, the remainder of the construction of the timber portion of the TRB would be performed using manual labor. Native soil would be replaced with a skid-steer and re-compacted with a walk-behind plate compacter. Where additional backfill material is needed between the timber panels, controlled density fill (CDF) would likely be used. CDF is a self-compacting, self-leveling concrete product that can be delivered in a cement mixer truck and pumped via a boom truck staged on the street-side of the homes. CDF is a relatively light-weight material, making it especially suitable for this use, since more weight would result in more settlement of the levee.

Pump Station 2 Pipe Reinforcement

Construction steps and sequencing for Pump Station 2 pipe reinforcement are shown in **Table 2**. This element of the Project would begin with dewatering, removing sediment, and cleaning the inside of the approximately 42" diameter pipe. This would be done by first constructing a coffer dam with sandbags (or alternative material that can be installed by hand) around the outfall at a very low tide and pumping the pipe dry. An inflatable plug may be installed in the end of the pipe to allow for a Vactor truck staged at the pump station wet well to clean the pipe out. The location where the plug is inserted may need to be dug out by hand. A video inspection (using a remote-controlled camera) of the pipe's condition would be performed after cleaning of the existing pipe and after reinforcement.



SOURCE: Kleinfelder, Inc., 2016

Figure 8
Design Details

Table 2: Project Construction Activities and Sequencing: Pipe Reinforcement and Abandonment[1]

Construction Activity	Pipe Reinforcement Pump Station #2	Pipe Abandonment Pump Station #5
Mobilization	Contractor would gather and transport equipment and personnel to the site. Work area and stockpile areas would be delineated.	Contractor would gather and transport equipment and personnel to the site. Work area and stockpile areas would be delineated.
Environmental Protection Measures	Contractor would install orange plastic fencing and temporary fencing around the site for security and public safety.	Contractor would install orange plastic fencing and temporary fencing around the site for security and public safety.
Coffer Dam Construction	Contractor would work at low tide to construct a sandbag wall around the pipe outfall sufficiently high to protect against high tides entering.	Contractor would work at low tide to construct a sandbag wall around the pipe outfall sufficiently high to protect against high tides entering.
Demolition	No facilities would be demolished as part of this task.	Contractor would temporarily remove fences and gates above work area. Contractor would use concrete saw to cut asphalt and concrete. Pipe would be dug up with excavator and disposed of at local municipal landfill. Excavated soil would be stockpiled adjacent to trench.
Clearing and Grubbing	Sediment would be removed from inside pipe by Vactor truck. No plants would be removed.	Riprap shoreline protection would be removed above the pipe outfall and stockpiled. No plants would be removed.
Construction activities	Contractor would patch holes in the pipe by hand and pull a device through the pipe that spreads the cement/grout and seal coating.	Contractor would backfill trench with excavated soil and compact. Additional soil might be imported.
Site Rehabilitation/ Cleanup	Contractor would remove coffer dam and any temporary fencing at low tide.	Contractor would reconstruct fences and gates and replace riprap shoreline protection. If any plants needed to be salvaged, they would be replanted.
Remobilization	There is only one mobilization anticipated for this task.	There is only one mobilization anticipated for this task.
Demobilization/ Cleanup	Contractor would remove all equipment from site and complete final cleanup.	Contractor would remove all equipment from site and complete final cleanup.

Note: [1] Work on the two pipes may or may not occur simultaneously.

Reinforcing the pipe would be done with a spin-cast technique which centrifugally casts a fibermesh grout against the inside of the existing pipe. Depending on the existing condition of the pipe it might be patched with grout to establish a flat bottom, then a machine would be pulled through the pipe while distributing the grout against the pipe. A sealant coat would be applied as a final layer.

Construction activities in the marsh would avoid excavation except inside the pipe and within 10 feet from the outfall as needed to keep it clean. The cofferdam and plug materials would be taken to the pipe outfall by foot and would temporarily occupy about 100 square feet of mudflat. No other equipment would be placed in

the marsh and the staging would occur within the 6,300 square foot pump station parcel. Construction would take place between September 1st and October 31st to avoid the rainy season and the breeding season for endangered species known to occur in the area (see Biological Resources section).

Pump Station 5 Pipe Abandonment

Construction steps and sequencing for Pump Station 5 pipe abandonment are shown in Table 2. Abandonment of the pipe at Pump Station 5 would begin with temporary removal of two overlying gates and fences and cutting approximately 70 lineal feet of asphalt and concrete with a concrete saw. The asphalt and concrete would be removed and disposed at a municipal landfill or recycled. The 100 feet of pipe would then be dug up with an excavator operating directly above or adjacent to it. A small cofferdam of sandbags would be placed by hand at the outfall end to keep high tides from flowing into the trench. The trench would be back-filled and compacted to match the surrounding grade. Approximately 8.5 cubic yards of additional backfill will be imported to compensate for the space occupied by the pipe. This material could be either a clean soil or Controlled Density Fill (CDF), a light concrete mix. Concrete and asphalt would be patched and gates reconstructed. Appropriate Best Management Practices (BMPs) would be utilized to prevent saw-cutting, asphalt, and concrete activities from creating dust and sediment that could enter the creek.

Construction activities would temporarily disturb less than 1,000 square feet, including less than 10 feet of channel at the outfall for cofferdam construction. The staging would occur within that area on the land. Construction would take place between September 1st and October 31st, avoiding the rainy season and the breeding season for endangered species known to occur in the area (see Checklist Section 4, Biological Resources).

Equipment and Crew Size

Construction equipment used for the Project would depend on the individual needs of each Project element, as well as the discretion of individual contractors. **Table 3** presents a list of equipment types that would be likely to be used during implementation of the Project. The total estimated number of heavy truck trips for each Project element is shown in **Table 4**, and anticipated maximum crew sizes are shown in **Table 5**.

Table 3: Equipment

TRB Reconstruction	Pipe Reinforcement and Abandonment
• Skid-steer loader • Mini excavator • Auger • Dump truck • Motorized wheelbarrow • Concrete pumper and boom • Plate compactor • Sandbags	• Sandbags • Baker tanks (for storing pumped water) • Trash pump • Video truck • Spin-cast rig • Excavator • Vactor truck

Table 4: Vehicle Load Estimates

Project Element	Truck Loads
TRB Reconstruction	1 demolition/off-haul truck and one cement mixer/pump truck pair per 5 homes = 25 dump trucks, 25 cement trucks, 25 pump trucks, imported soil = up to 450 cy or 45 trucks
Pipe Reinforcement and Abandonment	5
TOTAL	125

Table 5: Construction Duration and Crew Size

Project Element	Estimated Maximum Construction Duration (months)	Estimated Maximum Construction Crew Size (individuals per work day)
TRB Reconstruction	36	10
Pipe Reinforcement and Abandonment	1	5

Implementation Sequence and Schedule

The implementation sequence for each Project element is shown in Tables 1 and 2. Construction duration is shown in Table 5. For TRB reconstruction, implementation in the first construction season would target the locations where the existing TRB is currently lower than the FEMA 100-year flood water surface elevation and where the condition of the existing TRB warrants more immediate action. Following completion of these more vulnerable sections, the District would continue with the retrofits of remaining areas until the full 7,000-foot length of the TRB-levee system is brought to the design elevation.

To avoid rain, high tides, and endangered species breeding seasons, the CMP reinforcement and abandonment projects would be completed in September and October. The timing may be before, during, or after TRB construction. The two CMP projects could occur simultaneously, or at different times.

If approved, TRB construction is expected to begin as early as the summer of 2020, and extend 2-3 years. CMP tasks could occur as early as 2019 or as late as 2025.

Project Maintenance

Maintenance is performed and funded by the District, with funds designated to Flood Control Zone 7 in Santa Venetia. The District has had an annual program of inspecting and/or performing miscellaneous tasks to support the function of the TRB, such as replacing or repairing sections of the TRB and closing animal burrows. Inspections are performed to inform maintenance needs and priorities.

After completion of the planned improvements, the maintenance needs for the reconstructed TRB are expected to be reduced due to the use of improved materials and designs. Composite lumber materials are formed from a mixture of wood fiber, plastic, and thermoplastic resin. They do not corrode and are highly resistant to decay, rot and pest infestation. The typical design life of composite lumber materials

is 50-years, (compared to a 20-year design life for wooden lumber material) and they require minimal cleaning and maintenance.

No maintenance is expected at the location of pipe abandonment adjacent to Pump Station 5. Occasional inspection and cleaning may occur of Pump Station 2's outfall pipe.

REQUIRED APPROVALS

The Gallinas Levee Upgrade Project could only be implemented with the following governmental approvals:

Compliance with the California Environmental Quality Act through an action of the Public Works Director to adopt a Mitigated Negative Declaration or of the District's Board of Supervisors to certify an Environmental Impact Report;

Approval of Project funding by the District's Board of Supervisors, Federal Emergency Management Agency, County Board of Supervisors, and/or by ballot initiative;

Issuance of a Streambed Alteration Agreement by the California Department of Fish and Wildlife, pursuant to Fish and Game Code Sec. 1600.

Other approvals that may be required include Federal Clean Water Act Sec. 401 Clean Water Certification by the San Francisco Bay Regional Water Quality Control Board and a Sec. 404 Dredge and Fill Permit/Rivers and Harbors Act Section 10 Permit from the U.S. Army Corps of Engineers.

REFERENCES

Federal Emergency Management Agency (FEMA), 2016. Flood Insurance Rate Map, panel 06041C0294E. Effective March 16, 2016.

Kleinfelder, Inc., 2013. Geotechnical Data Report – Las Gallinas Levee System – San Rafael, California. Prepared for Marin County Department of Public Works and Marin County Flood Control and Water Conservation District.

Kleinfelder, Inc., 2014. Geotechnical Alternatives Analysis, Las Gallinas Levee System, San Rafael, California. Prepared for Marin County Department of Public Works and Marin County Flood Control and Water Conservation District.

Kleinfelder, Inc., 2016. Santa Venetia Timber-Reinforced Berm Improvement Project Plan Set. Prepared for Marin County Department of Public Works and Marin County Flood Control and Water Conservation District.

Marin County, 2017. Marin Shoreline Sea Level Rise Vulnerability Assessment. Bay Waterfront Adaptation & Vulnerability Evaluation (BayWAVE) report, prepared by Prepared by BVB Consulting for Marin County Department of Public Works, June 2017.

State of California, Ocean Protection Council, 2018. Sea Level Rise Guidance, 2018 Update. State of California, Natural Resources Agency, Ocean Protection Council.

US Army Corps of Engineers (USACE), 2014. Las Gallinas Creek, CA, Preliminary Flood Damage Analysis. US Army Corps of Engineers San Francisco District, January 7, 2014.

WRA Environmental Consultants, 2018. Santa Venetia Timber-Reinforced Berm Improvement Project - Recommended avoidance and minimization measures to protect salt marsh harvest mouse. Memo from Katie Smith, Wildlife Biologist, WRA, to Gerhard Epke, Senior Program Coordinator, Marin County Flood Control District, Dec. 6, 2018.

III. CIRCULATION AND REVIEW

This Initial Study/Mitigated Negative Declaration is being circulated for a 30-day review and comment period pursuant to CEQA Guidelines Section 15073. It is being circulated to all agencies that have jurisdiction over the subject property or the natural resources affected by the Project and to consultants, community groups, and interested parties to attest to the completeness and adequacy of the information contained in the Initial Study as it relates to the concerns which are germane to the agency's or organization's jurisdictional authority or to the interested parties' issues.

Marin County Agencies:

- Marin County Department of Public Works (DPW)
- Marin County Community Development Agency, Environmental Health Services Division
- Marin County Fire Department

Trustee and Responsible Agencies:

- National Marine Fisheries Services
- US Fish and Wildlife Service
- US Army Corp of Engineers
- California Department of Fish and Wildlife
- California Regional Water Quality Control Board

IV. EVALUATION OF ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

Pursuant to Section 15063 of the State CEQA Guidelines, the Marin County Flood Control and Water Conservation District (the District) will prepare an Initial Study for all projects not categorically exempt from the requirements of CEQA. The Initial Study evaluation is a preliminary analysis of a project which provides the District with information to use as the basis for deciding whether to prepare an Environmental Impact Report (EIR) or Negative Declaration. The points enumerated below describe the primary procedural steps undertaken by the District in completing an Initial Study

checklist evaluation and, in particular, the manner in which significant environmental effects of the Project are made and recorded.

A. The determination of significant environmental effect is to be based on substantial evidence contained in the administrative record. As a procedural device for reducing the size of the Initial Study document, relevant information sources cited and discussed in topical sections of the checklist evaluation are incorporated by reference into the checklist (e.g. general plans, zoning ordinances). Other sources used or individuals contacted are also cited in the discussion of topical issues where appropriate.

B. In general, a Negative Declaration shall be prepared for a project subject to CEQA when either the Initial Study demonstrates that there is no substantial evidence that the project may have one or more significant effects on the environment. A Negative Declaration shall also be prepared if the Initial Study identifies potentially significant effects, but revisions to the project made by or agreed to by the applicant prior to release of the Negative Declaration for public review would avoid or reduce such effects to a level of less than significance, and there is no substantial evidence before the District that the project as revised will have a significant effect on the environment. A signature block is provided in Section VII of this Initial Study to verify that the project sponsor has agreed to incorporate mitigation measures into the project in conformance with this requirement.

C. All answers to the topical questions must take into account the whole of the action involved, including off-site as well as on-site, cumulative as well as project-level, indirect as well as direct, and construction as well as operational impacts. Significant unavoidable cumulative impacts shall be identified in Section V of this Initial Study (Mandatory Findings of Significance).

D. A brief explanation shall be given for all answers except "Not Applicable" answers that are adequately supported by the information sources the District cites in the parenthesis following each question. A "Not Applicable" answer is adequately supported if the referenced information sources show that the impact simply does not apply to projects like the one involved (e.g. the project falls outside a fault rupture zone). A "Not Applicable" answer shall be discussed where it is based on project-specific factors as well as general standards (e.g. the project will not expose sensitive receptors to pollutants, based on a project-specific screening analysis).

E. "Less Than Significant Impact" is appropriate if an effect is found to be less than significant based on the project as proposed and without the incorporation of mitigation measures recommended in the Initial Study.

F. "Potentially Significant Unless Mitigated" applies where the incorporation of recommended mitigation measures has reduced an effect from "Potentially Significant Impact" to a "Less than Significant Impact." The Lead County Department must describe the mitigation measures, and briefly explain how they reduce the effect to a less than significant level (mitigation measures from Section IV, "Earlier Analyses", may be cross-referenced).

G. "Significant Impact" is appropriate if an effect is significant or potentially significant, or if the District lacks information to make a finding that the effect is less than significant. If there are one or more effects which have been determined to be significant and unavoidable, an EIR shall be required for the project.

H. The answers in this checklist have also considered the current State California Environmental Quality Act Guidelines and Appendix G contained in those Guidelines.

Environmental Factors Potentially Affected

The environmental factors checked below would be potentially affected by this Project, involving at least one impact that is a “potentially significant impact” as indicated by the checklist on the following pages.

- ☐ Aesthetics
- ☐ Agriculture and Forestry Resources
- ☒ Air Quality
- ☒ Biological Resources
- ☒ Cultural Resources
- ☐ Energy
- ☐ Geology and Soils
- ☐ Greenhouse Gas Emissions
- ☐ Hazards and Hazardous Materials
- ☐ Hydrology and Water Quality
- ☐ Land Use and Planning
- ☐ Mineral Resources
- ☐ Noise
- ☐ Population and Housing
- ☐ Public Services
- ☐ Recreation
- ☐ Transportation
- ☐ Tribal Cultural Resources
- ☐ Utilities and Service Systems
- ☐ Wildfire
- ☐ Mandatory Findings of Significance

Environmental Impact Checklist

1. Aesthetics

Except as provided in Public Resources Code Section 21099, would the Project:	Significant or Potentially Significant Impact	Less Than Significant Impact with Mitigation Incorporated	Less than Significant	No Impact
a) Have a substantial adverse effect on a scenic vista?	☐	☐	☒	☐
b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?	☐	☐	☐	☒
c) Substantially degrade the existing visual character or quality of public views of the site and its surroundings? (Public views are those that are experienced from publicly accessible vantage point). If the project is in an urbanized area, would the project conflict with applicable zoning and other regulations governing scenic quality?	☐	☐	☒	☐
d) Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?	☐	☐	☐	☒

a) Have a substantial adverse effect on a scenic vista?

c) Substantially degrade the existing visual character or quality of public views of the site and its surroundings? (Public views are those that are experienced from publicly accessible vantage point). If the project is in an urbanized area, would the project conflict with applicable zoning and other regulations governing scenic quality?

Scenic vistas in the vicinity of the Project site include views of South Fork Gallinas Creek, marsh areas, and surrounding hills from public trails in the vicinity of the Project site. Trails with scenic vistas include the levee trail around the perimeter of the Santa

Venetia Marsh Open Space Preserve (**Figure 1-1**), the bridge to Santa Margarita Island Preserve, and the trail around the island itself (**Figure 1-2**).

From the levee trail, only the northernmost part of the TRB is visible. The TRB itself does not contribute to the scenic vistas from the levee trail, and reconstruction of the TRB would not substantially alter or degrade these views. Once Project construction is completed, there would be little difference in scenic vistas from the levee trail. Effects on scenic vistas from this location would be less than significant.

The bridge to Santa Margarita Island, and the trail around the island, also have scenic views of the creek and fringing marsh. Both the bridge and the trail have clear views toward the backyards of the houses along the southernmost portion of Vendola Drive, including the earthen levee, the TRB, and docks extending into the creek. Landscaping, fencing, and yard ornaments adorn the levee and TRB. The TRB is not a distinct visual feature from viewpoints along the Island trail.

Reconstruction of the TRB would require removal of the landscaping, fencing, and yard ornaments along the levee crest. During and after construction, the levee and especially the TRB would stand out more as a distinct built element, and together with the removal of vegetation and ornaments, the TRB would contrast more with its surroundings. The evenness of the structure, its relatively low height (even at its highest, it would be lower than a typical backyard fence, for example), its repeating structural elements (posts and planks) the use of earth-tone materials, and the installation of living shoreline features, however, would all minimize the visual intrusiveness of the TRB into scenic views from the bridge and the island. As vegetation around the TRB re-establishes, including living shoreline features, it would likely become less and less visible. Over time, it would blend into the landscape, as the existing TRB has done.

In those portions of the TRB that would need to be built higher above the levee crest than they currently are in order to achieve the design elevation, the reconstructed TRB might partially block views from the backyards and rear windows of some of the homes along Vendola Drive. Views from backyards and rear windows may include scenic elements including Gallinas Creek, the marsh, and the hills beyond. Homes in the southern part of the Project site have views of Santa Margarita Island. Under CEQA, however, obstruction of a view from private property is generally not considered a significant impact. Because of this, and because views would be only partially obstructed, and because residents would still have unobstructed views from the levee itself and from their docks, the impact on private views would not be considered substantial, and is therefore less than significant.

In sum, the Project would temporarily alter, but would not substantially degrade scenic vistas and visual quality.

SOURCE: Sicular Environmental Consulting, 2019

Figure 1-1
View Toward Project Site from
Santa Venetia Marsh Outer Levee Trail

SOURCE: Sicular Environmental Consulting, 2019

Figure 1-2
View Toward Project Site
from Santa Margarita Island

b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?

The Project site is not within a state scenic highway. As discussed above, the Project would not substantially degrade visual quality. Distinct visual features near the Project site, including mature trees, South Fork Gallinas Creek and its fringing marsh, and Santa Margarita Island, would not be altered by the Project. There would be no impact of this kind.

d) Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?

Construction of the Project would conform to the requirements of Marin County Code §6.70.030, which states that construction noise is allowed from 7 a.m. to 6 p.m. on weekdays and 9 a.m. to 5 p.m. on Saturdays. Construction activities are prohibited on Sundays and holidays. Therefore, construction would not occur at night, and there would be no new source of light or glare during construction. The Project would not introduce any new permanent source of light or glare to the area. There would be no impact of this kind.

References

California Department of Transportation (CalTrans), 2019: Officially Designated State Scenic Highways. http://www.dot.ca.gov/hq/LandArch/16_livability/scenic_highways/ Accessed May 24, 2019.

2. Agriculture and Forestry Resources

Would the Project:	Significant or Potentially Significant Impact	Less Than Significant Impact with Mitigation Incorporated	Less than Significant	No Impact
a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?	☐	☐	☐	☒
b) Conflict with existing zoning for agricultural use, or a Williamson Act contract?	☐	☐	☐	☒
c) Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g))?	☐	☐	☐	☒
d) Result in the loss of forest land of conversion of forest land to non-forest use?	☐	☐	☐	☒
e) Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forest land to non-forest use?	☐	☐	☐	☒

a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the

Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?

b) Conflict with existing zoning for agricultural use, or a Williamson Act contract?

c) Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g))?

d) Result in the loss of forest land of conversion of forest land to non-forest use?

e) Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forest land to non-forest use?

The Project site is zoned for single-family residences. There is no agricultural land or forest land within the Project site or in the surrounding areas. Therefore, the Project would have no effect on farmland or forest land, would not conflict with any agricultural uses, Williamson Act contract or zoning of forest land, timberland, or Timberland Production area. Neither would the Project result in conversion of farmland or forest land. The Project would have no impacts of these kinds.

3. Air Quality

Where available, the significance criteria established by the applicable air quality management district or air pollution control district may be relied upon to make the following determinations.

Would the Project:	Significant or Potentially Significant Impact	Less Than Significant Impact with Mitigation Incorporated	Less than Significant	No Impact
a) Conflict with or obstruct implementation of the applicable air quality plan?	☐	☐	☐	☒
b) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard.	☐	☐	☒	☐
c) Expose sensitive receptors to substantial pollutant concentrations?	☐	☒	☐	☐
d) Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?	☐	☐	☒	☐

a) Conflict with or obstruct implementation of the applicable air quality plan?

The proposed Project is within the San Francisco Bay Area (Bay Area) Air Basin. Air quality in the Bay Area Air Basin is governed by the Bay Area Air Quality Air Management District (BAAQMD). The BAAQMD has developed air quality plans to attain and maintain air quality standards within designated timeframes. The BAAQMD plans estimate future emissions in the Bay Area Air Basin and contain strategies necessary for emissions reductions through regulatory controls. Emissions projections are based on population, vehicle, and land use trends typically developed by the BAAQMD, Metropolitan Transportation Commission (MTC), and the Association of Bay Area Governments (ABAG).

In April of 2017, the BAAQMD adopted the Final 2017 Clean Air Plan/Regional Climate Protection Strategy (CAP/RCPS; BAAQMD, 2017a). The 2017 CAP/RCPS provides a roadmap for BAAQMD's efforts over the next few years to reduce air pollution and protect public health and the global climate. The CAP/RCPS includes the Bay Area's

first-ever comprehensive Regional Climate Protection Strategy, which identifies potential rules, control measures, and strategies that the BAAQMD can pursue to reduce greenhouse gas (GHG) emissions in the Bay Area. Measures included in the 2017 CAP/RCPS that address the transportation sector are in direct support of Plan Bay Area, which was prepared by ABAG and MTC and includes the region's Sustainable Communities Strategy and the 2040 Regional Transportation Plan.

Any project that would not support the 2017 CAP/RCPS goals would be considered inconsistent with the 2017 CAP/RCPS. The recommended measure for determining project support of these goals is consistency with BAAQMD CEQA thresholds of significance (BAAQMD, 2017b). As presented in the subsequent impact discussions, the proposed Project would not exceed the BAAQMD significance thresholds; therefore, the Project would support the primary goals of the 2017 CAP/RCPS, and would not conflict with the Plan or obstruct its implementation.

b) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard?

