NEGATIVE DECLARATION

Marin County

Environmental Coordination and Review

Pursuant to Section 21000 et. seq. of the Public Resources Code and Marin County Environmental Impact Review Guidelines and Procedures, a Negative Declaration is hereby granted for the following project.

1. Project Name: Santa Venetia Floodwall Project

2. Location and Description: 5 to 825 Vendola Drive, San Rafael

   The Marin County Flood Control and Water Conservation District Zone 7 (District) is proposing to construct a floodwall along the top of the existing earthen levee, from #7 Vendola Drive, just east of the Meadow Drive Bridge, to Pump Station 5, which is just east of #825 Vendola Drive. The total length of the floodwall would be about 7,200 feet, and the maximum width would be about 14 inches. The District's objective for the Project is to provide protection for the Santa Venetia neighborhood from the 100-year flood for the 30-year design life of the Project.

3. Project Sponsor: Marin County Flood Control and Water Conservation District

4. Finding:

   Based on the attached Initial Study and without a public hearing, it is my judgment that:

   ☐ The project will not have a significant effect on the environment.

   ☒ The significant effects of the project noted in the Initial Study attached have been mitigated by modifications to the project so that the potential adverse effects are reduced to a point where no significant effects would occur.

Rachel Reid _____ Date: 12/8/2023

Environmental Planning Manager

Based on the attached Initial Study, a Mitigated Negative Declaration is granted.

[ ] Board of Supervisors
See approval resolution following project approval on _____

1. Mitigation Measures:

   ☐ No potential adverse impacts were identified, therefore, no mitigation measures are required.

   ☒ Please refer to mitigation measures in the attached Initial Study.

   All of the mitigation measures for the above effects have been incorporated into the project and are embodied in conditions of approval recommended by the Marin County Flood Control and Water Conservation District.

Other conditions of approval in support of these measures may also be advanced.

2. Preparation:

   This Mitigated Negative Declaration was prepared by Sicular Environmental Consulting and Natural Lands Management on behalf of the Marin County Flood Control and Water Conservation District. Copies may be obtained at the address listed below.

   Marin County Flood Control and Water Conservation District
   3501 Civic Center Drive, Suite 304
   San Rafael, CA 94903
   (415) 473-6680
   Monday-Thursday, 8:00 a.m. to 5:00 p.m.

   An electronic version is also available for review on the County of Marin Environmental Planning website.

Santa Venetia Floodwall

Supplemental Environmental Review and Subsequent Mitigated Negative Declaration

Supplement to the 2019 Gallinas Levee Upgrade Initial Study/Mitigated Negative Declaration

Prepared for:

Marin County Flood Control and Water Conservation District

By: **Sicular Environmental Consulting and Natural Lands Management**
in association with:
Sutro Science, LLC
Environmental Science Associates
RCH Group
Achasta Archaeological Services

December 2023

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CHAPTER 1
Project Description

1. Introduction and Background

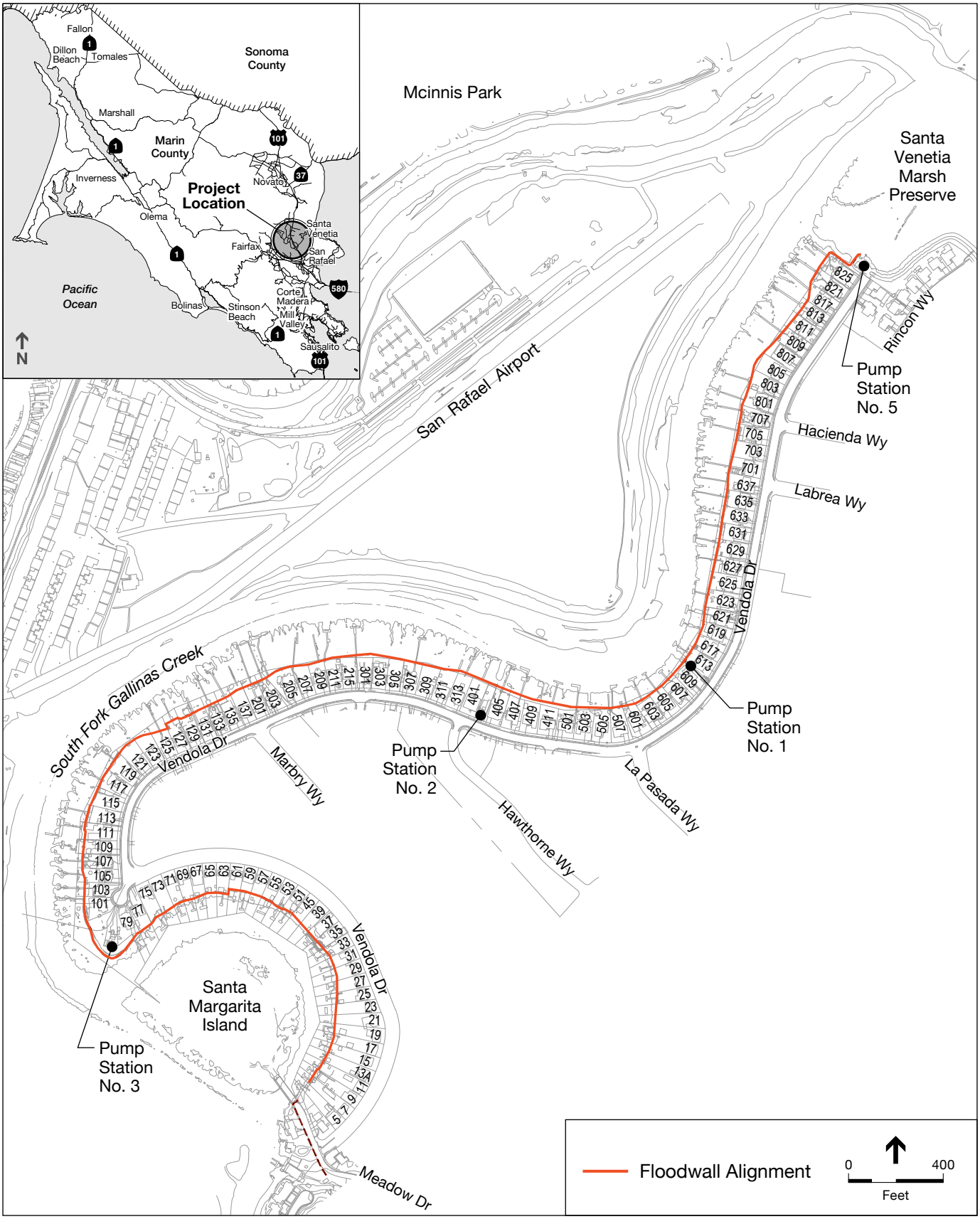
The Marin County Flood Control and Water Conservation District Zone 7 (the District)[1] is proposing to implement the Santa Venetia Floodwall Project (the Project). The Project would replace an existing wooden structure – the Timber-Reinforced Berm, or TRB – that is a crucial component of the levee system that protects the Santa Venetia neighborhood from flooding, with a composite sheet pile floodwall. The Project would provide improved protection from flooding for the neighborhood.

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 1-1, Location and Figure 1-2, Aerial Photo).** The neighborhood, which was built in the early to mid-20th century, is protected from flooding by a system of earthen 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 consisting of a thick sequence of soft, compressible sediments, generally referred to as "Bay mud." Fill placed on top of the Bay mud causes water to be squeezed out of the pore space between the mud particles, resulting in consolidation of the mud and subsidence of the land surface. Now, most of the Santa Venetia neighborhood lies below the high tide level. Subsidence is also gradually lowering the elevation of the earthen levees.

Private development of the marsh, including construction of an earthen levee and interior drainage system, began in 1914. Extensive flooding in the 1940s and 1950s was followed by the formation of Flood Zone 7 of the District in the 1960s. The current levee system was completed with development of the Santa Venetia neighborhood in the 1950s and 1960s (Kleinfelder, 2014). The District installed five pump stations along the neighborhood's storm drain network to move interior drainage through the levee. Nevertheless, 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 protecting homes on Vendola Drive. 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

[1] The District is a distinct governmental body separate from the County of Marin, but with very close ties to the County. The District is governed by the District Board of Supervisors (made up of members of the County Board of Supervisors) and staffed by the County Department of Public Works.



SANTA VENETIA FLOODWALL SUPPLEMENTAL ENVIRONMENTAL REVIEW

Figure 1-1

Source: CSW/ST2 Engineering, 2023

Project Site

SANTA VENETIA FLOODWALL SUPPLEMENTAL ENVIRONMENTAL REVIEW

Figure 1-2

Source: Google Earth Pro, 2022

Aerial Photo

crest (**Figure 1-3, Timber Reinforced Berm**). The TRB is constructed of redwood and pressure-treated fir, with wooden posts embedded approximately 2 to 4 feet into the earthen levee. The box structure is backfilled with a mixture of gravel, sand, silt, and clay soils.

When built, the TRB was a quick response to an urgent need to increase flood protection, without increasing the footprint of the levee. Since the TRB's construction nearly 40 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 wooden 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). A US Army Corps of Engineers (USACE) report sums-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). 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 Santa Venetia community, to elevation 9.8 feet[3] (FEMA, 2016; **Figure 1-4, FIRM Map**). With this reassessment of flood elevation, portions of the TRB are now below the BFE and at risk of overtopping in the FEMA-defined 100-year flood.[4] Overtopping of the TRB would result in flooding within the Santa Venetia neighborhood.

The trend of rising flood elevation is expected to continue with climate change and resulting sea level rise (SLR). The State of California's *Sea Level Rise Guidance, 2018 Update* (State of California Ocean Protection Council, 2018), provides probabilistic projections of different SLR scenarios. The "likely range" (66% chance) is 0.6-1.1 feet (7.2 to 13.2 inches) SLR by 2050. There is a 1-in-20 chance (5% chance) of 1.4 feet (16.8 inches) SLR by 2050, and a 1-in-200 chance (0.5% chance) of 1.9 feet (22.8 inches) SLR by 2050.

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).

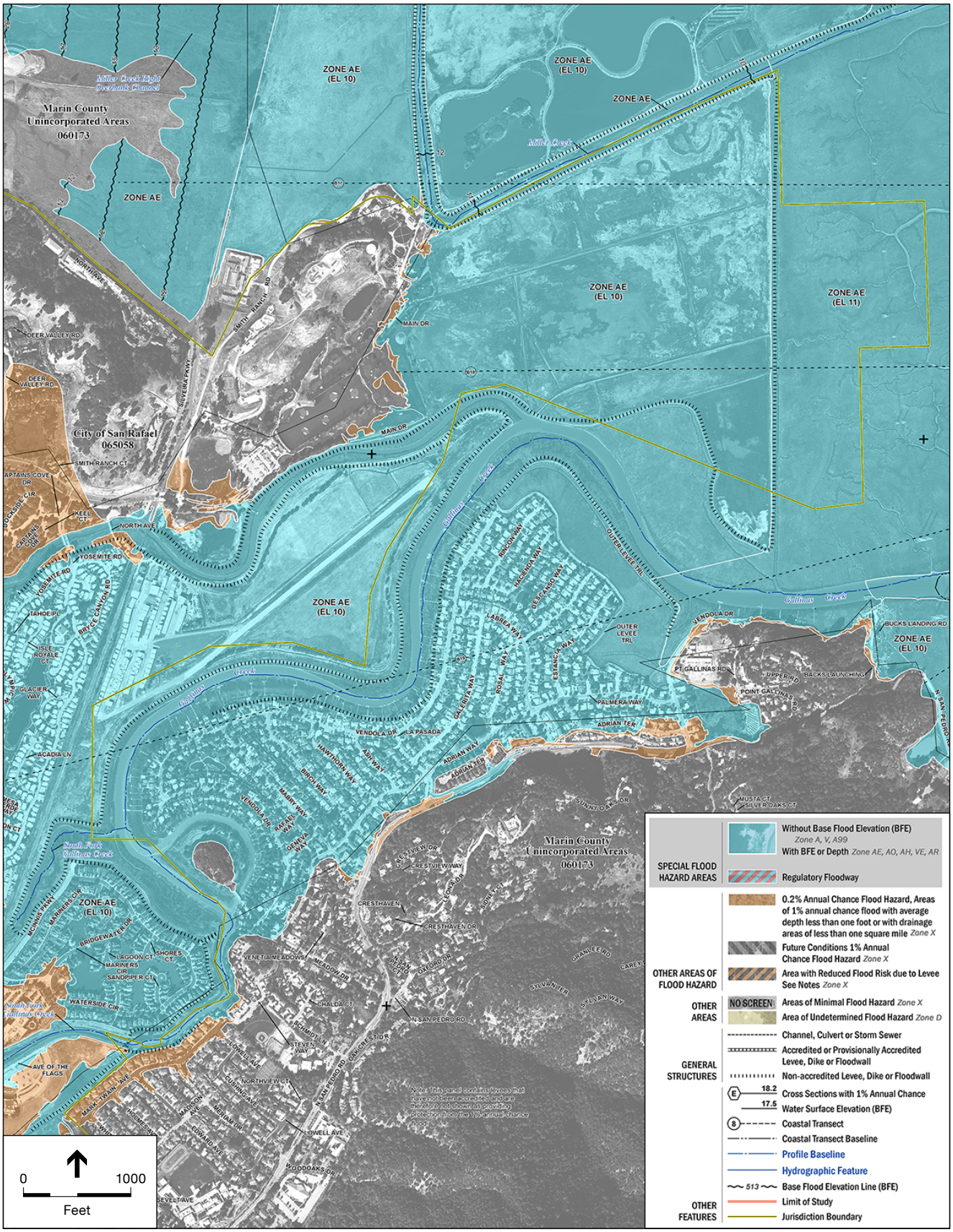
3 All elevations used in this document are referenced to the North American Vertical Datum of 1988 (NAVD 88), the standard model of the earth's surface used to establish land surface elevation and sea level in the United States. In this location, the datum (elevation 0) is equivalent to mean lower low water (MLLW), the low tide mark. Mean sea level (msl) is 3.13 feet.

4 The 100-year flood is the flood event having a 1-percent chance of being equaled or exceeded in any given year. The 1-percent annual chance flood is also referred to as the base flood or 100-year flood.

Source: Marin County Flood Control District

Figure 1-3

Timber Reinforced Berm



SANTA VENETIA FLOODWALL SUPPLEMENTAL ENVIRONMENTAL REVIEW

Figure 1-4

Source: FEMA, 2016

Flood Insurance Rate Map

Approximately every four years between 1962 and 2016, the County and the District have monitored settlement of the interior land and levee in Santa Venetia. 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 earth, the deteriorating TRB, and rising sea level, the risk of tidal flooding is continually increasing.

Previously, the District planned to replace the existing TRB with a new TRB, using more durable materials, a stronger design, and a uniform design height. In 2019, the District prepared an Initial Study (IS) for the TRB replacement project and adopted a Mitigated Negative Declaration (MND) (the "2019 IS/MND"),[5] to fulfill the District's environmental review responsibilities under the California Environmental Quality Act (CEQA). Since then, the District has determined that reconstructing the TRB would be too costly and time-consuming. The District therefore investigated alternative designs for improving flood protection (Civic Knit et al, 2023), ultimately deciding upon a composite sheet pile floodwall. As described in detail below, a composite sheet pile floodwall is constructed from interlocking panels made from a composite resin-fiber material, driven partially into the ground.

Because of the changed design – from a reconstructed TRB to a composite sheet pile floodwall – and the resulting changes in construction methods, the District has determined that the potential for the Project to result in adverse environmental effects must be reexamined. The District has therefore prepared this Supplemental Environmental Review (SER) to determine whether the current version of the Project would result in a new or substantially more severe significant environmental impact than previously identified in the 2019 IS/MND. Pursuant to State CEQA *Guidelines* Section 15162, a finding of a new or substantially more severe significant environmental impact would require the District to prepare a subsequent Mitigated Negative Declaration, or, if the impact could not be mitigated, a subsequent Environmental Impact Report (EIR) prior to Project approval. If no new or substantially more severe significant impact is identified, then the District would prepare an addendum to the 2019 IS/MND, pursuant to State CEQA *Guidelines* Section 15164.

2. Project Location and Setting

The Santa Venetia neighborhood is located in unincorporated Marin County, near the City of San Rafael, just east of the Marin County Civic Center (Figure 1-1). The neighborhood is located east of the US 101 freeway and is accessed via North San Pedro Road. The portion of Santa Venetia prone to flooding is a low-lying neighborhood of single family and multi-family residences. Bordering the neighborhood on its northeastern edge is the Santa Venetia Marsh Preserve. 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.

[5] The 2019 IS/MND is available at: https://marinflooddistrict.org/documents/gallinas-levee-upgrade-initial-study-june-2019/

The County of Marin's Santa Venetia Marsh Preserve, which is adjacent to and northeast of the Santa Venetia Neighborhood (Figures 1-1 and 1-2), 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 public 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 South Fork Gallinas Creek, where the TRB exists. The levee around the Preserve is maintained by Marin County Parks and Marin County Open Space District, which manage 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. This section of levee is also easily inspected and accessible by trucks and equipment for any flood-fighting that may be needed in the future.

3. Proposed Project

Project Design

The District is proposing to construct a composite sheet pile floodwall along the top of the existing earthen levee, from #7 Vendola Drive, just east of the Meadow Drive Bridge, to Pump Station 5, which is just east of #825 Vendola Drive (Figure 1-1). The total length of the floodwall would be about 7,200 feet, and the maximum width would be about 14 inches. An example of a composite sheet pile floodwall from Pinole Creek in Contra Costa County is shown in **Figure 1-5, Composite Sheet Pile Floodwall.** Composite sheet piles function similarly to the more traditional steel sheet piles, but they are fabricated from a proprietary composite material. The advantages of composite sheet piles are that they are lightweight, corrosion resistant, limit seepage, and have low maintenance requirements. A disadvantage is that the material is not as strong as steel, and thus can deflect under load, especially when not backed by soil or some type of anchor. A sheet pile floodwall would also counter the deterioration of the existing levee: it would strengthen the underlying earthen levee, while a reconstructed TRB would in some ways weaken the levee, due to its weight and the potential settlement that weight could cause.

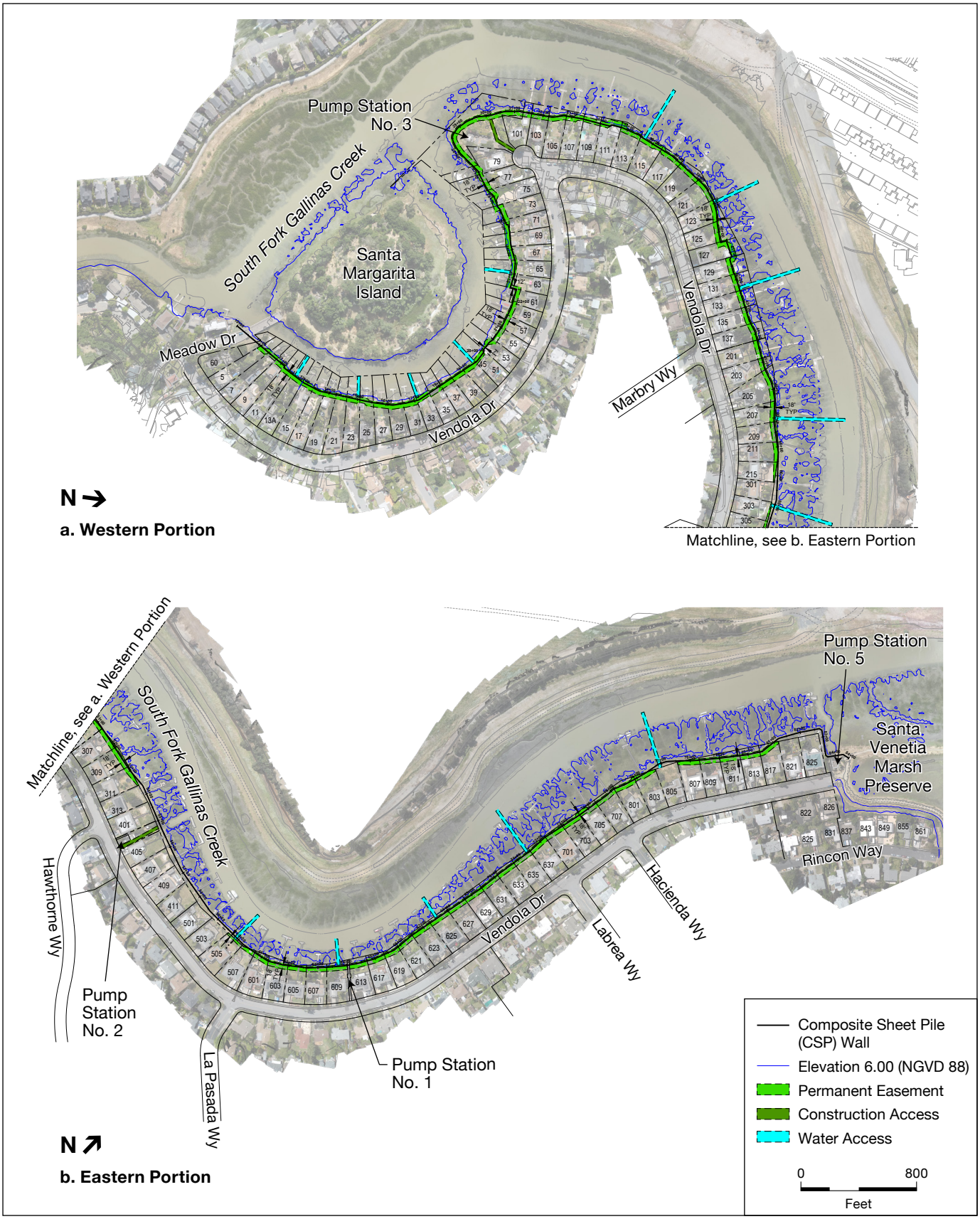
At the six locations where storm drain and sewer main outfalls pass beneath or over the levee (**Figure 1-6, Project Plan View)**, the Project would not install composite sheet piles. Rather, an upgraded TRB would be installed, constructed from composite, concrete, or plastic-based material, and connected to the adjacent composite sheet pile floodwall to provide continuous flood protection. Additionally, a TRB would be constructed at #55 Vendola Drive due to limited construction access from site constraints.

The District's objective for the Project is to provide protection for the Santa Venetia neighborhood from the 100-year flood for the 30-year design life of the Project. To determine the needed height of the floodwall to meet this objective, the District considered several factors (Civic Knit et al, 2023): FEMA's BFE of 9.8 feet; the 100-year water surface elevation predicted

Figure 1-5

Source: Civic Knit et al, 2023

Example of a Composite Sheet Pile Floodwall



SANTA VENETIA FLOODWALL SUPPLEMENTAL ENVIRONMENTAL REVIEW

Figure 1-6

Source: CSW/ST2 Engineering, 2023

Project Plan View

by USACE in their 2013 *Las Gallinas Creek Hydrologic, Hydraulic and Coastal Analysis* (USACE, 2013) of approximately 9.1 feet;[6] predicted SLR based on the State of California's 2018 Sea Level Rise Guidance Document (State of California, 2018); and predicted subsidence (Kleinfelder, 2014). All of these factors are shown in **Table 1-1**, with SLR and subsidence adjusted to year 2055, 30 years after the proposed completion date of the new composite sheet pile floodwall.

TABLE 1-1: FACTORS USED IN SELECTING DESIGN HEIGHT

(Vertical Feet)

100-Year Water Surface Elevation (NAVD 88)		2055 Projected Sea Level Rise (State of California, 2018)		2055 Land Subsidence (Kleinfelder, 2014)	
USACE, 2013	FEMA, 2016	Low-end, 66% Probability	High-end, 5% Probability	Low	High
9.1	9.8	0.7	2.2	0.8	1.0

Source: Civic Knit et al, 2023

Adding the values from Table 1-1 results in a range of 10.6 to 13 feet as potential target design elevations that would meet the overall objective of providing 100-year flood protection over a 30-year design life. Based on this analysis, and input from some residents indicating that they would consider a height for the proposed floodwall above 11 feet to have an unacceptable adverse effect on views from their homes and backyards, the District has selected 11 feet as the design height for the new composite floodwall.

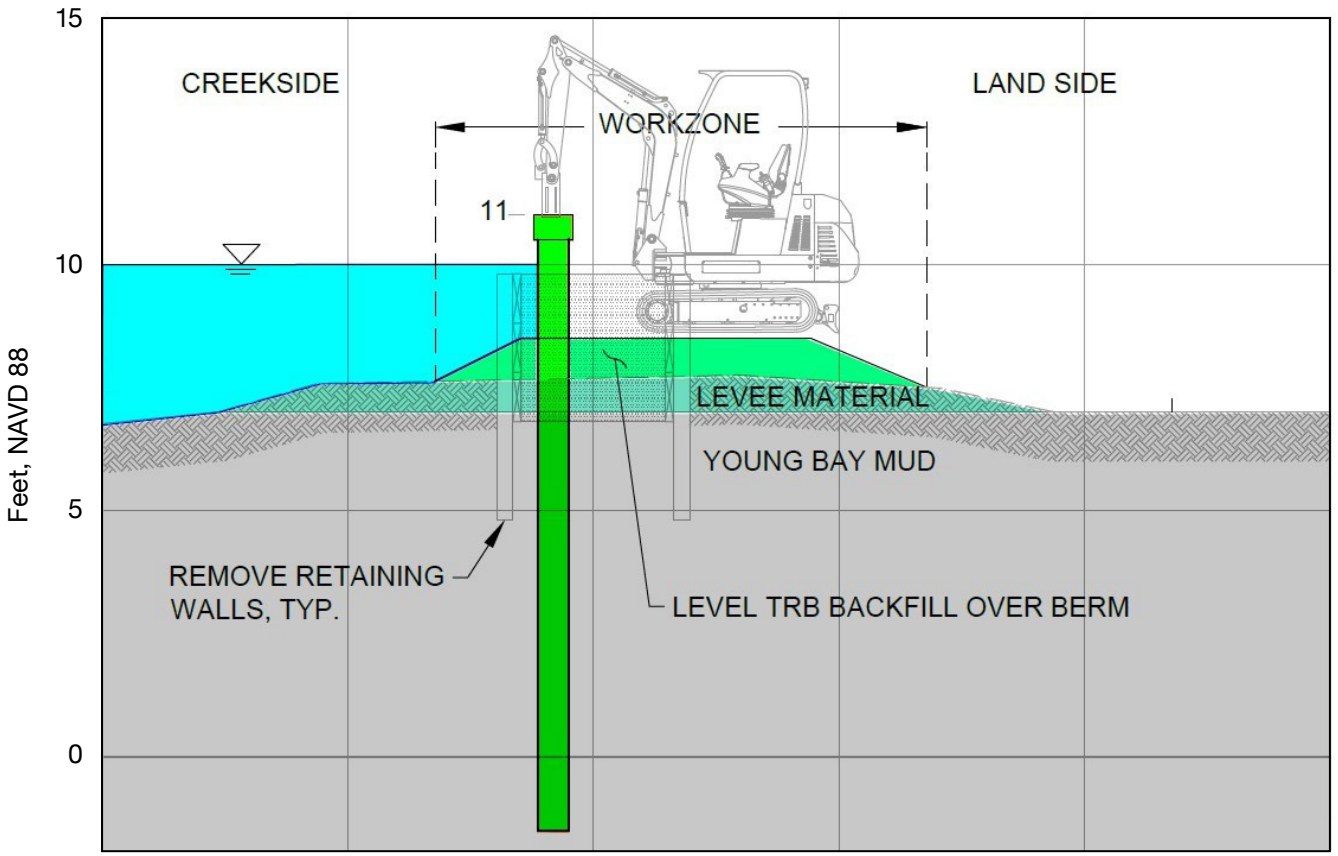
Due to differing ground elevations along the existing levee, the floodwall would range in height from less than 1 foot to 6 feet above the ground surface, in order to achieve a uniform elevation of 11 feet. To resist flood loads, the composite sheet pile sections would be embedded into the ground to depths ranging from 6 to 18 feet. Typically, the greater the height above ground surface, the deeper the composite sheet pile section would need to be embedded, and therefore the greater the overall length of the section.

Project Construction

Construction Method

To prepare to install the sheet piles, the construction contractor would need to create a clear work zone along the alignment. The work zone would be 10-18 feet wide, and could be situated completely or partly along the landside or waterside alignment of the new floodwall. An example of the work zone aligned along the landside of the floodwall is shown in **Figure 1-7, Work Zone Schematic Drawing.** Where the floodwall would be located on private property, the District proposes to acquire permanent easements from property owners to enable access for

[6] Both of these estimates are based on a coincident frequency analysis to account for the combined probability of coastal water surface elevation and creek flow, to set the 1% probability water surface elevation. The USACE has determined that the 100-year flow in Gallinas Creek is 1,300 cubic feet per second.