Criteria air pollutants include carbon monoxide (CO), reactive organic compounds (ROG), nitrogen oxides (NO_x), sulfur dioxide (SO_2), particulate matter equal to or less than 10 micrometers (coarse particulates or PM_{10}), and particulate matter equal to or less than 2.5 micrometers (fine particulates or $PM_{2.5}$). NOx and ROG are precursors to the formation of ozone. The Bay Area Air Basin is currently designated nonattainment for State and national (1-hour and 8-hour) ozone standards, for the State annual and 24-hour PM_{10} standards, and for State annual and national 24-hour $PM_{2.5}$ standards (BAAQMD, 2017a). The Bay Area Air Basin is designated attainment or unclassifiable with respect to the other ambient air quality standards.

The proposed Project would generate pollutant emissions during construction. Operation of the Project (that is, regular inspection and maintenance of the earthen levee, TRB, and pump stations) would not substantially change compared to the current condition, and so no new or additional operational emissions would be expected.

Construction-related emissions would result from off-road mobile and hand-held equipment operating at the Project site to demolish the existing TRB and construct the new TRB, and to conduct the proposed pipe upgrade and decommissioning at the pump stations. Emissions would also result from truck trips associated with deliveries of construction materials and supplies, and from light vehicle trips associated with construction workers commuting to and from the Project site.

To determine the significance of the Project's impact from criteria pollutant emissions, the District utilizes the significance criteria provided in the BAAQMD CEQA Air Quality Guidelines (BAAQMD, 2017b), which are shown in **Table 3-1**. Also shown in **Table 3-1** are modeled emissions from Project construction. Construction includes demolition, site preparation, construction, and clean-up. The analysis focuses on annual and daily emissions from these construction activities, including mobile, area, stationary, and

fugitive sources. The California Air Resources Board's (CARB) Emissions Estimator Model (CalEEMod), Version 2016.3.2 (CAPCOA, 2016) was used to quantify construction-related emissions.

Table 3-1 provides the estimated emissions that would be associated with Project construction, including construction of the TRB, upgrading of the culvert at Pump Station 2, and decommissioning the culvert at Pump Station 5.

Table 3-1: Estimated Daily Construction Emissions (pounds)

Condition	ROG	NOx	PM_{10}[2]	$PM_{2.5}$[2]	CO
Construction - tons per year (max)	0.0307	0.2425	0.0111	0.0104	0.2797
Construction - lbs per day (avg)[1]	0.307	2.425	0.111	0.104	2.797
Significance Threshold (lbs per day)	54	54	82	54	---
Significant (Yes or No)?	No	No	No	No	No

Note: 1. Based on estimated 200 construction days per year.
2. PM_{10} and $PM_{2.5}$ are exhaust emission only, per BAAQMD guidance.
Source: CARB, 2016.

The construction emissions are compared to the BAAQMD's significance thresholds for construction exhaust emissions. The average daily construction period emissions (i.e., maximum annual construction emissions divided by an estimated 200 construction days per year) were compared to the BAAQMD significance thresholds. All construction-related emissions would be below the BAAQMD significance thresholds.

BAAQMD's CEQA Air Quality Guidelines recommend the implementation of all Basic Construction Mitigation Measures, whether or not construction-related emissions exceed applicable thresholds of significance. The BAAQMD measures are also required by Marin County Code §22.20.040 (B). The District would include a requirement in all Project construction contracts to implement all Basic Construction Mitigation Measures. These measures include the following:

1. All exposed surfaces (e.g., parking areas, staging areas, soil piles, and graded areas, and unpaved access roads) shall be watered two times a day.
2. All haul trucks transporting soil, sand, or other loose material off-site shall be covered.
3. All visible mud or dirt track-out onto adjacent public roads shall be removed using wet power vacuum street sweepers at least once per day. The use of dry power sweeping is prohibited.
4. All vehicle speeds on unpaved roads shall be limited to a maximum of 15 miles per hour.
5. Idling times shall be minimized either by shutting equipment off when not in use or reducing the maximum idling time to five minutes (as required by the California

Airborne Toxics Control Measure Title 13, Section 2485 of California of Regulations). Clear signage shall be provided for construction workers at all access points.

6. All construction equipment shall be maintained and properly tuned in accordance with manufacturer's specifications. All equipment shall be checked by a certified mechanic and determined to be running in proper condition prior to operation.

These measures, which are considered a part of the Project, would further reduce emissions from Project construction. As shown in **Table 3-1**, criteria pollutant emissions from Project construction would not exceed BAAQMD significance criteria, and would be less than significant.

c) Expose sensitive receptors to substantial pollutant concentrations?

The BAAQMD has established thresholds of significance for exposure to toxic air contaminants (TACs) based on the projected increase in human health risk. Projects that would result in increased cancer risk of greater than 10 in a million or increased non-cancer risk greater than a Hazard Index of 1.0 are considered to have a significant impact. In addition, an increase in annual average ambient PM2.5 concentrations in excess 0.3 micrograms per cubic meter would be considered a significant impact. The BAAQMD recommends that lead agencies assess the incremental toxic air contaminant (TAC) exposure risk to all sensitive receptors within a 1,000-foot radius of a project's fence line. (BAAQMD, 2017b). Sensitive receptors include residences, hospitals, schools, day care facilities, and nursing homes.

Project operation (that is, ongoing maintenance and repair of the earthen levee and TRB) would not result in new TAC emissions. However, Project construction activities would result in emission of diesel particulate matter (DPM) from use of diesel-powered trucks and equipment. DPM is considered to be a TAC, with both carcinogenic and non-carcinogenic health effects.

The closest sensitive receptors to the Project site are the residences along Vendola Drive, as the earthen levee and TRB are within the backyards of these residences, and Pump Stations 2 and 5 are adjacent to residences. The houses themselves are separated from the levee by their backyards, and are typically about 50 feet away from where TRB construction activities would take place. Cement trucks, pump trucks, and other diesel-powered trucks would also occasionally operate on Vendola Drive, in front of the residences. The closest schools to the Project site are the Korean School of Marin County, located at 635 Adrian Way, about 600 feet away from the nearest point of the levee, and Gallinas Elementary School/Venetia Valley School, located at 177 North San Pedro Road, about a half mile from the nearest point of the levee. There are also several retirement homes and daycare centers in the Santa Venetia neighborhood.

The dose to which receptors are exposed is the primary factor affecting health risk from exposure to TACs. Dose is a function of the concentration of a substance or substances in the environment and the duration of exposure to the substance. According to the California Office of Environmental Health Hazard Assessment (OEHHA), health risk assessments, which determine the exposure of sensitive receptors to TAC emissions,

should be based on a 70-year exposure period when assessing TACs (such as DPM) that have only cancer or chronic non-cancer health effects. However, such health risk assessments should be limited to the duration of the emission-producing activities associated with the project (OEHHA, 2015).

Reconstruction of each segment of the TRB, as well as work on each of the pipes at the pump stations, is expected to take no more than 4 weeks. For TRB construction, after work on an approximately 200-foot long section (within the backyards of 3-5 houses) is completed, construction activities would move to another section of the levee. Therefore, residents would be within 1,000 feet of DPM emission sources for up to a few months, and in close proximity to emissions sources (within 200 feet) for up to a few weeks. Emissions modeling results indicate that DPM emissions (Exhaust PM10) would average 0.11 pounds per day of construction (.0111 tons per year), and PM2.5 emissions would average 0.104 pounds per construction day (.0104 tons per year) (**Table 3-1**). The Basic Construction Mitigation Measures numbers 5 and 6, listed above would result in reduction of DPM emissions and PM2.5. Given the small amount of DPM emissions and the short exposure time, the Project would not be expected to substantially increase cancer or non-cancer health risks for nearby sensitive receptors. However, certain individuals, such as pregnant women and their fetuses, infants, and children, are more sensitive to toxic air contaminants (OEHHA, 2015). Even short-term exposure to TACs could result in an increased risk of adverse health effects. Mitigation Measure AQ-1, which specifies additional diesel emissions reduction measures would reduce TAC emissions and exposure, and would ensure that the impact is less than significant.

Mitigation Measure AQ-1: Diesel Exhaust Emissions Reduction Measures. The District will include in all Project construction contracts requirements for the following measure:

- All off-road diesel-powered equipment with engines greater than 25 horsepower used in Project construction shall meet the California Air Resources Board's most recent certification standard for off-road heavy-duty diesel engines.

Monitoring Measure AQ-1:

The District's Project Manager shall be responsible for ensuring that this requirement is stated in bid documents and is being implemented by contractors.

d) Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?

Odors associated with Project construction are likely to include diesel exhaust from trucks and machinery, as well as odors from excavation of bay mud. Residents of the houses along Vendola Drive may experience odors during reconstruction of portions of the TRB near their homes. Odors are likely to be occasional and short-term, and would not be expected to adversely affect any residents substantially or for an extended period. Mitigation Measure AQ-1, above, and the DPM-reducing Basic Construction Mitigation Measures listed above, would further reduce odor from diesel emissions. Odor impacts would therefore not be significant.

References

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California Air Pollution Control Officers Association (CAPCOA), 2016, CalEEMod User's Guide Version 2016.3.2, September 2016.

California Air Resources Board (CARB), 2016. California Emissions Estimator Model (CalEEMod), verison 2016.3.2.

California Office of Environmental Health Hazard Assessment (OEHHA), 2015, Air Toxics Hot Spots Program Guidance Manual for Preparation of Health Risk Assessments, February 2015.

4. Biological Resources

Would the Project:	Significant or Potentially Significant Impact	Less Than Significant Impact with Mitigation Incorporated	Less than Significant	No Impact
a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?	☐	☒	☐	☐
b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?	☐	☒	☐	☐
c) Have a substantial adverse effect on state or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?	☐	☒	☐	☐
d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?	☐	☐	☒	☐
e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	☐	☐	☒	☐

Would the Project:	Significant or Potentially Significant Impact	Less Than Significant Impact with Mitigation Incorporated	Less than Significant	No Impact
f) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	☐	☐	☐	☒

SETTING

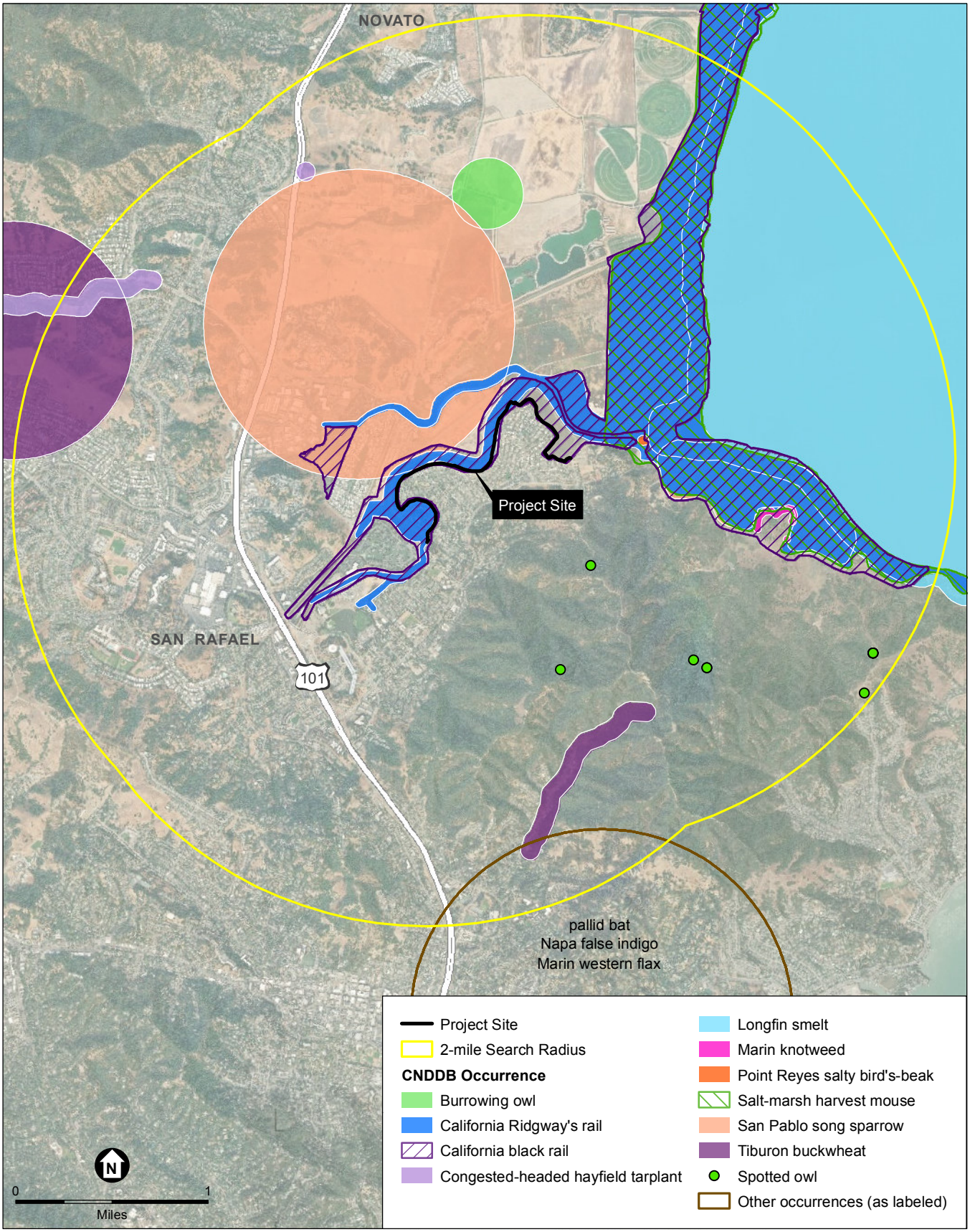
Special status species

The local distribution of known special-status biological resources within the vicinity of the Project site is shown in **Figure 4-1**. Special-status species with potential to occur on the Project site or in the surrounding area were identified from field reconnaissance, database searches (CNPS, 2019; CNDDB, 2019: iPaC, 2019) and local surveys (Point Reyes Conservation Science, 2019), and are shown in **Table 4-1**. **Figure 4-2a** shows a typical section of TRB to be replaced, and **Figure 4-2b** shows the area of replacement for the pipe at Pump Station 2.

Several special-status wildlife species are known or have high potential to occur in or near the Project site: Ridgway's rail (*Rallus obsoletus*), salt marsh harvest mouse (*Reithrodontomys raviventris*), California black rail (*Laterallus jamaicensis*), San Pablo song sparrow (*Melospiza melodia pusillula*) and saltmarsh common yellowthroat (*Geothlypis trichas sinuosa*). Western pond turtle (*Actinemys marmorata*) and steelhead (*Oncorhynchus mykiss*) have moderate potential to be found in the vicinity of the Project site, along with other special-status birds, mammals, and plants. California red-legged frog (*Rana draytonii*) has low potential. All species with potential to occur are listed in Table 4-1.

Within and around the Project site, tidal marsh areas contain pickleweed (*Salicornia virginica*), marsh gumplant (*Grindelia stricta* var. *angustifolia*) and cattail (*Typha latifolia*), which may provide habitat for salt marsh harvest mouse, Ridgway's rail and other sensitive wildlife. Work areas are limited to upland habitat outside of tidal areas, and the marsh fringe.

Three rare plants have moderate potential to occur in the tidal marsh in and around the Project site: pappose tarplant (*Centromadia parryi* ssp. *parryi*), Point Reyes bird's-beak (*Chloropyron molle* ssp. *molle*), and soft bird's-beak (*Chloropyron maritimum* ssp. *palustre*). Soft bird's-beak is federally and state listed. However, rare plants are unlikely to be present within the fragmentary and disturbed plant communities on the fringe of the marsh where work at the pump stations would occur. Work on the TRB would occur on the levee itself and landscaped areas on the inboard side of the levee. Along the levee itself are stands of iceplant (*Carpobrotus edulis*) and other non-native and ornamental plants. There is no potential for rare plants to occur along the levee.



SOURCE: USDA, 2016; CDFW, 2019; ESA, 2019

Figure 4-1
Special-status Species Occurrences
within the Project Vicinity

Typical section of TRB to be replaced, surrounded by upland vegetation (4/2/19)

Location of pipe at Pump

SOURCE: Sicular Environmental Consulting, 2019

Figure 4-2
Photos of Project Area

TABLE 4-1
SPECIAL-STATUS SPECIES WITH POTENTIAL TO OCCUR IN THE PROJECT AREA

Name	Listing Status	General Habitat Requirements	Potential for Species Occurrence Within the Project Area
Invertebrates			
San Bruno elfin butterfly (*Callophrys mossii bayensis*)	FE/--	Coastal, mountainous areas with grassy ground cover, mainly in the vicinity of San Bruno Mountain, San Mateo County. Colonies are on steep, north-facing slopes within the fog belt. Larval host plant is *Sedum spathulifolium*.	**Low.** Project sites outside species' known distribution.
Callippe silverspot butterfly (*Speyeria callippe callippe*)	FE/--	Host plant is *Viola pedunculata*. Most adults found on East-facing slopes; males congregate on hilltops in search of females.	**Low.** Suitable habitat not found in Project sites.
California freshwater shrimp (*Syncaris pacifica*)	FE/SE	Shallow pools away from main streamflow. Winter: undercut banks with exposed roots. Summer: leafy branches touching water.	**Low.** Suitable habitat not found in Project area.
Amphibians			
California tiger salamander (*Ambystoma californiense)*	FT/ST	Breeds in vernal pools and other seasonal ponds; adults burrow outside of breeding season. Habitat limited to vicinity of seasonal pools up to elevation of 1000 m.	**Absent.** Project area is outside species' range.
California giant salamander (*Dicamptodon ensatus*)	--/SSC	Vernal or temporary pools in annual grasslands, or open stages of woodlands. Typically adults use mammal burrows.	**Absent.** Suitable habitat not found in Project area.
California red-legged frog (*Rana draytonii*)	FT/SSC	Streams, freshwater pools, and ponds with overhanging vegetation, also woods adjacent to streams. Requires permanent or ephemeral water sources and slow moving streams with pools of >0.5 m depth for breeding.	**Low**. Present in Marin County, but in lower Gallinas Creek, breeding habitat is limited by high salinity and the absence of suitable vegetated ponds or backwaters.
Foothill yellow-legged frog (*Rana boylii*)	--/SSC	Partly-shaded, shallow streams & riffles with a rocky substrate in a variety of habitats; requires at least some cobble-sized substrate for egg-laying.	**Absent.** Suitable habitat not found in Project area.
Fish			
Tidewater goby (*Eucyclogobius newberryi*)	FE/SSC	Found in shallow lagoons and lower stream reaches, they need fairly still but not stagnant water & high oxygen levels	**Absent.** Presumed extirpated from watershed.
Coho salmon – central California coast ESA (*Oncorhynchus kisutch*)	FE/SE	The Sacramento-San Joaquin River Delta, including the entire Delta, Suisun Bay, and five sloughs. Require beds of loose, silt-free, coarse gravel for spawning. Also need cover, cool water & sufficient dissolved oxygen.	**Absent.** Presumed extirpated from watershed.
Chinook salmon – Central Valley fall run (*Oncorhynchus tshawytscha*)	--/SSC	Migrate through San Pablo Bay from spawning grounds in Central Valley rivers. Require beds of loose, silt-free, coarse gravel for spawning. Also need cover, cool water & sufficient dissolved oxygen.	**Low.** Occasional Chinook may stray in from San Pablo Bay but there is no extant run in the watershed.
Steelhead – central California Coast DPS (*Oncorhynchus mykiss*)	FT/--	Aquatic streams and drainages.	**Moderate.** Historically present in watershed, may occasionally enter Gallinas Creek from San Pablo Bay.
Tomales roach (*Lavinia symmetricus* ssp.)	--/SSC	Aquatic streams and drainages.	**Low.** Suitable habitat not found in Project area.

Name	Listing Status	General Habitat Requirements	Potential for Species Occurrence Within the Project Area
Longfin smelt (*Spirinchus thaleichthys*)	FC/ST	Euryhaline, nektonic & anadromous. Found in open waters of estuaries, mostly in middle or bottom of water column. Prefer salinities of 15-30 ppt, but can be found in completely freshwater to almost pure seawater.	**Low.** Individuals may occasionally enter Gallinas Creek from San Pablo Bay.
Reptiles			
Western pond turtle (*Actinemys marmorata*)	--/SSC	Ponds, marshes, rivers, streams, and irrigation ditches with aquatic vegetation <6,000' in elevation. Require basking sites and upland habitat for egg laying (sandy banks and open, grassy fields)	**Moderate.** Breeding habitat (undisturbed upland habitat adjacent to waterways) is limited in the watershed, but adult turtles may use habitat around Santa Margarita island.
Birds			
Tricolored blackbird (*Agelaius tricolor*)	--/CE	Nest communally in wetlands or agricultural fields; forage over fields, feedlots and wetlands.	**Moderate.** May forage over lower Gallinas Creek or nest in larger marsh areas along San Pablo Bay.
Short-eared owl (*Asio flammeus*)	--/SSC	Found in swamp lands, both fresh and salt; lowland meadows; irrigated alfalfa fields. Tule patches/tall grass needed for nesting/daytime seclusion. Nests on dry ground in depression concealed in vegetation.	**Low.** Suitable open habitat is fragmented in the Project area.
Northern spotted owl (*Strix occidentalis caurina*)	FT/ST	In California, the northern spotted owl inhabits a mix of primary and secondary forests, featuring dense canopy of mature trees, abundant logs, standing snags, and live trees with broken tops.	**Low.** Suitable forest habitat not present in the Project Area.
Burrowing owl (*Athene cunicularia*)	--/SSC	Nests and forages in low-growing grasslands with burrowing mammals.	**Moderate**. Project grasslands are too fragmented to provide suitable habitat, but suitable burrowing habitat is present nearby at Las Gallinas Sanitary District.
Swainson's hawk (*Buteo swainsoni*)	---/FT	Nests in tall trees and forages over open country, including grasslands, pastures and agricultural fields.	**Low.** Suitable nest trees and open foraging habitat are limited in the Project Area.
Western snowy plover (*Charadrius alexandrines nivosus*)	FT/SSC	Sandy beaches, salt pond levees & shores of large alkali lakes. Needs sandy, gravelly or friable soils for nesting.	**Low.** Suitable sandy, gravelly soil habitat not found in the Project area.
Northern harrier (*Circus cyaneus*)	--/SSC	Nests on ground in shrubby vegetation, usually at marsh edge; nest built of a large mound of sticks in wet areas.	**Moderate.** May forage over Project Area marshlands and nest in more isolated marshes to the north.
White-tailed kite (*Elanus leucurus*)	--/CFP	Nests in shrubs and trees adjacent to grasslands, forages over grasslands and agricultural lands	**Moderate.** May nest in nearby trees and forage over Project Area marshland.
American peregrine falcon (*Falco peregrinus anatum*)	BCC/CFP	Nest consists of a scrape or a depression on rock, cliff or building ledge over an open site.	**Low.** Project Area lacks suitable nesting habitat.
California black rail (*Laterallus jamaicensis*)	BCC/ST/CFP	Found in salt, brackish and freshwater marsh with dense vegetation for nesting habitat.	**Present.** Observed in Las Gallinas South Reach and Santa Venetia March Preserve.
Bank swallow (*Riparia riparia*)	--/ST	Requires vertical banks/cliffs with fine-textured/sandy soils near streams, rivers, lakes, ocean to dig nesting hole.	**Low.** Project Area lacks suitable nesting habitat.
Saltmarsh common yellowthroat (*Geothlypis trichas sinuosa*)	BCC/SSC	Requires thick, continuous cover down to water surface for foraging; tall grasses, tule patches, willows for nesting.	**Present.** Observed in nearby marshlands of Santa Venetia and Las Gallinas.

Name	Listing Status	General Habitat Requirements	Potential for Species Occurrence Within the Project Area
Alameda song sparrow (*Melospiza melodia pusillula*)	BCC/SSC	Salt marshes. Inhabits *Salicornia* marshes; nests low in *Grindelia* bushes (high enough to escape high tides) and in *Salicornia*.	**Absent.** Project Area is outside the range of this subspecies.
San Pablo song sparrow (*Melospiza melodia samuelis*)	BCC/SSC	Inhabits tidal sloughs in the *Salicornia* marshes; nests in *Grindelia* bordering slough channels.	**High.** Suitable habitat is present in tidal marshes of the Project Area and known to occur nearby.
Ridgway's rail [California clapper rail] (*Rallus obsoletus*)	FE/SE/CFP	Found in salt and brackish marsh with well-defined tidal channels and dense growth of pickleweed; feeds on invertebrates in mud-bottomed sloughs.	**Present.** Observed in marshlands of Santa Venetia and Las Gallinas.
Mammals			
Pallid bat (*Antrozous pallidus*)	--/SSC	Grasslands, shrublands, woodlands, and forests. Common in arid regions with rocky outcroppings, particularly near water. Roosts in rock crevices, buildings, and under bridges. Very sensitive to disturbance.	**Low.** Suitable local habitat is prone to human disturbance.
Townsend's big-eared bat (*Corynorhinus townsendii*)	--/SSC	Herbaceous, shrub, and open stages of most habitat types with dry, friable soils.	**Low.** Suitable local habitat is prone to human disturbance.
San Pablo vole (*Microtus californicus sanpabloensis*)	--/SSC	Subspecies of California vole found in coastal marshlands, where it constructs networks of burrows in soft soil and feeds on grasses, sedges and herbs.	**Moderate.** Suitable marsh habitat is present in the vicinity of the Project Area.
Salt marsh harvest mouse (*Reithrodontomys raviventris*)	FE/SE/CFP	Pickleweed is primary habitat, but may occur in other marsh vegetation and in adjacent upland areas. Does not burrow, builds loosely organized nests. Requires adjacent uplands for escape from high tides.	**High.** Suitable pickleweed habitat is present in the Project Area and species is known to occur in the vicinity.
Suisun shrew (*Sorex ornatus sinuosus*)	--/SSC	Occurs in tidal marshes of northern San Pablo and Suisun bay, preferentially *Spartina* and *Salicornia*.	**Moderate.** Suitable marsh habitat is present in the vicinity of the Project Area.
Salt-marsh wandering shrew (*Sorex vagrans halicoetes*)	--/SSC	Medium high marsh 6-8 ft. above sea level where abundant driftwood is scattered among *Salicornia*.	**Moderate.** Suitable marsh habitat is present in the vicinity of the Project Area.
Plants			
Franciscan onion (*Allium peninsulare var. franciscanum*)	--/--/1B.2	Volcanic clay, often serpentinite, cismontane woodland, valley and foothill grassland. May – June. 52- 305 m.	**Absent.** Suitable habitat not present in Project Area.
Napa false indigo (*Amorpha californica var. napensis*)	--/--/1B.2	Broadleafed upland forest, chaparral, or cismontane woodland. Perennial deciduous shrub. April - July. 30 – 735m	**Absent.** Suitable habitat not present in Project Area.
Bent-flowered fiddleneck (*Amsinckia lunaris*)	--/--/1B.2	Observed in Marin County in cismontane woodland, valley and foothill grassland, or coastal bluff scrub. March - June. 3 – 500m	**Low.** Suitable habitat not present in Project Area.

Name	Listing Status	General Habitat Requirements	Potential for Species Occurrence Within the Project Area
Mt. Tamalpais manzanita (*Arctostaphylos montana* ssp. *montana*)	--/--/1B.3	Observations recorded in Marin and Humboldt County. Chaparral, valley and foothill grassland. Perennial evergreen shrub. February - April. 150 – 680m	**Absent.** Suitable habitat not present in Project Area.
Marin manzanita (*Arctostaphylos virgata*)	--/--/1B.2	Chaparral, mixed evergreen forest, redwood forest, closed-cone pine forest in Marin County on sandstone or granite. Perennial evergreen shrub. Endemic to CA. January - March. 1-800m	**Absent.** Suitable habitat not present in Project Area.
Alkali-milk vetch (*Astragalus tener* var. *tener*)	--/--/1B.2	Alkali playa and flats, valley, annual, and foothill grassland, vernal pools, low ground, and flooded lands. March – June. 1-170 m.	**Low.** Suitable habitat not present in Project Area.
Sonoma sunshine (*Blennosperma bakeri*)	FE/SE/1B.1	Valley and foothill grassland, mesic; vernal pools. March – May. 10 – 110 m.	**Low.** Suitable habitat not present in Project Area.
Thurber's reed grass (*Calamagrostis crassiglumis*)	--/--/2B.1	Freshwater wetlands, wetland-riparian. Perennial rhizomatous herb May - August. 10-60m	**Low.** Freshwater marsh habitat is limited in the Project Area.
Tiburon mariposa lily (*Calochortus tiburonensis*)	FT/ST/1B.1	Valley and foothill grassland on open, rocky, slopes in serpentine grassland. March – June. 50-150m	**Absent.** Endemic to Ring Mtn. Preserve on the Tiburon Peninsula.
Tiburon paintbrush (*Castilleja affinis* var. *neglecta*)	FE/ST/1B.2	Open serpentine grassland slopes. April – June. 60-400m	**Absent.** Suitable habitat not present in Project Area.
Pappose tarplant (*Centromadia parryi* ssp. *parryi*)	--/--/1B.2	Chaparral, coastal prairie, meadows and seeps, coastal salt marshes and swamps, often alkaline; valley and foothill grassland (vernally mesic). May-November. 0-420 m.	**Moderate.** Suitable marsh habitat is present in the Project Area, but is fragmentary and disturbed.
Point Reyes bird's-beak (*Chloropyron maritimum* ssp. *palustre*)	--/--/1B.2	Recorded in the San Francisco Bay Area in the South Bay, East Bay, and North Bay and as far south as San Luis Obispo County, as well as north in Humboldt County. Coastal salt marsh, wetland-riparian. Annual herb (hemiparasitic). June-October. 0 – 10 m.	**Moderate.** Suitable marsh habitat is present in the Project Area, but is fragmentary and disturbed.
Soft bird's-beak (*Chloropyron molle* ssp. *molle)*	FE/SR/1B.2	Coastal salt marshes and swamps. June – November. Annual herb (hemiparasitic). 0-3 m.	**Moderate.** Suitable marsh habitat is present in the Project Area, but is fragmentary and disturbed.
San Francisco Bay spineflower (*Chorizanthe cuspidata* var. *cuspidata*)	--/--/1B.2	Observed as far south as Monterey County, but most recordings are in the San Francisco Bay Area. Coastal strand, coastal prairie, northern coastal scrub. Annual herb. 3-215 m. April – July.	**Low.** Suitable habitat is not present in the Project Area.
Sonoma spineflower (*Chorizanthe valida*)	FE/SE/1B.1	Sandy coastal prairie. June-August. Annual herb. 10-305 m.	**Absent.** Suitable habitat not present in Project Area.
Mt. Tamalpais thistle (*Cirsium hydrophilum* var. *vaseyi*)	--/--/1B.2	Observations recorded in San Francisco and Marin County in mixed evergreen forest, chaparral, wetland-riparian. Perennial herb. 240-620 m.	**Low.** Suitable habitat not present in Project Area.
Western leatherwood (*Dirca occidentalis*)	--/--/1B.2	Broadleafed upland forest, chaparral, closed-cone coniferous forest, cismontane woodland, north coast coniferous forest, riparian forest, riparian woodland.	**Low.** Suitable habitat not present in Project Area.

Name	Listing Status	General Habitat Requirements	Potential for Species Occurrence Within the Project Area
		On brushy slopes, mesic sites; mostly in mixed evergreen & foothill woodland communities. 25-425 m.	
Tiburon buckwheat *(Eriogonum luteolum* var. *caninum*)	--/--/1B.2	Observations recorded in the San Francisco Bay Area include the East Bay and North Bay up to Mendocino County. Coastal prairie, chaparral, and valley grassland. Annual herb. May-September. 0-700m	**Low.** Suitable habitat not present in Project Area.
Minute pocket moss (*Fissidens pauperculus*)	--/--/1B.2	Observations recorded from Santa Cruz County to Del Norte, and east in Butte County. Moss grows on damp soil along the coast and in dry streambeds/streambanks. 10-1024 m.	**Low.** Suitable habitat not present in Project Area.
Fragrant fritillary *Fritillaria liliacea*	--/--/1B.2	Coastal scrub, valley and foothill grassland, coastal prairie. Often on serpentine; usually on clay soils, in grassland. February- April. 3-410 m.	**Absent.** Suitable habitat not present in Project Area.
Marin checker lily (*Fritillaria lanceolata* var. *tristulis*)	--/--/1B.1	Perennial bulbiferous herb. Observations recorded in San Mateo and Marin County in canyons to riparian areas and serpentine rock outcrops. February – May. 15-150m	**Absent.** Suitable habitat not present in Project Area.
Dark-eyed gilia (*Gilia millefoliata*)	--/--/1B.2	Coastal dunes. April –July. Annual herb. 2-30 m.	**Absent.** Suitable habitat not present in Project Area.
Diablo helianthella (*Helianthella castanea*)	--/--/1B.2	South Bay, East Bay, and North Bay in chaparral, foothill woodland, Northern coastal scrub, and valley grassland. Perennial herb. 60- 1300 m.	**Low.** Suitable habitat not present in Project Area.
Congested-headed hayfield tarplant (*Hemizonia congesta* ssp. *congesta*)	--/--/1B.2	Primarily found in the South Bay, North Bay, and north to Del Norte. Grassy valleys and hills, often in fallow fields; sometimes along roadsides. April – November. 20-560 m.	**Low.** Suitable habitat not present in Project Area.
Marin western flax (*Hesperolinon congestum*)	FT/ST/1B.1	Alameda, San Mateo, San Francisco, Marin County and Colusa County in chaparral and valley grassland. Annual herb. 60-370 m.	**Low.** Suitable habitat not present in Project Area.
Santa Cruz tarplant (*Holocarpha macradenia*)	FT/SE/1B.1	Monterey and Santa Cruz County, as well as the North Bay and East Bay in coastal prairie and valley grassland. Annual herb. June – October. 10-220 m.	**Low.** Suitable habitat not present in Project Area.
Thin-lobed horkelia (*Horkelia tenuiloba*)	--/--/1B.2	San Luis Obispo, Monterey County, Marin to Mendocino County and east to Colusa County in chaparral. Perennial herb. 50- 500 m.	**Low.** Suitable habitat not present in Project Area.
Contra costa goldfields (*Lasthenia conjugens*)	FE/--/1B.1	Mesic cismontane woodland, alkaline playa, valley and foothill grassland, vernal pools. March – June. 0-470 m.	**Low.** Suitable habitat not present in Project Area.
Tamalpais lessingia (*Lessingia micradenia* var. *micradenia*)	--/--/1B.2	Marin and Lake County and chaparral and valley grassland. Usually on serpentine, in grassland or chaparral. Often on roadsides. Annual herb. June – October. 60-305 m.	**Low.** Suitable habitat not present in Project Area.
Pitkin marsh lily (*Lilium pardalinum* ssp. *pitkinense*)	FE/SE/1B.1	Mesic, sandy cismontane woodland, meadows and seeps, freshwater marshes and swamps. June – July. 35-65 m.	**Low.** Suitable habitat not present in Project Area.

Name	Listing Status	General Habitat Requirements	Potential for Species Occurrence Within the Project Area
Marsh microseris (*Microseris paludosa*)	--/--/1B.2	Found along the west coast from San Luis Obispo County to Mendocino County. Occurs in northern coastal scrub and closed-cone pine forest. Perennial herb. April – June. 5-300 m.	**Low.** Suitable habitat not present in Project Area.
Baker's navarretia (*Navarretia leucocephala* ssp. *bakeri*)	--/--/1B.1	Mesic cismontane woodland, lower montane coniferous forest, meadows and seeps, valley and foothill grassland, vernal pools. April – July. 5- 1740 m.	**Low.** Suitable habitat not present in Project Area.
Marin County navarretia (*Navarretia rosulata*)	--/--/1B.2	Marin and Napa County in chaparral, dry, open rocky places, including closed-cone pine forest. In serpentine soils. Annual herb. May – July. 200-635m	**Low.** Suitable habitat not present in Project Area.
White-rayed pentachaeta (*Pentachaeta bellidiflora*)	FE/SE/1B.1	Annual herb. Along the west coast from Monterey County to Marin excluding SF County, in valley grassland. March – May. 35-610m.	**Absent.** Species is likely extirpated from Marin.
Hairless popcornflower (*Plagiobothrys glaber*)	--/--/1A	South and East Bay from Santa Clara County to Alameda County, and Marin County in coastal salt marsh, wetland-riparian meadows, salt-marsh, coastal. Occurs almost always under natural conditions in wetlands. Annual herb. March – May. 5-125m.	**Absent.** Presumed extinct in California.
North Coast semaphore grass (*Pleuropogon hooverianus*)	--/ST/1B.1	North Bay, including Marin to Mendocino County. Farthest north in Del Norte County in mixed evergreen forest, north coastal coniferous forest, freshwater wetlands, wetland-riparian in meadows and vernal-pools. Usually occurs in wetlands, but occasionally found in non-wetlands. Perennial rhizomatous grass. April-June. 10-671 m.	**Low.** Suitable habitat not present in Project Area.
Marin knotweed (*Polygonum marinense*)	--/--/3.1	North Coast of California from Humboldt to Alameda. Found in coastal salt or brackish marshes and swamps. 0 – 10 m. Annual herb. May- August.	**Moderate.** Suitable habitat is present in the vicinity and known to occur nearby.
Tamalpais oak (*Quercus parvula* var. *tamalpaisensis*)	--/--/1B.3	Marin County only. Lower montane habitats. Perennial evergreen. 100-750 m. March- April.	**Low.** Project area outside of known elevation range.
Point Reyes checkerbloom (*Sidalcea calycosa* ssp. *rhizomata*)	--/--/1B.2	North Bay counties – Marin, Sonoma, and Mendocino in coastal salt marsh or wetland-riparian. Primary habitat is freshwater-marsh. Occurs almost always under natural conditions in wetlands. Perennial rhizomatous herb. 3-75 m. April – September.	**Low.** Freshwater marsh not present in Project Area and tidal marsh is disturbed and fragmentary.
Marin checkerbloom (*Sidalcea hickmanii* ssp. *virdis*)	--/--/1B.2	Serpentine soils in chaparral habitats. May – June. 50-430m.	**Low.** Suitable habitat not found in Project Area.
Two-fork clover (*Trifolium amoenum*)	FE/--/1B.1	South Bay (Santa Clara/San Mateo), East Bay and North Bay in valley grassland, wetland-riparian. Sometimes on serpentine soil, open sunny sites, swales, roadsides and eroding cliff faces. Annual herb. 5-415m. April-June.	**Low.** Suitable habitat not found in Project Area.

Name	Listing Status	General Habitat Requirements	Potential for Species Occurrence Within the Project Area
Saline clover (*Trifolium hydrophilum*)	--/--/1B.2	Mesic, alkaline sites. April-June. 1-335 m.	**Low.** Suitable habitat not found in Project Area.
Pacific Grove clover (*Trifolium polyodon*)	--/--/1B.1	Mesic, sometimes granitic closed-cone coniferous forest, coastal prairie, meadows and seeps, valley and foothill grassland. April – June. 5 – 425 m.	**Low.** Suitable habitat not found in Project Area.
Coastal triquetrella (*Triquetrella californica*)	--/--/1B.2	Grows within 30m from the coast in coastal scrub, grasslands and in open gravels on roadsides, hillsides, rocky slopes, and fields. On gravel or thin soil over outcrops. Moss. 10-100 m.	**Low.** Suitable habitat not found in Project Area.

Status Codes:

USFWS (U.S. Fish and Wildlife Service)
- FE = Listed as Endangered by the Federal Government
- FT = Listed as Threatened by the Federal Government.
- FC = Listed as Candidate
- BBC = USFWS Bird of Conservation Concern

CDFW (California Department of Fish and Wildlife)
- SE = Listed as Endangered by the State of California
- ST = Listed as Threatened by the State of California
- SR = Listed as Rare by the State of California
- CT = Candidate Threatened by the State of California
- CFP = California Fully Protected species
- SSC = Species of Special Concern
- WBWG = Western Bat Working Group

California Native Plant Society:

List 1A=Plants presumed extinct in California
List 1B=Plants rare, Threatened, or Endangered in California and elsewhere
List 2= Plants rare, Threatened, or Endangered in California but more common elsewhere
List 3= Plants about which more information is needed
List 4= Plants of limited distribution
An extension reflecting the level of threat to each species is appended to each rarity category as follows:
- .1 – Seriously endangered in California
- .2 – Fairly endangered in California
- .3 – Not very endangered in California

Potential to Occur Categories:

Absent = The Project site and/or immediate vicinities do not support suitable habitat for a particular species. Project site may be outside of the species' known range.
Low = The Project site and/or immediate vicinities only provide limited habitat. In addition, the species' known range may be outside of the Project sites.
Moderate = The Project site and/or immediate vicinities provide suitable habitat.
High = The Project site and/or immediate vicinity provide ideal habitat conditions or the species has been observed in the vicinity.
Present = The species has been observed in the Project Area.

SOURCES: California Department of Fish and Wildlife (CDFW), California Natural Diversity Data Base, 2019; California Native Plant Society, Inventory or Rare, Threatened and Endangered Plants of California, 2019; U.S. Fish and Wildlife Service (USFWS), iPac Information for Planning and Conservation, 2019; Point Blue Conservation Science, 2019.

More detail is provided below on wildlife species known to be present or with high potential to occur in and near the active Project site.

Ridgway's Rail – Ridgway's (California clapper) rail is a federal- and State-listed endangered species, federally listed on October 13, 1970 (35 FR 16047). Ridgway's rails can be found year-round in coastal wetlands and brackish areas of San Francisco and Monterey Bays. These medium-sized birds require emergent wetlands and mud flats for survival, preferring salt marshes dominated by California cordgrass (*Spartina foliosa*) and perennial pickleweed. They can also be found in brackish or freshwater marshes where dense bulrush or cattails grow. Ridgway's rails will forage in higher marsh vegetation along the mudflat interface and in tidal creeks, feeding on crabs, mussels, clams, snails, insects, spiders, worms, and even mice and dead fish. Ridgway's rails nest in lower tidal zones where cordgrass grows abundantly and tidal sloughs are nearby, building a nesting platform concealed by a canopy of woven cordgrass, pickleweed, gumplant, or cattail or bulrush in fresh and brackish waters.

Adult Ridgway's rails are preyed upon by raptors and mammals, while rats prey on eggs and young. In northern California, populations may fluctuate according to rainfall patterns. Agricultural and urban development, accompanied by the filling and diking of wetlands, has led to the destruction of emergent wetland habitat and particularly cordgrass marshes.

Ridgway's rail is present in tidal marshes of Santa Venetia and Las Gallinas (Point Blue Conservation Science, 2019). Surveys conducted by Point Blue Conservation Science in winter and early spring 2019 in Gallinas Creek South Reach and Middle Reach, Santa Margarita Island, and Santa Venetia Marsh Preserve detected a dozen or more Ridgway's rails in each area, with the highest density in Santa Venetia. Most rails were detected across the channel from the residences of Santa Venetia where the Project site is located, but two detections were on the side abutting the residences and the levee.

Salt Marsh Harvest Mouse – The salt marsh harvest mouse is a federal- and State-listed endangered species. The salt marsh harvest mouse is found only in a few northern California locations. There are two subspecies, the northern salt marsh harvest mouse (*R. r. halicoetes*) found in the salt marshes of San Pablo and Suisun Bays, and the southern salt marsh harvest mouse (*R. r. raviventris*) found in salt marshes of San Francisco Bay and a few locations in Corte Madera and Richmond. The Collinsville-Antioch area is the eastern limit of distribution, and movement among marshes is infrequent if it occurs at all. This species is critically dependent on dense cover, preferring pickleweed, and is seldom found in cordgrass or alkali bulrush (*Bolboschoenus maritimus*). The value of pickleweed increases with depth, density and the degree of intermixing with fat hen (*Chenopodium* spp.) and alkali heath (*Frankenia grandifolia*). Transitional upper tide zones with peripheral halophytes are used to escape high tides, and even adjoining grasslands are used during the highest winter tides.

The salt marsh harvest mouse eats grass, leaves, seeds, and stems of plants, including pickleweed, saltgrass (*Distichlis spicata*), fat hen, and other marsh vegetation. Fresh water is required, but both subspecies can drink brackish or salty water for short periods.

They are primarily nocturnal, but some afternoon activity does occur. Breeding takes place between March and November, and produces 1 to 2 litters per year with an average litter size of four. This species does not burrow, but makes a minimal nest of grass and sedge, often built over an old bird nest.

Salt marsh harvest mice are prey for owls, hawks, gulls, weasels, and other birds and mammals. Their greatest threat is habitat reduction and degradation. Historically, tidal marshes and open mudflats surrounding San Pablo Bay neared 80,000 acres. There has been an 82 percent reduction in North Bay wetlands since the 1800s, with most of it diked, drained and claimed for agricultural use. The resulting changes in salinity and vegetation support only small, disconnected salt marsh harvest mouse populations. Small, fragmented habitats that are completely submerged during high tides and lack transitional upper tidal zones likely result in breeding failures and increased predation.

Salt marsh harvest mouse has been found in pickleweed-dominated tidal salt marsh at the mouth of Las Gallinas Creek and in McInnis Park (CNDDB, 2019), and is highly likely to occur near, though not necessarily within, the Project site.

California Black Rail – The California black rail is a State-listed threatened species. The sparrow-sized California black rail is a year-round resident of brackish, freshwater and saline emergent wetlands in the San Francisco Bay Area, the Sacramento-San Joaquin Delta, and a few other locations, including small, isolated populations in southeastern California and western Arizona (CDFW, 2005). This species is found more often in brackish marshes dominated by pickleweed and bulrush, and in freshwater marshes with bulrush, cattails, and saltgrass than in saline marshes. Heard but rarely seen, black rails live and breed in the high wetland zone, an area with minimal water-level fluctuation. They pick isopods, arthropods and insects from the mud or from vegetation. Breeding season is from March through June, and the majority in northern California breed in San Pablo Bay. They make deep, loose cup nests at ground level or slightly elevated in pickleweed or other dense vegetation, with an average clutch size of six eggs.

Black rails are preyed upon by raptors, large wading birds, and domestic cats. Habitat loss is the greatest threat to this species, and the loss of higher wetlands and transitional wetlands throughout San Francisco Bay is thought to be responsible for eliminating breeding populations in the southern parts of the Bay (CDFW, 2005).

California black rail is present in tidal marshes of Santa Venetia and Las Gallinas (Point Blue Conservation Science, 2019). Surveys in winter and early spring 2019 detected black rails in the South Fork of Gallinas Creek and in Santa Venetia Marsh Preserve, with the higher density in Santa Venetia.