SANTA VENETIA FLOODWALL SUPPLEMENTAL ENVIRONMENTAL REVIEW

Figure 1-7

Source: Marin County Flood Control District

Work Zone Schematic Drawing

installation and future maintenance. The easements are proposed to be up to 18 feet wide. Additionally, up to 15 of the proposed easements would allow water access for construction (see Access for Construction discussion, below). Easements are proposed to be acquired on 106 privately owned parcels.

To create the work zone, the contractor would need to remove docks, gangways, decks, stairways, small buildings, trees, vegetation, TRB, and landscaping from the levee. In addition, where access to the levee from Vendola Drive would be between residences (see Access for Construction, below), side fences and gates would be removed as necessary. Upon completion of the floodwall, the contractor may replace side fences and gates as requested by homeowners, as well as stairs to provide resident access over the floodwall. As part of easement negotiations, fair market value would be established for structures and other items that would need to be removed from private backyards, and homeowners would be compensated for their removal. Replacement would be the responsibility of homeowners.[7] The estimated area or number of structures that would be demolished is listed in **Table 1-2**. A list of trees that would be removed is included in **Appendix D**.

TABLE 1-2: DEMOLITION

Type of Structure or Area	Number	Unit
Clearing and Grubbing Vegetation	54,000	Square Feet
Tree Removal - Trees < 36” Diameter at Breast Height	59	Trees
Tree Removal - Trees > 36” Diameter at Breast Height	3	Trees
Planter Box Removal	800	Square Feet
TRB Removal	6,500	Linear Feet
Side Fence Removal	1,695	Linear Feet
Rear Fence Removal	500	Linear Feet
Soil Export	300	Cubic Yards
Soil Spreading	1,500	Cubic Yards
Dock Removal	13,500	Square Feet
Stair Removal	3,945	Square Feet
Deck Removal	4,500	Square Feet
Hardscape Removal	1,000	Square Feet
Electrical Conduit/Conductor Removal	27	Lines
Storm Drain Lateral Removal	27	Lines
Storm Drain Main Removal (at Pump Station 5)	1	Line
Water Pipe Removal	37	Lines
Sanitary Sewer Pipe Removal	27	Lines

Source: Marin County Flood Control District

The work zone would be cleared, including demolition and removal of the TRB. The fill material within the TRB would be removed from the site, or spread across the top of the levee. The contractor would not demolish the entire TRB at once, but would stay just ahead of the sheet pile installation

[7] Replacement of structures in backyards is not considered a part of the Project, as it will be outside the control and responsibility of the District. Because replacement is a reasonably foreseeable consequence of the Project, however, the impacts of future replacement are considered in the environmental analysis in Chapter 2.

crew to limit the gap between the new floodwall and the old TRB. The demolition would be coordinated with tide and weather predictions to reduce the potential for localized flooding.

Along the majority of the levee, the composite sheet piles would be installed using a 15-ton excavator (Caterpillar 315L or similar; all equipment that would be used for Project construction is listed in **Table 1-3**) with a vibratory hammer mounted to the end of the excavator's arm, as shown in **Figure 1-8**. These excavators have a width of a little more than 8 feet. The excavator would operate in line with the composite sheet pile floodwall along the crest of the levee, within the cleared work zone. The hammer used to install the sheet piles operates using vibration, not impact. The vibration, in combination with the weight of the hammer and the hydraulic pressure exerted through the excavator's arm, would push the sheet piles into the ground.

TABLE 1-3: CONSTRUCTION EQUIPMENT

Equipment Type	Quantity
Caterpillar 315L or similar excavators	2
Caterpillar 315L or similar excavator mounted on amphibious tracks	1
Caterpillar 249D3 or similar compact track loaders	2
Caterpillar 303.5E or similar excavators	2
End or side grip sheet pile vibratory hammers	2
Two AUSA D350AHG or similar articulated dumpers	2
Flexifloat H-50 or modular pontoons	1
Truck mounted crane or an amphibious crane	1
Two aluminum boat	2
Sherp Amphibious Vehicle	1

Source: Marin County Flood Control District

Along portions of the levee, site conditions would not allow for use of this method of composite sheet pile installation, and an alternative or modified method would be employed. The method chosen would depend on the particular condition, as follows:

- Where longer sections of composite sheet pile are needed that exceed the excavator's reach, the contractor would need to use either a larger machine, an extension on the arm, or a side grip hammer. The hammer would still be the vibratory type.

- For hard soil conditions or where obstructions, such as rocks, are present within the levee fill that would prevent the composite sheet pile from penetrating the ground, the contractor would excavate a trench approximately 2 feet wide by about 30 inches deep with a small excavator, then drive the composite sheet pile section into the bottom of the trench. After installation, the contractor would backfill and compact the trench with the excavated material.

- Along about 1,000 feet of the work zone, it may be impractical to advance construction equipment along the crest of the levee, due to the presence of large trees and structures that would not be slated for removal. In these locations, equipment would need to travel along the outboard slope of the levee. If equipment must enter an elevation below 6 feet, which is the high tide level, the contractor would support equipment on "crane mats" or

Source: Sicular Environmental Consulting

Figure 1-8

Composite Sheet Pile Installation

timbers. Crane mats are manufactured products that are set on soft soil to spread the weight of equipment. The crane mats would be 8-10 feet wide and about 20 feet long, and would be advanced along the alignment leap-frog fashion to allow equipment to advance. Crane mats would be in place in any given location for a short time, typically 4 hours or less. An example of crane mats used recently in the State Route 37 improvement project is shown in **Figure 1-9**. As an alternative to crane mats, the contractor may use timbers, such as 6"x6" wood beams, placed next to each other to bridge soft soil conditions. These would also be placed temporarily.

- As an alternative to crane mats for working in soft soil conditions or at an elevation below 6 feet, the contractor may use a small amphibious excavator (10-19 metric tons) such as those manufactured by Wilco Manufacturing **(Figure 1-10),** to travel along the shoreline to a point where it could move back to the top of the levee and continue sheet pile installation. An amphibious excavator is capable of operating in soft soil conditions, so crane mats would not be necessary.

Access for Construction

The District is proposing to access the levee for equipment, materials, and personnel to demolish the TRB and construct the new floodwall in two ways: by land and by water.

Access by Land

Access by land to the levee for construction would be between residences along Vendola Drive, where the space is wide enough to accommodate the necessary equipment, materials, and personnel. These access routes would also be used for removal of demolished components of the TRB and other construction waste. All four of the District's pump stations would also be used for this purpose,[8] as well as up to ten private properties where temporary access easements would be acquired by the District.

Access by Water

In addition to access by land, the contractor may use a barge to move construction materials, equipment, and personnel up and down Gallinas Creek to and from the work area. An approximately 20-foot by 30-foot (600 square feet), shallow draft barge, such as those manufactured by Flexifloat Construction Systems **(Figure 1-11),** or a custom-built flotation device would be used. The contractor would use Buck's Landing, located off North San Pedro Road east of the Project site near the mouth of Gallinas Creek, as a staging area to transload materials between land and water. A crane located on shore at Buck's Landing would be used to load and unload the barge. No modifications to facilities at Buck's Landing would be required.

Once the barge is loaded, the contractor would push or pull it upstream using a small boat (a "push-boat") or amphibious vehicle, such as a "Sherp." The contractor would move the barge between Buck's Landing and designated levee access points only during high tide. At low tide,

[8] Equipment and construction personnel would access the levee at Pump Stations 2, 3 and 5; Pump Station 1 would provide access for personnel only, not equipment.

SANTA VENETIA FLOODWALL SUPPLEMENTAL ENVIRONMENTAL REVIEW

Figure 1-9

Source: Marin County Flood Control District

Crane Mats

SANTA VENETIA FLOODWALL SUPPLEMENTAL ENVIRONMENTAL REVIEW

Figure 1-10

Source: Wilco Manufacturing

Amphibious Excavator

SANTA VENETIA FLOODWALL SUPPLEMENTAL ENVIRONMENTAL REVIEW

Figure 1-11

Source: Flexifloat Construction Systems

Shallow Draft Barge

the barge would be anchored in the creek for a period of up to 12 hours, until the next high tide allowed the contractor to move it. The barge would be anchored in the channel using "spuds," which are removable piles that would be set into the creek bed (Figure 1-11).

Access from the stream channel to the levee would occur at up to twenty locations, generally evenly distributed along the floodwall's alignment, as shown in Figure 1-6. The distance from the stream channel, where the barge would be located, to the levee would range between about 20 and 200 feet. Exact locations would be selected to minimize disturbance to the marsh vegetation growing on the mudflat between the levee and the stream channel. Temporary access pathways across the mudflat would be demarcated by the District to limit the extent of area disturbed.

The contractor would move material along the temporary access pathway using a "slide pontoon" (**Figure 1-12**) pulled by an amphibious excavator (Figure 1-10). Construction materials would be loaded from the barge onto the pontoon using a crane mounted on the barge, as shown in Figure 1-11, or with the amphibious excavator. The amphibious excavator would pull the slide pontoon along the temporary access pathway across the mudflat to the levee, as illustrated schematically in **Figure 1-13**. An amphibious vehicle could also be used to move personnel between the barge and the levee along the temporary access pathways.

Construction Schedule and Duration

The new floodwall would be installed at a rate of about 100 lineal feet per workday, requiring approximately 90-120 workdays to complete. Work would commence in early May and would be completed by October, requiring one construction season to finish installation. The approximate timeline for the Project is shown in **Table 1-4**.

TABLE 1-4: PROJECT TIMELINE

Task	Days to Complete
1. Mobilize equipment and materials	15
2. Begin timber reinforced berm demolition	5
3. Sheet pile installation. This task would include the following: • Install erosion control (only needed if construction occurs during wet season, October 15-April 15). • Install exclusionary fencing as well as homeowner security fencing. • Demolish TRB to allow for the day's sheet pile installation. • Install sheet piles. • Implement trenching or other alternatives should soil conditions preclude vibratory installation. • Where outfall lines cross the levee, install TRB tying into composite sheet pile floodwall. • Install sheet pile cap. • Replace fences and gates. • Install stairs.	120
4. Cleanup and demobilization	15
5. Restore properties to existing conditions – work by others.	Not determined

Source: Marin County Flood Control District

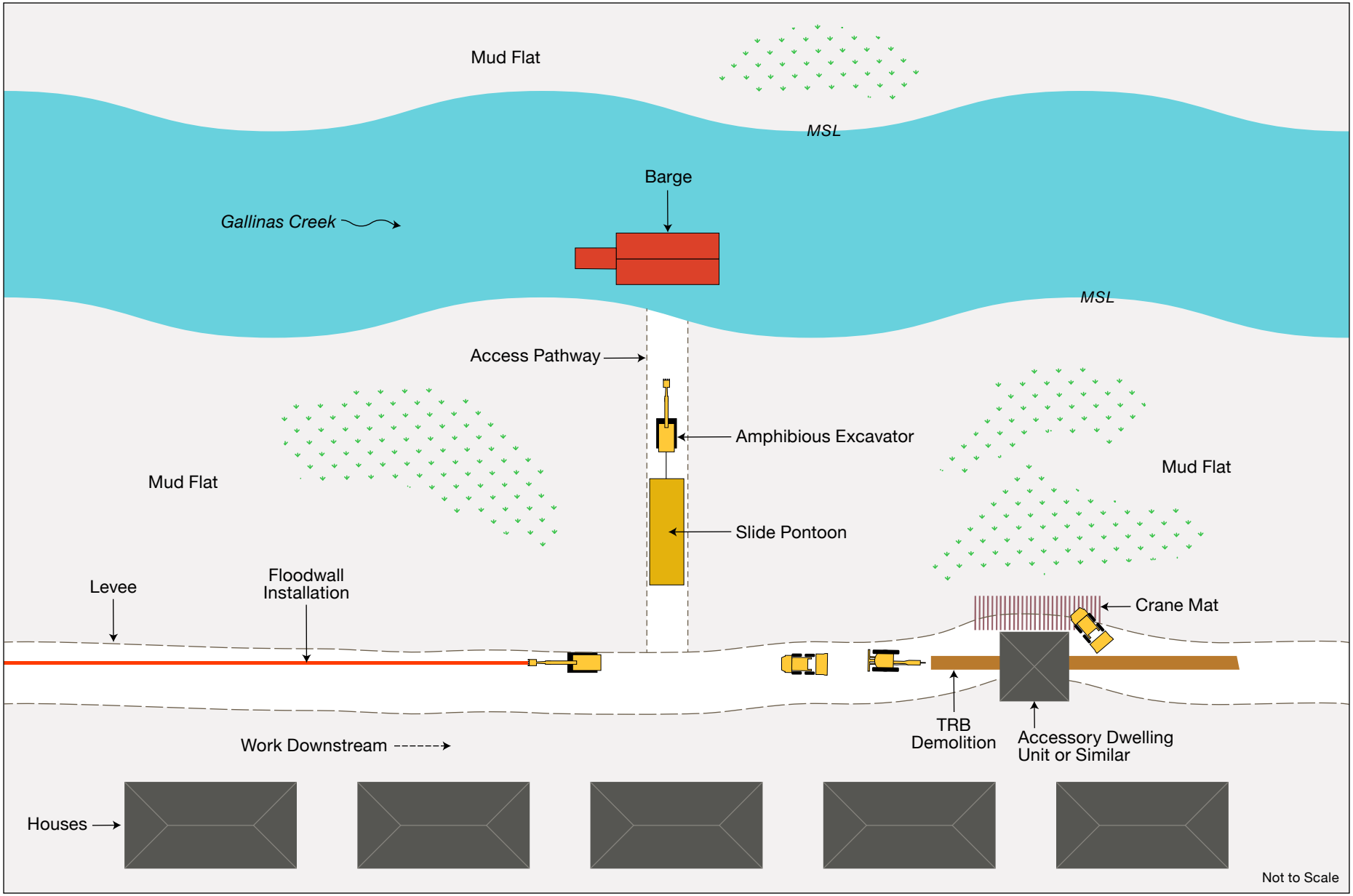
All work would occur between 7 a.m. to 5 p.m., Monday-Saturday. Moving the barge on Gallinas Creek may occur during nighttime hours to take advantage of high tides.

SANTA VENETIA FLOODWALL SUPPLEMENTAL ENVIRONMENTAL REVIEW

Figure 1-12

Source: Wilco Manufacturing

Slide Pontoon



SANTA VENETIA FLOODWALL SUPPLEMENTAL ENVIRONMENTAL REVIEW

Source: CSW/ST2 Engineering

Figure 1-13

Work Sequence for Water Access
Plan View

4. Required Approvals

The Santa Venetia Floodwall Project would require the following governmental approvals:

- Compliance with CEQA through an action of the District's Board of Supervisors to adopt an Addendum to the 2019 Mitigated Negative Declaration or to adopt a subsequent Mitigated Negative Declaration, or to certify an Environmental Impact Report;
- Approval of Project funding by the District's Board of Supervisors, County Board of Supervisors, grant agencies such as FEMA, 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 Section 1600;
- Federal Clean Water Act Section 401 Clean Water Certification by the San Francisco Bay Regional Water Quality Control Board;
- Federal Clean Water Act Section 404 Dredge and Fill Permit, and Rivers and Harbors Act Section 10 Permit from the U.S. Army Corps of Engineers.

5. References[9]

Civic Knit, Engeo, DAC Associates, and CSW|ST2, 2023. Santa Venetia Floodwall, Basis of Design and Project Alternatives, Marin County, California. Prepared for the Marin County Flood Control and Water Conservation District, March 2023. Version 2.0

CSW/Stuber-Stroh Engineering Group, 2023. Santa Venetia Floodwall Project Plan Set. Prepared for County of Marin Department of Public Works, Flood Control and Water Conservation District Zone 7, Santa Venetia, California. County Project No. FIPS ID #041-00000. Plan set dated 4/17/2023.

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.

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

[9] Bolded references are available at the Project website: https://marinflooddistrict.org/proposed-santa-venetia-floodwall-project/

US Army Corps of Engineers (USACE), 2013. Las Gallinas Creek Hydrologic, Hydraulic and Coastal Analysis. USACE San Francisco District, Water Resources Section. December 2013.

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

CHAPTER 2
Supplemental Environmental Review Checklist

The purpose of this checklist is to evaluate the proposed Project in order to determine, for each environmental issue, whether any changes (i.e., Project changes, changed circumstances, or new information of substantial importance) may result in a new or substantially more severe significant environmental impact, or otherwise trigger the requirement for a subsequent or Environmental Impact Report (EIR), Negative Declaration, or Mitigated Negative Declaration (ND or MND), pursuant to State CEQA Guidelines Sections 15162 or 15163. For each environmental issue, the checklist asks whether there is any changed condition that pertains to that issue, and, if so, whether the changed condition would result in a new significant impact or a substantial increase in the severity of a significant impact that was previously identified in the 2019 Initial Study/Mitigated Negative Declaration (2019 IS/MND).

Explanation of Checklist Questions

Where was this Impact Analyzed in the Previous Environmental Document?

The first question in the checklist asks for a cross-reference to the particular IS/MND document and impact number, section, or pages in which information and analysis that pertain to the environmental issue may be found. The 2019 IS/MND consists of the following documents:

- Marin County Flood Control and Water Conservation District, 2019a. Gallinas Levee Upgrade Project Initial Study and Draft Mitigated Negative Declaration. July, 2019.
- Marin County Flood Control and Water Conservation District, 2019b. Notice of Availability for the Draft Initial Study Gallinas Levee Upgrade Project. July 3, 2019.
- Marin County Flood Control and Water Conservation District, 2019 c. Gallinas Levee Upgrade Project Initial Study Response to Comments. October 2019.

Do Proposed Project Changes Affect this Issue?

This checklist question asks whether the proposed changes to the Project could affect or have any bearing on the environmental issue. This question, along with the next two, determines whether it is necessary to continue with the analysis of each issue. If it is determined that proposed Project

changes could not affect this environmental issue, the question is answered "no." A "yes" answer indicates the necessity to continue to evaluate impacts related to this environmental issue.

Are There Any Changed Circumstances that Affect this Issue?

This checklist question asks whether there have been changes in the circumstances under which the Project is undertaken that have occurred since adoption of the 2019 IS/MND that could affect the environmental issue. "Changed circumstances" include changes to the environmental setting and the regulatory setting for the Project. A "yes" answer indicates the necessity to continue to evaluate impacts related to this environmental issue.

Is There Any New Information of Substantial Importance Pertaining to this Issue?

This checklist question asks whether new information of substantial importance which was not known and could not have been known with the exercise of reasonable diligence at the time the 2019 IS/MND was adopted has come to light that pertains to the environmental issue. New information may include, for example, new studies of the Project or the Project site, the results of mitigation monitoring of the Project, or new scientific studies or methods.

If Any of the Previous Three Questions Was Answered "Yes," Would the Changes or New Information Result in a New or Substantially More Severe Significant Impact?

This checklist question pertains only to those issues for which at least one of the previous three questions was answered "yes." A "yes" response to this question indicates that the supplemental environmental analysis has found that a new significant impact or substantial increase in the severity of a previously identified significant impact would occur. A "no" answer indicates that the analysis has concluded that no such impact would occur. If the previous three questions were all answered "no," this column is marked "not applicable" ("N/A"). In determining whether a new or substantially more significant impact would occur, the supplemental environmental analysis assumes the continuation of existing adopted mitigation measures and conditions of approval, unless stated otherwise.

Are there any New or Reconsidered Mitigation Measures or Alternatives that would Substantially Reduce Significant Impacts?

Pursuant to Sections 15162(a)(3)(c) and (d) of the State CEQA *Guidelines*, this column asks whether new information of substantial importance has come to light, consisting of evidence that mitigation measures or alternatives previously found not to be feasible would in fact be feasible and would substantially reduce one or more significant impacts, or that new mitigation measures or alternatives which are considerably different from those previously analyzed would substantially reduce one or more significant impacts. A "yes" response indicates that the supplemental environmental analysis has developed new mitigation measures or alternatives, or reconsidered previous mitigation measures or alternatives, and found them to be feasible and capable of reducing a previously identified significant impact, or a newly identified significant

impact, to less than significant. A "no" response indicates no such mitigation measures or alternatives are available. "N/A" indicates that there was not previously, nor is there currently, a significant impact associated with this issue.

Discussion

A discussion of the elements of the checklist is provided under each environmental issue to clarify and substantiate the answers. The discussion provides information about each issue, how the proposed Project changes relate to the issue, any changed circumstances or new information resulting in new significant impacts or a substantial increase in the severity of previously identified significant impacts, and mitigation measures that apply to this issue.

Mitigation Measures

Applicable mitigation measures from the prior environmental review that are required to reduce or avoid impacts of the current Project are listed for each environmental issue. New mitigation measures and revisions to previously adopted mitigation measures are considered, if needed. Revisions are for clarity, for consistency with current regulations, or to make them applicable to the current Project. All proposed revisions to mitigation measures are also compiled in Chapter 3, Summary and Conclusion. Revisions are indicated by ~~strikethrough~~ and <u>underline</u> text.

Conclusions

At the end of each section, a discussion is provided that summarizes the conclusions resulting from the supplemental environmental analysis.

2.1 Aesthetics

Environmental Issue Area	Where Was this Issue Analyzed in the Previous Environmental Document?	Do Proposed Project Changes Affect this Issue?	Are There Any Changed Circumstances that Affect this Issue?	Is There Any New Information of Substantial Importance Pertaining to this Issue?	If Any of the Previous Three Questions Was Answered "Yes," Would Changes or New Information Result in a New or Substantially More Severe Significant Impact?	Are there any New or Reconsidered Mitigation Measures or Alternatives that Would Substantially Reduce Significant Impacts?
1. Aesthetics. Would the Project:						
a) Have a substantial adverse effect on a scenic vista?	2019 IS/MND, Section IV.1, Aesthetics, topic a; 2019 Response to Comments document, response to comment C-12	Yes	No	Yes	No	N/A
b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?	2019 IS/MND, Section IV.1, Aesthetics, topic b	No	No	No	N/A	N/A
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?	2019 IS/MND, Section IV.1, Aesthetics, topic c	Yes	No	Yes	No	N/A
d) Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?	2019 IS/MND, Section IV.1, Aesthetics, topic d	Yes	No	Yes	No	N/A

Discussion

Project changes potentially affecting aesthetics include the change from a reconstructed TRB to a composite sheet pile floodwall, as well as differences in construction methods. Project plans constitute new information affecting aesthetics issues. There are no new circumstances affecting

the Project since adoption of the 2019 IS/MND, such as substantial changes to the physical environment or changes to the policies and regulations governing views and aesthetics issues.

a. Would the Project substantially damage scenic resources?

c. Would the Project substantially degrade the existing visual character or quality of public views of the site and its surroundings?

The 2019 IS/MND examined the impacts on scenic resources and public views from rebuilding the TRB to a design height of no more than 12.5 feet NAVD 88. The 2019 IS/MND found that the project then being considered would temporarily alter, but would not substantially degrade, scenic resources and public views, and that impacts of these kinds would therefore be less than significant. Potential impacts on scenic views from Gallinas Creek were examined in the response to Comment C-12 in the Response to Comments document, and also found to be less than significant.

The current Project would construct the proposed floodwall along the same alignment as the TRB, and for approximately the same length, but to a design height of 11 feet, 1.5 feet lower than the previously proposed maximum height of the rebuilt TRB. The proposed floodwall would therefore have less effect on blocking of views across the levee from publicly accessible viewpoints, such as Santa Margarita Island, the Santa Venetia Marsh Preserve inner levee trail, and South Fork Gallinas Creek. Like the previously proposed TRB reconstruction, construction of the floodwall would require the removal of existing structures on and across the levee, as well as landscaping and ornaments, and would introduce a newly built wall along the length of the levee. This would be an intrusive new visual element primarily affecting the scenic quality and appearance of backyards of the houses along Vendola Drive. Impacts on private views are not, however, considered significant under CEQA. Furthermore, the appearance of the floodwall would soften over time, as structures such as docks and stairways are rebuilt and as replacement landscaping becomes established. Construction would be of short duration and would therefore have limited, insubstantial visual impacts. For these reasons, the current Project would not have a new or substantially more severe impact on scenic resources or public views, compared to the reconstruction of the TRB examined in the 2019 IS/MND.

b. Would the Project Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a State scenic highway?

As discussed in the 2019 IS/MND, the Project site is not within or visible from any State scenic highway, and the project then being examined therefore was found not to have the potential for an adverse impact related damaging scenic resources within a State scenic highway corridor. For the same reason, the current Project would not have a new or substantially more severe impact of this kind.

d. Would the Project create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?

The 2019 IS/MND concluded that the TRB reconstruction project then being considered would not create a new source of substantial light or glare that would adversely affect day or nighttime views in the area, because the structure itself would not be a substantial source of glare, and there would be no new light source associated with the project. Furthermore, construction activities were to be limited to daylight hours, and so would not create a temporary source of light during construction. The 2019 IS/MND found that impacts of this kind would be less than significant.

The composite sheet piles that would be used in construction of the proposed floodwall have a dull, grey, rough surface and would not be a substantial source of daytime glare. As with the previous project, the currently proposed floodwall Project would not install any new light source. Construction would occur during daylight hours and would be of short duration. The Project may involve nighttime barging of construction materials along South Fork Gallinas Creek, but this would be an infrequent, short-term occurrence, and, though the barge and push boat would be lit, the lighting would not be a substantial new source of nighttime light. For these reasons, the Project would not have a new or substantially more severe significant impact with regard to light and glare, compared to the previously proposed TRB reconstruction.

Mitigation Measures

The 2019 IS/MND identified only less-than-significant impacts on aesthetics; no mitigation measures were required. As the current Project would also have only less-than-significant impacts on aesthetics, there is no mitigation required.

Conclusion

Other than the Project changes and Project plans, there are no changed circumstances and no new information of substantial importance regarding aesthetics. The points made in the 2019 IS/MND to support the conclusion of less-than-significant impacts on aesthetics for the project then being evaluated are still valid; for the same reasons stated in the 2019 IS/MND, the current Project would have less-than-significant impacts on aesthetics. Therefore, the current Project would not result in a new significant impact or a substantial increase in the severity of a previously identified significant impact on aesthetics.

References

California Department of Transportation (Caltrans), 2022. List of eligible and officially designated State Scenic Highways. Excel file, dated August 2019, and downloaded from Caltrans website September 6, 2022). Available at https://dot.ca.gov/programs/design/lap-landscape-architecture-and-community-livability/lap-liv-i-scenic-highways

2.2 Agriculture and Forestry Resources

Environmental Issue Area	Where Was this Issue Analyzed in the Previous Environmental Document?	Do Proposed Project Changes Affect this Issue?	Are There Any Changed Circumstances that Affect this Issue?	Is There Any New Information of Substantial Importance Pertaining to this Issue?	If Any of the Previous Three Questions Was Answered "Yes," Would Changes or New Information Result in a New or Substantially More Severe Significant Impact?	Are there any New or Reconsidered Mitigation Measures or Alternatives that Would Substantially Reduce Significant Impacts?
2. Agriculture and Forestry Resources. Would the Project:						
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?	2019 IS/MND, Section IV.2, Agriculture and Forestry Resources, topic a	No	No	Yes	No	N/A
b) Conflict with existing zoning for agricultural use, or a Williamson Act contract?	2019 IS/MND, Section IV.2, Agriculture and Forestry Resources, topic b	No	No	No	N/A	N/A
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))?	2019 IS/MND, Section IV.2, Agriculture and Forestry Resources, topic c	No	No	No	N/A	N/A
d) Result in the loss of forest land of conversion of forest land to non-forest use?	2019 IS/MND, Section IV.2, Agriculture and Forestry Resources, topic d	No	No	No	N/A	N/A
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?	2019 IS/MND, Section IV.2, Agriculture and Forestry Resources, topic e	No	No	No	N/A	N/A

Discussion

a) Would the Project 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) Would the Project conflict with existing zoning for agricultural use, or a Williamson Act contract?

c) Would the Project 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) Would the Project result in the loss of forest land of conversion of forest land to non-forest use?

e) Would the Project 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?

As stated in the 2019 IS/MND, 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 2019 IS/MND found that the project then being examined 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; nor would it result in conversion of farmland or forest land. The 2019 IS/MND found, therefore, that the Project would have no impacts of these kinds.

Proposed project changes do not affect these issues, and there are no changed circumstances affecting these issues. Since the adoption of the 2019 IS/MND, the California Department of Conservation has published a new Important Farmlands map of Marin County (California Department of Conservation, 2022). This map shows the Project area as "Urban and Built-up Land."

For the same reasons as stated in the 2019 IS/MND, the current Project would have no impact on agricultural or forestry resources. The Project would therefore not result in a new significant impact or a substantial increase in the severity of a previously identified significant impact on agricultural or forestry resources.

Mitigation Measures

The 2019 IS/MND, finding that the project then being examined would have no impact on agricultural or forestry resources, required no mitigation measures for these resources. For the same reason, no mitigation measures are required for the current Project.

Conclusion

There are no changed circumstances affecting this topic. New information of substantial importance includes the publication by the California Department of Conservation of a new Important Farmlands map. The new map, however, corroborates the findings of the 2019 IS/MND to support the conclusion of no impacts on agriculture and forestry resources for the current Project. Therefore, the current Project would not result in a new significant impact or a substantial increase in the severity of a previously identified significant impact agriculture and forestry resources.

References

California Department of Conservation, 2022. *Marin County Important Farmland 2018.* California Department of Conservation, Division of Land Resource Protection, Farmland Mapping and Monitoring Program. Published January 2022.

2.3 Air Quality

Environmental Issue Area	Where Was this Issue Analyzed in the Previous Environmental Document?	Do Proposed Project Changes Affect this Issue?	Are There Any Changed Circumstances that Affect this Issue?	Is There Any New Information of Substantial Importance Pertaining to this Issue?	If Any of the Previous Three Questions Was Answered "Yes," Would Changes or New Information Result in a New or Substantially More Severe Significant Impact?	Are there any New or Reconsidered Mitigation Measures or Alternatives that Would Substantially Reduce Significant Impacts?
3. Air Quality. Would the Project:						
a) Conflict with or obstruct implementation of the applicable air quality plan?	2019 IS/MND, Section IV.3, Air Quality, topic a	No	No	No	N/A	N/A
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.	2019 IS/MND, Section IV.3, Air Quality, topic b	Yes	Yes	No	No	N/A
c) Expose sensitive receptors to substantial pollutant concentrations?	2019 IS/MND, Section IV.3, Air Quality, topic c	Yes	Yes	No	No	N/A
d) Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?	2019 IS/MND, Section IV.3, Air Quality, topic d	No	No	No	N/A	N/A

Discussion

Since the adoption of the 2019 IS/MND, the Bay Area Air Quality Management District (BAAQMD) has published updated *CEQA Air Quality Guidelines* (BAAQMD, 2023). BAAQMD's threshold of significance for air quality emissions were not modified in this update and remain the same as identified in the 2019 IS/MND.

A new version of the California Emissions Estimator Model (CalEEMod), Version 2022.1.1.19, has also been released since the adoption of the 2019 IS/MND, which has been used to estimate construction emissions for the Project (CAPCOA, 2022).

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. Criteria air

pollutants of concern in the Bay Area Air Basin 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.

As discussed in more detail below, the 2019 IS/MND identified four air quality impacts from Project activities. One impact was less than significant with mitigation incorporated, two were less than significant, and one was no impact.

a. Would the Project conflict with or obstruct implementation of the applicable air quality plan?

The 2019 IS/MND identified this impact as "No Impact." The Project changes do not affect this issue, there are no changed circumstances that affect this issue, nor is there any new information of substantial importance pertaining to the issue. The BAAQMD's *2017 Clean Air Plan/Regional Climate Protection Strategy (CAP/RCPS)*, remains the applicable air quality plan for the Project (BAAQMD, 2017b). The Project is a short-term construction activity that would not result in increased long-term air quality emissions. Furthermore, as identified throughout this section, Project would not exceed BAAQMD's significance thresholds, thus the Project would not conflict with or obstruct implementation of the *2017 CAP/RCPS*. Therefore, this conclusion would remain no impact; no new or substantially more severe significant impacts, compared to what was identified in the 2019 IS/MND, would occur.

b. Would the 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?

The 2019 IS/MND identified this impact as "Less than Significant." The Project changes could potentially affect this issue since construction details (i.e., equipment, schedule, vehicle trips, etc.) have changed and a new version of CalEEMod has been released.

Table 2.3-1 presents the modeled emissions from Project construction and compares them to BAAQMD's average daily thresholds of significance, per BAAQMD's *CEQA Air Quality Guidelines* (BAAQMD, 2023). CalEEMod Version 2022.1.1.19 was used to estimate construction emissions for the Project (CAPCOA, 2022). The CalEEMod emissions inventory, which provides construction assumptions (i.e., schedule, equipment, vehicle trips, etc.) and detailed emissions outputs, is provided in Appendix B.

TABLE 2.3-1: ESTIMATED AVERAGE DAILY CONSTRUCTION EMISSIONS (POUNDS)

Condition	ROG	NOx	PM_{10}[2]	$PM_{2.5}$[2]	CO
Construction - tons per year (max)	0.22	1.93	0.11	0.10	1.70
Construction - lbs per day (avg)[1]	1.22	10.6	0.60	0.55	9.33
Significance Threshold (lbs per day)	54	54	82	54	---
Significant (Yes or No)?	No	No	No	No	No

Note: 1. Based on estimated 185 construction work days.
2. PM_{10} and $PM_{2.5}$ are exhaust emission only, per BAAQMD's *CEQA Air Quality Guidelines*
Source: Appendix B: Air Quality Modeling Output

As shown in Table 2.3-1, the Project would be below BAAQMD's significance thresholds. BAAQMD's *CEQA Air Quality Guidelines* require the implementation of all Basic Construction Mitigation Measures for a project to have a less-than-significant criteria air pollutant impact related to construction-related fugitive dust. 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. Therefore, this conclusion would remain less-than-significant; no new or substantially more severe significant impacts, compared to what was identified in the 2019 IS/MND, would occur.

c. Would the Project expose sensitive receptors to substantial pollutant concentrations?

The 2019 IS/MND identified this impact as "Less than Significant with Mitigation Incorporated." The nearest sensitive receptors identified in the 2019 IS/MND remain unchanged. Approximately 100 feet of sheet pile wall would be installed per day, thus the Project would require approximately 90 to 120 days to complete the composite sheet pile wall. Therefore, a given sensitive receptor would be within 1,000 feet of DPM emission sources for approximately one month and in close proximity to emissions sources (within 200 feet) for up to one week.

Emissions modeling results indicate that DPM emissions (Exhaust PM_{10}) would average 0.60 pounds per day of construction (0.11 tons per year), and $PM_{2.5}$ emissions would average 0.55 pounds per construction day (0.10 tons per year) (Table 2.3-1). Given the small amount of DPM emissions and the short exposure time, the Project would not 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 (TACs) (OEHHA, 2015). Even short-term exposure to TACs could result in an increased risk of adverse health effects. Mitigation Measure AQ-1 from the 2019 IS/MND, which specifies additional diesel emissions reduction measures, would reduce TAC emissions and exposure, and would ensure that the impact is less than significant.

d. Would the Project result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?

The 2019 IS/MND identified this impact as "Less than Significant." The Project changes do not affect this issue, there are no changed circumstances that affect this issue, nor is there any new information of substantial importance pertaining to the issue. The nearest sensitive receptors identified in the 2019 IS/MND remain unchanged. Odors from the Project would not adversely affect sensitive receptors substantially or for an extended period. Therefore, this conclusion would remain less than significant; no new or substantially more severe significant impacts, compared to what was identified in the 2019 IS/MND, would occur.

Mitigation Measures

Mitigation Measure AQ-1 from the 2019 IS/MND would ensure that there are no new or substantially more severe significant impacts with respect to air quality. The text of all mitigation measures is included in Chapter 3, Summary and Conclusion.

Conclusion

The Project would not result in new or substantially more severe significant air quality impacts, compared to those identified in the 2019 IS/MND.

References

Bay Area Air Quality Management District (BAAQMD), 2023. *CEQA Air Quality Guidelines*, April 2023.

Bay Area Air Quality Management District (BAAQMD), 2017a. Air Quality Standards and Attainment Status. http://www.baaqmd.gov/about-air-quality/research-and-data/air-quality-standards-and-attainment-status#five Accessed June 23, 2023.

Bay Area Air Quality Management District (BAAQMD), 2017b. *Final 2017 Clean Air Plan*, April 19, 2017.

California Air Pollution Control Officers Association (CAPCOA), 2022. CalEEMod User's Guide Version 2022.1, April 2022.

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

2.4. Biological Resources

Environmental Issue Area	Where Was this Issue Analyzed in the Previous Environmental Document?	Do Proposed Project Changes Affect this Issue?	Are There Any Changed Circumstances that Affect this Issue?	Is There Any New Information of Substantial Importance Pertaining to this Issue?	If Any of the Previous Three Questions Was Answered "Yes," Would Changes or New Information Result in a New or Substantially More Severe Significant Impact?	Are there any New or Reconsidered Mitigation Measures or Alternatives that Would Substantially Reduce Significant Impacts?
4. Biological Resources. Would the Project:						
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 Wildlife or U.S. Fish and Wildlife Service?	2019 IS/MND, Section IV.4. Biological Resources, topic a, 2019 Response to Comments document, response to comment Q-5	Yes	Yes	No	Yes	Yes
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 Wildlife or U.S. Fish and Wildlife Service?	2019 IS/MND, Section IV.4. Biological Resources, topic b	Yes	Yes	No	Yes	Yes
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?	2019 IS/MND, Section IV.4. Biological Resources, topic c	Yes	Yes	No	Yes	Yes
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?	2019 IS/MND, Section IV.4. Biological Resources, topic d	Yes	Yes	No	Yes	Yes
e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	2019 IS/MND, Section IV.4. Biological Resources, topic e	No	No	Yes	No	N/A
f) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?	2019 IS/MND, Section IV.4. Biological Resources, topic f	No	No	No	N/A	N/A

Discussion

The 2019 IS/MND Biological Resources section considered whether reinforcing the timber-reinforced berm (TRB) in Santa Venetia, along with pipeline maintenance and replacement at the pump stations, could have adverse effects on biological resources. The analysis identified special-status wildlife species that use tidal marsh habitat, and concluded that potential effects on these species could be mitigated to a less-than-significant level by application of Mitigation Measures BIO-1 through 5. The analysis also provided mitigation for potential impacts to wetlands, and determined that impacts to local ordinances, habitat conservation plans and wildlife corridors were less than significant.

Since the publication of the 2019 IS/MND, the Project design and construction methods have changed. The Project now includes the option to use water access for construction equipment, materials, and workers, rather than exclusively land-based access. Marsh vegetation in the south fork of Gallinas Creek has expanded substantially into the marsh channel and the water at the western end (by Santa Margarita Island) has become shallower and more stagnant (see Photo 1 below). Annual surveys have continued to show presence of Ridgway's rail and California black rail in nearby Santa Venetia Marsh Preserve, and salt marsh harvest mouse surveys showed this species present in the preserve as well (Smith, 2023; Liu, 2023). A tree survey conducted for the Project (Appendix D) provides detailed new information on the species and size of trees that would be removed during Project implementation.

The current Supplemental Environmental Review includes an updated reconnaissance survey of the site, and searches of the California Natural Diversity Data Base (CNDDB)(CDFW, 2023a); U.S. Fish and Wildlife Service (USFWS) Information for Planning and Conservation (IPaC) (USFWS, 2023); and California Native Plant Society (CNPS) Rare Plant Inventory (CNPS, 2023) databases for current special-status species occurrence records from Santa Venetia and vicinity; review of unpublished survey findings for listed species in the vicinity of the Project; and examination of recent aerial photos of the Project site.

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 Wildlife or U.S. Fish and Wildlife Service?

The 2019 IS/MND evaluated impacts to federal and state-endangered Ridgway's rail (a.k.a., California clapper rail), state- threatened black rail, and federal and state-endangered salt marsh harvest mouse, which are all fully protected species, and other special-status marsh birds. Previously adopted mitigation measures (Measures BIO-1 and BIO-2), along with Marin County Development Code provisions protecting nesting birds were found to be sufficient to reduce all impacts on special-status species from the project evaluated in the 2019 IS/MND to less-than-significant levels. These measures included hand cutting of marsh vegetation in work areas, exclusion fence installation where feasible, worker education, avoiding foot traffic in sensitive marsh habitat, avoidance of work at extreme high tides, and seasonal surveys for nesting birds, with nest avoidance buffers to protect active nests. The following sections address changes associated with the 2023 Project.

Special-Status Plants

The 2019 IS/MND analyzed potential impacts to special-status species with potential to occur in Santa Venetia. Three rare plants (pappose tarplant, *Centromadia parryi* ssp. *parryi*; and Point Reyes bird's beak, *Chloropyron molle* ssp. *Molle* – both CRPR 1B.2 species*;* and soft bird's beak*, Chloropyron maritimum* ssp. *palustre*, a federally-listed endangered and California rare species) were considered to have moderate potential to occur in the marsh areas around the Project site, but none of these species were considered likely to occur in the 2019 work area, and no mitigation was required for rare plants. The 2023 records search indicates the nearest record of soft bird's beak from Sear's Point is considered likely extirpated, while the pappose tarplant record, also from Sear's Point, is presumed extant (CDFW 2023a). This species is found in vernally mesic, often alkaline sites, unlike the Santa Venetia work area, which is a perennial, tidal wetland. These two species are now considered to have low potential to occur. However, the Point Reyes bird's beak has numerous records from San Rafael coastal salt marsh; this species has moderate potential to occur in the work area (CDFW, 2023a).

The work area has been expanded since the project evaluated in the 2019 IS/MND and now includes marsh vegetation on the levee side of the channel, which could be temporarily damaged by movement of the barge in narrower parts of the channel (see **Photo 1**), and along the ten water access points, over which pontoons and heavy equipment would pass. Thus, there is a greater possibility for marsh rare plants (especially Point Reye's bird's beak) to be crushed if present in the work area; if present, this would be a new significant impact not previously identified in the 2019 IS/MND. Mitigation would include required surveys for special-status plants, to be conducted by a qualified botanist during the appropriate season within areas to be disturbed. Mitigation would also require relocation, salvage, and monitoring if rare plants are found in impact areas. This mitigation has been added to revised **Mitigation Measure BIO-1: Avoidance of Sensitive Species**, below, and would reduce impacts on rare plants to a less-than-significant level.

Salt Marsh Harvest Mouse, Ridgway's (California Clapper) Rail and Black Rail

The work proposed in 2019 within tidal marsh habitat was limited to pipe replacement and removal at the pump stations, planned to occur outside nesting season (September through January). The current Project plans to use water access to move materials to the worksite with a slide pontoon pulled by an amphibious excavator from the barge, which would be moored in the Gallinas Creek channel, across the marsh to the levee. Both the amphibious excavator and the slide pontoon would cross and temporarily disturb marsh vegetation at the water access points (see Project Description Figure 1-13) during installation of the composite floodwall. This work would occur from May to September, and has the potential for a substantially more severe significant impact than previously identified to nesting rails and salt marsh harvest mouse, if present, due to both its timing and the greater potential for damage to marsh habitat.

Since 2019, the channel has accumulated sediment which has fostered extensive growth of alkali bulrush (*Bolboschoenus robustus*) extending out from the berm and surrounding residents' docks. Bulrush is excellent habitat for black rail nesting, and may provide nest habitat for Ridgway's rail if sufficiently dense. In the presence of nearby pickleweed habitat, bulrush habitat may also host

Photo 1. Western end of south fork Gallinas Creek adjacent to Santa Margarita Island (August 2023).

salt marsh harvest mouse. Surveys for salt marsh harvest mouse in 2022 found the species in the Marsh Preserve (Smith, 2023), and both rail species are regularly heard in the Marsh Preserve (Liu, 2023). The Project changes and changed circumstances (increased use of the channel and larger impacts on marsh vegetation) have the potential to result in a substantial increase in the severity of the previously identified significant impact. Mitigation Measure BIO-1 has been revised for protection of these species through avoidance of all active nests with a 700-foot buffer and biological monitoring throughout all work in the tidal marsh. Mitigation Measure BIO-2 for worker education and site maintenance is carried forward unchanged. With implementation of these measures, the potential for substantially more severe significant impacts on these species would be reduced to a less-than-significant level.

Other Nesting Birds

The 2019 IS/MND found that construction activities could disturb nesting migratory birds, including raptors, protected under the Migratory Bird Treaty Act and California Fish and Game Code section 3503, but that Marin County Development Code (Sec. 22.20.040(G) Nesting Bird Protection Measures; Marin County, 2021) requires a preconstruction survey if construction occurs during the bird nesting season (February 1 to August 15). Potential nesting habitat for raptors occurs on or near the Project site area in marshes and eucalyptus trees. Other special-status bird species potentially breeding in marshes onsite include San Pablo song sparrow (*Melospiza melodia samuelis*) and saltmarsh common yellowthroat (*Geothlypis trichas*). Other protected migratory birds could nest in grasslands, ornamental trees and shrubs, and in the

marshes within or adjoining the Project site. While any birds nesting within the Project site may be habituated to noisy conditions, clearing, grading, and other construction activities during TRB demolition and composite sheet pile floodwall construction could disturb or destroy active nests, or cause nest abandonment and death of young, if active nests are present. Removal of trees or shrubs could result in direct losses of nests, eggs, or nestlings. Adherence to the Marin County Development Code would protect actively nesting birds and ensure that the Project would not have a new or substantially more severe impact on nesting birds. No new information or changed circumstances have come to light since certification of the 2019 IS/MND that would change this conclusion: the Project would not result in a new significant impact or a substantial increase in the severity of a previously identified significant impact on nesting migratory birds.

Fish and Other Aquatic Resources

The 2019 IS/MND did not address potential impacts to special-status aquatic biological resources or Essential Fish Habitat.[10] Impacts to aquatic species were not expected from land-based construction on the timber-reinforced berm. The revised Project would use a barge to access the berm from South Fork Gallinas Creek, and the barge would sit on to the bottom of the channel at low tide. Listed sturgeon and steelhead may be present in the channel at the time of construction. However, the Project's work schedule from May through September would avoid over-wintering fish and fish nursery sites; only stray juvenile fish would be likely to be present in the summer months. Damage to the channel bottom from the barge would be temporary for the duration of construction; no long-term damage to Essential Fish Habitat is expected. Any increase in sediment delivery to the channel would be mitigated to a less-than-significant level by use of erosion control measures, as included in Mitigation Measure BIO-4 from the 2019 IS/MND. Thus, the current Project would not have a new or substantially more severe significant impact on aquatic species, and no additional mitigation is required.

Reptiles and Amphibians

The 2019 IS/MND found that project activities had low potential to adversely impact California red-legged frog or western pond turtles, should they be present in the marsh channel. These species are unlikely to occur in the channel due to the salinity of the water. Thus, no mitigation was proposed for these species, which are still considered unlikely to occur in the revised work area. No new information or changed circumstances have come to light since certification of the 2019 IS/MND that would change this conclusion: the Project would not result in a new or more severe significant impact on special-status reptiles or amphibians.

In summary, the Project site has potential to host the rare plant Point Reyes bird's beak, and is close to occupied habitat for salt marsh harvest mouse, Ridgway's rail, and California black rail, all listed and fully protected species. These species would experience a substantially more severe significant impact from the Project, compared to that identified in the 2019 IS/MND, due to temporary loss of marsh habitat and potential disturbance during nesting season. With implementation of Mitigation Measure BIO-1, revised as follows, impacts on special-status

[10] Essential Fish Habitat was defined by the U.S. Congress in the 1996 amendments to the Magnuson-Stevens Fishery Conservation and Management Act, or Magnuson-Stevens Act, as those waters and substrate necessary to fish for spawning, breeding, feeding or growth to maturity. South Fork Gallinas Creek is EFH for salmonid species, coastal pelagic species and groundfish (NOAA 2023).

species would be reduced to a less-than-significant level by including rare plant surveys with avoidance or relocation, full-time biological monitoring for work in the marsh, exclusion fencing, and avoidance of work during rail nesting season near active nest sites. 2019 IS/MND Mitigation Measure BIO-2, which requires environmental awareness training for site workers and minimizing work in marsh and avoiding work in extreme high tides, is carried forward unchanged, to reduce impacts on special-status species to a less-than-significant level.

Revised Mitigation Measure BIO-1 Avoidance of Sensitive Species (additions are underlined; deletions are ~~struck-through~~)

a. Plants: A qualified biologist shall conduct a focused survey for all rare plant species with potential to be present during their suitable blooming period, prior to ground disturbance. If no special-status plants are observed, no further action is required. If special-status plant species, including Point Reyes bird's beak, are observed, the plants shall be avoided with a suitable buffer, determined in coordination with CDFW. The buffer zone shall be clearly demarcated using exclusion fencing.

If establishing an avoidance buffer is not feasible, individual plants shall be transplanted to an area with suitable physical and biological conditions outside of the work area, according to a Rare Plant Relocation Plan to be prepared by Marin County or its contractor and reviewed and approved by CDFW. The Relocation Plan shall include regular monitoring and weed control for a period of five years, with success criteria including 75% cover of target species and less than 20% cover of weeds. Adaptive management criteria shall apply, including additional 3 years' monitoring, weeding, supplemental watering, or additional replanting, if success criteria are not met after the five-year management period.

b. Wildlife: For work within and directly adjacent to 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:

- For work within and directly adjacent to marsh habitat~~, including work at the two pump stations with pipeline replacement activities, the~~ a qualified biologist ~~biological monitor~~ shall survey the area where ground disturbance or vegetation removal will take place each morning prior to the start of work.

- Protocol-level surveys will be conducted annually in Las Gallinas marsh and Santa Venetia marsh in all suitable habitat for Ridgway's (California clapper) rail (CCR) or California black rail (CBR). Protocol-level surveys for rails shall follow the methods detailed in the USFWS *Site-Specific Protocol for Monitoring Marsh Birds* (2017). ~~Survey methodology and results will be submitted for CDFW approval.~~ No work activities, visual disturbance (direct line of sight) and/or increase in the ambient noise level shall occur within 700 feet of areas where CCR and/or CBR have been detected and are likely to be nesting during the breeding season (January 15 - August 31 for CCR, February 1 - August 31 for CBR), though this buffer distance may be reduced depending on site conditions and the nature of the proposed work, in coordination with CDFW and

USFWS ~~other appropriate agencies~~. ~~For work within 250 feet of nesting sites, activities will be conducted outside of rail nesting season.~~

- 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. All work in tidal marsh habitat shall be monitored full-time by a qualified biologist.

- Following vegetation removal, exclusion fencing shall be installed around work areas within tidal marsh habitat where substrate would support fencing. 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 shall 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 and associated special-status species, it would not require exclusion fencing or biological monitoring.~~ Barrier fencing shall be installed at land-based ~~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 workday 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.

Revised 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 qualified botanist and 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).

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 Wildlife or U.S. Fish and Wildlife Service?

The 2019 IS/MND found that the project then being evaluated would avoid direct removal of sensitive natural community coastal salt marsh (CDFW 2023b), but that temporary impacts such as trampling, and indirect impacts, such as increased sediment delivery or spread of invasive plant species following construction, could occur. To mitigate these effects, Mitigation Measures BIO-3 and BIO-4 were proposed to reduce these impacts to a less-than-significant level by minimizing disturbance, and restoring habitat following construction, with monitoring for a period of five years. Although the area of impact to sensitive marshland community is larger in the current Project, the nature of the impact is similar, with temporary damage to marsh plants, primarily bulrushes, via operation of the slide pontoon and aquatic excavator, and by use of crane mats for traversing the outboard edge of the levee, where necessary for access. These plants may survive compression by equipment; if not, they would naturally recolonize the damaged areas from the healthy surrounding populations. Thus, Mitigation Measure BIO-4 has been revised to indicate that re-planting would occur only if needed, as determined by a qualified biologist, while maintaining the performance criteria and monitoring duration previously specified. BIO-4 has also been revised to remove the installation of "living shoreline" along the marsh side of the berm. This feature is not considered feasible in light of the restricted horizontal distance between the tidally flooded area and the berm. Salt marsh harvest mice have limited upland refugia along the berm due to the proximity of homes and development, but the marsh side of the berm would remain accessible and areas with upland vegetation would provide refugia. In addition to revised Mitigation Measure BIO-4, 2019 Mitigation Measure BIO-3 is carried forward unchanged for the current Project for protection of sensitive natural communities. Thus, with implementation of Mitigation Measures BIO-3 and revised Mitigation Measure BIO-4, the Project would not result

in a new significant impact or substantial increase in the severity of a previously identified significant impact on sensitive natural communities.

Photo 2. Dense bulrush adjacent to TRB at Vendola Drive residence (August 2023)

Revised Mitigation Measure BIO-4: Habitat Restoration and Monitoring

During or f~~F~~ollowing 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:

- If needed, as determined by qualified restoration biologist, a~~A~~reas 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

- If needed, as determined by qualified restoration biologist, t~~T~~emporary 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 (only applicable to replanted areas); *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.

- ~~Restoration of the TRB shall incorporate vertical and horizontal habitat structure to restore the marsh on the outward 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).~~

- ~~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 saltmarsh 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.~~

Revised 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.~~

•If the qualified restoration biologist employed by the District determines replanting is necessary, 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 state or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?

The 2019 IS/MND found that construction activities associated with the project then being evaluated had potential to harm sensitive wetlands (tidal marshland) where present in the work area. Mitigation Measures BIO-4 and BIO-5 were proposed to reduce these impacts to a less-than-significant level by requiring a wetland delineation, adherence to all permit requirements, and habitat restoration of temporarily disturbed areas. The current Project would have a more severe impact on tidal marsh because it would impact a larger area (up to 10 water access routes, approximately 20 to 30 feet wide and up to 100 feet long, and along the channel where the barge would pass; see Figure 1-6 in the Project Description, which shows the planned locations of water access). These water access points are densely vegetated, primarily with bulrush. Though the circumstances of the Project have changed to include a greater area, the mitigation for the project evaluated in the 2019 IS/MND would continue to apply and would still reduce impacts to a less-than-significant level. Thus, with implementation of revised Mitigation Measure BIO-4 and Mitigation Measures BIO-3 and BIO-5 from the 2019 IS/MND, the Project would not result in a new or more severe significant impact on jurisdictional wetlands and waters.

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 2019 IS/MND found a less-than-significant impact with respect to wildlife corridors and nursery sites. The impact was less than significant due to the small footprint of construction, its seasonal restriction, and because the creek channel water flow would not be impeded. The updated 2023 project has a larger footprint and includes use of a barge, which would launch from Buck's Landing near the shore of the bay and move upstream as far as the bridge to Santa Margarita Island. The construction footprint would also include up to 10 water access routes for a slide pontoon and aquatic excavator used to transport materials from the barge to the levee (see Figures 1-6 and 1-13 in the Project Description). Aquatic species movement through the channel could be impeded during construction at each location; however, construction would be of short duration (less than two weeks at each location) and would occur during the summer months when the use of the channel by fish species is at its lowest level. In addition, salt marsh harvest mouse may move within tidal marshland of the channel during foraging or dispersal, and could be harmed by barge or pontoon traffic. Salt marsh harvest mice in the work area would be protected by fencing and monitoring applied in Mitigation Measures BIO-1 and BIO-2. Mice that were moving through marshland that is not within an exclusion area could avoid harm by seeking upland refugia along the marsh side of the berm in areas with upland vegetation, Thus, impacts on fish and aquatic wildlife movement would remain less than significant.

Impact to nursery sites, specifically bird nesting habitat in the marsh, is a new significant impact, not previously identified in the 2019 IS/MND, due to the anticipated May to September work season. The temporary crushing of marsh vegetation beneath the barge and pontoons would have the potential to destroy bird nests, and the noise and other disturbance associated with construction could promote nest abandonment. This impact is potentially significant, but would be reduced to a less-than-significant level by implementation of revised Mitigation Measure BIO-1 and Mitigation Measure BIO-2, as well as Marin County Development Code requirements for protecting nesting birds. With implementation of Mitigation Measures BIO-1, as revised, and BIO-2 and Development Code Sec. 22.20.040(G), this impact would be reduced to less than significant.

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

The 2019 IS/MND stated that tree removal, if any, associated with TRB reconstruction would be subject to the tree protection provisions of Marin County Development Code Sec. 22.62. Consequently, no significant impact was identified.

A tree survey was conducted by the District to identify trees that would be removed during construction of the current Project (Appendix D). These would include primarily fruit trees and non-native species such as palm, eucalyptus and acacia; however, up to three large live oaks (*Quercus agrifolia*) would require removal due to their location on the present timber-reinforced berm, which would block installation of the composite sheet pile floodwall. Non-native trees are

not protected by Marin County Development Code, but live oaks (larger than 12 inches in diameter at breast height) are protected. The District would adhere to the provisions of the Code for replacement on- or off-site or payment of an in-lieu fee.

The Marin Countywide Plan (CWP; Marin County, 2007) has provisions for protection of wetlands (Policy BIO-1.1, to avoid development in and minimize impacts on wetlands, and BIO-3.1, establishing a 100-foot setback from wetlands for development). The Project is exempted from Policy BIO-3.1 because pre-existing development (residences on Vendola Drive) is already present adjacent to the marsh. The Project would not conflict with Policy BIO-1.1 because no development is planned in wetlands; the floodwall would be placed above the elevation of the marsh. CWP Policy BIO-2.5 restricts disturbance in sensitive habitat during nesting season; the Project would not conflict with this policy because Mitigation Measure BIO-1, as revised above, would protect nesting birds, including listed rail species, during construction. CWP Policy BIO-5.1 protects the Baylands corridor. The Project would not conflict with this measure because no development would occur in the marsh and temporary impacts would be minimized.

The Santa Venetia Community Plan (SVCP; Marin County, 2017) has provisions protecting wildlife movement corridors (Policy NR-1), protecting wetlands (Policy NR-6), and promoting native tree replacement (Policy NR-7). The Project would not conflict with these provisions because it would minimize impacts on wildlife movement corridors (Mitigation Measures BIO-1, as revised, and BIO-2) and wetlands (Mitigation Measures BIO-3, BIO-4, as revised, and BIO-5) and would adhere to the County tree ordinance for replacement.