San Pablo Song Sparrow – This subspecies is a California species of special concern. San Pablo song sparrow is known from scattered marsh locations throughout the North Bay, including Sears Point, Peacock Gap, and the Napa Salt Marsh. A year-round resident to riparian corridors, fresh and saline emergent wetland, and wet meadow habitats, this species is largely granivorous but takes insects as well. This species has

historically occurred at numerous locations throughout the San Pablo Bay (CNDDB, 2019), and is highly likely to occur in the vicinity of the Project site.

Saltmarsh Common Yellowthroat – This species is a California species of special concern. The saltmarsh common yellowthroat breeds and winters in wet meadows, riparian corridors, fresh and saline water emergent habitats, and occasionally grasslands. Forage items primarily include terrestrial invertebrates, but seeds are taken as well. Salt marsh common yellowthroat is known from scattered locations throughout the North Bay, and has been observed in the Santa Venetia Marsh Preserve. It is highly likely to occur within the vicinity of the Project site.

Natural Communities and Wetlands
Vegetation communities in and around the Project site include the following:

Non-native Annual Grassland
Annual grassland occurs along the surfaces of the levee above the marshland, where vegetation has not been landscaped by home owners. Annual grassland also occurs at the pump stations and on the perimeters of trails and in open areas outside of marshlands. Grassland areas are dominated by non-native species including slender oat (*Avena barbata*), Italian rye grass (*Festuca perennis*), ripgut brome (*Bromus diandrus*), and Italian thistle (*Carduus pycnocephalus*). Non-native annual grassland is not a sensitive vegetation community.

Developed/Landscaped
Developed and landscaped areas include back yards of homes abutting the levee. Vegetation in developed areas is primarily ornamental, non-native species including oleander (*Nerium oleander*) and iceplant. Landscaped areas also contain the non-native grassland species listed above. Landscaped areas are not a sensitive vegetation community.

Sensitive Natural Communities
The area around the Project site contains wetland communities. The federal government defines and regulates waters, including wetlands, in Section 404 of the Clean Water Act (CWA). Wetlands are “areas that are inundated or saturated by surface water or groundwater at a frequency and duration sufficient to support (and do support, under normal circumstances) a prevalence of vegetation typically adapted for life in saturated soil conditions” (33 CFR 328.3[b] and 40 CFR 230.3). The U.S. Army Corps of Engineers (USACE) has primary federal responsibility for administering regulations that concern waters of the U.S. and requires a permit under CWA Section 404 if a project proposes the discharge of fill and/or the placement of structures within waters of the U.S. (U.S. Army Corps, 1987).

Northern Coastal Salt Marsh – Northern coastal salt marsh is a wetland community found along sheltered inland margins of estuaries, lagoons and bays that are subject to regular tidal influence. Vegetation changes with the salinity gradient but always consists of salt-tolerant plants, usually perennials that form a moderate to dense land cover. Vegetation characteristic of northern coastal salt marsh includes perennial pickleweed,

saltgrass, alkali heath, marsh gumplant, and California cordgrass. Adjacent communities include valley grassland and freshwater marsh. Salinity levels may fluctuate with rainfall and drainage patterns, and with tidal variations. Brackish marshes usually intergrade with coastal salt marshes along coastal or bay fringes and with freshwater marshes at upstream drainages. Northern coastal salt marsh occurs along lower Gallinas Creek and in Santa Venetia Marsh Preserve abutting the Project site, outboard of the levee and surrounding the pipes at the pump stations. The salt marsh is a remnant of the tidal marsh which once covered Santa Venetia. To the east of Pump Station 5, the Santa Venetia Marsh Preserve contains additional fragmentary tidal marshlands, divided by levees.

Tidal salt marsh provides food, cover and breeding habitat for wetland-dependent wildlife species. The dense vegetation and invertebrate populations typically associated with salt marshes provided foraging for bird species including rails, egrets, herons, waterfowl and shorebirds. In addition, the salt marsh provides nutrients and organic matter to the mudflats and open water of the bay.

a) Would the project have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?

Replacement of the corrugated metal pipe at Pump Station 2 and removal of the pipe at Pump Station 5 would impact a small amount of tidal marsh habitat for approximately one month per action. This work would be conducted outside of nesting season (September through January) and avoid high tides when wildlife may seek refuge in upland areas. However, construction equipment and vehicle traffic could disrupt or disturb non-breeding black rail and Ridgway's rail and salt marsh harvest mouse, if present at work sites or in the nearby vicinity. Mitigation to reduce this impact to a less-than-significant level is provided below (Mitigation Measure BIO-1).

Replacement and upgrading of the TRB would occur year-round and impact the entire Project site, but all work, staging and equipment use would occur upland of and outside the tidal marsh. Thus, no marsh habitat would be directly impacted. In addition, the planned "worst first" approach to upgrading the TRB (first addressing those areas of the TRB that are in the worst condition) would scatter impact areas at defined locations along the creek, allowing wildlife to disperse to other undisturbed areas during construction. However, special-status wildlife within the marsh, including nesting rails, could still be impacted by noise or human disturbance during construction. Construction noise from specific equipment is described in Section 13, Noise. To reduce potential noise and other human disturbance impacts to a less-than-significant level, Mitigation Measure BIO-2 will be implemented during construction.

Ornamental and non-native vegetation growing along the existing TRB would be removed during construction. Tree, shrub and grass removal in upland areas during nesting season could disturb nesting birds, including special-status birds. Marin County

Code §22.20.040(F) requires pre-construction nest surveys for construction work undertaken during the nesting season, and establishment of no-disturbance buffers around identified active nests. Adherence to this requirement would avoid impacts to nesting birds.

In addition, non-native vegetation removal has potential to increase erosion and sediment delivery to Gallinas Creek. This increase in sediment can result in reduced oxygenation of the water, higher temperature, and render habitat unsuitable for steelhead or other species. Mitigation to reduce these impacts to a less-than-significant level is provided under (b) below.

Mitigation Measure BIO-1: Avoidance of Sensitive Species

For work within potential habitat for salt marsh harvest mouse, California black rail, and Ridgway's rail (i.e., within tidal marsh habitat), the following protection measures shall apply:

- Any areas where construction activities will take place shall have all vegetation removed using hand tools or hand-held motorized equipment only (e.g., string trimmers).
- Prior to all vegetation removal in the above-defined habitats, a qualified biologist shall survey the vegetated areas to identify any common or special-status wildlife. Such removal shall only occur in the presence of the qualified biologist. A qualified biologist/biological monitor is defined as a person who has completed a four-year degree in biological sciences and has demonstrated field experience in identification and monitoring of salt marsh harvest mouse and rail species.
- Following vegetation removal, exclusion fencing shall be installed around work areas within tidal marsh habitat. The fence shall be made of a non-textured material that does not allow salt marsh harvest mice to pass through or climb (such as slick plastic sheeting) or silt fence with slick tape a minimum of 6 inches wide, and the bottom should be buried to a depth of at least 4 inches so that animals cannot crawl under the fence. Fence height shall be at least 12 inches higher than the highest adjacent vegetation with a maximum height of 4 feet. Fence posts shall be placed on the work area side (vegetation cleared side) of the fencing. The fencing shall be installed under the supervision of the qualified biologist.
- For work within marsh habitat, including work at the two pump stations with pipeline replacement activities, the biological monitor shall survey the area where ground disturbance or vegetation removal will take place each morning prior to the start of work. Because replacement and enhancement of the TRB would avoid direct impacts to tidal marsh and associated special-status species, it would not require exclusion fencing or biological monitoring. Barrier fencing shall be installed at TRB work sites to define the outer limits of each work area.
- If a special-status species is identified within or near the work area during construction, the biologist shall be notified and work shall cease in the vicinity of the animal. The animal shall be allowed to relocate of its own volition. If the animal does not voluntarily relocate, the biologist shall contact U.S. Fish and Wildlife Service (USFWS) and/or the California Department of Fish and Wildlife (CDFW), as appropriate, to determine an appropriate response prior to reinitiating work in the area.

- All excavated or deep-walled holes or trenches greater than one-foot deep shall be covered at the end of each workday using plywood, steel plates, or similar materials, or escape ramps shall be constructed to allow animals to exit. Before such holes are filled, they shall be thoroughly inspected for trapped animals.
- At the beginning of each work day within marsh habitat, a biological monitor shall visually inspect and sweep both sides of each exclusion fence to ensure that the fence is in good repair and that salt marsh harvest mouse or other wildlife have not entered the work area or become trapped within folds in exclusion fencing fabric.
- As the California black rail, Ridgway's rail and salt marsh harvest mouse are all California fully protected species, as well as a state and/or federal listed species, the District shall avoid all take of these species.

Monitoring Measure BIO-1:

- The District shall ensure that all construction contracts include the stated provisions for use of hand tools only, fencing, etc. in sensitive habitats
- Prior to start of construction, the District shall employ the services of a biological monitor to carry out the site inspection and monitoring provisions of Mitigation Measure BIO-1. The Biological Monitor shall report to the District's Project Manager monitoring activities and any encounter with sensitive species.
- The District shall report all observations of sensitive species made during construction to the California Natural Diversity Database (CNDDB).

Mitigation Measure BIO-2: Site Protection and Contractor Environmental Awareness Training

- All construction personnel shall attend an environmental education program presented by a qualified biologist. The training shall include an explanation of how to avoid the accidental take of Ridgway's rail, California black rail, salt marsh harvest mouse, other special-status species, and nesting birds. The field meeting shall include topics on species identification, descriptions, habitat requirements and required minimization and avoidance measures. Training shall be repeated at least annually for the duration of the construction period.
- Throughout the construction period, foot traffic in the marsh shall be avoided and minimized to avoid impacting vegetation.
- All earthwork shall occur during daylight hours. No artificial lighting will be introduced to the work area.
- Because salt marsh harvest mouse move to high ground during extreme high tides and may be near work areas during that time, no work will occur during high tide events or when the adjacent marsh plain is flooded, i.e., two hours before and after a high tide event of 6.5 feet or greater as measured at the Golden Gate Bridge, and adjusted to the timing of local high tides.
- The contractor shall provide closed garbage containers for the disposal of all trash items. Work sites shall be cleaned of litter daily. No pets, excluding service animals, shall be allowed in construction areas.

Monitoring Measure BIO-2:

The District shall include in all construction contracts the provisions for worker training and work restrictions contained in Mitigation Measure BIO-2. The District's Project Manager shall be responsible for implementation of this measure.

b) Would the project have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?

Replacement and enhancement of the TRB would avoid direct impacts to tidal marsh; however, indirect, short-term (during construction only) impacts such as increased erosion and sediment delivery may occur. In addition, removal and replacement of pipes in tidal marshland would require temporary disturbance in this habitat. Impacts in these areas may also include trampling or other damage to sensitive vegetation. Indirect effects following construction could include spread of invasive plant species. To avoid and minimize potential impacts to tidal marshlands, construction activities would incorporate the following Mitigation Measures, BIO-3 and BIO-4. Adherence to the mitigation measures below would reduce these impacts to a less-than-significant level.

Mitigation Measure BIO-3: Protection for Sensitive Natural Communities

The area of impact in sensitive natural communities shall be minimized by siting construction staging and access areas outside sensitive natural communities and by utilizing previously-disturbed areas in upland habitat for staging. All wetland areas shall be avoided as discussed in Mitigation Measure BIO-2.

During construction, removal of understory vegetation trees will be minimized and avoided. All trees to remain during construction will be flagged for avoidance, and trimmed as necessary to ensure their trunks and/or limbs are not disturbed during construction. Certified weed-free permanent and temporary erosion control measures (e.g., fabric wattles) shall be used to minimize erosion and sedimentation during and after construction.

Temporary impacts on sensitive natural communities shall be restored by revegetation with native species. No permanent loss of salt marsh habitat or associated vegetation is anticipated.

Monitoring Measure BIO-3:

The District shall include the provisions of Mitigation Measure BIO-3 in all construction contracts. The District's Project Manager shall be responsible for verifying compliance with these conditions.

Revegetated sensitive natural areas shall be monitored for a five-year period to ensure success, according to the monitoring requirements described in Mitigation Measure BIO-4.

Mitigation Measure BIO-4: Habitat Restoration and Monitoring

Following Project construction, the District shall restore sensitive vegetation disturbed during construction, and monitor conditions to ensure that restoration has been successful. Restoration and monitoring shall be guided by a qualified biologist experienced in wetland habitat restoration. Restoration shall include protocols for replanting of native vegetation removed prior to or during construction, and management and monitoring of the plants to ensure replanting success. The following measures shall apply to site restoration:

- Areas impacted from construction-related activity shall be replanted or reseeded with locally collected and grown native trees, shrubs, wetland vegetation, and herbaceous species under guidance from a qualified restoration biologist.
- Temporary impacts to vegetated salt marsh habitat shall be restored onsite with native wetland species under guidance from a qualified biologist.
- Monitoring shall commence following the completion of restoration activities, and shall continue annually for five years or until performance criteria are satisfied. Success criteria for monitoring shall include:
- 70 percent survival of planted wetland vegetation; *or*
- native wetland herbaceous species in restored areas exceeding 60 percent relative vegetative cover; and,
- less than 20 percent cover of invasive non-native plants identified on the California Invasive Plant Council (Cal-IPC) High or Moderate lists.
- If during annual monitoring, the Project biologist determines that a particular species is underperforming or suffers high rates of mortality, remedial action may be warranted to address the issue. Such actions may include the replacement of mitigation plantings, raking, or weed removal. In some cases, plant replacement may be needed with a higher-performing species.
- Rebuilding of the TRB shall incorporate vertical and horizontal habitat structure to restore the marsh on the outboard side of the TRB as a “living shoreline”, using a palette of native species such as coyote brush (*Baccharis pilularis*), saltgrass, marsh gumplant, rushes (*Juncus* spp.) and bulrushes (*Schoenoplectus*, *Bolboschoenus* spp.) (Figure 7 in the Project Description).
- Wherever feasible given space constraints, clean fill shall be placed and compacted on the outboard side of the TRB to increase marsh elevation, while maintaining an appropriate slope to allow development and migration of marsh vegetation in association with sea level rise. The following replanting criteria discussed in the WRA (2018) memorandum would additionally apply:
- A horizontal corridor created by planting a linear patch of tall vegetation extending perpendicularly from the emergent vegetation at the water’s edge, to the outboard edge of the TRB. Corridor length should be sufficient to span the gap.
- A vertical corridor created by planting tall plants adjacent to the TRB to allow salt marsh harvest mice to climb the wall without being exposed to predators.

- At least one vertical corridor planted at each home, or at property lines such that one corridor services two properties.
- The horizontal width of the vertical corridor at least 3 feet to allow numerous mice to utilize it.
- The vertical corridor of sufficient height (or composed of plants reasonably expected to reach sufficient height) to allow vegetation canopy to spill over on to the top of the TRB and provide cover, even if no other cover exists on the top or inboard side of the TRB.
- If nursery stock of native tall plants is not available, or if plants are not tall enough to provide cover to the top of the TRB, then wooden lattice should be attached between two posts at the location of the vertical corridor to allow plants to be secured vertically to maximize height, and provide cover for mice climbing the TRB behind the lattice.
- A public information campaign to encourage residents to plant vegetation for refuge and forage in their yards to support salt marsh harvest mice seeking refuge there.

Monitoring Measure BIO-4:

- Prior to commencing construction, the District shall finalize design drawings for living shoreline elements. These will be included in construction bid packages.

- The District shall contract with a landscaping or restoration firm to complete revegetation and restoration requirements. Revegetation of disturbed areas shall occur during the same year in which the disturbance occurred. The District's Project Manager will be responsible for oversight of the contractor and for the post-revegetation monitoring of restored areas.

c) Would the project have a substantial adverse effect on federally or state protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?

Wetlands are present in the tidal marsh on the outboard side of the levee and surrounding the pipes at Pump Stations 2 and 5. Though wetland impacts are small in area, temporary impacts may occur during pipe replacement and removal. In addition, indirect impacts may result from construction, such as accumulation of sediment in wetlands. Following construction, onsite soils would be reused, wetland vegetation would be replanted and restored, and the hydrology of the features would be maintained. The following Mitigation Measure (BIO-5) would address impacts from construction in and near State and federally jurisdictional wetlands. Adherence to this measure, as well as Mitigation Measures BIO-3 and BIO-4 above, would reduce impacts on wetlands to a less-than-significant level.

Mitigation Measure BIO-5: Wetland Delineation, Mitigation, and Monitoring

a. The District shall conduct a wetland delineation according to the USACE protocol and regional supplement to delineate all potentially jurisdictional wetlands and other waters within and adjoining the Project site. The wetland delineation will delineate wetlands, waters of the U.S., and/or waters of the State within the Project footprint.

The District shall then obtain and comply with necessary conditions for permits for wetland impacts from the USACE, CDFW and the Regional Water Quality Control Board. The permits will specify the amount of wetland to be impacted and include conditions for construction and restoration. The District will comply with all permit conditions for temporary and permanent wetland impacts, including mitigation at 1:1 or other approved ratio.

b. Final Project design shall avoid and minimize the fill of wetlands, waters of the U.S., and/or waters of the State based on the delineation. To offset unavoidable temporary impacts to wetlands, waters of the U.S., and/or waters of the State, restoration shall be provided through the Habitat Restoration and Monitoring Plan described in Mitigation Measure BIO-4.

Monitoring Measure BIO-5

The District shall conduct the required wetland delineation and obtain the necessary permits prior to commencement of any Project construction activities. The District's Project Manager shall be responsible for ensuring that mitigation requirements are implemented. Successful implementation of mitigation requirements will be verified by the relevant permitting agency or agencies.

d) Would the project interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?

The Proposed Project would not interfere substantially with the movement of any native resident or migratory fish or any native resident or migratory wildlife species. Construction would occur within seasonally restricted work windows in the Pump Station areas and would be limited to a small space for one month per site. TRB replacement work would be conducted within a limited area at any one time along the crest of the levee adjacent to residential development. The levee does not provide an important corridor for wildlife movement. Water flow would not be impeded and work would be limited to daytime hours (Mitigation Measure BIO-2). Thus, wildlife could continue to use movement corridors within the creek channel and marsh and there would be a less-than-significant impact to wildlife corridors or nursery sites from the Project. No mitigation is required.

e) Would the project conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?

Marin County Code §22.62.040 defines protected trees as native trees larger than 6 or 10 inches, depending on the species, and heritage tree as trees greater than 18 or 30 inches, depending on species. Species covered include arroyo willow (*Salix lasiolepis*), big leaf maple (*Acer macrophyllum*), blue oak (*Quercus douglasii*), coast live oak (*Quercus agrifolia*), madrone (*Arbutus menziesii*), Oregon oak (*Quercus garryana*), redwood (*Sequoia sempervirens*), valley oak, California bay (*Umbellularia californica*) and other native species.

The Project has not yet identified which trees would be removed. If any trees fall under the tree ordinance as described above, removal could require obtaining a permit from Marin County and complying with terms, including re-planting where specified.

f) Would the project conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?

No Habitat Conservation Plans or Natural Community Conservation Plans cover the area of the Project. Thus, the proposed Project would not conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan, and there would be no impact to habitat conservation plans from the Project.

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5. Cultural Resources

Would the Project:	Significant or Potentially Significant Impact	Less Than Significant Impact with Mitigation Incorporated	Less than Significant	No Impact
a) Cause a substantial adverse change in the significance of a historical resource pursuant to §15064.5?	☐	☒	☐	☐
b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to § 15064.5?	☐	☒	☐	☐
c) Disturb any human remains, including those interred outside of formal cemeteries?	☐	☒	☐	☐

a) Cause a substantial adverse change in the significance of a historical resource pursuant to §15064.5?

b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to § 15064.5?

A Cultural Resources Assessment Report (CRAR) was prepared for this Initial Study by PaleoWest Archaeology, under contract to Sicular Environmental Consulting (Price et al, 2019). The CRAR was prepared in compliance with the California Environmental Quality Act (CEQA) to determine whether cultural resources are present within the Project area and to provide recommendations about their potential significance, using the criteria for eligibility for listing on the California Register of Historical Resources (CRHR), in accordance with the criteria in State CEQA *Guidelines* Section 15064.5.

In an effort to identify all potentially significant cultural resources that could be adversely affected by the Project, a request was made from the California Historical Resources Information System, Northwest Information Center (NWIC) at Sonoma State University in Rohnert Park, California, to conduct a records search of the Project area. The results of the records search indicate there are no previously recorded archaeological sites or other cultural resources in the immediate area around the Project site, but three previously recorded resources are within a quarter mile of the Project site:

- Resource P-21-000150 is a prehistoric shellmound that was recorded by anthropologist Nels C. Nelson in 1907 as Nelson No. 123. The mound contained human burials and habitation debris. The mound measured 180-x-250 feet and was 15 feet high.

- Resource P-21-002618 is a portion of the Northwest Pacific Railroad in Marin County (P-29-2844 in Sonoma County). The line is part of an amalgam of other lines that serviced Sonoma, Marin and San Francisco counties; construction of these lines began as early as 1864.
- Resource P-21-002929 is a historic rock quarry that includes a graded area and elevated loading ramp constructed of crushed rock. The quarry site measures approximately 430 feet long by 80 feet wide and 80 feet in height. The exposed northern face of the quarry is overgrown and contains exposed crumbling bedrock, which appears to have been mechanically mined.

In addition to the records search, PaleoWest senior archaeologist Brenna Wheelis conducted a pedestrian archaeological survey of accessible portions of the Project site on April 8, 2019. No historic or prehistoric-period archaeological sites or other cultural resources were identified in the survey. The results of the cultural resources survey are included in the CRAR.

The probability that prehistoric or historic cultural material may be discovered during construction excavation is considered low, since the levee and TRB consist of artificial fill. However, the presence of the previously recorded shellmound close to the southern end of the TRB alignment raises the sensitivity of this portion of the Project site. Accidental discovery and disturbance of archaeological materials during Project construction could result in a significant impact.

Marin County Code §22.20.040 (D) addresses potential accidental discovery of archaeological, historical, and paleontological resources during construction. This Code section states that, in the event that archaeological, historic, or paleontological resources are discovered during any construction, construction activities shall cease, and the Community Development Agency shall be notified so that the extent and location of discovered materials may be recorded by a qualified archaeologist, and disposition of artifacts may occur in compliance with State and Federal law.

Because of the sensitivity of the southern portion of the Project site with respect to the potential for occurrence of archaeological materials, however, additional mitigation is required to ensure that any accidental discovery does not result in a significant impact. Mitigation Measures CUL-1 and CUL-2 would reduce the potential for such an impact to less than significant.

Mitigation Measure CUL-1: Archaeological Monitoring. During Project construction, a qualified archaeologist shall be present during any work involving ground disturbance within the southern portion of the levee. This includes approximately 2,500 feet of the levee, from station 80 to the southern terminus of the existing TRB, as shown in Figure 3 in the Project Description. If any archaeological materials are discovered, including but not limited to potential buried components of the previously recorded shellmound, the archaeologist will have the authority to stop work and initiate the procedures outlined in Marin County Code §22.20.040 (D).

Monitoring Measure CUL-1:

Prior to commencement of any construction activities in the southern portion of the levee, the District shall employ the services of a qualified archaeologist to perform the construction monitoring. The archaeologist shall be contractually empowered to stop work, if archaeological materials are discovered. The archaeologist will report to the District's Project Manager.