With adherence to the Marin County Development Code, the Project would not conflict with any local policies or ordinances, nor with other regional or local plans protecting biological resources. New information, in the form of the tree survey conducted for the Project, would not change this conclusion: the Project would not result in a new or more severe significant impact with respect to conflict with local policies or ordinances protecting biological resources.

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, natural community conservation plans, or other approved local, regional, or state habitat conservation plans apply to the Project site. Thus, the 2019 IS/MND did not identify an impact related to this topic. Similarly, the current Project would have no impact of this kind.

Mitigation Measures

The 2019 IS/MND identified five mitigation measures required to reduce biological resources impacts to less than significant. Three of the mitigation measures are carried forward without change: Mitigation Measure BIO-2 would require worker environmental awareness training and minimized marsh work; Mitigation Measure BIO-3 would minimize vegetation removal and require staging in disturbed areas; and Mitigation Measure BIO-5 would require an aquatic resources delineation and adherence to all required permits for marsh work. Two of the mitigation

measures from the 2019 IS/MND require revision to address the new or substantially more severe significant impacts to biological resources of the current Project identified above. Revised Mitigation Measure BIO-1 would protect sensitive species by requiring rare plant and rail surveys with relocation or avoidance if found, and exclusion fencing and full-time biological monitoring for work within the marsh. Revised Mitigation Measure BIO-4 would require habitat restoration and monitoring following construction, with replanting if needed. The full text of all mitigation measures, including those unchanged from the 2019 IS/MND and those modified in this document, is included in Chapter 3, Summary and Conclusion.

Conclusion

Due to Project changes, the current Project has the potential to impact nursery sites, specifically bird nesting habitat in the marsh, which would be a new impact not previously identified in the 2019 IS/MND. Furthermore, the Project has the potential for a substantial increase in the severity of a previously identified significant impact on special status species. With the implementation of mitigation measures specified in the 2019 IS/MND, as revised in this section, the Project's new and substantially more severe significant impacts to biological resources would be reduced to a less-than-significant level.

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2.5. Cultural Resources

Environmental Issue Area	Where Was this Issue Analyzed in the Previous Environmental Document?	Do Proposed Project Changes Affect this Issue?	Are There Any Changed Circumstances that Affect this Issue?	Is There Any New Information of Substantial Importance Pertaining to this Issue?	If Any of the Previous Three Questions Was Answered "Yes," Would Changes or New Information Result in a New or Substantially More Severe Significant Impact?	Are there any New or Reconsidered Mitigation Measures or Alternatives that Would Substantially Reduce Significant Impacts?
5. Cultural Resources. Would the Project:						
a) Cause a substantial adverse change in the significance of a historical resource pursuant to §15064.5?	2019 IS/MND, Section IV.5, Cultural Resources, topic a	No	No	Yes	No	N/A
b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to § 15064.5?	2019 IS/MND, Section IV.5, Cultural Resources, topic b	No	No	Yes	No	N/A
c) Disturb any human remains, including those interred outside of formal cemeteries?	2019 IS/MND, Section IV.5, Cultural Resources, topic c	No	No	Yes	No	N/A

Discussion

The 2019 IS/MND evaluated the potential for the project then being considered to impact cultural resources. The evaluation was based on a Cultural Resources Assessment Report (CRAR; Price et al, 2019) that included a records search, literature search, and site survey. For the current Project, a supplement to the CRAR was prepared (Achasta Archaeological Services, 2023).

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

The 2019 IS/MND found no recorded historical resources within the Project site, and determined that the TRB itself was not an historical resource. The CRAR found that the potential for occurrence of undiscovered historical cultural material to be discovered during project construction was low, since the levee and TRB consist of artificial fill. The 2019 IS/MND also referenced Marin County Development Code Sec. 22.20.040(D) (Marin County, 2021), which 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. Based on the lack of recorded historical resources, no observation of historical materials within the Project site, and the protections of the Marin County Development Code, the 2019 IS/MND found that the project then being considered would not cause a substantial adverse change in the significance of a historical resource.

The supplement to the CRAR prepared for the current Project confirmed the findings of the 2019 IS/MND. For the same reasons as stated above, the current Project would not cause a substantial adverse change in the significance of a historical resource, and the impact would therefore be less than significant.

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

Based on the findings of the CRAR, the 2019 IS/MND discussed the presence near the Project site of sensitive archaeological resources. Though no recorded or observed archaeological resources were found within the Project site itself, the Project site, particularly the southwestern portion of the levee, should be considered sensitive. Accidental discovery or disturbance of archaeological materials during Project construction could result in a significant impact. The 2019 IS/MND therefore identified two mitigation measures to bolster the effectiveness of the Marin County Development Code protections cited above: Mitigation Measure CUL-1 required archaeological monitoring of the construction work on the southern 2,500-foot portion of the levee. Mitigation Measure CUL-2 required training of construction personnel in identifying and responding to an inadvertent discovery of archaeological materials. With adoption of these mitigation measures, the potentially significant impact on archaeological resources was reduced to less than significant.

The supplement prepared for the current Project confirmed the findings of the 2019 CRAR: there are no recorded or observed archaeological resources within the Project site, and the fill composition of the levee and TRB reduce the potential for presence of intact archeological materials (Achasta Archaeological Services, 2023). Still, the presence of nearby recorded archaeological sites supports the need for strong protection for previously undiscovered archaeological materials that may be encountered during construction. While the Project would not result in a new or substantially more severe significant impact with respect to archaeological resources, Mitigation Measures CUL-1 and CUL-2 are still required to reduce the previously identified impact to less than significant. The supplement to the CRAR recommends revisions to CUL-1 and CUL-2 to bring them up to current professional standards. Those recommendations are incorporated in revisions to the two mitigation measures, as follows:

Revised Mitigation Measure CUL-1: Archaeological Monitoring. ~~During Project construction,~~ The District will retain the services of a qualified archaeologist who has expertise in California precontact settings, and a Tribal representative with cultural ties to the Project area ~~shall~~ to monitor all Project related ground-disturbing activities into native soils in the southwestern Project area from the southern terminus of the Project area at Meadows Drive downstream to the

portion of the levee at 115 Vendola Drive. Upon completion of ground disturbance in the southwestern Project area, the District shall retain the archaeological and Tribal consultants on an on-call basis in the event of inadvertent discoveries throughout the remainder of the construction period. ~~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 previously undiscovered archaeological materials are discovered during construction, ~~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).~~ all work shall stop until the qualified archaeologist and the Tribal representative have the opportunity to evaluate the find and provide additional treatment recommendations. If the resource is considered significant by the archaeologist and the Tribal representative, all ground disturbance shall be halted until appropriate mitigation measures are implemented, as determined necessary by the qualified archaeologist, the lead agency, and the Tribal representative. Mitigation measures may include, but are not limited to: planning construction to avoid the resource; deeding the resource into a permanent conservation easement; capping or covering the resource with soil prior to construction; planning parks, greenspaces, or other open space to incorporate the resource; excavation of the resource, if it would otherwise be damaged or destroyed by the Project.

Revised 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 and Tribal representative culturally affiliated with the Project area to perform the construction monitoring. The archaeologist and the Tribal representative shall both be contractually empowered to stop work, if archaeological materials are discovered. The archaeologist and the Tribal representative will report to the District's Project Manager.

Revised Mitigation Measure CUL-2: Construction Personnel Training. A qualified archaeologist and a Tribal representative with cultural ties to the Project area 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.~~ (1) the reasons for archaeological and Tribal resource monitoring; (2) regulatory policies protecting archaeological and Tribal resources and human remains; (3) basic identification of archaeological and Tribal resources; and (4) the protocol to follow in case of a discovery of such resources. 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.

Revised Monitoring Measure CUL-2

Prior to the commencement of construction activities, the District shall employ a qualified archaeologist and a Tribal representative with cultural ties to the Project area 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) Would the Project disturb any human remains, including those interred outside of formal cemeteries?

The 2019 IS/MND, based on the CRAR, found that ground disturbing activities associated with site preparation, grading, and construction activities could also disturb human remains, including remains interred outside of formal cemeteries, and that the proximity of archaeological sites raised the potential for accidental discovery of human remains during Project construction. The 2019 IS cited Section 7050.5(b) of the California Health and Safety code, which requires certain procedures to be implemented if human remains, or possible human remains, are discovered, but to ensure compliance with Section 7050.5(b), and therefore to ensure that the potential impact was adequately mitigated, the 2019 IS/MND added Mitigation Measure CUL-3, requiring that the archaeological training specified in Mitigation Measure CUL-2 also include training on identification of human remains or potential human remains, and in the procedures to follow in the event of such a discovery.

The supplement to the CRAR prepared for the current Project reiterates the potential for accidental discovery of human remains during Project construction, and also cites Section 7050.5(b) of the California Health and Safety Code. With adherence to that code section, ensured by the adoption of Mitigation Measure CUL-3, any disturbance of human remains would be properly addressed, and the impact would therefore be less than significant. With these provisions, there would be no new or substantially more severe impact with respect to disturbance of human remains.

Mitigation Measures

Mitigation measures identified in the 2019 IS/MND, as revised above, would mitigate the Project's potential impacts to cultural resources to less than significant.

Conclusion

The Project would not have a new significant impact nor a substantial increase in the severity of a previously identified significant impact, with respect to cultural resources. With implementation of Mitigation Measures CUL-1, CUL-2, and CUL-3, as revised above, the Project would have only a less-than-significant impact on cultural resources.

References

Achasta Archaeological Services, 2023. Supplemental Cultural Resources Assessment Report: Santa Venetia Floodwall Project, Supplemental Environmental Review, Santa Venetia Neighborhood, Marin County, California. Prepared for Sicular Environmental Consulting and Natural Lands Management by Brenna Wheelis, B.A., and Susan Morley, M.A., RPA.

Marin County, 2021. Marin County Code, Title 22, Development Code.

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.

2.6. Energy

Environmental Issue Area	Where Was this Issue Analyzed in the Previous Environmental Document?	Do Proposed Project Changes Affect this Issue?	Are There Any Changed Circumstances that Affect this Issue?	Is There Any New Information of Substantial Importance Pertaining to this Issue?	If Any of the Previous Three Questions Was Answered "Yes," Would Changes or New Information Result in a New or Substantially More Severe Significant Impact?	Are there any New or Reconsidered Mitigation Measures or Alternatives that Would Substantially Reduce Significant Impacts?
6. Energy. Would the Project:						
a) Result in a potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation?	2019 IS/MND, Section IV.6, Energy, topic a	Yes	No	Yes	No	N/A
b) Conflict with or obstruct a state or local plan for renewable energy or energy efficiency?	2019 IS/MND, Section IV.6, Energy, topic b	No	Yes	No	No	N/A

Discussion

Project changes, specifically changes in construction methods and materials, require reevaluation of the potential for energy impacts. No other new information affects this topic. Changed circumstances include the adoption by Marin County of a new Climate Action Plan (Marin County, 2020) and an updated Green Building Code (Title 19 Marin County Building Code, Subchapter 2 - Green Building Requirements).

a. Would the Project result in a potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation?

The 2019 IS/MND found that the reconstruction and maintenance of the TRB would consume energy, mostly in the form of fossil fuels for powering construction equipment and vehicles, but that the amount of energy consumed would be modest, and would be a justifiable use, given that the levee is essential infrastructure. The 2019 IS/MND therefore concluded that the project then being considered would have a less-than-significant impact with regard to wasteful, inefficient, or unnecessary consumption of energy resources.

The current Project would use different construction methods, including more use of heavy equipment, which would consume energy in the form of fossil fuels. Construction would, however, occur over a shorter period of time. Again, the Project is essential infrastructure, and once constructed, would consume only a small amount of energy for ongoing inspection and

maintenance. For the same reasons as stated for the previously proposed TRB reconstruction, the current Project would not result in wasteful, inefficient, or unnecessary consumption of energy resources; there would be no new or substantially more severe significant impact of this kind.

b) Would the Project conflict with or obstruct a state or local plan for renewable energy or energy efficiency?

The 2019 IS/MND found that the project then being considered would not conflict with or obstruct a state or local plan for renewable energy or energy efficiency, and concluded that there would be no impact of this kind.

Since completion of the 2020 IS/MND, Marin County has updated its Climate Action Plan. Climate Action Plan 2030 (Marin County, 2020), which contains policies and programs pertaining to the unincorporated areas of the County, was approved by the Board of Supervisors in December 2020. Climate Action Plan 2030 contains numerical targets for greenhouse gas (GHG) reductions consistent with the Statewide goal, established by Senate Bill 32 of 2016, to reduce emissions 40 percent below 1990 levels by 2030. Strategies for achieving the targeted GHG reductions include many measures related to energy efficiency and renewable energy, including increasing use of zero emission vehicles, greater reliance on human-powered and public transit, increasing renewable energy generation including rooftop solar, waste reduction strategies, water conservation strategies, greater use of low-embodied emissions building materials, and others. Many provisions of CALGreen and the Marin County Green Building Code are consistent with and serve to implement Climate Action Plan 2030 strategies, such as requiring advanced energy efficient design and construction, and use of on-site renewable energy generation.

Compliance with the provisions of CALGreen and the 2022 Marin County Green Building Code 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. As with the previously proposed reconstruction of the TRB, the current Project would be consistent with State and local plans for energy efficiency and renewable energy, and, as concluded in the 2019 IS/MND, there would be no impact of this kind: the current Project would not result in a new significant impact or a substantial increase in the severity of a previously identified significant impact of this kind.

Mitigation Measures

The 2019 IS/MND found no significant impacts associated Energy, and so required no mitigation measures. Similarly, the current Project would not have an impact with respect to energy, and so no mitigation is required.

Conclusion

the 2019 IS/MND concluded that the project then being evaluated would not have a significant impact with respect to energy consumption and consistency with energy efficiency and renewable energy plans. There is no new information of substantial importance affecting this topic. Changed circumstances include the adoption by Marin County of Climate Action Plan 2030 and updates to the County Green Building Code. Taking these changed circumstance into consideration, the current Project would not result in a new significant impact or a substantial increase in the severity of a previously identified significant impact with respect to energy.

References

Marin County, 2020. Climate Action Plan 2030. Adopted by the Board of Supervisors December 2020. Available at: https://www.marincounty.org/depts/cd/divisions/sustainability/climate-and-adaptation.

2.7. Geology and Soils

Environmental Issue Area	Where Was this Issue Analyzed in the Previous Environmental Document?	Do Proposed Project Changes Affect this Issue?	Are There Any Changed Circumstances that Affect this Issue?	Is There Any New Information of Substantial Importance Pertaining to this Issue?	If Any of the Previous Three Questions Was Answered "Yes," Would Changes or New Information Result in a New or Substantially More Severe Significant Impact?	Are there any New or Reconsidered Mitigation Measures or Alternatives that Would Substantially Reduce Significant Impacts?
7. Geology and Soils. Would the Project:						
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.	2019 IS/MND, Section IV.7, Geology and Soils, topic a.i	No	No	No	N/A	N/A
ii) Strong seismic ground shaking?	2019 IS/MND, Section IV.7, Geology and Soils, topic a.ii	Yes	Yes	No	No	N/A
iii) Seismic-related ground failure, including liquefaction?	2019 IS/MND, Section IV.7, Geology and Soils, topic a.iii	Yes	Yes	No	No	N/A
iv) Landslides?	2019 IS/MND, Section IV.7, Geology and Soils, topic a.iv	Yes	Yes	No	No	N/A
b) Result in substantial soil erosion or the loss of topsoil?	2019 IS/MND, Section IV.7, Geology and Soils, topic b	No	No	No	N/A	N/A
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?	2019 IS/MND, Section IV.7, Geology and Soils, topic c	No	No	No	N/A	N/A

Environmental Issue Area	Where Was this Issue Analyzed in the Previous Environmental Document?	Do Proposed Project Changes Affect this Issue?	Are There Any Changed Circumstances that Affect this Issue?	Is There Any New Information of Substantial Importance Pertaining to this Issue?	If Any of the Previous Three Questions Was Answered "Yes," Would Changes or New Information Result in a New or Substantially More Severe Significant Impact?	Are there any New or Reconsidered Mitigation Measures or Alternatives that Would Substantially Reduce Significant Impacts?
7. Geology and Soils. Would the Project:						
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?	2019 IS/MND, Section IV.7, Geology and Soils, topic d	No	No	Yes	No	N/A
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?	2019 IS/MND, Section IV.7, Geology and Soils, topic e	No	No	No	N/A	N/A
f) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	2019 IS/MND, Section IV.7, Geology and Soils, topic f	No	No	No	N/A	N/A

Discussion

a) Would the Project 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.

Earthquake faults that are delineated under the Alquist-Priolo Earthquake Fault Zoning Act (Alquist-Priolo Act) are typically considered "sufficiently active" and "well-defined"[11] and have experienced displacement within Holocene time (about the last 11,000 years) (Bryant and Hart, 2007). Faults that are zoned under the Alquist-Priolo Act have the potential to rupture the ground surface during an earthquake causing considerable damage to structures and utilities.

[11] The terms *sufficiently active* and *well-defined* constitute the present criteria used by the State Geologist in determining if a given fault should be zoned under the Alquist-Priolo Act. A fault is deemed *sufficiently active* if there is evidence of Holocene surface displacement along one or more of its segments or branches. A fault is considered *well-defined* if its trace is clearly detectable by a trained geologist as a physical feature at or just below the ground surface.

An unnamed ancient or "Pre-Quaternary fault"[12] has been mapped approximately 1,100 feet (closest distance) south of the Project site, trending northeast and adjacent of the Santa Venetia neighborhood (Rice et.al, 1976, CGS, 2023, MarinMap, 2023). Pre-Quaternary-aged faults are assumed to be buried beneath Quaternary-aged deposits (up to 1.6 million years old). No evidence of recent or Holocene displacement has been found for this fault and it is not considered sufficiently active and well-defined (Rice et.al, 1976, CGS, 2023). Pre-Quaternary faults have no potential for surface fault rupture and a very low potential of triggering earthquakes.

The 2019 IS/MND, under topic a.i, concluded that the project then being evaluated would not overlie faults zoned under the Alquist-Priolo Act. The closest Alquist-Priolo fault zones are the Hayward-Rodgers Creek Fault Zone, located 8 miles east and the San Andreas Fault Zone, located 10.7 miles southwest. This conclusion remains valid under the current Project and the impact of surface fault rupture is less than significant. Therefore, the Project would not cause a new significant impact and there would be no substantial increase in the severity of a previously identified significant impact related to surface fault rupture.

ii) Strong seismic ground shaking?

The Project site is located in an area mapped as having the highest degree of amplification due to ground shaking because this area is underlain by unconsolidated artificial fill placed over Young Bay Mud (Rice et.al, 1976; Kleinfelder, 2013 MarinMap, 2023). Seismic waves are amplified in these materials far more than they are in consolidated deposits or bedrock. Structural damage and injury during an earthquake are inherent risks in seismically active regions such as Marin County, especially in low-lying areas underlain by fill and soft bay marsh sediments. As discussed below (Topic a.iii), ground shaking in the Project vicinity could also trigger liquefaction of the artificial fill and Young Bay Mud, which could cause structural damage along portions of the levee and possibly injury to those at the Project site.

The 2019 IS/MND, under topic a.ii, concluded that this impact would be less than significant because the project then being evaluated would not alter the geologic conditions of the Project site or the susceptibility of the levee or TRB to damage or failure during a seismic event.

While the current Project would not alter the underlying geologic conditions either, the susceptibility of failure of the proposed floodwall would decrease because the current Project proposes to drive sheet piles 6 to 18 feet through the artificial fill and into the Young Bay Mud, substantially deeper than the retaining walls of the TRB project evaluated in the 2019 IS/MND. The deeper foundation depth would increase the overall structural stability of the floodwall when subjected to earthquake ground motion. Therefore, the impact of seismic ground shaking would be less than significant. The current Project would not cause a new significant impact and there would be no substantial increase in the severity of a previously identified significant impact related to seismic ground shaking.

[12] Pre-Quaternary faults are older than 1.6 million years and/or do not exhibit Quaternary age displacement.

iii) Seismic-related ground failure, including liquefaction?

Liquefaction occurs when the seismic waves from an earthquake increase the pore pressure in saturated granular soils causing them to liquefy and lose a substantial amount of strength. The levee is underlain by between 5 and 17 feet of artificial fill consisting of layers of soft to stiff, lean clay and silt with up to about 30 percent sand and layers of very loose to medium dense sands and gravels with clay. These materials overlie between 45 and 50 feet of Young Bay Mud. Underlying the Young Bay Mud is stiff clay and dense sand. Groundwater was observed at depths ranging from 2.0 to 5.5 feet below existing ground surface (Kleinfelder, 2013).

Geotechnical evaluation of the levee fill materials and the underlying native Young Bay Mud determined that these materials are susceptible to liquefaction-related ground failures including earthquake induced settlement,[13] lateral spreading,[14] lurching,[15] cyclic densification[16] (Kleinfelder, 2013). The amount of settlement at a given location would depend primarily on the thickness of liquefiable soils. The geotechnical analyses concluded that four inches of liquefaction settlement could occur: two inches calculated in the overlying artificial levee fill and two inches within the alluvial deposits underlying the Young Bay Mud (Kleinfelder, 2013). The potential for lateral spreading is highest near the free face of the levee (i.e., adjacent to a creek) and diminishes with distance landside. Because the Project site is adjacent to Las Gallinas Creek and gradually sloping, the potential for lateral spreading is high. The potential for lurching is high because the levee overlies soft Young Bay Mud and is located adjacent to Las Gallinas Creek. The potential for cyclic densification is high, but because the groundwater table is between 2 and 7 feet below the surface, it would likely be confined to the shallow, near surface fills. Estimated settlement from cyclic densification in this relatively thin surface layer is estimated to be less than one-quarter of an inch (Kleinfelder, 2013).

The 2019 IS/MND, under topic a.iii, concluded that this impact would be less than significant because the project then being evaluated would not alter the geologic conditions of the Project site or the susceptibility of the levee or TRB to damage or failure during a seismic event. The current Project would not reduce the potential for earthquake-induced settlement, lateral spreading, lurching, or cyclic densification, but it would reduce the potential for resultant damage to the proposed floodwall during an earthquake. The sheet piles would be driven up to 18 feet through the artificial fill material and embedded into the soft Young Bay Mud, thereby increasing the foundation stability, and essentially isolating the floodwall structure from liquefaction if it were to occur in the artificial fill soils or shallow Young Bay Mud. Therefore, impacts associated with liquefaction and seismic ground failure are less than significant. The current Project would

[13] Settlement during a large earthquake is caused by dissipation of excess pore water pressure generated by ground shaking. Such dissipation produces consolidation within the soil that is manifested at the ground surface as settlement (Kleinfelder, 2013).

[14] Lateral spreading is defined as the mostly horizontal movement of gently sloping ground (less than 5% surface slope) due to elevated pore pressures or liquefaction in underlying, saturated soils (Kleinfelder, 2013).

[15] Steep slopes underlain by soft soils can deform laterally or lurch during an earthquake that can lead to cracking and slope failure depending on the height of the exposed slope (Kleinfelder, 2013).

[16] Seismically induced compaction or densification of non-saturated sand or silt above the groundwater table due to earthquake vibrations may cause settlement (Kleinfelder, 2013).

not cause a new significant impact and there would be no substantial increase in the severity of a previously identified significant impact related to liquefaction and related ground failure.

iv) Landslides?

The 2019 IS/MND concluded that because the Project site is nearly flat, it is not prone to landsliding and therefore, the project then being evaluated would not result in impacts relating to landsliding. Information on past levee performance was obtained during a 2008 survey conducted by the District[17] and reported in the 2013 geotechnical data report (Kleinfelder, 2013). Based on the survey and a subsequent site reconnaissance, the only reported incident of landside slope instabilities was creekside slumping at #39 Vendola Drive. While slope failure along the levee berm is possible, especially during a large earthquake, current evidence indicates that it does not represent a major failure mechanism along the existing levee. The floodwall proposed by the Project would consist of interlocking sheet piles that would be driven up to 18 feet through the levee materials to embed in soft Young Bay Mud underlying the levee. The deeper foundation would afford the wall more stability during an earthquake than the existing TRB. If post-construction berm failure did occur, it would have little consequence to either the stability or performance of the floodwall. Project impacts associated with seismically induced landslides would therefore be less than significant: the current Project would not cause a new significant impact and there would be no substantial increase in the severity of a previously identified significant impact related to seismically-induced slope failure.

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

The 2019 IS/MND, under topic b, concluded that this impact would be less than significant because construction contracts would include requirements to adhere to the Marin County Stormwater Pollution Prevention Program's (MCSTOPPP) Minimum Control Measures for Small Construction Projects. MCSTOPPP would require practices to control erosion, manage sedimentation, and maintain good housekeeping practices.

As discussed in Section 2.10, *Hydrology and Water Quality*, the current Project must comply with the State of California National Pollutant Discharge Elimination System (NPDES) Order WQ 2022-0057-DWQ, which is referred to as the Construction General Permit (CGP). Under the CGP, the permit applicant or their contractor(s) would implement stormwater controls [aka Best Management Practices (BMPs)], as set forth in a detailed Stormwater Pollution Prevention Plan (SWPPP). SWPPPs must describe the specific erosion control and stormwater quality BMPs needed to reduce erosion and minimize pollutants in stormwater runoff with adequate details of their placement and proper installation. Under the CGP, there is a low potential that the Project site would be impacted by a substantial degree of erosion during construction. The current Project would not permanently alter the configuration or material composition of the existing earthen levee and thus the Project would not increase the potential for post-construction (operational) erosion and soil loss. Impacts associated with erosion and soil loss would be less than significant.

[17] In late 2008 the District surveyed residents of the Santa Venetia area whose homes are situated along the levee. The survey inquired about observed seepage and settlement, existing drainage improvements at the residents' properties, burrowing animals, vegetation, and sedimentation along the Las Gallinas Creek channel.

The current Project would not cause a new significant impact and there would be no substantial increase in the severity of a previously identified significant impact related to erosion and soil loss.

c) Would the Project 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 described in topic a.iii, above, the levee materials consist of between 5 and 17 feet of artificial fill overlying between 45 and 50 feet of Young Bay Mud, which is underlain by stiff clay and dense sand. Groundwater is 2.0 to 5.5 feet below ground surface (Kleinfelder, 2013). These conditions render the levee inherently unstable because it is subject to compaction and settlement under static (non-seismic) conditions and liquefaction ground failures during earthquakes.

The 2019 IS/MND, under topic c, concluded that this impact would be less than significant because the project then being evaluated would not change the underlying geologic condition and would result in a more stable TRB structure with less susceptibility to collapse due to subsidence (i.e., settlement), liquefaction, or lateral spreading. The current Project would not alter the configuration or material composition of the levee and thus would not exacerbate the existing level of inherent instability (refer to topic a.iii, above regarding liquefaction and lateral spreading). Moreover, the current Project would decrease the potential of flooding due to floodwall settlement because it proposes to embed the sheet piles into the underlying Young Bay Mud—beneath the levee materials—thereby substantially reducing potential settlement under static and earthquake conditions[18]. While the levee may continue to settle as it has been since it was constructed, the proposed floodwall design would not exacerbate settlement rates. This impact is therefore less than significant. The current Project would not cause a new significant impact and there would be no substantial increase in the severity of a previously identified significant impact related to unstable geologic units.

d) Would the Project 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?

Expansive soils contain clays that swell when they are wet and shrink when desiccated. The seasonal shrink and swell cycles can result in soil heaving and localized settlement and, over time, damage to foundations and utilities. As stated in topics a.-iii and c, above, the soils at the Project site are mapped as alluvium and artificial fill placed over Young Bay Mud.

The 2019 IS/MND under topic d concluded that there would be no impact associated with expansive soils for the project then being evaluated. Review of Marin County geologic conditions for the current Project found that the banks of South Fork Gallinas Creek, which includes the existing levee from #85 Vendola Drive to #825 Vendola Drive/Pump Station No. 5, are mapped as having high potential for expansive soils (MarinMap, 2023). However, the creek banks along the southern extent of the Project site—from #7 Vendola Drive to #79 Vendola Drive—are

[18] Settlement data collected by the District indicate that cumulative settlement of approximately two feet has occurred in some areas. The average rate of settlement in the 1960's and 1970's was approximately six inches every ten years. A slight decrease is evident in the settlement rate over time; the average rate of settlement from the period 1990 to 2012 is approximately three to five inches every ten years (Kleinfelder, 2013).

mapped as having no expansive potential (MarinMap indicator: nil). Geology and geologic hazards mapping, as presented in MarinMap, generally relies on region-wide assessments of soil conditions obtained through previous mapping studies and may not reflect actual site-specific geologic conditions at individual properties. However, verification of expansive conditions along the levee was available from the geotechnical evaluation of the Las Gallinas levee system conducted in 2013 (Kleinfelder, 2013). Five soil samples were evaluated to obtain their plasticity index (a measure of expansive soil potential) by testing the Atterberg Limits (ASTM 4318)[19]. Two of the five samples represented levee materials above the Young Bay Mud along the Project alignment. The samples were obtained from a soil boring (KC-2) on the levee behind the residence at #601 Vendola Drive at depths of 3.5 and 8.0 feet. Laboratory testing indicated that these soils contained inorganic clays of low to medium plasticity (Kleinfelder, 2013). Soils with this degree of plasticity could be described as low to moderately expansive.

Considering that the proposed Project would drive sheet piles through the levee materials and embed them into the Young Bay Mud underlying the levees, the degree of expansivity in the levee soil materials is of no consequence and would not create a substantial risk of damage to the proposed sheet pile floodwall, and would not create substantial direct or indirect risks to life or property. The current Project would not cause a new significant impact and there would be no substantial increase in the severity of a previously identified significant impact related to expansive soils.

e) Would the Project 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?

The 2019 IS/MND, under topic e, concluded that because no septic systems were proposed for the project then being evaluated, this issue was not applicable, and no impact would occur. The current Project does not propose to install septic systems and thus there is no such impact. The current Project would not cause a new significant impact and there would be no substantial increase in the severity of a previously identified significant impact related to adequacy of soils for septic tanks or alternative wastewater disposal systems.

f) Would the Project directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?

The 2019 IS/MND impact analysis, under topic f, concluded there are no known unique geologic features or paleontological resources within the site of the project then being evaluated. As noted in the analysis, the site is underlain by Young Bay Mud, an alluvial deposit with low paleontological sensitivity[20]; and artificial fill, a material that likely does not contain

[19] Expansivity of soils can be determined in a laboratory using the Atterberg Limits (ASTM 4318). It involves the measurement of the Liquid Limit (LL) (moisture content where soil passes from a liquid to plastic state)—LLs over 50 are typically expansive; Plastic Limit (moisture content where soil passes from plastic to a semisolid); and the Plasticity Index (LL minus the PL). The two soils samples collected at the Project site had Liquid Limits (LL) of 26 (3.5 feet) and 25 (8 feet) and Plasticity Indexes (PI) of 10 and 11, respectively (Kleinfelder, 2013).

[20] Young Bay Mud that underlies the artificial fill is less than 10,000 years old. In some locations, these bay mud deposits may contain common fossils such as mussel shells. Although plant and invertebrate remains have been found in young bay mud, these remains are ubiquitous, and their occurrence would not be noteworthy.

paleontological resources and, if they were present, would be out of their original context and of little value to the scientific community.

The conclusions in the 2019 IS/MND remain valid with respect to the current Project. Driving sheet piles into shallow Young Bay Mud to construct the proposed floodwall could encounter recent remains of plants and invertebrates but their occurrence would not be noteworthy, and they would be otherwise unrecoverable. No other disturbance or excavation of the Young Bay Mud is proposed. Under the proposed Project, the Las Gallinas levee system would remain an artificial feature constructed over marshland, and thus would not be considered a unique geologic feature. Therefore, impacts associated with paleontological resources and unique geologic features are less than significant. The current Project would not cause a new significant impact and there would be no substantial increase in the severity of a previously identified significant impact related to paleontological resources or unique geologic features.

Mitigation Measures

The 2019 IS/MND identified no significant impacts of the project then being evaluated as related to geology, soils, seismicity, and paleontology; accordingly, no mitigation measures were required. Review of the current Project did not identify significant impacts and thus, no mitigation is required.

Conclusion

No new information has been revealed or exposed that would alter the impact conclusions presented in the Geology and Soils section (Section IV.7) of the 2019 IS/MND. All impacts related to geology, soils, seismic hazards, and paleontology remain either no impact or less than significant. No new significant impacts would occur and no previously identified significant impact would substantially increase in severity as a result of the proposed design changes and the resulting changes in construction methods.

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2.8. Greenhouse Gas Emissions

Environmental Issue Area	Where Was this Issue Analyzed in the Previous Environmental Document?	Do Proposed Project Changes Affect this Issue?	Are There Any Changed Circumstances that Affect this Issue?	Is There Any New Information of Substantial Importance Pertaining to this Issue?	If Any of the Previous Three Questions Was Answered "Yes," Would Changes or New Information Result in a New or Substantially More Severe Significant Impact?	Are there any New or Reconsidered Mitigation Measures or Alternatives that Would Substantially Reduce Significant Impacts?
8. Greenhouse Gas Emissions. Would the Project:						
a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?	2019 IS/MND, Section IV.8, Greenhouse Gas Emissions, topic a	No	No	No	N/A	N/A
b) Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?	2019 IS/MND, Section IV.8, Greenhouse Gas Emissions, topic b	No	No	No	N/A	N/A

Discussion

As discussed in more detail below, the 2019 IS/MND found no significant GHG emissions impact associated with the project then being evaluated.

Since the adoption of the 2019 IS/MND, the Bay Area Air Quality Management District (BAAQMD) has published updated *CEQA Air Quality Guidelines* (BAAQMD, 2023). BAAQMD's threshold of significance for construction GHG emissions were not adopted in this update. BAAQMD states that GHG emissions from construction represent a very small portion of a project's lifetime GHG emissions. GHG emissions from construction are a one-time release and would not pose a significant impact to the environment (BAAQMD, 2022).

Also, as discussed above in Section 2.6, Energy, changed circumstances include the adoption by Marin County of a new Climate Action Plan (Marin County, 2020) and an updated Green Building Code (Title 19 Marin County Building Code, Subchapter 2 - Green Building Requirements).

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

The 2019 IS/MND identified this impact as "Less than Significant." The Project changes do not affect this issue, there are no changed circumstances that affect this issue, nor is there any new information of substantial importance pertaining to the issue.

CalEEMod was used to estimate GHG emissions from the Project. The total estimated amount of GHG emissions during Project construction is approximately 301 metric tons of CO_2e, all of which would be from non-biogenic (i.e., fossil) sources. Equipment and vehicles used in construction would use fuels subject to the state's Low Carbon Fuel Standard and the Project would recycle at least 65 percent of demolition and construction waste, per CALGreen (Title 24) Green Building Code. The GHG emissions from Project construction are a one-time release and would not pose a significant impact to the environment. Therefore, this conclusion would remain no impact; no new or substantially more severe significant impacts, compared to what was identified in the 2019 IS/MND, would occur.

b. Would the Project conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?

The 2019 IS/MND identified this impact as "No Impact." Project changes do not affect this issue, but, as noted above, since adoption of the 2019 IS/MND, Marin County has adopted a new Climate Action Plan (Marin County, 2020) and an updated Green Building Code (Title 19 Marin County Building Code, Subchapter 2 - Green Building Requirements). As discussed in Section 2.6, Energy, topic b, Climate Action Plan 2030 contains numerical targets for GHG reductions consistent with the Statewide goal, established by Senate Bill 32 of 2016, to reduce emissions 40 percent below 1990 levels by 2030. Strategies for achieving the targeted GHG reductions include increasing use of zero emission vehicles, greater reliance on human-powered and public transit, increasing renewable energy generation including rooftop solar, waste reduction strategies, water conservation strategies, greater use of low-embodied emissions building materials, and others. Many provisions of CALGreen and the Marin County Green Building Code are consistent with and serve to implement Climate Action Plan 2030 strategies, such as requiring advanced energy efficient design and construction, and use of on-site renewable energy generation.

Compliance with the 2022 Marin County Green Building Code would ensure that the Project would not conflict with or obstruct State or local policies and regulations for GHG reduction. The Project is a short-term construction activity that would not result in increased long-term GHG emissions that could conflict with GHG reduction plans. As with the previously proposed reconstruction of the TRB, the current Project would be consistent with State and local plans, policies, and regulations for reducing GHG emissions, and, as concluded in the 2019 IS/MND, there would be no impact of this kind: the current Project would not result in a new significant impact or a substantial increase in the severity of a previously identified significant impact of this kind.

Mitigation Measures

As the project evaluated in the 2019 IS/MND identified no significant impacts with respect to greenhouse gas emissions, no mitigation was required. The same is true for the current Project.

Conclusion

The Project would not result in new or substantially more severe significant GHG emissions impacts, compared to those identified in the 2019 IS/MND.

References

Bay Area Air Quality Management District (BAAQMD), 2023. *CEQA Air Quality Guidelines*, April 2023.

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2.9. Hazards and Hazardous Materials

Environmental Issue Area	Where Was this Issue Analyzed in the Previous Environmental Document?	Do Proposed Project Changes Affect this Issue?	Are There Any Changed Circumstances that Affect this Issue?	Is There Any New Information of Substantial Importance Pertaining to this Issue?	If Any of the Previous Three Questions Was Answered "Yes," Would Changes or New Information Result in a New or Substantially More Severe Significant Impact?	Are there any New or Reconsidered Mitigation Measures or Alternatives that Would Substantially Reduce Significant Impacts?
9. Hazards and Hazardous Materials. Would the Project:						
a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	2019 IS/MND, Section IV.9, Hazards and Hazardous Materials, topic a	No	No	No	N/A	N/A
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?	2019 IS/MND, Section IV.9, Hazards and Hazardous Materials, topic b	No	No	No	N/A	N/A
c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	2019 IS/MND, Section IV.9, Hazards and Hazardous Materials, topic c	No	No	No	N/A	N/A
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?	2019 IS/MND, Section IV.9, Hazards and Hazardous Materials, topic d	No	No	No	N/A	N/A
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?	2019 IS/MND, Section IV.9, Hazards and Hazardous Materials, topic e	Yes	No	No	No	N/A

Environmental Issue Area	Where Was this Issue Analyzed in the Previous Environmental Document?	Do Proposed Project Changes Affect this Issue?	Are There Any Changed Circumstances that Affect this Issue?	Is There Any New Information of Substantial Importance Pertaining to this Issue?	If Any of the Previous Three Questions Was Answered "Yes," Would Changes or New Information Result in a New or Substantially More Severe Significant Impact?	Are there any New or Reconsidered Mitigation Measures or Alternatives that Would Substantially Reduce Significant Impacts?
9. Hazards and Hazardous Materials. Would the Project:						
f) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	2019 IS/MND, Section IV.9, Hazards and Hazardous Materials, topic f	No	No	No	N/A	N/A

Discussion

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

b) Would the Project 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) Would the Project emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?

Like the project examined in the 2019 IS/MND, the current Project would involve construction activities that use limited quantities of hazardous materials, such as gasoline, diesel fuel, oils and lubricants. The 2019 IS/MND identified one school, the Korean School of Marin County, 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.

As with the project examined in the 2019 IS/MND, the Project would be subject to federal, State, and local laws and regulations governing hazardous material transport, storage, use, and disposal. As discussed in detail in Section 2.10, Hydrology and Water Quality, project construction would fall under the National Pollutant Discharge Elimination System and the State General Construction Permit, requiring preparation of a Stormwater Pollution Prevention Plan and adoption of best management practices for controlling discharge of pollutants to surface waters from construction activities. These include practices to manage hazardous materials and to prevent equipment and vehicle fluid spills and leaks onto the ground. As with the project analyzed in the 2019 IS/MND, with adherence to these mandatory practices, the transport, use, storage, and disposal of hazardous materials would not create a significant hazard or foreseeably release hazardous materials into the environment, including but not limited to within one-quarter

mile of a school. As with the TRB reconstruction analyzed in the 2019 IS/MND, the current Project would result in a less than significant impact with regard to hazardous materials use, transport, and storage; there would be no new or substantially more severe significant impact of these kinds.

d) Would the Project 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?

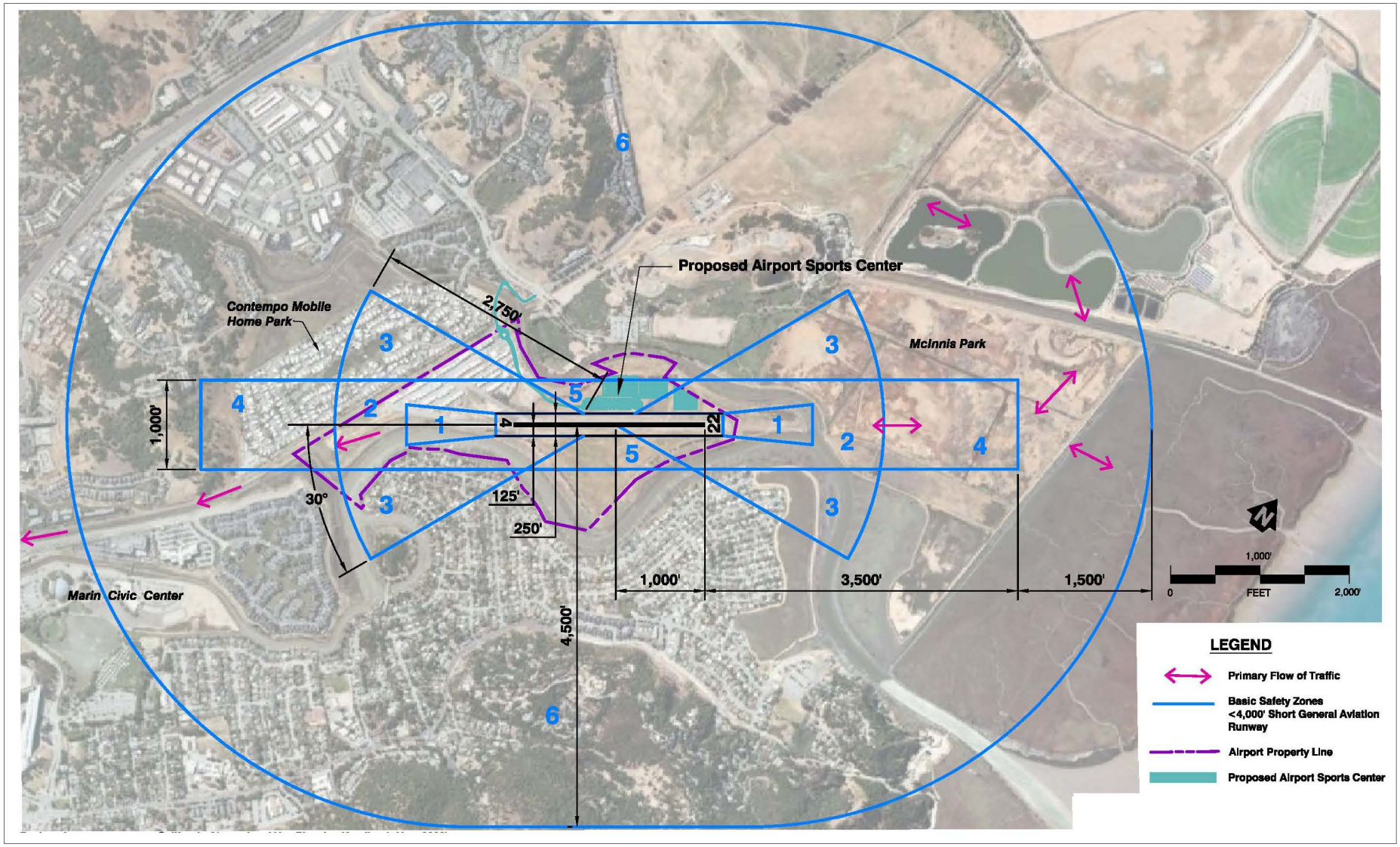
A new search of the State's Geotracker and Envirostor databases revealed no hazardous materials sites within or in close proximity to the Project site (State Water Resources Control Board, 2023, Department of Toxic Substances Control, 2023). As with the previously proposed TRB reconstruction project, the current Project would have 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?

As discussed in the 2019 IS/MND, the San Rafael Airport, a privately-owned general aviation facility, is located just north of the Project site, across South Fork Gallinas Creek. The San Rafael Airport does not have an adopted airport land use plan. The nearest distance from the San Rafael Airport runway to the levee is about 360 feet (Google Maps, 2023).

As discussed in the 2019 IS/MND, portions of the Project site are within the typical regulatory safety zones established around the runway, as shown in Figure 2.9-1. Like the previously proposed TRB reconstruction, however, the current Project 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 2.13, Noise). The 2019 IS/MND stated that workers involved in construction of the project then being considered 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 was considered small and therefore safety risks were considered less than significant. Also as discussed in the 2019 IS/MND, and confirmed in Section 2.13, Noise, in the current document, despite occasional small aircraft landings and take-offs, ambient noise levels in the area of the Project site are low, and therefore workers would not be exposed to excessive noise levels. The 2019 IS/MND concluded that impacts associated with proximity to the airport would be less than significant.

The current Project would use an excavator-mounted pile driver atop the existing levee for installation of sheet piles, and would also involve transport of materials by barge along South Fork Gallinas Creek and across the marsh between the creek and levee using a slide pontoon pulled by an amphibious excavator. Portions of the levee, of South Fork Gallinas Creek, and of the access pathways between the creek and the levee (Figure 1-6 in Chapter 1, Project Description) are in close proximity to the San Rafael Airport runway, and within a typical Runway Protection Zone (Safety Zone 1) (CalTrans, 2011) at the ends of the runway (**Figure 2.9-1**).



SANTA VENETIA FLOODWALL SUPPLEMENTAL ENVIRONMENTAL REVIEW

Source: City of San Rafael, 2009

Figure 2.9-1

San Rafael Airport Basic Safety Zones

Part 77 of the Federal Aviation Regulations (FAR), Objects Affecting Navigable Airspace, establishes standards for determining obstructions to navigable airspace and the effects of such objects on the safe and efficient use of that airspace. Whether a particular object constitutes an airspace obstruction depends upon the object's proximity to the airport and the height of the object relative to the runway elevation. The acceptable height of objects near an airport is most commonly determined by application of standards set forth in FAR Part 77. These regulations establish a three-dimensional space in the air above an airport. Any object which penetrates this volume of airspace is considered to be an obstruction and must be analyzed to determine whether it constitutes a hazard to flight.

Federal and State regulations (Public Utilities Code, Section 21659 and Title 21 CCR 3543) require that the Federal Aviation Administration (FAA) and the California Division of Aeronautics (CDA) be notified of proposed construction or alteration of objects—whether permanent, temporary, or of natural growth—if those objects would be of a height which exceeds the FAR Part 77 criteria.

The boom of a barge-mounted crane or of the amphibious excavator could extend into protected airspace around the runway. If so, this could potentially interfere with aircraft operations and pose a safety hazard for aircraft, construction workers, and others. In accordance with regulatory requirements, the District will, therefore, notify the FAA and the California Division of Aeronautics at least 45 days prior to the planned start of construction by filing a "Notice of Proposed Construction or Alteration" (FAA Form 7460-1) with the FAA and California Division of Aeronautics (CDA). The District will comply with any and all conditions imposed by the FAA and CDA to ensure aircraft safety. With adherence to this regulatory requirement, the Project would not have a new significant or a substantial increase in the severity of a previously identified significant impact, with respect to airport safety or noise.

f) Would the Project impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?

As stated in the 2019 IS/MND, the reconstruction of the TRB would not have altered roads or other transportation facilities. Project construction was not expected to result in temporary or permanent road closures. Therefore, the 2019 IS/MND concluded that the project then being evaluated would not have the potential to impair or interfere with an emergency response plan or evacuation plan, and that there would be no impact of this kind.

For the same reasons, the current Project would not have an impact of this kind; there would be no new significant impact nor a substantial increase in the severity of a significant impact related to emergency response or evacuation plans.

Mitigation Measures

The 2019 IS/MND found no impacts associated with hazards or hazardous materials, and so required no mitigation measures. Similarly, the current analysis finds no significant impacts associated with hazards or hazardous materials. No mitigation is required.

Conclusion

The Project would not result in new or substantially more severe significant impact with regard to hazards and hazardous materials.

References

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2.10. Hydrology and Water Quality

Environmental Issue Area	Where Was this Issue Analyzed in the Previous Environmental Document?	Do Proposed Project Changes Affect this Issue?	Are There Any Changed Circumstances that Affect this Issue?	Is There Any New Information of Substantial Importance Pertaining to this Issue?	If Any of the Previous Three Questions Was Answered "Yes," Would Changes or New Information Result in a New or Substantially More Severe Significant Impact?	Are there any New or Reconsidered Mitigation Measures or Alternatives that Would Substantially Reduce Significant Impacts?
10. Hydrology and Water Quality. Would the Project:						
a) Violate any water quality standards or waste discharge requirements, or otherwise substantially degrade surface or groundwater quality?	2019 IS/MND, Section IV.10, Hydrology and Water Quality, topic a	Yes	Yes	No	No	N/A
b) Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin?	2019 IS/MND, Section IV.10, Hydrology and Water Quality, topic b	No	No	No	N/A	N/A
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;	2019 IS/MND, Section IV.10, Hydrology and Water Quality, topic c.i	Yes	Yes	No	No	N/A
ii) substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or offsite;	2019 IS/MND, Section IV.10, Hydrology and Water Quality, topic c.ii	No	No	No	N/A	N/A
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	2019 IS/MND, Section IV.10, Hydrology and Water Quality, topic c.iii	No	No	No	N/A	N/A
iv) Impede or redirect flood flows?	2019 IS/MND, Section IV.10, Hydrology and Water Quality, topic c.iv	No	No	No	N/A	N/A

Environmental Issue Area	Where Was this Issue Analyzed in the Previous Environmental Document?	Do Proposed Project Changes Affect this Issue?	Are There Any Changed Circumstances that Affect this Issue?	Is There Any New Information of Substantial Importance Pertaining to this Issue?	If Any of the Previous Three Questions Was Answered "Yes," Would Changes or New Information Result in a New or Substantially More Severe Significant Impact?	Are there any New or Reconsidered Mitigation Measures or Alternatives that Would Substantially Reduce Significant Impacts?
10. Hydrology and Water Quality. Would the Project:						
d) In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation?	2019 IS/MND, Section IV.10, Hydrology and Water Quality, topic d	No	No	No	N/A	N/A
e) Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?	2019 IS/MND, Section IV.10, Hydrology and Water Quality, topic e	Yes	Yes	No	No	N/A

Discussion

As discussed in more detail below, the 2019 IS/MND identified eight hydrology and water quality impacts of implementing proposed TRB floodwall improvements, all of which were found to be less than significant or to result in no impact. The 2019 IS/MND Response to Comments provided additional detail and clarifications relating to baseline conditions and the analysis of impacts relating to hydrology and water quality. The environmental impact significance criteria in this section include thresholds for hydrology and water quality and are the same as those used in the 2019 IS/MND. The following section provides an analysis of whether the proposed design changes and the resulting changes in construction methods would result in a new significant impact relating to hydrology and water quality.

Environmental setting information for hydrology and water quality, including descriptions of South Fork Gallinas Creek, Santa Venetia Marsh, and San Pablo Bay, as presented in the 2019 IS/MND, remains pertinent and applicable for evaluating the proposed design changes and the resulting changes in construction methods against baseline conditions. The hydrology and water quality of the Project site and surrounding area, including surface and groundwater hydrology, water quality, flooding and flood risk, climate, topography, drainage, and soils are described in the 2019 IS/MND and no new waters relevant to the Project site have been listed as impaired on the 303(d) list.

Key regulatory requirements relevant to hydrology and water quality, as presented in the 2019 IS/MND, remain relevant to the proposed design changes and the resulting changes in construction methods. However, subsequent to the completion of the 2019 IS/MND, the State of California updated and amended its General Permit for Construction Practices (Construction General Permit or CGP). Additionally, construction work within a channel or streambed (i.e., water body-dependent

construction) and that is part of a Clean Water Act Section 404 project with Section 401 certification, such as the proposed construction access along the outboard slope of the levee and across the marsh via Gallinas Creek, is not subject to CGP requirements below the defined top-of-bank or high water level as all types of water body-dependent construction are regulated under Section 401 (federal Clean Water Act - Regional Boards), Section 404 (federal Clean Water Act - Army Corps of Engineers), and/or Section 1602 (California Fish and Game Code). These key regulatory requirements are described below.

NPDES Construction General Permit

The State of California recently adopted a new NPDES construction general permit on September 8, 2022 (ORDER WQ 2022-0057-DWQ) (Construction General Permit), which became effective on September 1, 2023 and which supersedes Order 2009-0009-DWQ as amended by Order 2010-0014-DWQ and 2012-0006-DWQ (i.e., the prior CGP). The CGP regulates construction site stormwater management. Dischargers whose projects disturb one or more acres of soil are required to obtain coverage under the general permit for discharges of stormwater and non-stormwater associated with construction activity. The Project would be required to comply with the permit requirements to control stormwater and non-stormwater discharges from the sites where proposed Project elements are being constructed and staged. Construction activity subject to this permit includes clearing, grading, and disturbances to the ground, such as stockpiling or excavation.

In the Project area, the CGP is implemented and enforced by the San Francisco Regional Water Quality Control Board (RWQCB), which administers the stormwater permitting program. To obtain coverage under this permit, project operators must electronically file Permit Registration Documents, which include a Notice of Intent (NOI), a Stormwater Pollution Prevention Plan (SWPPP), and other compliance-related documents. The SWPPP identifies Best Management Practices (BMPs) that must be implemented to reduce construction effects on receiving water quality based on potential pollutants. The BMPs identified are directed at implementing both sediment and erosion control measures and other measures to control potential chemical contaminants. Examples of typical construction BMPs include scheduling or limiting certain activities to dry periods, installing sediment barriers such as silt fence and fiber rolls, and maintaining equipment and vehicles used for construction. Non-stormwater management measures include installing specific discharge controls during certain activities, such as vehicle and equipment washing and fueling. The SWPPP also includes descriptions of the BMPs to reduce pollutants in stormwater discharges after all construction phases have been completed at the site (post-construction BMPs). Dischargers are responsible for notifying the RWQCB of violations or incidents of non-compliance, as well as for identifying deficiencies of the BMPs and how the deficiencies were corrected.

The CGP includes requirements for a site-specific risk-level assessment,[21] an active stormwater effluent monitoring and reporting program during construction (for Risk Level 2 and 3 sites), rain

[21] The CGP defines three levels of risk (Risk Levels 1, 2, and 3) that may be assessed for a construction site. Risk is calculated based on the "project sediment risk," which determines the relative amount of sediment that can be discharged given the project and location details, and the "receiving water risk" (the risk sediment discharges pose to the receiving waters).

event action plans for certain higher risk sites, and numeric effluent limitations (NELs) for pH and turbidity as well as requirements for qualified professionals who prepare and implement the plan. The risk assessment and SWPPP must be prepared by a state-certified Qualified SWPPP Developer (QSD) and implementation of the SWPPP must be overseen by a state-certified Qualified SWPPP practitioner (QSP).

The proposed Project would be subject to additional CGP requirements for a Linear Underground Project (LUP), which have varying requirements based on a project's complexity and risk to water quality.[22] Under the CGP. The proposed Project would fall under the Type 2 LUP category due to having an increased potential to impact receiving water quality due to meeting some or all of the following conditions:

1. Occurs outside urban or developed areas;
2. Has larger areas of soil disturbance that are not closed or restored at the end of the day;
3. Has on-site stockpiles of soil, spoil, and other materials;
4. Crosses or occurs in close proximity to a wide variety of sensitive resources that may include, but are not limited to, steep topography and/or water bodies; and
5. Includes larger areas of disturbed soils that may be exposed for a longer time interval before final stabilization, cleanup, and/or reclamation occurs.

LUP project dischargers must, in addition to the requirements outlined above, provide and maintain natural surface water buffers[23] and/or equivalent erosion and sediment controls when a water of the United States is located within 50 feet of the site's earth disturbances, unless infeasible. If infeasible, the discharger must provide and maintain an undisturbed natural buffer that is less than 50 feet and is supplemented by erosion and sediment controls that achieve, in combination, the sediment load reduction equivalent to a 50-foot undisturbed natural buffer.

Clean Water Act Section 401—Water Quality Certification

Federal Clean Water Act Section 401 requires compliance with State water quality standards for actions within State waters, such as Gallinas Creek and Santa Venetia Marsh. Compliance with the water quality standards required under Section 401 is a condition for issuance of a Section 404 permit (described below). Under Clean Water Act Section 401, every applicant for a federal permit, such as an NPDES permit, or license for any activity that may result in a discharge to a water body must obtain a State Water Quality Certification that the proposed activity will comply with State water quality standards.

Clean Water Act Section 404 – Dredging or Filling of Navigable Waters of the U.S.

Under federal Clean Water Act Section 404, a Department of the Army permit must be obtained from the U.S. Army Corps of Engineers (USACE) for the discharge of dredged or fill material

[22] Factors that lead to the characterization of the project include location, sediment risk, and receiving water risk.
[23] The surface water buffer requirements apply to work above the top-of-bank or highwater level of waters of the United States.

into waters of the United States, including wetlands. The discharge of dredged or fill material typically means adding into waters of the United States materials such as concrete, dirt, rock, or pilings. Activities typically regulated under Section 404 include the use of construction equipment such as bulldozers, and the leveling or grading of sites where jurisdictional waters occur. The USACE reviews applications for permits in accordance with Section 404 guidelines, which have been established by the USACE and the U.S. EPA. To issue a permit under Section 404, the USACE must ensure that any discharge will not violate the State's water quality standards. Therefore, in California, the proponent of any activity that may result in a discharge to surface waters of the United States must obtain water quality certification or a waiver of certification from the regional board (pursuant to Clean Water Act section 401).