Mitigation Measure CUL-2: Construction Personnel Training. A qualified archaeologist shall be retained to conduct a cultural resources training session with construction personnel prior to the commencement of any ground disturbing activities. Training will include identification of archaeological and historical materials and procedures to follow in the event of an accidental discovery. Construction contractors shall maintain records of employees who have completed the training. Training shall be repeated at least annually. At least one trained crew member (trained within the previous year) must be present during all Project construction activities that involve ground disturbance.

Monitoring Measure CUL-2

Prior to the commencement of construction activities, the District shall employ a qualified archaeologist to conduct the cultural resources training. Construction contracts shall include the training and record keeping requirements. The District's Project Manager shall be responsible for ensuring all contractors' compliance with training requirements.

c) Disturb any human remains, including those interred outside of formal cemeteries?

Ground disturbing activities associated with site preparation, grading, and construction activities could also disturb human remains, including those who are interred outside of formal cemeteries. The potential to uncover Native American human remains exists in locations throughout California. Given the proximity of the Project site to the shellmound recorded by Nelson, and the potential for human remains to occur within shellmound remnants, there is a moderate potential for accidental discovery of human remains during Project construction. If not properly treated, this could result in a significant impact.

Section 7050.5(b) of the California Health and Safety code requires certain procedures to be implemented if human remains, or possible human remains, are discovered. Section 7050.5(b) states:

In the event of discovery or recognition of any human remains in any location other than a dedicated cemetery, there shall be no further excavation or disturbance of the site or any nearby area reasonably suspected to overlie adjacent remains until the coroner of the county in which the human remains are discovered has determined, in accordance with Chapter 10 (commencing with Section 27460) of Part 3 of Division 2 of Title 3 of the Government Code, that the remains are not subject to the provisions of Section 27492 of

the Government Code or any other related provisions of law concerning investigation of the circumstances, manner and cause of death, and the recommendations concerning treatment and disposition of the human remains have been made to the person responsible for the excavation, or to his or her authorized representative, in the manner provided in Section 5097.98 of the Public Resources Code.

The County Coroner, upon recognizing the remains as being of Native American origin, is responsible to contact the Native American Heritage Commission (NAHC) within 24 hours. The Commission has various powers and duties, including the appointment of a Most Likely Descendant (MLD) to the Project. The MLD, or in lieu of the MLD, the NAHC, has the responsibility to provide guidance as to the ultimate disposition of any Native American remains.

With adherence to Section 7050.5(b) of the California Health and Safety code, the potential for the disturbance of human remains during Project construction would be less than significant. However, to ensure compliance with Section 7050.5(b), and therefore to ensure that the potential impact is adequately mitigated, Mitigation Measure CUL-3 is added.

Mitigation Measure CUL-3: Training for Accidental Discovery of Human Remains. The archaeological training specified in Mitigation Measure CUL-2 shall include training on identification of human remains or potential human remains, and in the procedures to follow in the event of such discovery.

Monitoring Measure CUL-3:

See Monitoring Measure CUL-2.

Reference:

Price, Heather; Brenna Wheelis; Allen Estes; and Nazih Fino, 2019. Cultural Resources Assessment Report, Gallinas Levee Upgrade Project, Marin County, California. Prepared by PaleoWest Archaeology, Walnut Creek, CA, for Sicular Environmental Consulting and Natural Lands Management, May, 2019.

6. Energy

Would the Project:	Significant or Potentially Significant Impact	Less Than Significant Impact with Mitigation Incorporated	Less than Significant	No Impact
a) Result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation?	☐	☐	☒	☐
b) Conflict with or obstruct a state or local plan for renewable energy or energy efficiency?	☐	☐	☐	☒

a) Result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation?

Project construction would consume energy, primarily in the form of combustion of diesel and gasoline for construction equipment and vehicle operation. However, the consumption of energy would be minor and temporary. The Project design is intended to minimize the use of materials and movement of earth. This would result in a relatively small use of energy. Because the Project is an essential infrastructure improvement to protect an existing neighborhood, the consumption of energy is justified, and is not considered wasteful. Project operation would also require only a small amount of energy, mostly associated with vehicle trips for District staff for inspection and maintenance of the TRB, and for vehicles and small equipment for repair and maintenance activities. Energy consumption during Project operation would be expected to be less than the current operation, since maintenance requirements are expected to decrease.

Therefore, neither Project construction nor operation would result in wasteful, inefficient, or unnecessary consumption of energy resources, and the impact would be less than significant.

b) Conflict with or obstruct a State or local plan for renewable energy or energy efficiency?

State standards for energy conservation and energy efficiency in construction are contained in California Code of Regulations Title 24, also known as CalGreen. Marin County has adopted local building codes that meet or exceed State standards for energy efficiency and use of renewable resources in construction. The Project, however, does not require a building permit, as it is a project of a government agency. Nevertheless, the

District would ensure compliance with State and local building codes, and so the Project would not conflict with or obstruct State or local plans for renewable energy or energy efficiency. There would be no impact of this kind.

7. Geology and Soils

Would the Project:	Significant or Potentially Significant Impact	Less Than Significant Impact with Mitigation Incorporated	Less than Significant	No Impact
a) Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving:				
i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.	☐	☐	☐	☒
ii) Strong seismic ground shaking?	☐	☐	☒	☐
iii) Seismic-related ground failure, including liquefaction?	☐	☐	☒	☐
iv) Landslides?	☐	☐	☐	☒
b) Result in substantial soil erosion or the loss of topsoil?	☐	☐	☒	☐
c) Be located on geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse?	☐	☐	☒	☐
d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial direct or indirect risks to life or property?	☐	☐	☐	☒

e) Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater?	☐	☐	☐	☒
f) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	☐	☐	☐	☒

a) Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving:

i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.

The State Geologist has not produced an Alquist-Priolo Earthquake Fault Zoning Map for the quadrangles where the Project is located (California Geological Survey, 2019), as there are no known active faults in this area. The Project site lies approximately 10.7 miles east of the San Andreas Fault, and 8 miles west of the Hayward-Rogers Creek fault (USGS, 2019). Therefore, the Project site is not subject to fault rupture.

ii) Strong seismic ground shaking?

The entire Bay Area is in a seismically active area, and the entire region is subject to strong ground shaking in the event of a major seismic event along one of the region's major active faults, including the San Andreas fault and the Hayward-Rogers Creek fault. The degree of ground shaking experienced at any given location in the region is a function of several factors, including distance to the epicenter of the earthquake, magnitude, depth, and duration of the event, and local soil and bedrock conditions. The Project site is underlain by alluvium, and is thus subject to substantial amplification of ground shaking. As indicated in the MarinMap earthquake hazard layer, which shows the entire Santa Venetia neighborhood in the highest category of ground shaking amplification (MarinMap, 2019). A geotechnical study commissioned by the District finds a high potential for damage to the levee due to settlement during an earthquake, due to the potential for liquefaction within the levee fill or underlying alluvium (Kleinfelder, 2013). This could result in damage to or failure of the levee or portions of the levee, potentially resulting in direct property damage, injury or loss of life, or indirect effects due to flooding. The Project, however, would not alter the geologic conditions of the site or the susceptibility of the levee or TRB to damage or failure during a seismic event. The impact, therefore, would be less than significant.

iii) Seismic-related ground failure, including liquefaction?

A geotechnical study for the Project (Kleinfelder, 2013) found that the levee may experience up to four inches of liquefaction settlement during a seismic event. As noted above, this could cause damage to or failure of the levee, potentially resulting in direct property damage, injury or loss of life, or indirect adverse effects due to flooding. As stated above, however, the Project would not alter the geologic conditions of the site or the susceptibility of the levee or TRB to damage or failure during a seismic event and consequent liquefaction. The impact, therefore, would be less than significant.

iv) Landslides?

The Project site is on nearly flat land, and is therefore not prone to landsliding. MarinMap indicates that the Project site is not subject to landsliding (MarinMap, 2019). The Project would not result in any impact related to landsliding.

b) Result in substantial soil erosion or the loss of topsoil?

Soil disturbance, including grading, excavation, fill, and movement of work personnel and equipment around the Project site, may result in soil erosion from the levee, from fill material within the existing TRB, from additional fill brought to the site for the Project, and from pipe replacement and upgrade at the pump stations. Eroded materials could be washed down or blown off of the outboard side of the levee, into Gallinas Creek and marsh.

Construction contracts would include the requirement to adhere to Marin County Stormwater Pollution Prevention Program's (MCSTOPPP) Minimum Control Measures for Small Construction Projects (MCSTOPPP, 2015). These include practices to control (i.e., minimize) erosion, control sedimentation by preventing the transport of eroded sediment into waterways, and maintain good housekeeping practices at the worksite. With adherence to these mandatory practices, erosion would not be substantial, and the impact would be less than significant.

c) Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse?

As noted under issue a), above, the Project site is underlain by that with the potential for liquefaction and resulting subsidence during a seismic event. The geotechnical study also notes that the levee is susceptible to lateral spreading into Gallinas Creek. The Project, however, would not change this underlying condition. The redesigned and reconstructed TRB would be more stable than the current aging and deteriorating structure, and would therefore be less susceptible to collapse due to subsidence, liquefaction, or lateral spreading. Therefore, the impact would be less than significant.

d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial direct or indirect risks to life or property?

MarinMap indicates that the Project site is underlain by soils that are not expansive (mapped as "nil" expansive potential). No impact of this kind would occur.

e) Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater?

No septic systems are proposed for the Project. This issue is therefore not applicable to the Project. No such impact would occur.

f) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?

There are no known unique paleontological resources within the Project site, and no unique geologic features. The Project site is underlain by Bay mud, a young alluvial deposit which is considered to be of low paleontological sensitivity, and by artificial fill that was placed on top of the Bay mud (USGS, 2000; Kleinfelder, 2013). Excavation associated with Project construction would be within the existing levee. Since the levee consists of artificial fill, any fossils or other paleontological resources present would be of little value, since they would be out of their original context. Therefore, the Project would not have a significant impact on a paleontological resource or unique geologic feature.

References:

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8. Greenhouse Gas Emissions

Would the Project:	Significant or Potentially Significant Impact	Less Than Significant Impact with Mitigation Incorporated	Less than Significant	No Impact
a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?	☐	☐	☒	☐
b) Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?	☐	☐	☐	☒

Greenhouse Gas Emissions Setting

"Global warming" and "global climate change" are the terms used to describe the increase in the average temperature of the earth's near-surface air and oceans since the mid-20th century and its projected continuation. Warming of the climate system is now considered to be unequivocal, with global surface temperature increasing approximately 1.33 degrees Fahrenheit (°F) over the last 100 years. Continued warming is projected to increase global average temperature between 2 and 11°F over the next 100 years (IPCC, 2014).

Natural processes and human actions have been identified as the causes of this warming. The International Panel on Climate Change concludes that variations in natural phenomena such as solar radiation and volcanoes produced most of the warming from pre-industrial times to 1950 and had a small cooling effect afterward. After 1950, however, increasing greenhouse gas (GHG) concentrations resulting from human activity such as fossil fuel burning and deforestation have been responsible for most of the observed temperature increase. These basic conclusions have been endorsed by more than 45 scientific societies and academies of science, including all of the national academies of science of the major industrialized countries. Since 2007, no scientific body of national or international standing has maintained a dissenting opinion.

Increases in GHG concentrations in the earth's atmosphere have been identified as the main cause of human-induced climate change. GHGs naturally trap heat by impeding the exit of solar radiation that has hit the earth and is reflected back toward space. Some GHGs occur naturally and are necessary for keeping the earth's surface inhabitable. However, increases in the concentrations of these gases in the atmosphere during the last 100 years have decreased the amount of solar radiation that is reflected back into space, intensifying the natural greenhouse effect and resulting in the increase of global average temperature.

Gases that trap heat in the atmosphere are referred to as GHGs because they capture heat radiated from the sun as it is reflected back into the atmosphere, much like a greenhouse does. The accumulation of GHGs has been implicated as the driving force for global climate change. The primary GHGs are carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), ozone, and water vapor. While the presence of the primary GHGs in the atmosphere are naturally occurring, CO_2, CH_4, and N_2O are also emitted from human activities, increasing the concentration of these compounds within earth's atmosphere.

a) Would the project generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?

The Bay Area Air Quality Management District (BAAQMD) has not established a significance threshold for construction-related GHG emissions (BAAQMD, 2017). BAAQMD guidance includes disclosing the estimated amount of GHGs that Project construction would produce, and incorporating best management practices for reducing GHG emissions where feasible and applicable. Best management practices cited by the BAAQMD include using alternative fuel (e.g., biodiesel, electric) construction vehicles/equipment of at least 15 percent of the fleet; using local building materials of at least 10 percent; and recycling or reusing at least 50 percent of construction waste or demolition materials.

To provide an estimate of construction-related GHG emissions in compliance with BAAQMD guidance, GHG emissions were modeled using the same air quality model that was used to estimate other air emissions (see Section 3, Air Quality). The total estimated amount of GHG emissions during Project construction is approximately 92 metric tons of CO_2e, all of which would be from non-biogenic (i.e., fossil) sources. As described under the next topic, vehicles and equipment used for Project construction will use low-carbon fuel, per the State's Low Carbon Fuel standard, and will recycle or reuse at least 65 percent of construction and demolition waste, per the CalGreen (California Title 24) requirement. Because Project construction would use recommended best management practices for GHG emissions reduction, and because the volume of GHG emissions would be relatively small, the Project's construction-related GHG emissions would be less than significant.

b) Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?

In 2006, the California legislature passed and Governor Schwarzenegger signed the California Global Warming Solutions Act of 2006 (AB 32; California Health and Safety Code Division 25.5, Sections 38500 - 38599). AB 32 establishes regulatory, reporting, and market mechanisms to achieve quantifiable reductions in GHG emissions and establishes a cap on statewide GHG emissions. AB 32 requires that statewide GHG emissions be reduced to 1990 levels by 2020. This reduction will be accomplished by enforcing a statewide cap on GHG emissions. To effectively implement the cap, AB 32 directs CARB to develop and implement regulations to reduce statewide GHG emissions from stationary sources.

AB 32 requires CARB to adopt a quantified cap on GHG emissions representing 1990 emissions levels and disclose how it arrived at the cap; institute a schedule to meet the emissions cap; and develop tracking, reporting, and enforcement mechanisms to ensure that the state reduces GHG emissions enough to meet the cap. AB 32 also includes guidance on instituting emissions reductions in an economically efficient manner, along with conditions to ensure that businesses and consumers are not unfairly affected by the reductions. Using these criteria to reduce statewide GHG emissions to 1990 levels by 2020 would represent an approximate 25 to 30 percent reduction in current emissions levels. However, CARB has discretionary authority to seek greater reductions in more significant and growing GHG sectors, such as transportation, as compared to other sectors that are not anticipated to significantly increase emissions. Under AB 32, CARB must prepare a Scoping Plan and adopt regulations to achieve reductions in GHG emissions to meet the 1990 emissions cap by 2020. SB 32, enacted in 2016, increased the required reductions in GHG emissions to 40 percent below 1990 levels by 2030.

The AB 32 Scoping Plan 2017 Update contains the strategy for meeting the 2030 goal. This will be accomplished by increasing renewable energy use, putting more electric cars on the road, improving energy efficiency, and curbing emissions from key industries. The State has also established “renewable portfolio standards,” which specify the percentage of retail energy sold in the state from renewable and zero carbon sources. In September of 2018, Governor Brown signed SB100, establishing a renewable portfolio standard of 100 percent by the year 2045.

Few of the Scoping Plan policies directly relate to construction projects, such as the current Project. The Low Carbon Fuel Standard (LCFS), which seeks a transition to cleaner, less-polluting fuels that have a lower footprint, seeks at least an 18 percent reduction in carbon intensity of liquid fuels, and applies to all fuels sold in California (CARB, 2017). Equipment and vehicles used in Project construction would use fuels subject to the LCFS, and would therefore be consistent with this State policy. The original, 2008 Scoping Plan included High Recycling / Zero Waste measure for GHG reduction. This measure reduces greenhouse gas emissions primarily by reducing the substantial energy use associated with the acquisition of raw materials in the manufacturing stage of a product’s lifecycle. Since the Project would comply with the State CalGreen requirement to divert at least 65 percent of construction and demolition waste from landfill disposal, the Project would be consistent with the High Recycling measure.

Marin County has developed a Climate Action Plan (Marin County, 2015) that provides a roadmap for how the County will reduce energy consumption and GHG emissions to contribute to meeting the State GHG emissions targets. In addition, the Marin Countywide Plan outlines action items pertaining to sustainability including the preparation of policies that promote efficient management and use of resources in order to minimize GHG emissions. Marin County has also enacted Green Building requirements for construction of energy- and materials-efficient buildings. These are consistent with, and in some instances exceed the CalGreen (Title 24) Green Building Code. Green building requirements that pertain to the Project include diverting at least 65 percent of construction and demolition debris from landfill. The Project would also

use composite lumber, which is made from recycled plastic and wood fiber. Recycled materials generally require less energy to manufacture, resulting in a reduction in GHG emissions compared to similar products made from virgin materials.

In summary, the Project would be consistent, and would not conflict with, State and County policies and regulations to reduce GHG emissions. There would be no impact of this kind.

References

Bay Area Air Quality Management District. 2017, CEQA Air Quality Guidelines, May 2017.

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9. Hazards and Hazardous Materials

Would the Project:	Significant or Potentially Significant Impact	Less Than Significant Impact with Mitigation Incorporated	Less than Significant	No Impact
a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	☐	☐	☒	☐
b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?	☐	☐	☒	☐
c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	☐	☐	☒	☐
d) Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?	☐	☐	☐	☒
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard or excessive noise for people residing or working in the project area?	☐	☐	☒	☐
f) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	☐	☐	☐	☒

a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?

b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?

c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?

The Project would involve construction activities that use limited quantities of hazardous materials, such as gasoline, diesel fuel, oils and lubricants, and other chemicals associated with construction activities. One school, the Korean School of Marin County, is located within one quarter mile of the Project site, at 635 Adrian Way. This is about 600 feet away from the nearest point of the levee.

The Project would be subject to federal, State, and local laws and regulations governing hazardous material transport, storage, use, and disposal. As discussed in Section 7, Geology and Soils, construction contracts would include the requirement to adhere to Marin County Stormwater Pollution Prevention Program's (MCSTOPPP) Minimum Control Measures for Small Construction Projects (MCSTOPPP, 2015). These include practices to manage hazardous materials and to prevent equipment and vehicle fluid spills and leaks onto the ground. With adherence to these mandatory practices, transport, use, storage, and disposal would not create a significant hazard or foreseeably release hazardous materials into the environment.

With regard to hazardous emissions, please see the discussion of diesel particulate matter (DPM) emissions in Section 3, Air Quality, which finds that hazardous emissions would be less than significant.

d) Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?

A search of the State's Geotracker and Envirostor databases revealed no hazardous materials sites within or in close proximity to the Project site (State Water Resources Control Board, 2019, Department of Toxic Substances Control, 2019). There would be no impact of this kind.

e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard or excessive noise for people residing or working in the project area?

The San Rafael Airport is a privately-owned general aviation facility located just north of the Project site, across South Fork Gallinas Creek. San Rafael Airport's Master Use

Permit, issued by the City of San Rafael, establishes several restrictions on aircraft operations, including the following:

- Maximum of 100 aircraft based at the facility;
- Use of airport limited to based aircraft; no transient or guest aircraft are permitted to use the airport;
- No flight training activity

The airport property is approximately 120 acres in size, and has a single runway oriented in a northeast/southwest direction. The runway is 2,140 feet in length and 50 feet in width. Medium-intensity lights define the lateral limits of the runway and the runway thresholds. The airport is open 24-hours per day. The runway is a visual facility; all flights are conducted under visual conditions without the aid of straight-in instrument approach procedures (City of San Rafael, 2009).

Portions of the Project site are within the regulatory safety zones established around the runway (City of San Rafael, 2009). The Project, however, would not involve construction of new buildings or other structures that could interfere with airport operations or result in a new or more severe safety hazard. Neither would the Project affect noise from the airport (see Section 13, Noise). Workers involved in construction of the Project would at times be working within the regulatory safety zone of the airport, and would be exposed to occasional aircraft noise. The risk of an accident involving aircraft is considered small, however, and therefore less than significant. As discussed in Section 13, notwithstanding the Project site's proximity to the airport, ambient noise levels are low, and therefore workers would not be exposed to excessive noise levels. Therefore, the Project's impacts with regard to exposing workers to airport noise would be less than significant.

f) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?

The Project would not alter roads or other transportation facilities. Project construction is not expected to result in temporary or permanent road closures. Therefore, the Project would not have the potential to impair or interfere with an emergency response plan or evacuation plan. There would be no impact of this kind.

References

City of San Rafael, 2009. San Rafael Airport Recreational Facility, Draft Environmental Impact Report. SCH No. 2006012125. https://www.cityofsanrafael.org/airport-recreational-facility/

State of California, Water Resources Control Board, 2019. GeoTracker On-line Database. Searched May 7, 2019. https://geotracker.waterboards.ca.gov/

State of California, Department of Toxic Substances Control, 2019. ENVIROSTOR Database, Cortese List Hazardous Materials and Substances Sites. Searched May 7, 2019. https://www.envirostor.dtsc.ca.gov/public/search?basic=True

10. Hydrology and Water Quality

Would the Project:	Significant or Potentially Significant Impact	Less Than Significant Impact with Mitigation Incorporated	Less than Significant	No Impact
a) Violate any water quality standards or waste discharge requirements, or otherwise substantially degrade surface or groundwater quality?	☐	☐	☒	☐
b) Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin?	☐	☐	☐	☒
c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or through the addition of impervious surfaces, in a manner which would:				
i) result in substantial erosion or siltation on- or off-site;	☐	☐	☐	☒
ii) substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or offsite;	☐	☐	☐	☒
iii) create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff; or	☐	☐	☐	☒
iv) Impede or redirect flood flows?	☐	☐	☐	☒
d) In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation?	☐	☐	☒	☐

e) Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?	☐	☐	☐	☒

a) Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or groundwater quality?

The San Francisco Regional Water Quality Control Board's (RWQCB) 2017 Basin Plan (Basin Plan; RWQCB, 2017a) is the principal water quality planning document for the region. The Project site is adjacent to South Fork Gallinas Creek. The Basin Plan identifies the following beneficial uses for Gallinas Creek:

Cold Freshwater Habitat (COLD): Uses of water that support cold water ecosystems, including, but not limited to, preservation or enhancement of aquatic habitats, vegetation, fish, or wildlife, including invertebrates.

Preservation of Rare and Endangered Species (RARE): Uses of waters that support habitats necessary for the survival and successful maintenance of plant or animal species established under state and/or federal law as rare, threatened, or endangered.

Warm Freshwater Habitat (WARM): Uses of water that support warm water ecosystems including, but not limited to, preservation or enhancement of aquatic habitats, vegetation, fish, or wildlife, including invertebrates.

Wildlife Habitat (WILD): Uses of waters that support wildlife habitats, including, but not limited to, the preservation and enhancement of vegetation and prey species used by wildlife, such as waterfowl.

Water Contact Recreation (REC1): Uses of water for recreational activities involving body contact with water where ingestion of water is reasonably possible. These uses include, but are not limited to, swimming, wading, water-skiing, skin and scuba diving, surfing, whitewater activities, fishing, and uses of natural hot springs.

Noncontact Water Recreation (REC2): Uses of water for recreational activities involving proximity to water, but not normally involving contact with water where water ingestion is reasonably possible. These uses include, but are not limited to, picnicking, sunbathing, hiking, beachcombing, camping, boating, tide pool and marine life study, hunting, sightseeing, or aesthetic enjoyment in conjunction with the above activities.