California Fish and Game Code

The California Department of Fish and Wildlife (CDFW) is authorized under the California Fish and Game Code, Sections 1600 to 1616, to regulate activities that would substantially divert, obstruct the natural flow of, or substantially change rivers, streams, and lakes. The jurisdictional limits of CDFW are defined in Section 1602 as the "bed, channel, or bank of any river, stream, or lake." In practice, CDFW may exert authority over activities near such features that adversely affect any fish and wildlife resources associated with them. Activities that would "deposit or dispose of debris, waste, or other material containing crumbled, flaked, or ground pavement where it may pass into any river, stream, or lake" or that would obstruct the flow or alter the bed, channel, or bank of a river or stream, including intermittent and ephemeral streams, where there is a fish or a wildlife resource, are prohibited by CDFW unless a Lake and Streambed Alteration Agreement (LSAA) is issued and required measures to protect fish and wildlife resources implemented.

10a. Would the Project violate any water quality standards or waste discharge requirements, or otherwise substantially degrade surface or groundwater quality?

The 2019 IS/MND, under topic 10.a, concluded that 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 described in the 2019 IS/MND, 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. 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. Additionally, because ground disturbance of the project then being evaluated would have exceeded one acre, the District or their Contractor(s) would have been required to comply with the CGP and prepare a SWPPP that describes the BMPs that must be implemented to control potential water quality pollutants and prevent or minimize erosion and sedimentation.

For the current Project, the area of impact to marshland related to ground disturbance is larger than assessed in the 2019 IS/MND. The nature of the impact, however, is similar, with temporary damage to marsh plants potentially causing soil exposure as a result of vegetation crushing or

vegetation stripping. The current Project would impact a larger area (up to 10 water access routes, approximately 20 to 30 feet wide and up to 100 feet long). Access from Gallinas Creek to the levee across the marsh would include a shallow draft barge that is moved during high tide and anchored in the Gallinas Creek channel at low tide, and a slide pontoon (Figure 1-12) and amphibious excavator to transport equipment and materials across marsh access lanes (Figures 1-6 and 1-13). The amphibious excavator would pull the slide pontoon along the temporary access pathway across the mudflat to the levee. Access along the Gallinas Creek side of the levee within the marsh would include the use of crane mats.

Disturbance of Santa Venetia Marsh from construction activities and following construction is comprehensively assessed in Section 2.4, Biological Resources. As described in detail in the Biological Resources section, the 2019 IS/MND found that during construction of the version of the project then being evaluated, and following construction completion, temporary impacts such as trampling, and indirect impacts such as increased sediment delivery could occur. As described in section 2.4, Biological Resources, crushed plants may survive compression by equipment; if not, they would naturally recolonize the damaged areas from the healthy surrounding populations as marsh vegetation is well adapted to disturbance. Santa Venetia Marsh, as is typical of marsh systems, is a high sediment and turbidity environment and is adapted to such conditions. Sediment transport (and turbidity) is primarily controlled by weather events and tidal action. Large storms and high tides transport sediment-laden waters into the marsh from upstream or San Pablo Bay where high winds and wave action can resuspend settled sediments. Release of some sediments would be expected from disturbed areas, as occurs under existing conditions with direct rainfall on mudflats. Sediments mobilized by direct rainfall or tidal flow on disturbed marsh areas would likely settle out rapidly and/or be trapped by surrounding undisturbed vegetation. Any temporary increases in sediment and/or turbidity in the marsh or Gallinas Creek would be localized and temporary and substantially within the existing range of dynamic sediment and turbidity patterns and concentrations under baseline tidal and seasonal fluctuations.

Further, the Project would be required to obtain a Section 404 Clean Water Act permit from the USACE, Section 401 Water Quality Certification from the RWQCB, and Section 1600 LSAA from the CDFW prior to initiating any construction activities (see Section 2.4, Biological Resources, for further discussion). These permits require targeted avoidance and minimization measures, performance standards, and implementation of BMPs that are specific to construction within and adjacent to stream channels, wetlands, and flood plains. Typical requirements include minimizing vegetation removal, use of hand tools to reduce soil disturbance for earthwork on or near steep slopes, restricting vehicle refueling or maintenance within stream channels, implementing erosion and control measures, diverting runoff from steep erodible areas to stable locations, and implementing seasonal work windows to avoid construction within flowing waters.

Following construction, the proposed fiber reinforced plastic (FRP) composite sheet pile flood wall would not degrade water quality or violate any water quality standard as a result of stormwater runoff, contact with tidal or flood waters, or contact to groundwater or subsurface seepage within the earthen levee berm. The use of FRP composite sheet piles is an industry long-term standard practice for use in shoreline protection, embankment, retaining walls, marina facility, and groundwater isolation projects as the material has a longer service life in corrosive

environments compared to concrete and steel. It performs extremely well in damp environments or submerged in fresh and salt water. The long service life of FRP composite sheet piles is due to the material's inherent corrosion resistance from and durability in extreme environmental conditions, such as abnormal pH levels, extreme temperatures, and salt water. Further, FRP composite sheet piles are resistant to UV degradation as well as corrosive chemicals. The resistance to corrosion and breakdown under extreme environmental conditions minimizes and/or avoids the potential for contamination of soil and water over the life of the composite sheet piles.

The proposed Project construction within Santa Venetia Marsh would result in an increased discharge of sediment to receiving waters as compared to the Project assessed in the 2019 IS/MND. However, the mobilization of sediments within the marsh related to soil disturbance at the proposed water access routes across the marsh resulting from use of a slide pontoon and amphibious excavator would be highly localized, temporary, and limited spatially due to the work within the marsh progressing sequentially as the floodwall advances (rather than all proposed water access routes becoming disturbed at the same time). Further, compliance with the requirements of MCSTOPPP, the CGP, Section 404 Clean Water Act permit, Section 401 Water Quality Certification, and Section 1600 LSAA, in addition to the implementation of associated BMPs proposed as part of the Project, such as construction during the dry season and the use of crane mats to minimize disturbance to marsh soils, and a shallow draft barge to minimize disturbance to the Gallinas Creek bed and channel, would limit the discharge of pollutants to surface waters or groundwater and minimize potential degradation of surface water or groundwater quality during construction of the Project. With adherence to these practices, some of which are mandatory regulatory requirements, and others proposed as part of the Project, the Project would not degrade water quality or violate any water quality standard, and the impact would be less than significant. Therefore, the Project would cause no new significant impact and no previously identified significant impact would increase in severity than was disclosed in the 2019 IS/MND related to the violation of water quality standards, waste discharge requirements, or the degradation of water quality.

10b. Would the Project Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the Project may impede sustainable groundwater management of the basin?

The 2019 IS/MND, under topic 10.b, concluded that the project then being evaluated would not use groundwater and would not introduce new or additional impervious surfaces, and so would not affect groundwater recharge, and that project construction, which would have involved only shallow excavation, would not affect groundwater quality. The proposed Project design changes (i.e., a composite sheet pile wall) and the resulting changes in construction methods do not propose the use of groundwater and would not reduce surface water recharge through the addition of impervious surfaces. Therefore, the Project would cause no new significant impact and there would be no substantial increase in the severity of a previously identified significant impact related to decreasing groundwater supplies or interfering with groundwater recharge. The Project would not impede sustainable management of the Novato Valley Groundwater Basin.

10c. Would the Project 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 off-site;

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 2019 IS/MND, under topic 10.c, concluded that the project then being evaluated would rebuild and raise the elevation of the existing floodwall and would not alter existing drainage patterns, would not alter the course of a stream or river, and would not add impervious surfaces. As described in the 2019 IS/MND in detail, South Fork Gallinas Creek is already confined to its channel by the existing levee system. Implementing the proposed design changes to upgrade the levee would counter the deterioration of the levee, as well as predicted sea level rise, in order to achieve and maintain protection from the 100-year flood for the 30-year design life of the Project, as the current system has provided since the 1980s. The proposed Project design changes and the resulting changes in construction methods would not alter the existing drainage pattern and would not alter the course of a stream or river in a manner that would result in substantial erosion or siltation on- or off-site or cause additional sources of polluted runoff, as described in detail under topic 10a, above. The proposed Project design changes and the resulting changes in construction methods would only replace existing structures and would not introduce or add new impervious surfaces and would therefore not affect storm drains or alter the rate or volume of stormwater runoff or stormwater conveyance system inflows or discharges. Maintaining flood protection through construction of the proposed composite sheet pile floodwall would not impede or redirect flood flows as compared to baseline conditions. The Project would not be expected to have a substantial effect on flooding of the opposite bank as the airport and other Las Gallinas neighborhoods are protected by levees (Civic Knit et al, 2023). Therefore, the Project would cause no new significant impact and no previously identified significant impact would substantially increase in severity, compared to the 2019 IS/MND.

10d. In flood hazard, tsunami, or seiche zones, would the Project risk release of pollutants due to inundation?

As described in the 2019 IS/MND, under topic 10c, the existing levee system protects the Santa Venetia neighborhood from inundation as a result of a tsunami or seiche, but the Santa Venetia community is at risk of flooding and inundation during the FEMA-defined 100-year flood, as portions of the existing flood wall are below the FEMA defined BFE (see Project Description). The 2019 IS/MND concluded that the level of protection from inundation by flood waters would

increase with reconstruction of the TRB, thereby reducing the risk of a substantial release of pollutants during flooding.

Construction of the current Project is proposed to occur during the dry season, and so would not occur during periods of rain and high tides, when flooding is likely to occur. The height of a tsunami or seiche wave would tend to attenuate as it moved up South Fork Gallinas Creek and across Santa Venetia Marsh from the Bay. If a tsunami or seiche were to occur during Project construction, the minor flooding resulting from the attenuated wave height would not result in the release of pollutants as construction equipment proposed for use within the marsh and Gallinas Creek is designed for use for in-water (i.e., barge, slide pontoon, amphibious excavator) and can accommodate water level elevation changes, such as occur on tidal cycles. Implementing the proposed design changes and the resulting changes in construction methods would cause no new significant impact and no previously identified significant impact would substantially increase in severity, with respect to the risk of releasing pollutants due to inundation by flood waters.

10e. Would the Project conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?

The 2019 IS/MND identified beneficial uses for Gallinas Creek designated in the *Water Quality Control Plan for the San Francisco Bay Basin* (Basin Plan; RWQCB, 2017) and concluded that the project then being evaluated 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 2019 IS/MND concluded that the project then being evaluated would not conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan.

As described under topics 10a, 10b, and 10c, above, no significant water quality degradation or groundwater impacts would occur as a result of the proposed design changes and the resulting changes in construction methods associated with the current Project. This includes Gallinas Creek, which is subject to the Basin Plan water quality objectives. The Basin Plan water quality objectives are designed to preserve and enhance water quality and protect the beneficial uses of all regional terrestrial surface water bodies (e.g., creeks, rivers, streams, and lakes), groundwaters, coastal drainages, estuaries, coastal lagoons, and enclosed bays within the RWQCB's jurisdictional area. These objectives include parameters such as turbidity/sediment and nutrients. The Project would comply with the requirements of the CGP, including implementation of BMPs and other requirements of a SWPPP, as well as MCSTOPPP, Section 404 Clean Water Act permit, Section 401 Water Quality Certification, and Section 1600 LSAA, all of which are designed to ensure that construction activities and overall design comply with the Basin Plan water quality standards. As described under topic10b, the proposed Project would not require groundwater withdrawals or reduce groundwater recharge. Impacts relating to conflict or obstruction of implementation of a water quality control plan or sustainable groundwater management plan from implementation of the proposed design changes and the resulting changes in construction methods would be less than significant. There would be no new significant impact, nor a substantial increase in the severity of a previously identified significant impact, with respect to conflict or obstruction of implementation of a water quality control plan or sustainable groundwater management plan.

Mitigation Measures

As the 2019 IS/MND identified no significant impacts of the project then being evaluated related to hydrology and water quality, no mitigation measures were required. As the foregoing review likewise identified no such significant impacts, mitigation is not required.

Conclusion

Since the publication of the 2019 IS/MND, no new information has come to light that would alter the impact conclusions presented in Section 10, Hydrology and Water Quality. Neither do changed circumstances, in the form of updates to regulations that apply to the Project, alter those conclusions: all impacts related to hydrology and water quality remain less than significant. No new significant impacts would occur and no previously identified significant impact would substantially increase in severity as a result of the proposed design changes and the resulting changes in construction methods.

References

Civic Knit, Engeo, DAC Associates, and CSW|ST2, 2023. Santa Venetia Floodwall, Basis of Design and Project Alternatives, Marin County, California. Prepared for the Marin County Flood Control and Water Conservation District, March 2023. Version 2.0

Regional Water Quality Control Board (RWQCB), 2017. *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.

2.11. Land Use and Planning

Environmental Issue Area	Where Was this Issue Analyzed in the Previous Environmental Document?	Do Proposed Project Changes Affect this Issue?	Are There Any Changed Circumstances that Affect this Issue?	Is There Any New Information of Substantial Importance Pertaining to this Issue?	If Any of the Previous Three Questions Was Answered "Yes," Would Changes or New Information Result in a New or Substantially More Severe Significant Impact?	Are there any New or Reconsidered Mitigation Measures or Alternatives that Would Substantially Reduce Significant Impacts?
11. Land Use and Planning. Would the Project:						
a) Physically divide an established community (including a low-income or minority community)?	2019 IS/MND, Section IV.11, Land Use and Planning, topic a	No	No	No	N/A	N/A
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?	2019 IS/MND, Section IV.11, Land Use and Planning, topic b	Yes	Yes	No	No	N/A
c) Result in substantial alteration of the character or functioning of the community, or present planned use of an area?	2019 IS/MND, Section IV.11, Land Use and Planning, topic c	No	No	No	N/A	N/A
d) Conflict with applicable Countywide Plan designation or zoning standards?	2019 IS/MND, Section IV.11, Land Use and Planning, topic d	No	No	No	N/A	N/A

Discussion

a) Would the Project physically divide an established community (including a low-income or minority community)?

The 2019 IS/MND concluded that the reconstruction of the TRB would not introduce any new physical barrier, such as a new roadway, or otherwise divide an established community, and so there would be no impact of this kind. For the same reason, the current Project also would have no impact of this kind. Project changes do not affect this issue; there are no changed circumstances that affect this issue, nor is there any new information of substantial importance pertaining to this issue: there would be no new significant impact or a substantial increase in the severity of a previously identified significant impact with respect to physically dividing an established community.

b) Would the Project 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?

The 2019 IS/MND examined the potential for the then-proposed reconstruction of the TRB to conflict with land use plans, policies, and regulations adopted for the purpose of avoiding or mitigating an environmental effect, focusing on policies contained in the Marin Countywide Plan (CWP; Marin County, 2007) and the Santa Venetia Community Plan (SVCP; Marin County, 2017). The 2019 IS/MND considered potential conflicts with numerous polices contained in these two plans, including policies to protect sensitive biological resources, policies promoting consultation and resource preservation in environmental review; policies for protection of Baylands and marshes; policies for avoiding and minimizing erosion, sedimentation, and pollution of waterways; policies for protection from flooding and inundation; air pollution policies; climate change adaptation policies, noise policies; and cultural resources protection policies. The 2019 IS/MND concluded that, with incorporation of mitigation measures identified in the 2019 IS/MND, the TRB reconstruction would have been consistent with relevant CWP and SVCP polices intended to avoid or mitigate environmental effects. The 2019 IS/MND therefore found that the Project would have a less-than-significant impact with regard to policy inconsistency.

Project changes potentially affect this issue, specifically, the changes in Project construction methods involving more heavy equipment and operation of equipment in the marsh area outboard of the levee. New information affecting this issue includes updated evaluation of sea level rise risk (see Chapter 1, Project Description). Changed circumstances include the adoption by Marin County of a new Climate Action Plan for the unincorporated area of the County, which includes Santa Venetia where the Project is located (Marin County, 2020).

The Marin Climate Action Plan 2030 contains policies for reducing greenhouse gas (GHG) emissions at the local level, such as low carbon transportation, renewable energy and electrification, energy efficiency, waste reduction, and water conservation. Because the Project consists almost entirely of construction activities, with only limited ongoing maintenance and inspection of the proposed floodwall, these policies do not pertain directly to the Project. The Plan does, however, contains the following adaptation policy, which is pertinent to the Project:

> **AD-C1: Climate Change and Sea Level Rise Adaptation**
>
> 1. Ensure fair and robust inclusion of lower-income households and diverse communities in the planning and response to climate change impacts, including sea level rise, wildfire, public health, and emergency preparedness.
>
> 2. Support and integrate Climate Action Planning and implementation with the ongoing adaptation efforts of C-SMART and BayWAVE.
>
> 3. Coordinate and integrate Climate Adaptation Planning consistently throughout related County plans, including but not limited to the Countywide Plan and its Safety Element, Local Hazard Mitigation Plan (LHMP), sea level rise adaptation plans, Community

Wildfire Protection Plan, Local Coastal Plan and emergency and capital improvement plans.

4. Collaborate with cities within the County, as well as special districts, and subregional bodies such as Transportation Authority of Marin to coordinate and integrate planning.

5. Adopt a comprehensive climate change adaptation plan that prepares for and responds to the expected impacts of climate change.

As a major impetus of the Project is adaptation to sea level rise, the Project is consistent with this new policy.

Like the project evaluated in the 2019 IS/MND, the current Project has the potential to impact sensitive biological resources, to emit harmful air pollutants, and to adversely impact previously undiscovered cultural resources. The mitigation measures identified in the 2019 IS/MND, which would also be implemented for the current Project (with revisions, as summarized in Chapter 3, Summary and Conclusion), would likewise reduce the potential for impacts to less than significant, and ensure that the Project does not conflict with relevant CWP and SVCP policies (policies addressing sensitive biological resources are also considered in Section 2.4, Biological Resources, topic e). Therefore, as with the TRB reconstruction project, the current Project would have a less-than-significant impact with respect to conflicts with land use plans, policies, and regulations adopted for the purpose of avoiding or mitigating an environmental effect. There would be no new significant impact, and no substantial increase in the severity of a previously identified significant impact of this kind.

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

The 2019 IS/MND found that the project then being examined, because it would upgrade the existing levee and thereby increase protection of the Santa Venetia neighborhood from flooding, would therefore preserve, and not alter, the character of the community. The 2019 IS/MND therefore concluded that there would be no impact of this kind. For the same reason, the current Project would not have a significant impact with respect to altering the character or functioning of the community.

d) Would the Project conflict with applicable Countywide Plan designation or zoning standards?

As discussed in the 2019 IS/MND, the project then being evaluated, that is, the reconstruction of the TRB, would not have conflicted with the Countywide Plan land use designation (SF-6, Single Family-6) or Marin County Zoning (R1-B1, Residential Single Family, 6,000 square foot lot). The 2019 IS/MND further found that reconstruction of the TRB would not require a change to the existing land use designation or zoning: reconstruction of the TRB would have taken place within the backyards of the homes along Vendola Drive, but would not have permanently altered or conflicted with the single-family residential use of the properties. The TRB reconstruction project would have increased flood protection for the neighborhood, and thereby enabled the

continuation of residential uses consistent with the existing land use designation and zoning. Based on these considerations, the 2019 IS/MND concluded that there would have been no impact of this kind.

For the same reasons, the current Project would have no impact, and therefore neither a new significant impact nor a substantial increase in the severity of a previously identified significant impact, with respect to conflicts with applicable Countywide Plan designation or zoning standards.

Mitigation Measures

With consideration of mitigation measures identified for biological resources, air quality, and cultural resources, the 2019 IS/MND identified only less-than-significant impacts on land use and planning; no additional mitigation measures were required. As the current Project would also be required to implement the mitigation measures identified in the 2019 IS/MND (and as revised in this document), it would also have only less-than-significant impacts on land use and planning, and no additional mitigation is required.

Conclusion

Project changes and changed circumstances do not change the conclusion reached in the 2019 IS/MND for the TRB reconstruction project: the current Project, with incorporation of mitigation measures identified in the 2019 IS/MND and as revised in the current document, would have only less-than-significant impacts with respect to land use and planning: there would be no new significant impact nor the substantially increase in the severity of a previously identified significant impact.

References

Marin County, 2020. Marin Climate Action Plan 2030. Prepared by the Marin County Community Development Agency and Sustainability Team. Adopted by the Board of Supervisors, December 2020.

Marin County, 2007. Marin Countywide Plan. Prepared by the Marin County Community Development Agency and adopted by the Board of Supervisors, November 6, 2007.

Marin County, 2017. Santa Venetia Community Plan. Adopted by the Board of Supervisors February 14, 2017.

2.12. Mineral Resources

Environmental Issue Area	Where Was this Issue Analyzed in the Previous Environmental Document?	Do Proposed Project Changes Affect this Issue?	Are There Any Changed Circumstances that Affect this Issue?	Is There Any New Information of Substantial Importance Pertaining to this Issue?	If Any of the Previous Three Questions Was Answered "Yes," Would Changes or New Information Result in a New or Substantially More Severe Significant Impact?	Are there any New or Reconsidered Mitigation Measures or Alternatives that Would Substantially Reduce Significant Impacts?
12. Mineral Resources. Would the Project:						
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?	2019 IS/MND, Section IV.12, Mineral Resources, topic a	No	No	No	N/A	N/A
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?	2019 IS/MND, Section IV.12, Mineral Resources, topic b	No	No	No	N/A	N/A

Discussion

a) Would the Project 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?

The 2019 IS/MND found that there are no known valuable mineral resources within or adjacent to the Project site, and, therefore, the project then being evaluated would have no impact with respect to the loss of availability of a known mineral resource. Project changes do not affect this issue or this conclusion. There is no new information of substantial importance nor changed circumstances affecting this issue.

b) Would the Project 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?

The 2019 IS/MND references Map 3-5 from the 2007 Marin Countywide Plan (CWP; Marin County, 2007), which shows that the Project site is not within a State-designated mineral resource preservation site or within a County-permitted mineral resource site. The 2019 IS/MND concludes, therefore, that there would be no impact of this kind. Project changes do not affect this issue or this conclusion. There is no new information of substantial importance nor changed circumstances affecting this issue.

Mitigation Measures

As the 2019 IS/MND identified no impacts on mineral resources, no mitigation measures were required. The same holds true for the current Project.

Conclusion

Project changes do not affect this issue, and there is no new information of substantial importance, nor are there changed circumstances affecting this issue. The Project would not have a new significant impact nor a substantial increase in the severity of a previously identified significant impact with respect to mineral resources.

References

Marin County, 2007. Marin Countywide Plan. Prepared by the Marin County Community Development Agency and adopted by the Board of Supervisors, November 6, 2007.

2.13. Noise

Environmental Issue Area	Where Was this Issue Analyzed in the Previous Environmental Document?	Do Proposed Project Changes Affect this Issue?	Are There Any Changed Circumstances that Affect this Issue?	Is There Any New Information of Substantial Importance Pertaining to this Issue?	If Any of the Previous Three Questions Was Answered "Yes," Would Changes or New Information Result in a New or Substantially More Severe Significant Impact?	Are there any New or Reconsidered Mitigation Measures or Alternatives that Would Substantially Reduce Significant Impacts?
13. Noise. Would the Project result in:						
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?	2019 IS/MND, Section IV.13, Noise, topic a	Yes	Yes	No	No	N/A
b) Generation of excessive groundborne vibration or groundborne noise levels?	2019 IS/MND, Section IV.13, Noise, topic b	Yes	Yes	Yes	No	N/A
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?	2019 IS/MND, Section IV.13, Noise, topic c	No	No	No	N/A	N/A

Discussion

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 reflect 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 report 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)[24]; average day-night 24-hour average sound level (Ldn)[25] with a nighttime increase of 10 dB to account for sensitivity to noise during the nighttime; and community noise equivalent level (CNEL)[26], also a 24-hour average that includes both an evening and a nighttime sensitivity weighting.

Vibration

Vibration is the periodic oscillation of a medium or object. The rumbling sound caused by the vibration of room surfaces is called structure-borne noise. Sources of ground-borne vibrations include natural phenomena (e.g., earthquakes, volcanic eruptions, sea waves, landslides) or human-made causes (e.g., explosions, machinery, traffic, trains, construction equipment).

Vibration amplitudes are usually expressed in peak particle velocity (PPV) or root mean squared (RMS), as in RMS vibration velocity. The PPV and RMS velocity are normally described in inches per second (in/sec). PPV is defined as the maximum instantaneous positive or negative peak of a vibration signal. PPV is often used in monitoring of blasting vibration because it is related to the stresses that are experienced by buildings (FTA, 2018 and Caltrans, 2020). Vibrational effects from typical construction activities are only a concern within 25 feet of existing structures (Caltrans, 2002).

Although PPV is appropriate for evaluating the potential for building damage, it is not always suitable for evaluating human response. It takes some time for the human body to respond to vibration signals. In a sense, the human body responds to average vibration amplitude. The RMS of a signal is the average of the squared amplitude of the signal, typically calculated over a 1-second period. As with airborne sound, the RMS velocity is often expressed in decibel notation as vibration decibels (VdB), which serves to compress the range of numbers required to describe vibration (FTA, 2018). This is based on a reference value of 1 μ inch/second. Ground-borne vibration is normally perceptible to humans at approximately 65 VdB. For most people, a vibration-velocity level of 75 VdB is the approximate dividing line between barely perceptible and distinctly perceptible levels (FTA, 2018).

Typical outdoor sources of perceptible ground-borne vibration are construction equipment, steel-wheeled trains, and traffic on rough roads. If a roadway is smooth, the ground-borne vibration is rarely perceptible. The range of interest is from approximately 50 VdB, which is the typical background vibration-velocity level, to 100 VdB, which is the general threshold where minor damage can occur in fragile buildings. Construction activities can generate ground-borne vibrations, which can pose a risk to nearby structures. Constant or transient vibrations can weaken structures, crack facades, and disturb occupants (FTA, 2018). Construction vibrations can be

[24] 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.

[25] 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.

[26] 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.

transient, random, or continuous. Transient construction vibrations are generated by blasting, impact pile driving, and wrecking balls. Continuous vibrations result from vibratory pile drivers, large pumps, and compressors. Random vibration can result from jackhammers, pavement breakers, and heavy construction equipment.

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, that also depends on ground absorption (Caltrans, 1998). Physical barriers located between a noise source and the noise receptor, such as berms or sound walls, would increase the attenuation that occurs by distance alone.

Regulatory Framework

The 2019 IS/MND cited noise regulations, plans and policies from the Marin County Municipal Code and the Marin Countywide Plan Noise Element for analysis of potential noise impacts. These regulations in the County Code (Section 6.70) and noise programs from the Marin Countywide Plan Noise Element remain current and Marin County has not changed the noise regulations or criteria since the 2019 IS/MND.

Noise and Vibration Measurements

In November 2022, RCH Group (RCH) conducted noise and vibration monitoring of a sheet pile installation test for the project (RCH Group, 2022). This noise and vibration technical memorandum is included in Appendix C. A Larson Davis LxT was used for recording short-term noise measurements and was calibrated before and after the measurements. A Larson Davis LxT equipped with PCB Electronics velocity transducers was used for recording vibration measurements and was calibrated before and after the measurements (RCH Group, 2022).

A vibratory hammer mounted to the end of an excavator arm was used for installing the sheet piles. Noise and vibration monitoring was conducted at three sites. However, the vibration measurement taken at a site with soil conditions that best represented the conditions of a typical backyard along the levee is used for this analysis. The noise from the vibratory hammer pounding the sheet pile was up to 80 dB, Lmax at 50 feet at this site. The maximum vibration level was 86 VdB at 50 feet at this site (RCH Group, 2022).

Sensitive Receptors

The nearest sensitive receptors identified in the 2019 IS/MND remain unchanged. 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.

As discussed in more detail below, the 2019 IS/MND identified three noise impacts from Project activities which were all found to be less than significant.

a. Would the Project result in 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?

Overview of Updated Analysis

The analysis includes updated noise analyses based on Project changes. One change in circumstances is that the Project would install composite sheet piles from just east of the Meadow Drive Bridge to just east of Pump Station Number 5. These sheet piles would be installed with a vibratory hammer mounted to the end of an excavator arm. Some sheet pile installation locations could come as close as approximately 30 feet from residences along the levee. Another change is the potential use of aquatic construction equipment (e.g., amphibious cranes and excavators) to load and unload materials for project construction and to install sheet piles along the shoreline. An additional change is that the contractor would need to remove docks, gangways, decks, stairways, small buildings, trees, vegetation, TRB, and landscaping from the levee to create a work zone. In addition, where access to the levee from Vendola Drive would be between residences, side fences and gates would be removed as necessary. Upon completion of the floodwall, side fences and gates would be replaced as requested by the homeowners, as well as stairs to provide residents access over the floodwall.