The Basin Plan also lists beneficial uses for the Novato Valley Groundwater Basin, upon which the Santa Venetia neighborhood sits. While there are no "existing" beneficial uses of groundwater listed for this basin, "potential" beneficial uses include municipal and domestic water supply; industrial process water supply; industrial service water supply; and agricultural water supply.

The Basin Plan further lists beneficial uses of wetlands around the Bay, including the Gallinas Creek wetland. The beneficial uses listed for Gallinas Creek wetland include: Preservation of Rare and Endangered Species, Wildlife Habitat, Water Contact Recreation, and Noncontact Water Recreation, all described above, and two additional uses:

Estuarine Habitat (EST): Uses of water that support estuarine ecosystems, including, but not limited to, preservation or enhancement of estuarine habitats, vegetation, fish, shellfish, or wildlife (e.g., estuarine mammals, waterfowl, shorebirds), and the propagation, sustenance, and migration of estuarine organisms.

Fish Spawning (SPWN): Uses of water that support high quality aquatic habitats suitable for reproduction and early development of fish.

The Basin Plan establishes water quality "objectives" – essentially, maximum pollutant levels – intended to protect beneficial uses. Discharge of pollutants to surface or groundwaters that results in pollutant concentrations in excess of these objectives would generally be considered to be a significant impact. Gallinas Creek is listed as an "impaired water body" on the RWQCB's 303d list (list of impaired water bodies, pursuant to section 303d of the federal Clean Water Act) for high concentrations of the pesticide diazinon. A Total Maximum Daily Load (TMDL), essentially a pollutant prevention plan, has been established for Gallinas Creek by the RWQCB (RWQCB, 2017b)

Project construction activities could result in discharge of pollutants to South Fork Gallinas Creek, if eroded sediment, fill material, construction materials, debris, or fluids from construction equipment were to enter the creek. As previously noted, the District would include requirements in all construction contracts associated with the Project for contractors to adhere to Marin County Stormwater Pollution Prevention Program's (MCSTOPPP) Minimum Control Measures for Small Construction Projects (MCSTOPPP, 2015). These include practices to control (i.e., minimize) erosion, control sedimentation by preventing the transport of eroded sediment into waterways, and maintain good housekeeping practices at the worksite, including measures to manage leaks and spills of fuel and other fluids. With adherence to these mandatory practices, the Project would not degrade water quality or violate any water quality standard, and the impact would be less than significant.

b) Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin?

As noted in the previous discussion, the Santa Venetia neighborhood is underlain by the Novato Valley Groundwater Basin. The Project would not use groundwater and Project construction, which involves only shallow excavation, would not affect groundwater quality. The Project would not introduce new or additional impervious surfaces, and so would not affect groundwater recharge. In sum, the Project would not decrease groundwater supplies or interfere with groundwater recharge. Therefore, the Project

would not impede sustainable management of the Novato Valley Groundwater Basin. There would be no impact of this kind.

c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or through the addition of impervious surfaces, in a manner which would:

i) result in substantial erosion or siltation on- or off-site;

ii) substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or offsite;

iii) Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff; or

iv) Impede or redirect flood flows?

The Project would rebuild and raise the elevation of the existing TRB, and would also upgrade one drainage pipe and decommission another. All of these structures are part of the levee and stormwater drainage system protecting the Santa Venetia neighborhood. Project construction would not substantially alter drainage patterns: South Fork Gallinas Creek is already confined to its channel by the existing levee system. Upgrading the levee would counter the deterioration of the levee, as well as predicted sea level rise, in order to achieve and maintain the same level of flood protection that the levee has provided since the TRB was constructed in the 1980s. Rehabilitation of the drain pipe at Pump Station #2 would not alter drainage patterns, but would ensure the continued function of this existing feature. Decommissioning of the pipe at Pump Station #5 would not alter drainage patterns, as the pipe is already not functioning.

As noted under topic b) in this section, the Project would only replace existing structures, and would not introduce or add new impervious surfaces.

In sum, the Project does not have the potential to alter the existing drainage pattern, would not alter the course of a stream or river, and would not add impervious surfaces. Therefore, the Project would not result in substantial erosion or siltation on- or off-site; would not substantially increase the rate or amount of surface runoff; would not create or contribute runoff water which could exceed the capacity of stormwater systems or cause additional sources of polluted runoff; and would not impede or redirect flood flows. There would be no impact of this kind.

d) In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation?

The entire Project site, as well as the majority of the Santa Venetia neighborhood north of North San Pedro Road, is within FEMA Special Flood Hazard Zone AE, meaning that it has a one percent annual chance of flooding (FEMA, 2016; see Figure 5 in the Project Description). State of California tsunami inundation maps indicate that the existing levee

protects the Santa Venetia neighborhood from inundation during a tsunami (California Emergency Management Agency et al, 2009). A seiche is a resonant, side-to-side movement of water in a closed or mostly closed body of water such as a swimming pool, pond, lake or bay. San Francisco Bay could experience a seiche during a seismic event, which could result in inundation of low-lying shorelines. The area around the Project site could therefore experience a seiche. The height of a seiche wave (like a tsunami wave) would tend to attenuate as it moved up South Fork Gallinas Creek from the Bay. The existing levee system would likely protect the Santa Venetia neighborhood from a seiche, and the level of protection would increase with the Project.

If a flood, tsunami, or seiche were to occur during Project construction, there would be the potential for construction materials and equipment and stockpiled soil to be washed directly or indirectly into South Fork Gallinas Creek. Project construction would not occur, however, during periods of rain and high tides, when flooding is likely to occur. Materials and equipment would be confined to the levee crest and inboard side of the levee, which, as noted above, are considered to be out of reach of a tsunami or seiche wave. Therefore, the Project would not pose a substantial risk of release of pollutants due to inundation in a flood, tsunami, or seiche, and the impact would be less than significant.

e) Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?

As stated under issue a) in this section, the RWQCB's 2017 Basin Plan (RWQCB, 2017a) is the principal water quality planning document for the region. As discussed under that section, the Project would not substantially degrade surface water or groundwater quality, and therefore would not adversely affect the beneficial uses listed for Gallinas Creek, Gallinas wetland, or the Novato Valley Groundwater Basin. Therefore, the Project would not conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan. There would be no impact of this kind.

References

Regional Water Quality Control Board, San Francisco Bay Region (RWQCB), 2017a. San Francisco Bay Basin (Region 2) Water Quality Control Plan (Basin Plan). Incorporating all amendments approved by the Office of Administrative Law as of May 4, 2017. https://www.waterboards.ca.gov/sanfranciscobay/basin_planning.html

Regional Water Quality Control Board, San Francisco Bay Region (RWQCB), 2017b. Final 2016 Integrated Report (CWA Section 303(d) List / 305(b) Report). April 26, 2017. https://www.waterboards.ca.gov/sanfranciscobay/water_issues/programs/TMDLs/303dlist.html

State of California Emergency Management Agency, California Geological Survey, and University of Southern California, 2009. Tsunami Inundation Map for Emergency Planning: Novato Quadrangle/Petaluma Point Quadrangle. https://www.conservation.ca.gov/cgs/Documents/Tsunami/Maps/Tsunami_Inundation_NovatoPetalumaPoint_Quads_Marin.pdf

11. Land Use and Planning

Would the project:	Significant or Potentially Significant Impact	Less Than Significant Impact with Mitigation Incorporated	Less than Significant	No Impact
a) Physically divide an established community (including a low-income or minority community)?	☐	☐	☐	☒
b) Cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect?	☐	☐	☒	☐
c) Result in substantial alteration of the character or functioning of the community, or present planned use of an area?	☐	☐	☐	☒
d) Conflict with applicable Countywide Plan designation or zoning standards?	☐	☐	☐	☒

a) Physically divide an established community (including a low-income or minority community)?

The Project would not introduce any new physical barrier, such as a new roadway, or otherwise divide an established community. The Project would upgrade the existing levee, which runs along the margin of the Santa Venetia neighborhood and protects it from flooding. There would be no impact of this kind.

b) Cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect?

Policy inconsistencies may not necessarily indicate significant environmental effects. The State CEQA Guidelines Section 15358(b) states that “effects analyzed under CEQA must be related to a physical change [in the environment].” Therefore, only those policy inconsistencies that would lead to a significant effect on the physical environmental are considered significant impacts pursuant to CEQA. Other policy issues not pertaining to physical changes will be addressed as part of the District’s review of the merits of the Project. Many of the policies discussed in this section pertain to environmental topics

evaluated elsewhere in this Initial Study. Where this is the case, the reader is directed to the relevant section.

The foremost plan adopted by Marin County that pertains to the Project is the 2007 Countywide Plan (CWP). The CWP contains numerous goals, objectives, policies, and programs intended to protect the environment. The environmental protection policies contained in the CWP that pertain to the Project are considered below. Policies are arranged by element of the CWP, and are grouped where appropriate to facilitate the policy analysis.

On February 14, 2017, the Marin County Board of Supervisors adopted the Santa Venetia Community Plan (SVCP). The SVCP sets forth goals and policies for protecting natural resources, managing environmental hazards, and planning for land use, parks and open space, and transportation. The Plan also provides an overview of community characteristics and relevant County plans and regulations. Environmental protection policies of the SVCP, particularly the SVCP's Natural Resources policies, are also considered below.

Policies of the Natural Systems and Agriculture Element of the Countywide Plan and Natural Resources Polices of the Santa Venetia Community Plan

Policies to Protect Sensitive Biological Resources

CWP Policy BIO-1.1: Protect Wetlands, Habitat for Special-Status Species, Sensitive Natural Communities, and Important Wildlife Nursery Areas and Movement Corridors. Protect sensitive biological resources, wetlands, migratory species of the Pacific flyway, and wildlife movement corridors through careful environmental review of proposed development applications, including consideration of cumulative impacts, participation in comprehensive habitat management programs with other local and resource agencies, and continue acquisition and management of open space lands that provide for permanent protection of important natural habitats.

CWP Policy BIO-2.5: Restrict Disturbance in Sensitive Habitat During Nesting Season. Limit construction and other sources of potential disturbance in sensitive riparian corridors, wetlands, and baylands to protect bird nesting activities. Disturbance should generally be set back from sensitive habitat during the nesting season from March 1 through August 1 to protect bird nesting, rearing, and fledging activities. Preconstruction surveys should be conducted by a qualified professional where development is proposed in sensitive habitat areas during the nesting season, and appropriate restrictions should be defined to protect nests in active use and ensure that any young have fledged before construction proceeds.

SVCP Policy NR–1: Movement Corridors: Encourage the protection of wildlife habitat and movement corridors. Fence types, roads, structures, and outdoor lighting that would significantly inhibit or obstruct wildlife movement, especially access to water, should be avoided.

SVCP Policy NR-3: Landscaping and Invasive Plant Control: Encourage the use of drought tolerant, native and fire resistant plants on County-owned and managed properties as well as on private lands. Encourage property owners to remove plants considered invasive (ecologically and economically harmful) by the Marin County Open Space District, especially in natural resource areas (see Chapter 3 for specific areas) and along major travel corridors (North San Pedro Road). Invasive plant species of particular concern in Santa Venetia are French broom, pampas/jubata grass, acacia tree species, and perennial pepperweed.

SVCP Policy NR-6: Marsh and Wetlands: Development projects that are proposed adjacent to or drain into Gallinas Creek tidal marsh must avoid adverse impacts on wetlands and Wetland Conservation Areas. Require development at the MacPhails property to avoid tidal marsh of Gallinas Creek and on-site wetlands through the establishment of Wetland Conservation Areas that encompass the wetland itself and an associated buffer of at least 100-feet. An additional buffer area may be required based on the results of a site assessment.

SVCP Policy NR-7: Native Tree Replacement: Support amending Marin County Code §22.27 (Native Tree Protection and Preservation) to ensure that in-lieu funds collected for tree removal are used for the planting and maintenance of trees on Marin County lands within the community in which they are collected.

Consistent with Mitigation. As discussed in Section 4, Biological Resources, South Fork Gallinas Creek and the marsh provide habitat for several sensitive species, including the endangered Ridgeway's Rail and salt marsh harvest mouse. The impact analysis in Section 4 indicates that Project construction could have an adverse effect on sensitive species and their habitat. With the incorporation of mitigation measures specified in Section 4, however, impacts would be less than significant, ensuring consistency with the cited policies.

Policies Promoting Consultation and Resource Preservation in Environmental Review

CWP Policy BIO-2.1: Include Resource Preservation in Environmental Review. Require environmental review pursuant to CEQA of development applications to assess the impact of proposed development on native species and habitat diversity, particularly special-status species, sensitive natural communities, wetlands, and important wildlife nursery areas and movement corridors. Require adequate mitigation measures for ensuring the protection of any sensitive resources and achieving "no net loss" of sensitive habitat acreage, values, and functions.

CWP Policy BIO-2.8: Coordinate with Trustee Agencies. Consult with trustee agencies (the California Department of Fish and Game, U.S. Fish and Wildlife Service, National Oceanic and Atmospheric Administration (NOAA) Fisheries, U.S. Army Corps of Engineers, Environmental Protection Agency, Regional Water Quality Control Board, and Bay Conservation and Development Commission) during environmental review

when special-status species, sensitive natural communities, or wetlands may be adversely affected.

CWP Policy BIO-2.9: Promote Early Consultation with Other Agencies. Require applicants to consult with all agencies with review authority for projects in areas supporting wetlands and special-status species at the outset of project planning.

Consistent. The District is coordinating the environmental review of this Project with the responsible permitting agencies, including the U.S. Army Corps of Engineers, the San Francisco Bay Regional Water Quality Control Board, the US Fish and Wildlife Service, and FEMA. In addition to obtaining permits, notification of the proposed Project to all other regulatory agencies, all interested parties, and the general public will be achieved through the CEQA public review process. Given the level of consultation with responsible resource agencies, the Project would be consistent with policies BIO-2.1, BIO-2.8 and BIO-2.9.

Policies for Protection of Baylands and Marshes

CWP Policy BIO-5.1: Protect the Baylands Corridor. Ensure that baylands and large, adjacent essential uplands are protected, and encourage enhancement efforts for baylands including those in the Baylands Corridor.

CWP Policy BIO-5.5: Protect freshwater habitats. Preserve and where possible expand habitats associated with freshwater streams, seasonal wetlands and small former marshes to facilitate the circulation distribution and flow of fresh water and to enhance associated habitat values.

Consistent with Mitigation: As discussed in Section 4, Biological Resources, the District would implement mitigation measures to protect wetlands and habitat for special-status species. With incorporation of the specified mitigation measures, the Project would be consistent with policies BIO-5.1 and BIO-5.5.

Policies for Avoiding and Minimizing Erosion, Sedimentation, and Pollution of Waterways

CWP Policy WR-2.3: Avoid Erosion and Sedimentation. Minimize soil erosion and discharge of sediments into surface runoff, drainage systems, and water bodies. Continue to require grading plans that address avoidance of soil erosion and on-site sediment retention. Require developments to include on-site facilities for the retention of sediments, and, if necessary, require continued monitoring and maintenance of these facilities upon project completion.

CWP Policy WR-2.4: Design County Facilities to Minimize Pollutant Input. Design, construct and maintain County buildings, landscaped areas, roads, bridges, drainages, and other facilities to minimize the volume of toxics, nutrient, sediment, and other pollutants in storm water flows, and continue to improve road maintenance methods to reduce erosion and sedimentation potential.

Consistent: As noted in Section 7, Geology and Soils, and in Section 10, Hydrology and Water Quality, the District would include in all Project construction contracts the requirement to adhere to best management practices for preventing pollutants from construction activities entering surface waters, including South Fork Gallinas Creek. With these Project provisions, erosion and sedimentation would be minimized, water quality would be protected, and the Project would be consistent with policies WR-2.3 and WR-2.4

Policy for Protection from Flooding and Inundation

CWP Policy EH-3.2: Retain Natural Conditions. Ensure that flow capacity is maintained in stream channels and floodplains, and achieve flood control using biotechnical techniques instead of storm drains, culverts, riprap, and other forms of structural stabilization.

Consistent: Implementing Programs for this policy include **EH-3.m, Maintain Flood Controls**: Continue to implement adopted flood control programs including limitations on land use activities in flood hazard areas and through repair and maintenance of necessary flood control structures. As noted in the Project Description, the Project's objectives include Increasing the stability and reliability of the existing levee and TRB. As noted in Section 10, Hydrology and Water Quality, proposed levee upgrades would not impede flow capacity in South Fork Gallinas Creek. Levee upgrades would be accomplished through reconstruction and maintenance of the TRB, which would be consistent with policy Implementing Program EH-3.m. Upgrading of the existing drainage pipe at Pump Station #2 would similarly be consistent with Implementing Program EH-3.m. By preventing degradation of the drainage system, decommissioning the pipe at Pump Station #5 would also be consistent with this implementing program. The Project is therefore consistent with the relevant implementing program for Policy EH-3.2, and is also consistent with the policy itself.

Air Pollution Policy

CWP Policy AIR-2.1: Buffer Emission Sources and Sensitive Land Use. Consider potential air pollution and odor impacts from land uses that may emit pollution and/or odors when placing air pollution sources and residential and other pollution-sensitive land uses in the vicinity of air pollution sources.

Consistent with Mitigation. As stated in Section 3, Air Quality, Project construction could expose sensitive receptors to diesel particular emissions and objectionable odors. With implementation of the mitigation measure specified in Section 3, the impact would be less than significant, and the Project would be consistent with policy AIR-2.1.

Climate Change Adaptation Policy

CWP Policy AIR-5.2: Prepare Response Strategies for Impacts. Prepare appropriate strategies that aid systems in adapting to climate change based on sound scientific understanding of the potential impacts.

Consistent: The Project would implement improvements to the existing levee and drainage systems, to increase the level of flood protection in the face of rising sea level. Therefore, the Project would be consistent with Policy AIR-5.2.

Policies of the Built Environment Element of the Countywide Plan

Noise Policy

CWP Policy NO-1.3: Regulate Noise Generating Activities. Require measures to minimize noise exposure to neighboring properties, open space, and wildlife habitat from construction-related activities, yard maintenance equipment, and other noise sources, such as amplified music.

Consistent: As discussed in Section 13, Noise, noise associated with Project construction would be limited to the sound of equipment and workers working during normal daytime working hours, in compliance with the County's construction noise ordinance. Project maintenance is expected to be less intensive, and therefore less noisy, following construction. Therefore, the Project would be consistent with Policy NO-1.3.

Policies of the Socioeconomic Element of the Countywide Plan

Cultural Resources Protection Policies

CWP Policy HAR-1.1: Protect Historic Resources. Identify archaeological and historical resource sites.

CWP Policy HAR-1.3. Avoid Impacts to Historical Resources. Ensure that human activity avoids damaging cultural resources.

Consistent: As discussed in Section 5, Cultural Resources, and Section 18, Tribal Cultural Resources, there are no known archeological, historical, or tribal cultural resources within the Project site. Accidental discovery provisions contained in the Marin County Development Code and mitigation measures contained in Section 5, Cultural Resources (Mitigation Measures CUL-1 through CUL-3) would ensure the proper treatment of any previously unknown resources discovered during construction. Therefore, the Project would be consistent with policies HAR-1.1 and HAR 1.3.

Conclusion: Because the Project, as mitigated, would be consistent with relevant CWP polices intended to avoid or mitigate environmental effects, the Project would have a less-than-significant impact with regard to policy inconsistency.

c) Result in substantial alteration of the character or functioning of the community, or present planned use of an area?

The Project would upgrade the existing levee, and thereby increase protection of the Santa Venetia neighborhood from flooding. The Project would therefore preserve, and not alter, the character of the community. There would be no impact of this kind.

d) Conflict with applicable Countywide Plan designation or zoning standards?

The Santa Venetia Neighborhood is within the Baylands Corridor, as designated in the 2007 Marin Countywide Plan (CWP). The majority of the neighborhood, including the Project site (most of which is within the backyards of the residential properties along Vendola Drive) is designated SF-6 (Single Family -6) in the CWP. The SF-6 designation is for single family homes on lots less than 10,000 square feet, and densities of 4-7 dwelling units per acre. Zoning for unincorporated areas of Marin County is established in Title 22 of the Marin County Development Code. The majority of the Santa Venetia Neighborhood, including the Project site, is zoned R1-B1 (Residential Single Family, 6,000 square foot lot). The CWP lists Zone R1-B1 as consistent with the SF-6 designation.

The Project would not require a change to the existing land use designation or zoning. Reconstruction of the TRB would take place within the backyards of the homes along Vendola Drive, but would not permanently alter or conflict with the single-family residential use of the properties. The Project would increase flood protection for the neighborhood, and thereby enable the continuation of residential uses consistent with the existing land use designation and zoning. In sum, there would be no conflict with applicable CWP designation or zoning, and there would therefore be no impact of this kind.

12. Mineral Resources

Would the Project:	Significant or Potentially Significant Impact	Less Than Significant Impact with Mitigation Incorporated	Less than Significant	No Impact
a) Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?	☐	☐	☐	☒
b) Result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan?	☐	☐	☐	☒

a) Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?

There are no known valuable mineral resources within or adjacent to the Project site. As described in Section 7, Geology and Soils, the Project site and most of the Santa Venetia neighborhood are underlain by Bay mud, which does not have significant economic value. Therefore, the Project would have no impact of this kind.

b) Result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan?

As shown in Map 3-5 of the 2007 Marin Countywide Plan (CWP), the Project site is not within a State-designated mineral resource preservation site or within a County-permitted mineral resource site. Therefore, there would be no impact of this kind.

13. Noise

Would the Project result in:	Significant or Potentially Significant Impact	Less Than Significant Impact with Mitigation Incorporated	Less than Significant	No Impact
a) Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?	☐	☐	☒	☐
b) Generation of excessive groundborne vibration or groundborne noise levels?	☐	☐	☒	☐
c) For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?	☐	☐	☒	☐

Setting

Noise Descriptors

Sound is mechanical energy transmitted by pressure waves through a medium such as air. Noise is defined as unwanted sound. Sound pressure level has become the most common descriptor used to characterize the “loudness” of an ambient sound level. Sound pressure level is measured in decibels (dB), with zero dB corresponding roughly to the threshold of human hearing, and 120 to 140 dB corresponding to the threshold of pain. Decibels are measured using different scales, and it has been found that A-weighting of sound levels best reflects the human ear’s reduced sensitivity to low frequencies, and correlates well with human perceptions of the annoying aspects of noise. The A-weighted decibel scale (dBA) is cited in most noise criteria. All references to decibels (dB) in this analysis will be A-weighted unless noted otherwise.

Several time-averaged scales represent noise environments and consequences of human activities. The most commonly used noise descriptors are the equivalent A–

weighted sound level over a given time period (Leq)[6]; average day–night 24-hour average sound level (Ldn)[7] with a nighttime increase of 10 dB to account for sensitivity to noise during the nighttime; and community noise equivalent level (CNEL)[8], also a 24-hour average that includes both an evening and a nighttime sensitivity weighting. **Table 13-1** identifies decibel levels for common sound heard.

Noise Attenuation

Stationary point sources of noise, including construction equipment, attenuate (lessen) at a rate of 6 to 7.5 dB per doubling of distance from the source, depending on ground absorption. Soft sites attenuate at 7.5 dB per doubling because they have an absorptive ground surface such as soft dirt, grass, or scattered bushes and trees. Hard sites have reflective surfaces (e.g., parking lots or smooth bodies of water) and therefore have less attenuation (6.0 dB per doubling). A street or roadway with moving vehicles (known as a "line" source), would typically attenuate at a lower rate, approximately 3 to 4.5 dB each time the distance doubles from the source, which also depends on ground absorption (CalTrans, 1998). Physical barriers located between a noise source and the noise receptor, such as berms or sound walls, will increase the attenuation that occurs by distance alone.