Construction Noise Analysis

The 2019 IS/MND, Section IV.13, Noise, topic a determined that the use of on-site equipment during construction of the Project then being examined would result in increases in ambient noise levels over a period of approximately two to three years. Maximum construction noise levels for various types of construction equipment were estimated to range from 77 to 84 dB, Lmax at a distance of 50 feet. The 2019 IS/MND determined that because the construction activities would occur in compliance with the Marin County Municipal Code approved construction hours, the Project would not exceed noise standards in the Marin Countywide Plan or County Code, and that compliance with the County Code would result in a less-than-significant impact.

Project construction would now include the use of vibratory pile driving. Typical sonic pile-drivers (i.e., vibratory pile drivers) can generate noise levels of up to 95 dB, Lmax at 50 feet (FTA, 2018). During a test at the Project site in November 2022, the use of the vibratory hammer generated noise levels of up to 90 dB, Lmax at 25 feet when the vibratory hammer was pounding a sheet pile on a large subsurface boulder (RCH Group, 2022).

It is expected that construction activities could occur as close as approximately 30 feet from the nearest residence (depending on the side of the levee construction occurs on). Based on the field measurements from the sheet pile installation test, noise from the use of a vibratory hammer would attenuate to approximately 88 dB, Lmax at 40 feet. As discussed in the Project Description, amphibious cranes and excavators may be used to unload/load material from Las Gallinas Creek and to install sheet piles along the shoreline. However, the use of amphibious construction equipment would not be expected to generate more noise than typical construction

equipment. Both a crane and excavator typically generate maximum noise levels of 81 dB, Lmax (FHWA, 2006). In addition, demolition and replacement of docks, gangways, decks, stairways, and small buildings along the work zone would also utilize standard construction equipment and practices and would not be expected to generate more noise than typical construction equipment.

Though construction of the Project would temporarily increase ambient noise levels and can be expected to be a source of annoyance to nearby residents, Project construction activities are proposed to be limited to Monday-Saturday, 7 a.m. to 5 p.m. The Marin County Municipal Code, Section 6.70.030, allows noise from construction activities from 7 a.m. to 6 p.m. on weekdays and from 9 a.m. to 5 p.m. on Saturdays, but limits use of loud noise-generating construction-related equipment (e.g., backhoes, generators, jackhammers) to 8 a.m. to 5 p.m. Monday through Friday only. The Municipal Code, however, provides an exception to these limitations for construction projects of cities, the County, the State, other public agencies, and other public utilities. Construction noise under the Project would comply with the Municipal Code's noise limitations for public agency projects, and would therefore be less than significant; no new or substantially more severe significant impacts, compared to what was identified in the 2019 IS/MND, would occur.

b. Would the Project result in generation of excessive groundborne vibration or groundborne noise levels?

The 2019 IS/MND, Section IV.13, Noise, topic b determined that vibration from reconstruction of the TRB would be less than significant because it would not require the use of significant sources of vibration such as pile driving or blasting. As discussed above, one change in circumstances is that the Project would now install composite sheet piles from just east of the Meadow Drive Bridge to just east of Pump Station Number 5. These sheet piles would be installed with a vibratory hammer mounted to the end of an excavator arm. Some sheet pile installation locations could come as close as approximately 30 feet from residences along the levee.

Typical sonic pile-drivers (i.e., vibratory pile drivers) can generate vibration levels of up to 93 VdB at 25 feet (typical range) and vibration levels of up to 105 VdB at 25 feet (upper range) (FTA, 2018). During the November 2022 test, a maximum vibration level of 86 VdB at 50 feet was recorded at a site with soil conditions representative of the typical backyard along the levee (RCH Group, 2022). The 2018 FTA guidelines indicate that a vibration level of 85 VdB or more in a residence can result in annoyance (FTA, 2018). The FTA guidelines also show that a vibration level of up to 102 VdB is considered safe for buildings consisting of reinforced concrete, steel, or timber (no plaster[27]), and would not result in any construction vibration damage (FTA, 2018).

It is expected that construction activities could occur as close as approximately 30 feet from the nearest residence (depending on the side of the levee construction occurs on). Vibration levels would be approximately 93 VdB at 30 feet. The sheet pile installation along the levee would result in temporary annoyance to residents, but it is not expected to result in any structural damage to nearby residences since this vibration level would be well below the 102 VdB

[27] Plaster is more brittle and is not commonly used for interior wall finishing. The most common wall covering is drywall which is more vibration resistant than plaster finishes.

threshold for structural damage. Therefore, construction vibration under the Project would be less than significant; no new or substantially more severe significant impacts, compared to what was identified in the 2019 IS/MND, would occur.

13c. 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 2019 IS/MND, Section IV.13, Noise, topic c determined that aircraft noise impacts of TRB reconstruction would be less than significant because the project site is outside of the 55 dB CNEL San Rafael Airport noise contour identified in the Marin Countywide Plan. The Project would not affect the conclusions from the 2019 IS/MND. Therefore, aircraft noise under the Project would be less than significant; no new or substantially more severe significant impacts, compared to what was identified in the 2019 IS/MND, would occur.

Conclusion

The Project would not result in a new or substantially more severe significant noise impact, compared to those identified in the 2019 IS/MND. Incorporation of Noise BMPs, which are not required to reduce any significant impact to less than significant, would reduce annoyance and disruption experienced by nearby residents during construction.

References

California Department of Transportation (Caltrans), 1998. Traffic Noise Analysis Protocol for New Highway Construction and Reconstruction Projects. October 1998. Found at: https://dot.ca.gov/-/media/dot-media/programs/environmental-analysis/documents/env/f0008617-traffic-noise-protocol-oct1998-a11y.pdf

California Department of Transportation (Caltrans), 2020. Transportation and Construction Vibration Guidance Manual. April 2020. Found at: https://dot.ca.gov/-/media/dot-media/programs/environmental-analysis/documents/env/tcvgm-apr2020-a11y.pdf

California Department of Transportation (Caltrans), 2002. Transportation Related Earthborne Vibrations. February 2002. Found at: http://www.vibrationdata.com/tutorials_alt/caltrans_earth.pdf

Federal Highway Administration (FHWA), 2006. Roadway Construction Noise Model User's Guide. January 2006. Found at: https://www.gsweventcenter.com/Draft_SEIR_References/2006_01_Roadway_Construction_Noise_Model_User_Guide_FHWA.pdf

Federal Transit Administration (FTA), 2018. Transit Noise and Vibration Impact Assessment Manual. September 2018. Found at: https://www.transit.dot.gov/sites/fta.dot.gov/files/docs/research-innovation/118131/transit-noise-and-vibration-impact-assessment-manual-fta-report-no-0123_0.pdf

RCH Group (RCH), 2022. Noise & Vibration Monitoring for Gallinas Levee Upgrade Project Sheet Pile Installation Test. November 2022.

2.14. Population and Housing

Environmental Issue Area	Where Was this Issue Analyzed in the Previous Environmental Document?	Do Proposed Project Changes Affect this Issue?	Are There Any Changed Circumstances that Affect this Issue?	Is There Any New Information of Substantial Importance Pertaining to this Issue?	If Any of the Previous Three Questions Was Answered "Yes," Would Changes or New Information Result in a New or Substantially More Severe Significant Impact?	Are there any New or Reconsidered Mitigation Measures or Alternatives that Would Substantially Reduce Significant Impacts?
14. Population and Housing. Would the Project:						
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)?	2019 IS/MND, Section IV.14, Population and Housing, topic a	No	No	No	N/A	N/A
b) Displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?	2019 IS/MND, Section IV.14, Population and Housing, topic b	No	No	No	N/A	N/A
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?	2019 IS/MND, Section IV.14, Population and Housing, topic c	No	No	No	N/A	N/A
d) Displace existing housing, especially affordable housing?	2019 IS/MND, Section IV.14, Population and Housing, topic d	No	No	No	N/A	N/A
e) Result in any physical changes which can be traced through a chain of cause and effect to social or economic impacts?	2019 IS/MND, Section IV.14, Population and Housing, topic e	No	No	No	N/A	N/A

Discussion

a) Would the Project 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) Would the Project displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?

c) Would the Project 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) Would the Project displace existing housing, especially affordable housing?

This discussion covers all four of the above topics a-d. The 2019 IS/MND found that the project then being evaluated would not displace people or existing housing, nor would it increase the demand for new housing or induce unplanned population growth. The 2019 IS/MND therefore concluded that the proposed reconstruction of the TRB would have had no impact with respect to these topics. Neither Project changes, nor new information, nor changed circumstances affect these issues, and the Project similarly would have no impact of these kinds.

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

The 2019 IS/MND discussed how the project then being evaluated would not have an indirect deleterious social or economic impact, but rather that it would likely help maintain property values for properties protected from flooding by the improved levee, and thus would tend to have positive social and economic impacts. For the same reason, the current Project would likely not have indirect negative social or economic impacts stemming from physical changes, and so, too, would not have a significant adverse impact of this kind.

Mitigation Measures

As the 2019 IS/MND identified no significant impacts on population and housing, no mitigation measures were required. Similarly, the current Project would have no significant impact of this kind, and no mitigation is required.

Conclusion

Project changes do not affect this issue, and there is no new information of substantial importance, nor are there changed circumstances affecting this issue. The Project would not have a new significant impact nor a substantial increase in the severity of a previously identified significant impact with respect to population and housing.

2.15. Public Services

Environmental Issue Area	Where Was this Issue Analyzed in the Previous Environmental Document?	Do Proposed Project Changes Affect this Issue?	Are There Any Changed Circumstances that Affect this Issue?	Is There Any New Information of Substantial Importance Pertaining to this Issue?	If Any of the Previous Three Questions Was Answered "Yes," Would Changes or New Information Result in a New or Substantially More Severe Significant Impact?	Are there any New or Reconsidered Mitigation Measures or Alternatives that Would Substantially Reduce Significant Impacts?
15. Public Services.						
a. Would the Project 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?	2019 IS/MND, Section IV.15, Public Services, topic a.i	No	No	No	N/A	N/A
ii. Police protection?	2019 IS/MND, Section IV.15, Public Services, topic a.ii	No	No	No	N/A	N/A
iii. Schools?	2019 IS/MND, Section IV.15, Public Services, topic a.iii	No	No	No	N/A	N/A
iv. Parks?	2019 IS/MND, Section IV.15, Public Services, topic a.iv	No	No	No	N/A	N/A
v. Other public facilities, including roads?	2019 IS/MND, Section IV.15, Public Services, topic a.v	No	No	No	N/A	N/A

Discussion

As discussed in the 2019 IS/MND, and as also discussed in Section 2.14, Population and Housing, above, the project then being evaluated would not have induced population growth or new residential or other development; it would involve upgrading of an existing flood protection facility to increase the level of flood protection for an existing residential neighborhood. The 2019 IS/MND concluded that, therefore, the reconstruction of the TRB would not have required new or physically altered government facilities, and so would have had any adverse physical impact related to their construction and operation. For the same reasons, the current Project would not increase demand for government services or facilities, and would have no such impact. Project changes do not affect this issue or these conclusions, and there is no new information of substantial importance, nor changed circumstances affecting this issue.

Mitigation Measures

The 2019 IS/MND found no impacts associated with increased demand for public services, and so required no mitigation measures. Similarly, the current Project would not have an impact with respect to public services.

Conclusion

Project changes do not affect this issue, and there is no new information of substantial importance, nor are there changed circumstances affecting this issue. The Project would not have a new significant impact nor a substantial increase in the severity of a previously identified significant impact with respect to public services.

2.16. Recreation

Environmental Issue Area	Where Was this Issue Analyzed in the Previous Environmental Document?	Do Proposed Project Changes Affect this Issue?	Are There Any Changed Circumstances that Affect this Issue?	Is There Any New Information of Substantial Importance Pertaining to this Issue?	If Any of the Previous Three Questions Was Answered "Yes," Would Changes or New Information Result in a New or Substantially More Severe Significant Impact?	Are there any New or Reconsidered Mitigation Measures or Alternatives that Would Substantially Reduce Significant Impacts?
16. Recreation.						
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?	2019 IS/MND, Section IV.16, Recreation, topic a	Yes	Yes	No	No	N/A
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?	2019 IS/MND, Section IV.16, Recreation, topic b	No	Yes	No	No	N/A

Discussion

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?

The 2019 IS/MND found that, because the project then being evaluated would not increase housing or population in the Santa Venetia neighborhood, it would not result in an increase in use of neighborhood and regional parks or recreational facilities, potentially leading to their accelerated deterioration. The 2019 IS/MND concluded that there would be no impact of this kind.

Since the adoption of the 2019 IS/MND, Marin County Parks has acquired Buck's Landing, which was previously privately owned. Buck's Landing is now a one-half acre park used for wildlife viewing and for launching canoes, kayaks, and paddleboards onto Gallinas Creek (Marin County Parks, 2023). Buck's Landing is proposed to be used by the District as the loading point for barging building materials to the Project site. Buck's landing would be used to transload materials, including composite sheet piles, between land and water. A crane located on shore would be used to load and unload the barge. The change in ownership of Buck's landing, and its

proposed use for the Project, constitute Project changes and changed circumstances affecting this issue.

The Project would not require changes to existing physical facilities at Buck's Landing, and none are proposed. The access road to Buck's Landing from North San Pedro Road is adequate for the trucks that would carry equipment and materials. Materials would not be stored at Buck's landing, but would be transloaded from truck to barge by a crane stationed on shore or on the barge. This use of Buck's landing would be temporary, only during construction of the floodwall. For these reasons, a substantial deterioration of facilities would not be expected, and this impact would be less than significant: the Project would not result in a new significant impact, nor in a substantial increase in the severity of a previously identified significant impact, with respect to increased use and deterioration of parks and recreational 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 2019 IS/MND stated that the project then being evaluated would not include recreational facilities or require the construction or expansion of recreational facilities, and that there would therefore be no impact related to construction or expansion of recreational facilities.

For the same reasons, the current Project would have no impact related to construction or expansion of recreational facilities.

Mitigation Measures

The 2019 IS/MND found no impacts associated with increased demand for and potential deterioration of parks and recreational facilities. Similarly, the current Project would not have an impact with respect to parks and recreational facilities.

Conclusion

The Project would involve use of a recently-acquired County park for construction activities, but would have a less-than-significant impact with respect to deterioration of a park or recreational facilities.

References

Marin County Parks, 2023. Buck's Landing: Overview. www.parks.marincounty.org/parkspreserves/parks/bucks-landing Website accessed September 11, 2023.

2.17. Transportation/Traffic

Environmental Issue Area	Where Was this Issue Analyzed in the Previous Environmental Document?	Do Proposed Project Changes Affect this Issue?	Are There Any Changed Circumstances that Affect this Issue?	Is There Any New Information of Substantial Importance Pertaining to this Issue?	If Any of the Previous Three Questions Was Answered "Yes," Would Changes or New Information Result in a New or Substantially More Severe Significant Impact?	Are there any New or Reconsidered Mitigation Measures or Alternatives that Would Substantially Reduce Significant Impacts?
17. Transportation/Traffic. Would the Project:						
a) Conflict with a program, plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities?	2019 IS/MND, Section IV.17, Transportation, topic a	No	No	No	N/A	N/A
b) Conflict or be inconsistent with CEQA Guidelines section 15064.3, subdivision (b)?	2019 IS/MND, Section IV.17, Transportation, topic b	Yes	No	No	No	N/A
c) Substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	2019 IS/MND, Section IV.17, Transportation, topic c	Yes	No	No	No	N/A
d) Result in inadequate emergency access?	2019 IS/MND, Section IV.17, Transportation, topic d	No	No	No	N/A	N/A

Discussion

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

The 2019 IS/MND reviewed the transportation policies contained in the Transportation Element of the 2007 Marin Countywide Plan. The 2019 IS/MND stated that the project then being evaluated would not result in any long-term increase in traffic, and furthermore would not interfere with or alter existing circulation systems, including transit, roadway, bicycle, and pedestrian facilities. During reconstruction of the TRB, there would have been a small incremental increase in vehicle traffic associated with worker commute trips and transportation of materials and equipment, but the number of trips would be small. The 2019 IS/MND concluded that the additional vehicle trips would add incrementally to traffic on local and regional roadways, particularly North San Pedro Road, but that 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 then being evaluated adversely affect existing transit systems or bicycle and pedestrian facilities. The 2019 IS/MND concluded that this impact would therefore be less than significant.

There is no new information of substantial importance affecting this topic, and no changed circumstances. Project changes, however, particularly changes in floodwall design, construction methods, and construction schedule, would result in a greater daily number of construction vehicles, including trucks carrying equipment and materials, as well as workers' passenger vehicles. As discussed under the following topic, however, the number of daily vehicles would remain low, and would not be expected to conflict with Countywide Plan policies regarding traffic flow.

For the same reasons as stated in the 2019 IS/MND, the current Project would not be expected to have a significant impact with respect to conflict with a program, plan, ordinance or policy addressing the circulation system. There would not be a new significant impact, nor an increase in the severity of a previously identified significant impact of this kind.

b) Would the Project conflict or be inconsistent with CEQA Guidelines section 15064.3, subdivision (b)?

State CEQA Guidelines section 15064.3(b) establishes thresholds for determining the significance of transportation impacts, and directs lead agencies to use 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. The term "automobile" refers to on-road passenger vehicles, specifically cars and light trucks. Heavy-duty truck trips are not required to be included in the calculation of VMT, but may be disclosed for informational purposes and for calculation of air emissions.

The 2019 IS/MND estimated the number and average length of vehicle trips associated with reconstruction of the TRB, and concluded that that project would not have a significant impact related to VMT.

There are no changed circumstances nor any new information of substantial importance related to this topic. As stated in the discussion of the previous topic, the current Project would result in a greater number of construction-related vehicle trips during Project construction than the previously proposed TRB reconstruction. As with the project evaluated in the 2019 IS/MND, the Project would not result in any long-term increase in vehicle trips or VMT: 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.

Project construction would take place over one dry season, as discussed in Chapter 1, Project Description. During the approximately 155-day construction period, the Project would be expected to generate vehicle trips associated with workers commuting to and from the Project, site, as well as trucks used to haul equipment and materials to and from the Project site. The estimated number of construction worker trips and associated VMT are shown in **Table 2.17-1**.

The highest amount of daily VMT would be expected during the "Begin TRB Demolition" stage, when 16 one-way trips would total about 400 VMT each day during the five-day stage. The number of truck haul trips and average length are shown in **Table 2.17-2**, but according to the CEQA Guidelines, haul truck trips should not be included in VMT calculations for the purpose of determining the significance of transportation impacts.

TABLE 2.17-1: CONSTRUCTION WORKER DAILY TRIPS AND VMT

Stage	Duration (Work Days)	Worker Trips (1-Way) per Day	Average Trip Length (Miles)	VMT/Day
Mobilize	15	8	25	200
Begin TRB Demolition	5	16	25	400
Sheet Pile Installation	120	12	25	300
Cleanup and Demobilize	15	8	25	200

TABLE 2.17-2: HAUL TRUCK TRIPS PER CONSTRUCTION STAGE TRIP LENGTH

Stage	Duration (work days)	Haul Trips (1-way) per Stage	Avg. Length (Miles)
Mobilize	15	20	25
Begin TRB Demolition	5	100	15
Sheet Pile Installation	120	40	25
Cleanup and Demobilize	15	20	25

Consistent with guidance from the Governor's Office of Planning and Research on implementation of this section of the State CEQA Guidelines (OPR, 2018), 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 with or be inconsistent with State CEQA Guidelines section 15064.3, subdivision (b), and, like the project evaluated in the 2019 IS/MND, the impact would be less than significant.

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

The 2019 IS/MND determined that the project then being evaluated would not result in construction of new roads or intersections, alter the geometric design of existing roads or intersections, or introduce incompatible uses to the road system, such as farm equipment. Large construction vehicles, such as flatbed trucks, would be used infrequently, and would not be a substantial incompatible use. The 2019 IS/MND therefore determined that the project then being evaluated would have no impact of this kind.

Project changes, including use of different construction materials and methods, and use of different locations, including Buck's Landing, for accessing the work area, do not change the conclusion reached in the 2019 IS/MND. For the same reasons as stated in the 2019 IS/MND, the current Project would not substantially increase hazards due to a geometric design feature or

incompatible uses. There is no new information of substantial importance and there are no changed circumstances affecting this topic. The Project would not have a new significant impact, nor a substantial increase in the severity of a previously identified significant impact, of this kind.

d) Result in inadequate emergency access?

The 2019 IS/MND found that the project then being evaluated 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 and there would have been no impact of this kind. The same is true of the current Project. There is no new information of substantial importance and there are no changed circumstances affecting this topic. The Project would not have a new significant impact, nor a substantial increase in the severity of a previously identified significant impact, of this kind.

Mitigation Measures

The 2019 IS/MND found only less-than-significant impacts on transportation, and so no mitigation was required. Similarly, the current Project would not have a significant impact on transportation, and no mitigation is required.

Conclusion

Project changes do not affect the conclusion of no significant transportation impacts reached in the 2019 IS/MND. There is no new information of substantial importance, nor are there changed circumstances affecting this issue. The Project would not result in a new significant impact, nor a substantial increase in the severity of a previously identified significant impact on transportation.

References

California Governor's Office of Planning and Research, 2018. Technical Advisory on Evaluating Transportation Impacts in CEQA. December, 2018. https://opr.ca.gov/ceqa/sb-743/

2.18. Tribal Cultural Resources

Environmental Issue Area	Where Was this Issue Analyzed in the Previous Environmental Document?	Do Proposed Project Changes Affect this Issue?	Are There Any Changed Circumstances that Affect this Issue?	Is There Any New Information of Substantial Importance Pertaining to this Issue?	If Any of the Previous Three Questions Was Answered "Yes," Would Changes or New Information Result in a New or Substantially More Severe Significant Impact?	Are there any New or Reconsidered Mitigation Measures or Alternatives that Would Substantially Reduce Significant Impacts?
18. Tribal Cultural Resources. Would the Project:						
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)?	2019 IS/MND, Section IV.18, Tribal Cultural Resources, topic a.i	No	No	Yes	No	N/A
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.	2019 IS/MND, Section IV.18, Tribal Cultural Resources, topic a.ii	No	No	Yes	No	N/A

Discussion

a) Would the Project 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.

Citing the Cultural Resources Assessment Report (CRAR) prepared for the project then being evaluated (Price et al, 2019), the 2019 IS/MND stated that no Tribal Cultural Resources were known to exist within the Project site, and that standard accidental discovery provisions contained in the Marin County Development Code, augmented by Mitigation Measures CUL-1 and CUL-2, establish a procedure for protecting and recording any previously unknown archaeological resources or buried human remains encountered during construction activities. The 2019 IS/MND concluded, therefore, that the Project would not cause a substantial adverse change in the significance of a listed or eligible Tribal Cultural Resource.

As discussed in Section 2.5 Cultural Resources, of this SER, the 2019 CRAR was updated for the current Project, including a new records search, outreach to Tribes, and a site survey (Achasta Archaeological Services, 2023). The update to the CRAR confirmed the findings of the 2019 CRAR: there are no recorded or observed archaeological resources within the Project site, and the fill composition of the levee and TRB reduce the potential for presence of intact archeological materials (Achasta Archaeological Services, 2023). As discussed in Section 2.5, the presence of nearby recorded archaeological sites supports the need for strong protection for previously undiscovered archaeological materials that may be encountered during construction. Section 2.5 includes revisions to previously adopted Mitigation Measures CUL-1 and CUL-2 to bring these measures for inadvertent discovery of previously unknown archaeological resources up to current professional standards.

As discussed in Section IV.18, Tribal Cultural Resources, topic b, in the 2019 IS/MND, District staff previously contacted representatives of the two tribes who had previously requested notice of projects in Marin County, to offer to consult with them on Tribal Cultural Resources that may be known to them that could be affected by the project then being considered. Neither tribe requested consultation during preparation of the 2019 IS/MND, and, because the CRAR had not identified any Tribal Cultural Resources within the Project site, the District determined that the Project would not be expected to cause a substantial adverse change in the significance of a known Tribal Cultural Resource.

For the current Project, the District again contacted tribal representatives to offer to consult with them regarding Tribal Cultural Resources that may be affected by the Project, sending letters to the Coast Miwok Tribal Council and the Federated Indians of Graton Rancheria (FIGR) on October 4, 2023. The Coast Miwok declined the offer of consultation. FIGR did not respond within the 30-day period. Therefore, the offer of Tribal consultation resulted in no new information that indicates the presence of Tribal Cultural Resources within the Project site.

As with the Project evaluated in the 2019 IS/MND, with implementation of Mitigation Measures CUL-1, CUL-2 (as revised) and CUL-3, the Project would not cause a substantial adverse change

in the significance of any known Tribal Cultural Resource: there would be no new significant impact nor an increase in the severity of a previously identified significant impact of this kind.

Mitigation Measures

The 2019 IS/MND found that the project then being evaluated would not cause a substantial adverse change in the significance of any known Tribal Cultural Resource, and that mitigation measures identified for inadvertent discovery of archaeological resources would reduce the potential for adverse changes to previously unknown Tribal Cultural Resources to less-than-significant. No additional mitigation was required. Similarly, the current Project would not have a significant impact on Tribal Cultural Resources, and the mitigation measures identified for inadvertent discovery, as updated in Section 2.5, Cultural Resources, are sufficient to avoid impacts to previously unknown Tribal Cultural Resources that may be inadvertently encountered during Project construction. No additional mitigation is required.

Conclusion

Project changes and new information do not affect the conclusion of no significant impacts to Tribal Cultural Resources. The Project would not result in a new significant impact, nor a substantial increase in the severity of a previously identified significant impact on Tribal Cultural Resources.

References

Achasta Archaeological Services, 2023. Supplemental Cultural Resources Assessment Report: Santa Venetia Floodwall Project, Supplemental Environmental Review, Santa Venetia Neighborhood, Marin County, California. Prepared for Sicular Environmental Consulting and Natural Lands Management by Brenna Wheelis, B.A., and Susan Morley, M.A., RPA.

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.

2.19. Utilities and Service Systems

Environmental Issue Area	Where Was this Issue Analyzed in the Previous Environmental Document?	Do Proposed Project Changes Affect this Issue?	Are There Any Changed Circumstances that Affect this Issue?	Is There Any New Information of Substantial Importance Pertaining to this Issue?	If Any of the Previous Three Questions Was Answered "Yes," Would Changes or New Information Result in a New or Substantially More Severe Significant Impact?	Are there any New or Reconsidered Mitigation Measures or Alternatives that Would Substantially Reduce Significant Impacts?
19. Utilities and Service Systems. Would the Project:						
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?	2019 IS/MND, Section IV.19, Utilities and Service Systems, topic a	No	No	No	N/A	N/A
b) Have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry and multiple dry years?	2019 IS/MND, Section IV.19, Utilities and Service Systems, topic b	No	No	No	N/A	N/A
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?	2019 IS/MND, Section IV.19, Utilities and Service Systems, topic c	No	No	No	N/A	N/A
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?	2019 IS/MND, Section IV.19, Utilities and Service Systems, topic d	No	No	No	N/A	N/A
e) Comply with federal, state, and local management and reduction statutes and regulations related to solid waste?	2019 IS/MND, Section IV.19, Utilities and Service Systems, topic e	No	Yes	Yes	No	N/A

Discussion

a) Would the Project 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) Would the Project have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry and multiple dry years?

c) Would the Project 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?

The 2019 IS/MND determined that the Project then being evaluated would not require relocation or construction of new or expanded utilities, and would not increase demand for water supply (other than a small amount of water needed during construction) or wastewater treatment. The 2019 IS/MND concluded that the proposed reconstruction of the TRB would not have a significant impact related to these topics.

There are no changes to the current Project that affect these topics. There is no new information of substantial importance, nor are there changed circumstances affecting these topics. For the same reasons as stated in the 2019 IS/MND, the current Project would not have a new significant impact, nor would it result in a substantial increase in the severity of a previously identified significant impact related to these topics.

d) Would the Project 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) Would the Project comply with federal, state, and local management and reduction statutes and regulations related to solid waste?

The 2019 IS/MND pointed to existing State and local requirements for minimizing and recovering solid waste, including the requirement contained in CALGreen, the California Green Building Code, to recycle 65 percent of construction and demolition waste. The 2019 IS/MND stated that the majority of waste associated with TRB reconstruction was expected to be plant material from site preparation and wood waste from demolition of the existing TRB. The TRB was constructed primarily of redwood lumber, which would have been salvaged, with unusable lumber and plant debris segregated for composting, and fill material reused on-site or used as clean fill elsewhere. The 2019 IS/MND stated that remaining capacity at Redwood Landfill, just north of Novato, was sufficient for unrecoverable residue. The 2019 IS/MND concluded that these practices would enable the project then being evaluated to meet the CALGreen construction and demolition waste diversion requirements, and that it would not generate waste in excess of the capacity of local infrastructure. The 2019 IS/MND therefore concluded that impacts related to solid waste generation would be less than significant.