Table 13-1: Typical Noise Levels

Noise Level (dB)	Outdoor Activity	Indoor Activity
90+	Gas mower at 3 ft., jet flyover at 1,000 ft.	Rock band
80–90	Diesel truck at 50 ft.	Loud television at 3 ft.
70–80	Gas lawn mower at 100 ft., noisy urban area	Garbage disposal at 3 ft., vacuum at 10 ft.
60–70	Commercial area	Normal speech at 3 ft.
40–60	Quiet urban daytime, traffic at 300 ft.	Large business office, dishwasher next room
20–40	Quiet rural, suburban nighttime	Concert hall (background), library, bedroom at night
10–20		Broadcast / recording studio
0	Lowest threshold of human hearing	Lowest threshold of human hearing

Source: Modified from Caltrans Technical Noise Supplement (Caltrans, 2013)

[6]The Equivalent Sound Level (Leq) is a single value of a constant sound level for the same measurement period duration, which has sound energy equal to the time–varying sound energy in the measurement period.
[7]Ldn is the day–night average sound level that is equal to the 24-hour A-weighted equivalent sound level with a 10-decibel penalty applied to night between 10:00 p.m. and 7:00 a.m.
[8]CNEL is the average A-weighted noise level during a 24-hour day, obtained by addition of 5 decibels in the evening from 7:00 to 10:00 p.m., and an addition of a 10–decibel penalty in the night between 10:00 p.m. and 7:00 a.m.

Regulatory Framework

Marin Countywide Plan

The Noise Section (3.10) of the Built Environment Element of the 2007 Marin Countywide Plan contains policies and programs intended to maintain appropriate noise levels and protect noise-sensitive land uses in the County. The following program is applicable to the Project.

Implementing Program NO-1.i. Sections 6.70.030(5) and 6.70.040 of the Marin County Code establish allowable hours of operation for construction-related activities. As a condition of permit approval for projects generating significant construction noise impacts during the construction phase, construction management for any project shall develop a construction noise reduction plan and designate a disturbance coordinator at the construction site to implement the provisions of the plan.

Marin County Code

The Marin County Code Section 6.70.030(5) establishes allowable hours of operation for construction-related activities.

a. Hours for construction activities and other work undertaken in connection with building, plumbing, electrical, and other permits issued by the Community Development Agency shall be limited to the following:

i. Monday through Friday: 7 a.m. to 6 p.m.

ii. Saturday: 9 a.m. to 5 p.m.

iii. Prohibited on Sundays and Holidays (New Year's Day, President's Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day, and Christmas Day.)

b. Loud noise-generating construction-related equipment (e.g., backhoes, generators, jackhammers) can be maintained, operated, or serviced at a construction site for permits administered by the Community Development Agency from 8 a.m. to 5 p.m. Monday through Friday only.

c. Special exceptions to these limitations may occur for:

i. Emergency work as defined in Section 22.130.030 of the Municipal Code provided written notice is given to the Community Development Director within forty-eight hours of commencing work;

ii. Construction projects of city, county, state, other public agency, or other public utility;

iii. When written permission of the Community Development Director has been obtained, for showing of sufficient cause;

iv. Minor jobs (e.g., painting, hand sanding, sweeping) with minimal/no noise impacts on surrounding properties;

v. Modifications required by the review authority as a discretionary permit condition of approval.

Existing Noise Sources and Levels

To quantify existing ambient noise levels, RCH group conducted two long-term (72-hour) and five short-term (10-minute) noise measurements at the Project site. Noise measurements were made using Metrosonics db308 Sound Level Meters calibrated before and after the measurements. To measure existing 24-hour noise levels at the Project site, noise meters were placed north of Pump Station No. 2 (Site 1) and north of Pump Station No. 5 (Site 2). Additional short-term measurements were conducted at Site 1 and 2, south of Pump Station No. 3 (Site 3), on the bridge near the southern termination of the existing TRB (Site 4) and on the island south of Pump Station No. 3 (Site 5).

The noise measurements are summarized in **Table 13-2** below. The Noise Technical Appendix includes 24-hour noise plots of the data and figures showing noise measurement locations. In general, the Project site is a very quiet location. The predominant source of noise in the vicinity of the Project was birds, rustling vegetation, and nearby equipment such as mowers and backup beepers performing local or more distant construction. Additional noise sources included distant traffic and airplane noise.

Existing Sensitive Receptors

Noise sensitive receptors (uses associated with indoor and/or outdoor activities that may be subject to stress and/or significant interference from noise) typically include residential dwellings, hotels, motels, hospitals, nursing homes, educational facilities, and libraries. The Project is located within the Santa Venetia neighborhood and Project construction would occur along the top of the existing earthen levee system situated behind residences adjacent to Las Gallinas Creek. The closest sensitive receptors are these residences.

Table 13-2: Existing Noise Measurements

Location	Time Period	Noise Levels (dB)	Noise Sources
Site 1: North of Pump Station No. 2.	April 11, 12:00 a.m. through April 13, 11:59 p.m. 2019 Thursday – Saturday 72-hour measurement	Hourly Leq's ranged from: 43-55 CNELs: 52, 52, 50	Unattended noise measurements do not specifically identify noise sources. See data graphs in Noise Technical Appendix.
Site 2: North of Pump Station No. 5.	April 11, 12:00 a.m. through April 13, 11:59 p.m. 2019 Thursday – Saturday 72-hour measurement	Hourly Leq's ranged from: 42-59 CNELs: 54, 53, 53	Unattended noise measurements do not specifically identify noise sources. See data graphs in Noise Technical Appendix.

Location	Time Period	Noise Levels (dB)	Noise Sources
Site 1: North of Pump Station No. 2.	Thursday April 10, 2019 12:01 p.m. to 12:11 p.m.	5-minute Leq's: 44, 44	No traffic heard on local streets. One faint noise from airplane. Birds up to 50 dB. Shrubs rustling 45 dB. Faint traffic noise from NW. Background is 43 dB.
Site 2: North of Pump Station No. 5.	Thursday April 10, 2019 12:31 p.m. to 12:41 p.m..	5-minute Leq's: 45, 46	Misc. construction noise to the north: lawn mower, loader dropping rocks into truck, & backup beeper up to 49 dB. Windy grass 45 dB. Background is 44 dB and lower. Bird noise.
Site 3: South of Pump Station No. 3.	Thursday April 10, 2019 12:57 p.m. to 1:07 p.m.	5-minute Leq's: 45, 46	Distant beeper & far away plane, both below 45 dB. Birds in marsh, lots of mud in very low water creek. Birds up to 54 dB. Distant traffic < 43 dB.
Site 4: On the bridge near the southern termination of the existing TRB.	Thursday April 10, 2019 1:30 p.m. to 1:40 p.m.	5-minute Leq's: 44, 43	Distant mowers & backup beepers. Birds. Some very distant traffic noise. Backup beepers may be from street construction on local streets.
Site 5: On the island south of Pump Station No. 3.	Thursday April 10, 2019 1:51 p.m. to 2:01 p.m.	5-minute Leq's: 46, 47	Plane takeoff ~48 dB. Lawn mower behind one of the homes across the channel ~ 46 dB.

Source: RCH Group, 2019

a) Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?

Potential noise impacts associated with the Project would be related to noise from construction. The District has an ongoing maintenance program that includes regular inspections, raising lower portions of the levee, and repairing failing sections of the TRB. It is assumed that the Project would not result in changes to the maintenance program that would substantially increase noise. This analysis will not further assess impacts from noise generated by operation and maintenance of the Project.

Construction Noise

The use of on-site equipment and heavy trucks during construction of the Project would result in increases in ambient noise levels in the Project vicinity. The construction noise from TRB reconstruction would extend over a period of approximately two to three years, although construction would not occur during periods of rainy weather or predicted high tides. TRB reconstruction would be performed at approximately three to five homes at a time, due to homeowner access and coordination constraints and a given home would likely be exposed to construction noise for up to approximately one month. Pipe rehabilitation at Pump Station No. 2 and pipe abandonment at Pump Station No. 5 would be completed in approximately one month.

During construction, the noise would vary considerably, with most periods having very limited construction noise and only rare times when there would be constant or near-constant noise. Because of the limited space available to mobilize equipment onsite, construction equipment would be relatively small and portable, and many construction activities would be performed using manual labor. The maximum noise levels for various types of construction equipment that could be used (as indicated in the Project Description) during Project construction are provided in **Table 13-3**. Based on Table 13-3, maximum noise levels generated by construction equipment used for the Project would range from 77 to 84 dB Lmax at a distance of 50 feet. Maximum noise levels generated by Project construction equipment would likely be much lower because Project construction equipment would be smaller and more portable compared to the equipment that was measured to obtain the reference noise levels in Table 13-3. The existing noise that would be most similar in intensity to the proposed Project construction noise would be existing, periodic noise from lawn maintenance activities in the backyards of homes adjacent to the TRB. Gasoline-powered lawn mowers generate 70-80 dB at 100 feet (see Table 13-1).

The Marin County Code allows noise from construction activities that occur from 7 a.m. to 6 p.m. on weekdays and 9 a.m. to 5 p.m. on Saturdays. The Code also indicates loud noise-generating construction-related equipment (e.g., backhoes, generators, jackhammers) can be maintained, operated, or serviced at a construction site for permits administered by the Community Development Agency from 8 a.m. to 5 p.m. Monday through Friday only. Because the Project would operate in compliance with the County Code approved construction hours, the Project would not exceed noise standards in Marin Countywide Plan or the County Code, and Project compliance with the County Code would result in a less-than-significant impact.

Table 13-3: Typical Noise Levels from Construction Equipment (L_{max})

Construction Equipment	Noise Level (dB, Lmax at 50 feet)
Skid Steer Loader	79
Excavator	81
Auger Drill Rig	84
Dump Truck	76
Concrete Mixer Truck	79
Concrete Pump Truck	81
Plate Compactor	80

Notes: Lmax = maximum sound level
Source: Federal Highway Administration (FHWA) Roadway Construction Noise Model User's Guide (FHWA, 2006)

b) Would the project result in excessive groundborne vibration or groundborne noise levels?

Construction operations have the potential to result in varying degrees of temporary ground vibration depending on the specific construction equipment used and operations

involved. In most cases, vibration induced by typical construction equipment does not result in adverse effects on people or structures (Caltrans, 2013). Because of the limited space available to mobilize equipment onsite, construction equipment would be relatively small and portable, and many construction activities would be performed using manual labor. Project construction would not require significant sources of vibration such as pile driving or blasting. Based on the construction equipment to be used and the low intensity of construction, vibration from the Project would not be a concern. Therefore, the Project would result in a less-than-significant impact.

c) For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?

The Project site is not located within the vicinity of an area covered by an airport land use plan. The San Rafael Airport, a private use airstrip, is northwest of the Project site, across Las Gallinas Creek. At some locations the San Rafael Airport is within 500 feet of the Project site. According to the Marin Countywide Plan, the Project site is outside of the 55 dB CNEL San Rafael Airport noise contour (Marin County, 2007). Therefore, the Project would not expose Project construction workers to excessive aircraft noise levels. Furthermore, following construction, the Project would not alter the existing noise environment, and in particular would not result in residents experiencing higher noise levels from the San Rafael Airport. Therefore, the Project would result in a less-than-significant impact.

References

California Department of Transportation (Caltrans), 1998. Traffic Noise Analysis Protocol for New Highway Construction and Reconstruction Projects. October 1998. http://www.dot.ca.gov/hq/env/noise/pub/protocol.pdf

California Department of Transportation, 2002. Transportation Related Earthborne Vibrations. February 2002. http://www.dot.ca.gov/hq/env/noise/pub/TRANSPORTATION_RELATED_EARTHBORNE_VIBRATIONS.pdf

California Department of Transportation (Caltrans), 2013. Technical Noise Supplement. September 2013. http://www.dot.ca.gov/hq/env/noise/pub/TeNS_Sept_2013A.pdf

Federal Highway Administration (FHWA), 2006. Roadway Construction Noise Model User's Guide, Final Report. January 2006. https://planning.lacity.org/eir/CrossroadsHwd/deir/files/references/I09.pdf

United States Environmental Protection Agency (U.S. EPA), 1973. *Legal Compilation*. For sale by the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402. Stock No. 5500-0065.

14. Population and Housing

Would the Project:	Significant or Potentially Significant Impact	Less Than Significant Impact with Mitigation Incorporated	Less than Significant	No Impact
a) Induce substantial unplanned population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?	☐	☐	☐	☒
b) Displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	☒
c) Increase density that would exceed official population projections for the planning area within which the project site is located as set forth in the Countywide Plan and/or community plan?	☐	☐	☐	☒
d) Displace existing housing, especially affordable housing?	☐	☐	☐	☒
e) Result in any physical changes which can be traced through a chain of cause and effect to social or economic impacts?	☐	☐	☒	☐

a) Induce substantial unplanned population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?

The Project would upgrade existing infrastructure to increase flood protection for an existing neighborhood. The Project would not directly or indirectly induce or enable increased population growth, and there would be no impact of this kind.

b) Displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?

Project construction would not displace residents from their home or destroy any existing housing. There would be no impact of this kind.

c) Increase density that would exceed official population projections for the planning area within which the project site is located as set forth in the Countywide Plan and/or community plan?

The Project would not result in the construction of new housing or otherwise induce population growth in the area. The existing housing in the area is consistent with the zoning and General Plan land use designation (see Section 11, Land Use and Planning). There would be no impact related to increased population density.

d) Displace existing housing, especially affordable housing?

The Project would upgrade existing infrastructure, and would not displace any existing housing. There would be no impact of this kind.

e) Result in any physical changes which can be traced through a chain of cause and effect to social or economic impacts?

The Project would increase the level of flood protection for approximately 700 homes in the Santa Venetia neighborhood. By reducing the likelihood of flooding, the Project may be expected to help maintain property values. These changes would tend to have positive economic impacts, that could result in residential property owners investing in maintaining and remodeling their homes. While this may result in a slight increase in construction-related impacts, including consumption of materials and energy, and generation of air emissions and noise, impacts would likely be short-term and less than significant.

15. Public Services

Would the Project:	Significant or Potentially Significant Impact	Less Than Significant Impact with Mitigation Incorporated	Less than Significant	No Impact
a) Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for any of the public services:				
i) Fire protection?	☐	☐	☐	☒
ii) Police protection?	☐	☐	☐	☒
iii) Schools?	☐	☐	☐	☒
iv) Parks?	☐	☐	☐	☒
v) Other public facilities including roads?	☐	☐	☐	☒

a) Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for any of the public services:

i) Fire protection?

ii) Police protection?

iii) Schools?

iv) Parks?

v) Other public facilities including roads?

Fire protection in the Santa Venetia neighborhood, where the Project site is located, is provided by the Marin County Fire Department. Police services are provided by the Marin County Sheriff. The neighborhood is within the San Rafael Elementary School District and the San Rafael High School District. Parks in the area include Santa Venetia Marsh Preserve and Santa Margarita Island Preserve, and Castro Park (located at Vendola Drive and Mabry Way), all managed by Marin County Parks. San Pedro Mountain Park and China Camp State Park are nearby.

The Project would involve upgrading of existing flood protection and drainage facilities in order to increase the level of flood protection for an existing developed residential neighborhood. As discussed in Section 14, Population and Housing, the Project would not induce new housing or increase population. Nor would it increase the need for fire or police services, or the need for new or additional schools or recreation areas. There would be no impact of this kind.

16. Recreation

Would the Project:	Significant or Potentially Significant Impact	Less Than Significant Impact with Mitigation Incorporated	Less than Significant	No Impact
a) Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?	☐	☐	☐	☒
b) Does the project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?	☐	☐	☐	☒

a) Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?

As noted in the previous section, there are several parks within and adjacent to the Santa Venetia neighborhood. As discussed in Section 14, Population and Housing, the Project would not increase housing or population in the Santa Venetia neighborhood. The Project therefore would not result in an increase in use of neighborhood and regional parks or recreation facilities, and there would be no impact related to physical deterioration of such facilities.

b) Does the project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?

The Project does not include recreational facilities or require the construction or expansion of recreational facilities. There would be no impact of the Project related to construction or expansion of recreational facilities.

17. Transportation

Would the Project:	Significant or Potentially Significant Impact	Less Than Significant Impact with Mitigation Incorporated	Less than Significant	No Impact
a) Conflict with a program, plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities?	☐	☐	☒	☐
b) Conflict or be inconsistent with CEQA Guidelines section 15064.3, subdivision (b)?	☐	☐	☒	☐
c) Substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	☐	☐	☐	☒
d) Result in inadequate emergency access?	☐	☐	☐	☒

a) Conflict with a program, plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities?

Transportation policies are contained in the Transportation Element of the 2007 Marin Countywide Plan. The policies are organized around four goals:

GOAL TR-1: Safe and Efficient Movement of People and Goods. Provide a range of transportation options that meet the needs of residents, businesses, and travelers.

GOAL TR-2: Increased Bicycle and Pedestrian Access. Expand bicycle and pedestrian facilities and access in and between neighborhoods, employment centers, shopping areas, schools, and recreational sites.

GOAL TR-3: Adequate and Affordable Public Transportation. Provide efficient, affordable public transportation service countywide that meets the needs of everyone, including the elderly, disabled, and transit dependent.

GOAL TR-4: Protection of Environmental Resources. Minimize environmental disruption and energy use related to transportation.

The Project would result in no long-term increase in traffic, and furthermore would not interfere with or alter existing circulation systems, including transit, roadway, bicycle and pedestrian facilities. Short-term, that is, during Project construction, the Project would result in a small incremental increase in vehicle traffic associated with construction worker commute trips and transportation of materials and equipment to and from the Project site. The number of trips would be small, however: as shown in Table 3 in the Project Description, a total of 125 truck loads of materials and equipment would be needed for the Project, spread over a period of up to three years. Rarely would there be more than two trucks in a day. Table 4 in the Project Description indicates that TRB reconstruction would require up to about 10 workers, and work on the pipes at the pump stations would require up to about 5 workers each. In the worst-case traffic scenario, TRB reconstruction would occur simultaneously with work on the pipes at the two pump stations. This may involve up to 20 workers per day, for a period of up to 1 month. If all workers were to commute to and from the Project site in their own vehicles, this could add up to 40 one-way vehicle trips per day (20 a.m. trips and 20 p.m. trips). While this would add incrementally to traffic on local and regional roadways, particularly North San Pedro Road, the small number of trips and the short duration of the construction period would not be expected to conflict with Countywide Plan policies regarding traffic flow. Neither would the Project adversely affect existing transit systems or bicycle and pedestrian facilities. The impact would therefore be less than significant.

b) Conflict or be inconsistent with CEQA Guidelines section 15064.3, subdivision (b)?

CEQA Guidelines section 15064.3(b) is a new provision that establishes thresholds for determining the significance of transportation impacts. This section uses the metric of "vehicle miles traveled" (VMT) as the most appropriate measure of transportation impacts. VMT refers to the amount and distance of automobile travel attributable to a project. Other relevant considerations may include the effects of the project on transit and non-motorized travel. Beginning July 1, 2020, a project's effect on automobile delay (that is, an increase in traffic congestion) shall not constitute a significant environmental impact.

As noted above, the Project would not result in any long-term increase in traffic. Neither would it result in a long-term increase in vehicle miles traveled: following Project construction, Project operation (that is, ongoing maintenance and repair of the levee), would be the same as, or less than, the current condition, and associated vehicle trips and miles traveled would also be the same or less.

As noted above, short-term increases in vehicle trips, and associated VMT, would occur during Project construction. The model used to estimate Project air and greenhouse gas emissions for the Project in Section 3, Air Quality, uses a default figure of 10.8 miles for commuter trips for construction workers. Given this figure, TRB reconstruction, which may require up to 10 construction workers per day, would result in a short-term increase of up to 20 vehicle trips per workday, for a total of 216 VMT per workday for up to three years. Work on the pipes at the two pump stations would add up to another 5 workers

each, or up to 10 trips per workday and a total of 108 VMT per workday for each pipe. Work on each of the pipes is expected to take no more than one month.

The District considers projects that would generate or attract fewer than 110 trips per day to cause a less-than-significant transportation impact. Because the Project would generate no increase in trips or VMT long-term, and fewer than 110 trips per day short-term, the Project would not conflict or be inconsistent with CEQA Guidelines section 15064.3, subdivision (b), and the impact would therefore be less than significant.

c) Substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?

The Project would not result in construction of new roads or intersections, or alter the geometric design of existing roads or intersections. Neither would the Project introduce incompatible uses to the road system, such as farm equipment. Large construction vehicles, such as cement trucks, would be used infrequently, and would not be a substantial incompatible use. There would therefore be no impact of this kind.

d) Result in inadequate emergency access?

The Project would not block or impede any existing roadway or intersection, and therefore would not result in inadequate emergency access to the area around the Project site. There would be no impact of this kind.

References

California Air Resources Board (CARB), 2016. California Emissions Estimator Model (CalEEMod), version 2016.3.2.

California Governor's Office of Planning and Research, 2017. Technical Advisory on Evaluating Transportation Impacts in CEQA. November, 2017. http://opr.ca.gov/docs/20171127_Transportation_Analysis_TA_Nov_2017.pdf

18. Tribal Cultural Resources

Would the Project:	Significant or Potentially Significant Impact	Less Than Significant Impact with Mitigation Incorporated	Less than Significant	No Impact
a) Cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code Section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is:				
i) Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code Section 5020.1(k)?	☐	☐	☐	☒
ii) A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1. In applying the criteria set forth in subdivision (c) of Public Resources Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.	☐	☐	☐	☒

a) Cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code Section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of

the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is:

i) Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code Section 5020.1(k)?

As described in Section 5, Cultural Resources, a Cultural Resources Assessment Report (CRAR) was prepared for this Initial Study by PaleoWest Archaeology, under contract to Sicular Environmental Consulting (Price et al, 2019). The CRAR included a survey of the Project site by a qualified archaeologist and a records search at the California Historical Resources Information System, Northwest Information Center (NWIC) at Sonoma State University in Rohnert Park, California. The site survey found no archaeological materials within areas of the Project site accessible to the archaeologist. The results of the records search indicate there are no previously recorded archaeological sites or other cultural resources within the Project site. One previously recorded archaeological resource (P-21-000150), a shellmound, was recorded nearby the Project site by anthropologist Nels Nelson in 1907. There is no observable evidence, however, that this site extends into the area of the Project site. Accidental discovery provisions in County and State statutes (see Section 5, Cultural Resources), and mitigation measures included in Section 5, would ensure that any components of the shellmound, or other archaeological resources accidentally discovered during Project construction, would be protected and properly handled, including, if appropriate, consultation with Native American Tribes regarding the final disposition of any such materials. With these legal requirements and mitigation measures, the Project would not cause a substantial adverse change in the significance of a tribal cultural resource that has been previously listed or that is eligible for listing in the California Register of Historical Resources, or in a local register of historical resources. The Project would have no impact of this kind.

ii) A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1. In applying the criteria set forth in subdivision (c) of Public Resources Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.

On March 26, 2019, District staff contacted representatives of the Federated Indians of Graton Rancheria (FIGR) and the Ione Band of Miwok Indians, the two tribes that have previously requested notification of proposed projects in Marin County, to determine whether they had any interest in the Project, and to provide them with an opportunity for formal consultation (Williams, 2019a, 2019b). As of May 15, 2019, the Ione Band of Miwok Indians had not responded, and the District therefore concludes that they have no interest in the Project. On April 10, 2019, Buffy McQuillen, Tribal Heritage Preservation Officer, responded stating that the Project would be reviewed within the next 10 days (McQuillen, 2019). As of May 15, 2019, no further correspondence or contact was received from the Tribe. Therefore, no tribal cultural resources were identified or documented within the Project site.

Based on the lack of response from the tribes, the Project is not expected to cause a substantial adverse change in the significance of a tribal cultural resource; the Project would have no impact of this kind.

References

McQuillen, Buffy, 2019. e-mail from Buffy McQuillen, Tribal Heritage Preservation Officer, to Laurie Williams, Marin County Flood Control and Water Conservation District, re: County of Marin, Gallinas Creek Levee, Santa Venetia. Sent April 10, 2019.

Price, Heather; Brenna Wheelis; Allen Estes; and Nazih Fino, 2019. Cultural Resources Assessment Report, Gallinas Levee Upgrade Project, Marin County, California. Prepared by PaleoWest Archaeology, Walnut Creek, CA, for Sicular Environmental Consulting and Natural Lands Management, May, 2019.

Williams, Laurie, 2019a. Letter from L. Williams, Senior Planner, Marin County Flood Control and Water Conservation District, to Buffy McQuillen, Tribal Heritage Preservation Officer, Federated Indians of Graton Rancheria, re: Tribal Cultural Resources under the California Environmental Quality Act, AB 52 (Gatto, 2014). Formal Notification of determination that a Project Application is Complete or Decision to Undertake a Project, and Notification of Consultation Opportunity, pursuant to Public Resources Code § 21080.3.1. Sent March 26, 2019.

Williams, Laurie, 2019b. Letter from L. Williams, Senior Planner, Marin County Flood Control and Water Conservation District, to Randy Yonemura, Cultural Committee Chair, Ione Band of Miwok Indieans, re: Tribal Cultural Resources under the California Environmental Quality Act, AB 52 (Gatto, 2014). Formal Notification of determination that a Project Application is Complete or Decision to Undertake a Project, and Notification of Consultation Opportunity, pursuant to Public Resources Code § 21080.3.1. Sent March 26, 2019.

19. Utilities and Service Systems

Would the Project:	Significant or Potentially Significant Impact	Less Than Significant Impact with Mitigation Incorporated	Less than Significant	No Impact
a) Require or result in the relocation or construction of new or expanded water, wastewater or storm water drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects?	☐	☐	☐	☒
b) Have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry and multiple dry years?	☐	☐	☒	☐
c) Result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?	☐	☐	☐	☒
d) Generate solid waste in excess of State or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals?	☐	☐	☒	☐
e) Comply with federal, state, and local management and reduction statutes and regulations related to solid waste?	☐	☐	☒	☐

a) Require or result in the relocation or construction of new or expanded water, wastewater or storm water drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects?

The Project would involve only upgrading the existing levee and related pump stations. The Project would not require relocation or construction of new or expanded water, wastewater, storm water drainage, electric power, natural gas, or telecommunications facilities. The levee and TRB are not served by any of these utilities. The pump stations are provided with electrical power from the power grid, but the Project would not require the relocation, alteration, or expansion of electrical facilities. Therefore, there would be no impact of this kind.

b) Have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry and multiple dry years?

Water supply for the Santa Venetia neighborhood is provided by the Marin Municipal Water District. The Project would not increase demand for water supplies, as the levee and TRB do not require and do not currently have a water supply, other than water supplied to the residences along Vendola Drive, the backyards of which the levee is located in. A small amount of water would be used during construction for dust control, mixing concrete, etc. This short-term increase would not, however, require a new water hook-up or substantially increase water use, and existing supplies would be sufficient for this purpose. The Project would not construct new housing or other water-demanding uses, and would not induce population growth, as discussed in Section 14, Population and Housing. Therefore, the Project would have a less-than-significant impact on water supplies.

c) Result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?

Wastewater treatment service for the Santa Venetia neighborhood is provided by the Gallinas Valley Sanitary District. Neither the levee itself nor the pump stations has or requires sanitary sewer service. The Project would not increase demand for wastewater conveyance or treatment, and there would be no impact of this kind.

d) Generate solid waste in excess of State or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals?

e) Comply with federal, state, and local management and reduction statutes and regulations related to solid waste?

California law (the Integrated Waste Management Act of 1989, as amended – Public Resources Code Sec. 40500 et seq – AB 939) requires local governments to plan for

and implement programs to reduce, recycle, or compost 75 percent of solid waste generated by 2020. The State also has specific goals for diverting organic waste, which decomposes in landfills to produce methane, a potent greenhouse gas. State law also directs edible food to hungry families rather than having it discarded. Marin County has prepared the Integrated Waste Management Plan required by the law, which lays out the specific programs required to reach the waste diversion mandates.

Solid waste and recycling collection service is provided to the Project area by Marin Sanitary Service. Collected materials are taken to the Marin Resource Recovery Center, operated by Marin Sanitary Service and located on Jacoby Drive in San Rafael (Marin Sanitary Service, 2019). There, recyclable materials are processed for market and compostable and disposed materials are transferred to the Redwood Landfill, located north of Novato just east of US 101. As of 2014, Redwood Landfill had a permitted capacity to receive 1,390 tons per day for disposal, a design capacity of 26,077,000 cy, and was projected to reach capacity in 2036 (Marin County Environmental Health Services, 2014). The EarthCare Composting Facility, located on the landfill site, has a daily capacity of 514 tons of compostable material (CalRecycle, 2019).

Solid waste generated by Project construction would not result in exceedance of the permitted throughput capacity or long-term capacity of these facilities. In addition, the proposed Project would be required to comply with applicable County and State regulations regarding diversion of waste from landfill, including the CalGreen (Title 24) requirement to recycle 65% of construction and demolition waste. The majority of waste associated with Project construction is expected to be plant material from site preparation, and wood waste from demolition of the existing TRB. As described in the Project Description, construction contractors would salvage still-usable redwood lumber. Unusable lumber and plant debris would be segregated for composting. Fill material would be reused on-site or would be used as clean fill elsewhere. These practices would enable the Project to meet the CalGreen construction and demolition waste diversion requirements. Therefore, this impact would be less than significant.

References

CalRecycle, 2019. Solid Waste Information System (SWIS) Database. Searched May 20, 2019.

Marin Sanitary Service, 2019. Marin Sanitary Service website. Accessed May 20, 2019. https://marinsanitaryservice.com/marin-resource-recovery-center/

Marin County Environmental Health Services, 2014. Solid Waste Facility Permit 21-AA-0001, Redwood Landfill. CalRecycle Concurrence Date: October 13, 2014.

20. Wildfire

If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the Project:	Significant or Potentially Significant Impact	Less Than Significant Impact with Mitigation Incorporated	Less than Significant	No Impact
a) Due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose project occupants to, pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire?	☐	☐	☐	☒
b) Require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment?	☐	☐	☐	☒
c) Expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes?	☐	☐	☐	☒
d) Expose people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildland fires?	☐	☐	☐	☒

a) Due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose project occupants to, pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire?

In accordance with California Public Resource Code Sections 4201 through 4204 and Government Code Sections 51175 through 51189, The California Department of Forestry and Fire Protection (CalFire) has mapped areas of significant fire hazards because of fuels, terrain, weather, and other relevant factors. CalFire's Statewide and County maps (adopted November 2007) depict Fire Hazard Severity Zones (FHSZs) that are within the State Responsibility Area (SRA). The SRA is the area of the state where the State of California is financially responsible for the prevention and suppression of wildfires. The

SRA does not include lands within city boundaries or in federal ownership. The FHSZs in the SRA are further classified as being Moderate, High, or Very High.

The Project site is not within the mapped Wildland-Urban Interface (WUI), and is not within an area mapped as a moderate, high, or very high fire hazard severity zone (MarinMap, 2019). The Project would not add new flammable elements or otherwise exacerbate wildfire risks. The Project would not change the risk of exposure to pollutant concentrations from wildfire for residents of the Santa Venetia neighborhood. There would be no impact of this kind.

b) Require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment?

As noted above, the Project site is not within the WUI and is not in an area of elevated fire hazard severity (MarinMap, 2019). The Project would not require installation of new or maintenance of existing infrastructure that could exacerbate fire risk. There would be no impact of this kind.

c) Expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes?

The Project involves no new housing or population increase (see Section 14, Population and Housing), and is not in an area of risk of landslide or debris flow (see Section 7, Geology and Soils). The Project therefore does not have the potential for exposing people or structures to post-fire risks of this kind.

d) Expose people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildland fires?

As noted above, the Project site is not within the WUI and is not in an area of elevated fire hazard severity (MarinMap, 2019). The Project would not exacerbate fire hazard or risk of wildfire, and so would not increase risks from wildland fires. There would be no impact of this kind.

Reference

MarinMap, 2019. Wildland-Urban Interface and Fire Hazard Severity layers. Accessed May 20, 2019. www.marinmap.org

21. MANDATORY FINDINGS OF SIGNIFICANCE. Pursuant to Section 15065 of the State EIR Guidelines, a project shall be found to have a significant effect on the environment if any of the following are true:

	Yes	No	Maybe
a) Does the project have the potential to substantially degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, substantially reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?	☐	☒	☐
b) Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects)?	☐	☒	☐
c) Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?	☐	☒	☐
d) Does the project have the potential to achieve short-term, to the disadvantage of long-term, environmental goals?	☐	☒	☐

a) Does the project have the potential to substantially degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, substantially

reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?

Section 4, Biological Resources, finds that the Project could have an adverse impact on habitat for sensitive wildlife species, and could result in take of listed species. With the mitigation measures specified in that section, however, all impacts on biological resources would be reduced to less than significant, and the Project would not substantially degrade the quality of the environment or substantially impact sensitive plants or animals. Section 5, Cultural Resources, finds that the Project could have an adverse effect on as-yet undiscovered archeological resources. With mitigation measures specified in Section 5, however, any such impact would be reduced to less than significant, and the Project would not have the potential to eliminate important examples of the major periods of California history or prehistory.

b) Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects)?

Cumulative impacts analysis considers whether the impacts of a project could combine with impacts of other nearby past, present, and reasonably foreseeable future projects in a cumulative manner, and if so, whether the project's contribution to the cumulative impact would be "cumulatively considerable" and therefore significant. Other projects considered in the cumulative analysis include current, recent, and foreseeable future projects in the vicinity of the project site. These projects include the following:

San Rafael Airport Recreational Facility, a private gymnasium and outdoor recreational facility on land belonging to the airport, across South Fork Gallinas Creek from the Project site. The project includes construction of a new bridge over North Fork Gallinas Creek, which has already been completed. This project was the subject of an Environmental Impact Report prepared by the City of San Rafael (City of San Rafael, 2011). Construction of the facility is nearing completion.

McInnis Marsh Restoration Project, a project of Marin County Parks, which plans to enhance wildlife habitat, safeguard facilities and protect against sea level rise. McInnis Marsh is located just north of the north end of the Project site, across South Fork Gallinas Creek. The project is currently undergoing environmental review.

Santa Venetia Pump Station 4 Upgrade, a project of the District, which would modify an existing storm water pump station located adjacent to 1590 Vendola Dr. and across the road from the McPhail School site. The project would replace existing stormwater pumps, replace existing electronic infrastructure, implement minor upgrades to the existing wooden pump shed, implement minor changes to an existing wetwell, and replace existing standby power system, and repair or replace the existing outfall pipe. The project would be located on the same site as the existing facility and would increase

performance and reliability and provide the community with better flood protection. Any work that could affect the marsh would occur only during the seasonal work windows for Salt Marsh Harvest Mouse, Ridgeway's Rail, and Black Rail. The project is planned, but without a definite implementation date.

Santa Venetia Neighborhood Stormwater Infrastructure Repair, Maintenance, and Upgrades, a project of the Marin County Public Works Department, would include repair, maintenance, and upgrades to existing stormwater infrastructure in the Santa Venetia Neighborhood, and constructing new interties and new drainage runs to connect to existing runs. Most or all of the work would be within existing roadway footprints. Work could include pipe excavation, replacement, and re-covering; grinding; minor concrete such as minor drainage improvements; clearing and grubbing; and related incidental work.

Specifically, the work could include:

- upsizing upper pipe network to Pump Station 4;
- upsizing upper pipe network located southerly on Adrian that routes to Pump Station 1;
- creating a more direct 24-inch connection to the storm drain on Vendola Drive;
- upsizing pipes on Labrea Way, Rosal Way, and Galerita Way .

The project is planned, but without a definite implementation date.

Outnumbered LLC Design Review / Tree Removal Permit, is a proposed new 12,112 square foot single family residence with detached 3,056 square foot garage and various accessory structures including a 1,225 square foot barn, 1,195 square foot caretaker's cottage, and 120 square foot writer's cabin, located at 70 Oxford Drive, about 2,000 feet from the nearest point of the Project site, across North San Pedro Road. Access to the proposed development would be provided by new driveways extending from Oxford Drive and Leona Drive. The project would result in the removal of 19 regulated coast live oak trees. As of May 21, 2019, the project status is "incomplete" (Marin County Community Development Agency, 2019). The project will be subject to environmental review.

As discussed in this Initial Study, the only environmental issue areas for which the Project could have a significant impact are Air Quality (Section 3), Biological Resources (Section 4) and Cultural Resources (Section 5). The Project could have a less-than-significant impact in several other issue areas. However, these less-than-significant impacts would not tend to combine with impacts of other projects, either because they are highly localized, or because the impacts are too slight to have the ability to combine in a cumulative manner. The following discussion therefore focuses on the three issue areas which have the potential for a significant impact.

Air Quality

According to the Bay Area Air Quality Management District (BAAQMD) CEQA Guidelines (BAAQMD, 2017), a project with a significant air quality impact for criteria pollutant emissions would also be considered to have a significant cumulative air quality impact, but a project with a less-than-significant air quality impact would be considered not to make a considerable contribution to cumulative air quality impacts. Because the Project's criteria pollutant emissions would be less than significant, the Project's contribution to cumulative criteria pollutant levels would therefore be less than significant as well.

A search of the BAAQMD's interactive map showing areas of elevated pollutant concentrations (BAAQMD, 2016, 2019) shows that the Santa Venetia neighborhood does not have high levels of TACs or PM 2.5. Because the Project, with the incorporation of **Mitigation Measure AQ-1: Diesel Exhaust Emissions Reduction Measures,** would emit very low levels of TACs and PM 2.5, over a short period of time, in a neighborhood that does not have elevated levels of pollutant concentrations, the Project's contribution to cumulative health risk would be less than significant.

Biological Resources

Several of the listed cumulative projects, including the Airport Recreational Facility, the McInnis Marsh Restoration Project, and the Santa Venetia Pump Station 4 Upgrade, could, like the Project, impact sensitive marsh habitat and species. The Airport Recreational Facility EIR specifies several mitigation measures to protect marsh habitat and species, including adherence to seasonal work windows and establishment of a 100-foot buffer zone from marsh habitat. The Santa Venetia Pump Station 4 Upgrade project includes as part of the project a commitment by the District to restrict any work within the marsh to the seasonal work windows. The McInnis Marsh Restoration Project is expected to improve marsh habitat and increase the availability of high-quality habitat for sensitive marsh species, but could result in short-term impacts during implementation of restoration treatments, which may include earth moving and other construction activities. The environmental review for this project is likely to identify measures to reduce impacts on sensitive species and habitats. The mitigation measures incorporated into these projects will reduce the potential for any residual impacts to marsh habitat and marsh species to combine with impacts of other projects in a cumulative manner.

The marsh species and communities in the area around the Project site exist in a fragmented, isolated condition. The existing stress on the species and natural communities within the area represents a baseline condition of isolation and stress. From this baseline, implementation of the Project would impose excess noise, human traffic, vegetation removal, and other disturbances within habitat areas. However, these disturbances would be limited to localized areas and implemented at a moderate pace (small construction crews working on one small section of the TRB at a time), to minimize impacts on biological resources. In addition, these impacts would be minimized by implementation of Mitigation Measures BIO-1 through BIO-6 (see Section 4, Biological Resources). With implementation of these measures and the moderate pace of work on the TRB, the proposed Project would tend not to combine with impacts of

other past, current, or foreseeable future projects to result in a cumulative impact on special-status species, natural communities, or other biological resources. Where cumulative impacts may occur, the Project's contribution would not be cumulatively considerable. Thus, the cumulative effect would be less than significant.

Cultural Resources

As described in Section 5, Cultural Resources, there are no known cultural resources within the Project site, though recorded archeological sites exist in close proximity. Cultural resources are highly site-specific. The mitigation measures included in Section 5 (Mitigation Measures CUL-1 through CUL-3) would reduce impacts associated with accidental discovery of previously unknown cultural resources to less than significant. Similar measures, including Marin County Code §22.20.040 (D) which addresses potential accidental discovery of archaeological and historical resources during construction, would apply to other projects. Therefore, the cultural resources impacts of the Project would not be expected to combine with those of other nearby projects in a cumulative manner; no significant cumulative impact is anticipated.

c) Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?

As discussed in Section 3, Air Quality, the Project could have a significant adverse effect on human health, but Mitigation Measure AQ-1: Diesel Exhaust Emissions Reduction Measures would reduce this impact to less-than-significant. With this measure, the Project would not have a substantial adverse effect on human beings. Other potential direct or indirect impacts on human beings, such as from geologic hazards (Section 7, Geology and Soils), exposure to hazardous materials (Section 9, Hazards and Hazardous Materials), and construction noise (Section 13, Noise), would be less than significant, and would not have substantial adverse effects on human beings.

d) Does the project have the potential to achieve short-term, to the disadvantage of long-term, environmental goals?

The Project's objectives are to increase flood protection for an existing neighborhood. While the beneficial effects of the Project are expected eventually to be outpaced by the contravening effects of climate change and land subsidence, the Project would not disadvantage the County's long-term environmental goals, as embodied in the Marin Countywide Plan.

References:

Bay Area Air Quality Management District (BAAQMD), 2016. Planning Healthy Places: A Guidebook for Addressing Local Sources of Air Pollutants in Community Planning. http://www.baaqmd.gov/~/media/files/planning-and-research/planning-healthy-places/php_may20_2016-pdf.pdf?la=en

BAAQMD, 2017. CEQA Air Quality Guidelines, May 2017.

BAAQMD, 2019. Planning Healthy Places Interactive Map. Accessed May 24, 2019. https://www.arcgis.com/home/webmap/viewer.html?webmap=9b240e706e6545e0996be9df227a5b8c&extent=-122.5158,37.5806,-122.0087,37.8427

City of San Rafael Community Development Department, 2011. San Rafael Airport Recreational Facility Final Environmental Impact Report. SCH # 2006012125. August, 2011. https://www.cityofsanrafael.org/airport-recreational-facility/

Marin County Community Development Agency, 2019. Outnumbered LLC Design Review / Tree Removal Permit. CDA Project # P2085. Web page accessed May 21, 2019. https://www.marincounty.org/depts/cd/divisions/planning/projects/north-san-rafael/outnumbered-llc_dr_tr_p2085_sr

V. PROJECT SPONSOR'S INCORPORATION OF MITIGATION MEASURES:

Acting on behalf of the Project sponsor or the authorized agent of the Project sponsor, I (undersigned) have reviewed the Initial Study for the [Project name and planning permits] and have particularly reviewed the mitigation measures and monitoring programs identified herein. I accept the findings of the Initial Study, including the recommended mitigation measures, and hereby agree to modify the proposed Project applications now on file with Marin County to include and incorporate all mitigation measures and monitoring programs set out in this Initial Study.

ELIZABETH LEWIS

(Project Sponsor's Name or Representative)

(Project Sponsor's Name or Representative)

(Project Sponsor's signature) — *Date* 6/26/2019

(Project Sponsor's signature) — *Date*

VI. DETERMINATION: (Completed by Marin County Environmental Planning Manager). Pursuant to Sections 15081 and 15070 of the State Guidelines, the forgoing Initial Study evaluation, and the entire administrative record for the Project:

[ ] I find that the proposed project WILL NOT have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared.

[X] I find that although the proposed Project could have a significant effect on the environment, there will not be a significant effect in this case because the mitigation measures described on an attached sheet have been added to the Project. A MITIGATED NEGATIVE DECLARATION will be prepared.

[ ] I find that the proposed Project MAY have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT is required.

Rachel Reid

Rachel Reid, Environmental Planning Manager

6/26/19

Date

GALLINAS LEVEE UPGRADE PROJECT

DOCUMENTS INCORPORATED BY REFERENCE

The following is a list of relevant information sources that have been incorporated by reference into the foregoing Initial Study pursuant to Section 15150 of the State CEQA Guidelines. These documents are both a matter of public record and available for public inspection either online or at the Planning Division office of the Marin County Community Development Agency (CDA), Suite 308, 3501 Civic Center Drive, San Rafael. The information incorporated from these documents shall be considered to be set forth fully in the Initial Study.

1. Marin Countywide Plan, CDA - Planning Division (2007)

2. Marin County Development Code, Title 22, CDA - Planning Division

3. Marin County Development Standards, Title 24, Marin County Department of Public Works - Land Use & Water Resources Division

4. Soil Survey of Marin County, USDA Soil Conservation Service (1985)

5. Flood Insurance Rate Map Series of Marin County, California, prepared by the Federal Emergency Management Agency

6. Association of Bay Area Governments (ABAG), 2013. Marin County Earthquake Hazard Map. Available online: http://gis.abag.ca.gov/website/liquefactionsusceptibility/index.html

7. California Department of Conservation, (CDC), 2014. Marin County Tsunami Inundation Maps, available online: http://www.conservation.ca.gov/cgs/geologic_hazards/Tsunami/Inundation_Maps/Marin/Pages/Marin.aspx.

8. Alquist –Priolo Special Studies Zone Map (1974)

9. Bay Area Air Quality Management District (BAAQMD), 2017. CEQA Air Quality Guidelines, May 2017.

10. Bay Area Air Quality Management District (BAAQMD), 2009. Revised Draft Options and Justification Report, California Environmental Quality Act Thresholds of Significance, October, 2009.

11. BAAQMD, 2019 Air Quality Standards and Attainment Status, obtained on-line (http://hank.baaqmd.gov/pln/air_quality/ambient_air_quality.htm).

12. California Office of Environmental Health Hazard Assessment (OEHHA), 2015, Air Toxics Hot Spots Program Guidance Manual for Preparation of Health Risk Assessments, February 2015.Mineral Resources, CDA - Planning Division (1987)

13. California Department of Fish and Wildlife. Rarefind v. 5. Online version of the California Natural Diversity Database (CNDDB).

14. California Department of Toxic Substances Control (DTSC), 2019. EnviroStor database. Available online: http://www.envirostor.dtsc.ca.gov/public/

15. County of Marin, 2019. Marin Map, Hazard, Fire Hazard Severity Zone. Available online: http://www.marinmap.org/Geocortex/Essentials/Marinmap/Web/Viewer.aspx?Site=MMDataViewer.

16. State Water Resources Control Board (SWRCB), 2019. GeoTracker database. Available online: http://geotracker.waterboards.ca.gov/

17. Marin County Sheriff Department, official website, available online at http://www.marinsheriff.org/.

18. CalRecycle, Facility/Site Summary Details: Redwood Sanitary Landfill (21AA0001), available online at: http://www.calrecycle.ca.gov/SWFacilities/Directory/21-AA-0001/Detail/.

19. Marin County Archaeological Sites Inventory Map, CDA - Planning Division (undated) ***confidential.***