The 2019 IS/MND did not disclose that portions of the TRB are constructed of pressure-treated fir. Since adoption of the 2019 IS/MND, Assembly Bill 332 was signed into law, establishing Alternative Management Standards (AMS) for handling and disposal of "treated wood waste" (TWW), which includes most types of pressure-treated fir (California Department of Toxic Substances Control, 2023). The AMS are codified in California Health and Safety Code Section 25230. The AMS allow handling TWW in accordance with a set of alternative standards in lieu of the requirements for hazardous waste. In summary, the AMS lessen storage requirements, extend accumulation periods, allow shipments without a hazardous waste manifest and a hazardous waste hauler, and allow disposal at specific non-hazardous waste landfills. The AMS simplify and facilitate the safe and economical disposal of TWW.

Redwood Landfill is not permitted to accept TWW. There are, however, several landfills and waste handlers in the Bay Area that accept TWW for disposal. With adherence to the AMS statutory requirements for handling and disposal of TWW, the Project would not result in a new or substantially more severe impact with respect to waste disposal.

There are no other changes to the current Project that affect solid waste topics. There is no other new information of substantial importance, nor are there changed circumstances affecting these topics, other than those described above. With adherence to the CALGreen requirements for recycling of Construction and Demolition debris, and with the new AMS standards for handling and disposal of TWW, the current Project would not have a new significant impact, nor would it result in a substantial increase in the severity of a previously identified significant impact related to these topics.

Mitigation Measures

The 2019 IS/MND found only less-than-significant impacts on utilities and service systems, and so no mitigation was required. Similarly, the current Project would not have a significant impact on utilities and service systems, and no mitigation is required.

Conclusion

Project changes do not affect the conclusion of no significant impacts on utilities and services systems reached in the 2019 IS/MND. New information of substantial importance includes the revelation that portions of the TRB are constructed of pressure-treated fir. Changed circumstances affecting the analysis include the passage of AB 332 and changes to the California Health and Safety Code regarding Alternative Management Standards for Treated Wood Waste. With adherence to these standards, the Project would not result in a new significant impact, nor a substantial increase in the severity of a previously identified significant impact on utilities and service systems.

References

California Department of Toxic Substances Control (DTSC), 2023. Treated Wood Waste (TWW). https://dtsc.ca.gov/toxics-in-products/treated-wood-waste/ Accessed November 19, 2023.

2.20. Wildfire

Environmental Issue Area	Where Was this Issue Analyzed in the Previous Environmental Document?	Do Proposed Project Changes Affect this Issue?	Are There Any Changed Circumstances that Affect this Issue?	Is There Any New Information of Substantial Importance Pertaining to this Issue?	If Any of the Previous Three Questions Was Answered "Yes," Would Changes or New Information Result in a New or Substantially More Severe Significant Impact?	Are there any New or Reconsidered Mitigation Measures or Alternatives that Would Substantially Reduce Significant Impacts?
20. Wildfire. Would the Project:						
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?	2019 IS/MND, Section IV.20, Wildfire, topic a	No	No	No	N/A	N/A
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?	2019 IS/MND, Section IV.20, Wildfire, topic b	No	No	No	N/A	N/A
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?	2019 IS/MND, Section IV.20, Wildfire, topic c	No	No	No	N/A	N/A
d) Expose people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildland fires?	2019 IS/MND, Section IV.20, Wildfire, topic d	No	No	No	N/A	N/A

Discussion

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

b) Would the Project 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) Would the Project 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) Would the Project expose people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildland fires?

The 2019 IS/MND found that the Project site is not within the mapped Wildland-Urban Interface (WUI), and neither is it within an area mapped as a moderate, high, or very high fire hazard severity zone. The 2019 IS/MND stated that the project then being evaluated would not add new flammable elements or require new infrastructure that would exacerbate wildfire risks, would not change the risk of exposure to pollutant concentrations, risks from post-fire slope instability or drainage changes, or expose people or structures to a significant risk of loss, injury, or death involving wildland fires.

Project changes do not affect this issue, and there is no new information of substantial importance nor any changed circumstances affecting this issue topic. For the same reasons as stated in the 2019 IS/MND, the current Project would not have an impact – and therefore no new significant impact nor a substantial increase in a previously identified significant impact – with respect to exacerbating wildfire or wildfire-related risks.

Mitigation Measures

The 2019 IS/MND found no impacts related to wildfire topics, so no mitigation was required. Similarly, the current Project would not have a significant impact related to wildfire, and no mitigation is required.

Conclusion

Project changes do not affect the conclusion of no significant impacts related to wildfire reached in the 2019 IS/MND. There is no new information of substantial importance, nor are there changed circumstances affecting this issue. The Project would not result in a new significant impact, nor a substantial increase in the severity of a previously identified significant impact related to wildfire.

References

MarinMap, 2023. Wildland-Urban Interface and Fire Hazard Severity layers. Accessed September 14, 2023. www.marinmap.org

2.21. Mandatory Findings of Significance

Environmental Issue Area	Where Was this Issue Analyzed in the Previous Environmental Document?	Do Proposed Project Changes Affect this Issue?	Are There Any Changed Circumstances that Affect this Issue?	Is There Any New Information of Substantial Importance Pertaining to this Issue?	If Any of the Previous Three Questions Was Answered "Yes," Would Changes or New Information Result in a New or Substantially More Severe Significant Impact?	Are there any New or Reconsidered Mitigation Measures or Alternatives that Would Substantially Reduce Significant Impacts?
21. Mandatory Findings of Significance.						
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?	2019 IS/MND, Section IV.21, Mandatory Findings of Significance, topic a	Yes	No	No	No	N/A
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)?	2019 IS/MND, Section IV.21, Mandatory Findings of Significance, topic b	Yes	No	Yes	No	N/A
c) Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?	2019 IS/MND, Section IV.21, Mandatory Findings of Significance, topic c	No	No	No	N/A	N/A
d) Does the project have the potential to achieve short-term, to the disadvantage of long-term, environmental goals?	2019 IS/MND, Section IV.21, Mandatory Findings of Significance, topic d	No	No	No	N/A	N/A

Discussion

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?

The 2019 IS/MND found that the Project then being evaluated could have an adverse impact on habitat for sensitive wildlife species, and could result in take of listed species, but with incorporation of identified mitigation measures, 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. The 2019 IS/MND also found that the Project could have an adverse effect on as-yet undiscovered archeological resources, but mitigation measures identified would reduce any such impact 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.

For the current Project, there would be new significant impacts and a substantial increase in the severity of previously identified significant impacts to biological resources. Mitigation measures previously identified in the 2019 IS/MND have been revised, and with adoption of these measures, all biological resources impacts would be reduced to less than significant, and the Project would not 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, or substantially reduce the number or restrict the range of a rare or endangered plant or animal.

As discussed in Section 2.5, Cultural Resources, the current Project would not result in a new significant impact or in a substantial increase in the severity of a previously identified significant impact on cultural resources, including historical and archaeological resources. With adoption of previously identified mitigation measures addressing accidental discovery of previously unknown archaeological resources, as revised in Section 2.5, 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)?

The 2019 IS/MND identified several past, then-current, and future projects located close to the Project site, and considered whether the impacts of the project then being considered – all of which were less than significant -- had the potential to combine with impacts of the others in a cumulative manner. Finding that that potential was low, the 2019 IS/MND concluded that the TRB reconstruction would not have impacts that are individually limited, but cumulatively considerable.

Current cumulative projects are identified and described in **Table 2.21-1**. This includes several projects identified in the 2019 IS/MND, and additional projects not previously identified. Several projects are small residential development projects in the Santa Venetia neighborhood, and are unlikely to combine with the Project in a cumulative manner. Repair, maintenance, and improvements to the stormdrain system in Santa Venetia, planned by the District but with no definite implementation date, would occur within the neighborhood. A major nearby project, the San Rafael Airport Recreational Facility, is nearing completion, and though it is located close to the Project site, it does not involve changes to the creek or marsh areas around it.

There are, however, several projects that do involve work in the marsh and creek: upgrading of an existing outlet pipe at Santa Venetia Pump Station No. 2, abandonment of another pipe at Pump Station No. 5, various improvements, including upgrading the outfall pipe, at Pump Station No. 4, restoration of McInnis Marsh, and dredging of South Fork Gallinas Creek. All of these projects would involve some level of disturbance of the creek and/or the marsh fringing it, and so share with the Project the potential for impacts to biological resources, hydrology, and water quality. Most of the work that the District undertakes that involves working in the marsh occur only during established "work windows" that are outside of the nesting and rearing seasons for special status species, thereby avoiding most impacts to biological resources. The cumulative projects identified that involve working in the marsh would be highly localized and short-term, limiting impacts to water quality and hydrology. The 2019 IS/MND included the pipe work at Pump Station No. 2 and No. 5, and identified mitigation measures for work in the marsh to minimize and avoid significant impacts. It is reasonable to assume that these mitigation measures will be applied to the work at Pump Station No. 2 and No. 5. The larger projects, dredging of South Fork Gallinas Creek and restoration of McInnis Marsh, are being closely coordinated with permitting agencies (and with each other), and will undergo CEQA review prior to implementation. While both of these projects may result in short-term impacts to special status species through modification of habitat, and to water quality through introduction of sediment into the water column, both are intended to provide long-term benefits to wetland habitat and stream function. Furthermore, it can be assumed that the CEQA review for these projects will include mitigation measures for short term impacts, likely similar to the mitigation measures required for the current Project.

In sum, while the Project has the potential to combine cumulatively with other nearby projects involving work in the marsh and creek, cumulative impacts, with incorporation of mitigation and permit conditions, are expected to be minimized, localized, and of short duration. Therefore, these cumulative impacts are not expected to be "cumulatively considerable."

TABLE 2.21-1: CUMULATIVE PROJECT LIST

Project Name	Project Location (and Distance from Project Site)	Project Description	Current Status	Schedule
Projects Previously Identified in the 2019 IS/MND				
San Rafael Airport Recreational Facility	440 Smith Ranch Road, San Rafael, 94903 (750 feet)	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.	Under construction	City website states that all construction was anticipated to be completed by 2022.
McInnis Marsh Restoration Project	Marin	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 marsh restoration project would use dredge spoils from Gallinas Creek (see below), and so is being coordinated with County Service Area 6.	In development.	The project is planned, but without a definite implementation date.
Santa Venetia Pump Station No. 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.	planned	The project is planned, but without a definite implementation date.

Project Name	Project Location (and Distance from Project Site)	Project Description	Current Status	Schedule
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 No. 4; • upsizing upper pipe network located southerly on Adrian that routes to Pump Station No.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.	Planned	The project is planned, but without a definite implementation date.
Other Projects in the Vicinity of the Project Site				
South Fork Gallinas Creek Dredging	South Fork Gallinas Creek	County Service Area 6 (CSA 6) staff are working with Marin County Parks staff to design and permit the placement of dredge sediments from the South Fork of Gallinas creek as part of the McInnis Marsh Restoration Project. Parks is also in discussions with Las Gallinas Valley Sanitary District regarding possible relocation of a sewer force main pipeline from Santa Venetia to the treatment plant that runs through the marsh. Dredging has occurred periodically in the past (most recently in 1992 and 1994) to improve navigation for small boats. The current project is planned as a “geomorphic dredge” to restore the morphology and function of a natural tidal channel, while also improving navigation.	In the planning and feasibility phase of development	No definite schedule

Project Name	Project Location (and Distance from Project Site)	Project Description	Current Status	Schedule
Upgrade outlet pipe at Santa Venetia Pump Station No. 2	Santa Venetia levee, near intersection of Vendola Drive and Hawthorne Way	The District plans the reinforcement of a 42-inch corrugated metal discharge pipe from Santa Venetia Pump Station No. 2. The pipe is at the end of its expected design life. To ensure that the outfall pipe continues to function and serve this critical facility, the District is planning trenchless reinforcement of the pipe. Reinforcement of the Pump Station No. 2 discharge pipe was included in the project evaluated in the 2019 IS/MND, but is not a part of the current Project.	Planning	No definite date for implementation
Abandon stormdrain pipe at Santa Venetia Pump Station No. 5	Santa Venetia levee, east end of Vendola Drive	The District is planning to abandon an 18-inch corrugated metal pipe adjacent to Pump Station No. 5. This pipe formerly 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. Abandonment of this pipe was included in the project evaluated in the 2019 IS/MND, but is not a part of the current Project.	Planning	No definite date for implementation

Project Name	Project Location (and Distance from Project Site)	Project Description	Current Status	Schedule
San Rafael City Schools (WildCare) Temporary Use Permit (P4256)	251 North San Pedro Rd., Unincorporated San Rafael Assessor's Parcel 180-123-01 (1,400 feet)	The applicant requests Temporary Use Permit (TUP) approval to temporarily locate WildCare's wildlife medicine teaching hospital on a portion of the Old Las Gallinas property throughout the construction of their permanent facility at 76 Albert Park Lane in San Rafael. WildCare's temporary facility would provide all wildlife medicine functions, including the operation of the wildlife hospital, onsite animal rehabilitation, animal caging, and minimal on-site educational programs. Structures and improvements associated with the temporary use would include the following: three approximately 12-foot tall 960-square-foot modular buildings; two modular sheds including one 51-square-foot shed and one 150-square-foot shed; 34 animal rehabilitation cages amongst eight separate caging areas; and eight-foot-tall chain link fencing surrounding the area of temporary improvements and structures.	Initial Review	N/A
Ruiz Design Review and Tree Removal Permit (P4111)	16 Crestview Way Unincorporated San Rafael (APN: 180-192-076) (1 mile)	Design Review approval to replace an existing single-family dwelling with a new 3,469 sf single-family residence on a developed lot in San Rafael. Various site improvements would also be entailed in the proposed development, including a new pool and pool equipment. Project also includes demolishing an existing single-family dwelling and a Tree Removal Permit to remove a total of five protected trees from the property including one 10-inch California Bay tree, one 6-inch Coast Live Oak tree, two 8-inch Coast Live Oak trees, one 12-inch Coast Live Oak tree.	Approved	County Design Review approved Sept. 29, 2023
Schenebeck Design Review (P3715)	31 Washington Ave., Unincorporated San Rafael Assessor's Parcel: 179-126-01 (2,250 feet)	Design Review approval to construct a new 1,374 sf addition to a single-family dwelling on a developed lot in San Rafael The proposed development would result in a floor area ratio of 30 percent on the 15,246 sf lot. The addition would reach a maximum height of 23 feet above surrounding grade.	Approved	County Design Review approved April 20, 2023

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

The 2019 IS/MND identified the potential of the project then being evaluated to have a significant adverse effect on human health due to exposure to diesel exhaust emissions from construction equipment. Consequently, the 2019 IS/MND identified Mitigation Measure AQ-1: Diesel Exhaust Emissions Reduction Measures, to reduce this impact to less-than-significant. With this measure, the 2019 IS/MND found that reconstruction of the TRB would not have a substantial adverse effect on human beings. Other potential direct or indirect impacts on human beings, such as from geologic hazards, exposure to hazardous materials, and construction noise, were found to be less than significant; they would not have the potential for substantial adverse effects on human beings.

The current Project could also result in short-term exposure to elevated levels of diesel emissions. For this reason, Mitigation Measure AQ-1 is carried forward for the current Project, and would similarly reduce the potential impact to human health to less than significant. No other potentially substantial adverse effects on human beings were identified.

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

The 2019 IS/MND stated that the objectives of the project then being evaluated were to increase flood protection for an existing neighborhood. The same is true for the current Project. The 2019 IS/MND stated that, while the beneficial effects of the Project then being evaluated were expected eventually to be outpaced by the contravening effects of climate change and land subsidence, the project would not have disadvantaged the County's long-term environmental goals, as embodied in the Marin Countywide Plan. The same is true of the current Project.

Mitigation Measures

The 2019 IS/MND, making no mandatory findings of significance, identified no additional mitigation measures. As the same finding is made for the current Project, no additional mitigation is needed.

Conclusion

As for the project evaluated in the 2019 IS/MND, there are no mandatory findings of significance for the current Project.

References

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/

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Marin County Department of Public Works, 2023. Gallinas Creek (County Service Area #6). https://publicworks.marincounty.org/gallinas-creek-csa6/ Accessed October 5, 2023.

Marin County Parks, 2023. McInnis Marsh Restoration. https://www.parks.marincounty.org/projectsplans/land-and-habitat-restoration/marsh-restoration-mcinnis-park?tabnum=2 Accessed October 5, 2023.

CHAPTER 3
Summary and Conclusion

1. Summary Findings of Checklist

Table 3-1 provides a summary of the conclusions for each environmental topic reached in Chapter 2, Checklist for Supplemental Environmental Review. The table indicates for each topic whether the Project would result in a new significant impact or a substantially more severe significant impact than identified in the 2019 IS/MND, and if so, whether existing or revised mitigation measures would reduce the impact to less than significant. Those topical issue areas for which there is the potential for a significant impact that cannot be mitigated should be further evaluated in an EIR, pursuant to State CEQA *Guidelines* Section 15162. As discussed in Section 2.4, Biological Resources, the Project would result in one new and one substantially more severe significant impact, but these can be reduced to less than significant with identified mitigation measures. Consequently, a subsequent Mitigated Negative Declaration may be prepared, pursuant to State CEQA *Guidelines* Section 15162.

TABLE 3-1: CONCLUSIONS REGARDING NEW OR SUBSTANTIALLY MORE SEVERE SIGNIFICANT IMPACTS

Topical Issue	No New or Substantially More Severe Significant Impact	New or Substantially More Severe Significant Impact, Can Be Mitigated to Less than Significant	New or Substantially More Severe Significant Impact, Cannot Be Mitigated to Less than Significant
2.1 Aesthetics	X		
2.2 Agriculture and Forestry Resources	X		
2.3 Air Quality	X		
2.4 Biological Resources		X	
2.5 Cultural Resources	X		
2.6 Energy	X		
2.7 Geology and Soils	X		
2.8 Greenhouse Gas Emissions	X		
2.9 Hazards and Hazardous Materials	X		
2.10 Hydrology and Water Quality	X		
2.11 Land Use and Planning	X		
2,12 Mineral Resources	X		
2.13 Noise	X		
2.14 Population and Housing	X		

Topical Issue	No New or Substantially More Severe Significant Impact	New or Substantially More Severe Significant Impact, Can Be Mitigated to Less than Significant	New or Substantially More Severe Significant Impact, Cannot Be Mitigated to Less than Significant
2.15 Public Services	X		
2.16 Recreation	X		
2.17 Transportation and Traffic	X		
2.18 Tribal Cultural Resources	X		
2.19 Utilities and Service Systems	X		
2.20 Wildfire	X		
2.21 Mandatory Findings of Significance	X		

2. Mitigation Measures

All mitigation measures, including mitigation measures carried over unchanged from the 2019 IS/MND and revised mitigation measures are compiled here. No new mitigation measures are identified in this SER. All mitigation measures and monitoring measures, timelines, and responsibilities, are included in Appendix A, Revised Mitigation Monitoring and Reporting Program.

As explained in the topical sections above, some of the proposed revisions to previously adopted mitigation measures are to address new and substantially more severe significant impacts (Mitigation Measures BIO-1 and BIO-4), while others reflect changes in professional standards or CEQA practice standards since the 2019 IS/MND was adopted (Mitigation Measures CUL-1 and CUL-2). All other mitigation measures are carried forth from the 2019 IS/MND unchanged.

For the revised measures, **additions** are underlined, and **deletions** are ~~struck-through~~.

Air Quality

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.

Biological Resources

Revised Mitigation Measure BIO-1: Avoidance of Sensitive Species

a. Plants: A qualified biologist shall conduct a focused survey for all rare plant species with potential to be present during their suitable blooming period, prior to ground disturbance. If no special-status plants are observed, no further action is required. If special-status plant species, including Point Reyes bird's beak, are observed, the plants shall be avoided with a suitable buffer, determined in coordination with CDFW. The buffer zone shall be clearly demarcated using exclusion fencing.

If establishing an avoidance buffer is not feasible, individual plants shall be transplanted to an area with suitable physical and biological conditions outside of the work area, according to a Rare Plant Relocation Plan to be prepared by Marin County or its contractor and reviewed and approved by CDFW. The Relocation Plan shall include regular monitoring and weed control for a period of five years, with success criteria including 75% cover of target species and less than 20% cover of weeds. Adaptive management criteria shall apply, including additional 3 years' monitoring, weeding, supplemental watering, or additional replanting, if success criteria are not met after the five-year management period.

b. Wildlife: For work within and directly adjacent to 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:

- For work within marsh habitat~~, including work at the two pump stations with pipeline replacement activities, the~~ a qualified biologist ~~biological monitor~~ shall survey the area where ground disturbance or vegetation removal will take place each morning prior to the start of work.

- Protocol-level surveys will be conducted annually in Las Gallinas marsh and Santa Venetia marsh in all suitable habitat for Ridgway's (California clapper) rail (CCR) or California black rail (CBR). Protocol-level surveys for rails shall follow the methods detailed in the USFWS *Site-Specific Protocol for Monitoring Marsh Birds* (2017). ~~Survey methodology and results will be submitted for CDFW approval.~~ No work activities, visual disturbance (direct line of sight) and/or increase in the ambient noise level shall occur within 700 feet of areas where CCR and/or CBR have been detected and are likely to be nesting during the breeding season (January 15 - August 31 for CCR, February 1 - August 31 for CBR), though this buffer distance may be reduced depending on site conditions and the nature of the proposed work, in coordination with CDFW and USFWS ~~other appropriate agencies~~. ~~For work within 250 feet of nesting sites, activities will be conducted outside of rail nesting season.~~

- 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. All work in tidal marsh habitat shall be monitored full-time by a qualified biologist.

- Following vegetation removal, exclusion fencing shall be installed around work areas within tidal marsh habitat where substrate would support fencing. 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 shall 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 and associated special-status species, it would not require exclusion fencing or biological monitoring.~~ Barrier fencing shall be installed at land-based ~~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 workday 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.

Revised 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 qualified botanist and 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.

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.

Revised Mitigation Measure BIO-4: Habitat Restoration and Monitoring

During or f~~F~~ollowing 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:

- If needed, as determined by qualified restoration biologist, a~~A~~reas 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

- If needed, as determined by qualified restoration biologist, t~~T~~emporary 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 (**only applicable to replanted areas**); *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.

- ~~Restoration of the TRB shall incorporate vertical and horizontal habitat structure to restore the marsh on the outward 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).~~

- ~~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 saltmarsh 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.~~

Revised 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.~~

•If the qualified restoration biologist employed by the District determines replanting is necessary, 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.

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.

Cultural Resources

Revised Mitigation Measure CUL-1: Archaeological Monitoring. ~~During Project construction,~~ The District will retain the services of a qualified archaeologist who has expertise in California precontact settings, and a Tribal representative with cultural ties to the Project area ~~shall~~ to

monitor all Project related ground-disturbing activities into native soils in the southwestern Project area from the southern terminus of the Project area at Meadows Drive downstream to the portion of the levee at 115 Vendola Drive. Upon completion of ground disturbance in the southwestern Project area, the District shall retain the archaeological and Tribal consultants on an on-call basis in the event of inadvertent discoveries throughout the remainder of the construction period. ~~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 previously undiscovered archaeological materials are discovered during construction, ~~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).~~ all work shall stop until the qualified archaeologist and the Tribal representative have the opportunity to evaluate the find and provide additional treatment recommendations. If the resource is considered significant by the archaeologist and the Tribal representative, all ground disturbance shall be halted until appropriate mitigation measures are implemented, as determined necessary by the qualified archaeologist, the lead agency, and the Tribal representative. Mitigation measures may include, but are not limited to: planning construction to avoid the resource; deeding the resource into a permanent conservation easement; capping or covering the resource with soil prior to construction; planning parks, greenspaces, or other open space to incorporate the resource; excavation of the resource, if it would otherwise be damaged or destroyed by the Project.

Revised 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 and Tribal representative culturally affiliated with the Project area to perform the construction monitoring. The archaeologist and the Tribal representative shall both be contractually empowered to stop work, if archaeological materials are discovered. The archaeologist and the Tribal representative will report to the District's Project Manager.

Revised Mitigation Measure CUL-2: Construction Personnel Training. A qualified archaeologist and a Tribal representative with cultural ties to the Project area 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.~~ (1) the reasons for archaeological and Tribal resource monitoring; (2) regulatory policies protecting archaeological and Tribal resources and human remains; (3) basic identification of archaeological and Tribal resources; and (4) the protocol to follow in case of a discovery of such resources. 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.

Revised Monitoring Measure CUL-2

Prior to the commencement of construction activities, the District shall employ a qualified archaeologist and a Tribal representative with cultural ties to the Project area 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.

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.

APPENDICES

A. Mitigation Monitoring and Reporting Program

B. Air Quality Technical Report

C. Noise Technical Report

D. List of Trees Slated for Removal

APPENDIX A
Mitigation Monitoring and Reporting Program

The purpose of this Mitigation Monitoring and Reporting Program (MMRP) is to ensure that mitigation measures necessary to reduce the Project's significant impacts to less than significant are implemented in a timely and effective manner. In addition to the text of each mitigation measure, the MMRP table includes a description of the associated monitoring measure, when the measure will be implemented, and by whom it will be monitored.

Mitigation Measures and Monitoring Measures that have been revised is the Supplemental Environmental Review show changes from the versions adopted in the 2019 IS/MND: additions to the original text are shown with underlined text; deletions are shows with ~~strike-through~~ text.

Environmental Impact	Mitigation Measures	Mitigation Monitoring and Reporting Measures	When Implemented	Verified by
Air Quality				
Project construction would result in an increase in diesel exhaust emissions.	• **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.	During construction	Flood Control District Project Manager
Biological Resources				
Project could impact sensitive species	**Revised Mitigation Measure BIO-1: Avoidance of Sensitive Species** a. Plants: A qualified biologist shall conduct a focused survey for all rare plant species with potential to be present during their suitable blooming period, prior to ground disturbance. If no special-status plants are observed, no further action is required. If special-status plant species, including Point Reyes bird's beak, are observed, the plants shall be avoided with a suitable buffer, determined in coordination with CDFW. The buffer zone shall be clearly demarcated using exclusion fencing. If establishing an avoidance buffer is not feasible, individual plants shall be transplanted to an area with suitable physical and biological conditions outside of the work area, according to a Rare Plant Relocation Plan to be prepared by Marin County or its contractor and reviewed and approved by CDFW. The Relocation Plan shall include regular monitoring and weed control for a period of five years, with success criteria including 75% cover of target species and less than 20% cover of weeds. Adaptive management criteria shall apply, including additional 3 years' monitoring, weeding, supplemental watering, or	**Revised 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 qualified botanist and 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).	During Construction	Flood Control District Project Manager

Environmental Impact	Mitigation Measures	Mitigation Monitoring and Reporting Measures	When Implemented	Verified by
	additional replanting, if success criteria are not met after the five-year management period. b. Wildlife: For work within and directly adjacent to 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: • For work within and directly adjacent to marsh habitat~~, including work at the two pump stations with pipeline replacement activities, the~~ a qualified biologist ~~biological monitor~~ shall survey the area where ground disturbance or vegetation removal will take place each morning prior to the start of work. • Protocol-level surveys will be conducted annually in Las Gallinas marsh and Santa Venetia marsh in all suitable habitat for Ridgway's (California clapper) rail (CCR) or California black rail (CBR). Protocol-level surveys for rails shall follow the methods detailed in the USFWS *Site-Specific Protocol for Monitoring Marsh Birds* (2017). ~~Survey methodology and results will be submitted for CDFW approval.~~ No work activities, visual disturbance (direct line of sight) and/or increase in the ambient noise level shall occur within 700 feet of areas where CCR and/or CBR have been detected and are likely to be nesting during the breeding season (January 15 - August 31 for CCR, February 1 - August 31 for CBR), though this buffer distance may be reduced depending on site conditions and the nature of the proposed work, in coordination with CDFW and USFWS ~~other appropriate agencies~~. ~~For work within 250 feet of nesting sites, activities will be conducted outside of rail nesting season.~~ • Any areas where construction activities will take place shall have all vegetation removed using hand			

Environmental Impact	Mitigation Measures	Mitigation Monitoring and Reporting Measures	When Implemented	Verified by
	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. All work in tidal marsh habitat shall be monitored full-time by a qualified biologist. • Following vegetation removal, exclusion fencing shall be installed around work areas within tidal marsh habitat where substrate would support fencing. 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 shall 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 and associated special status~~			

Environmental Impact	Mitigation Measures	Mitigation Monitoring and Reporting Measures	When Implemented	Verified by
	~~species, it would not require exclusion fencing or biological monitoring.~~ Barrier fencing shall be installed at land-based ~~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 workday 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.			

Environmental Impact	Mitigation Measures	Mitigation Monitoring and Reporting Measures	When Implemented	Verified by
Project could impact sensitive species	**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.	During construction	Flood Control District Project Manager

Environmental Impact	Mitigation Measures	Mitigation Monitoring and Reporting Measures	When Implemented	Verified by
Project would impact sensitive natural communities	**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.	During construction and five years following revegetation	Flood Control District's Project Manager
Project would impact sensitive natural communities	**Revised Mitigation Measure BIO-4: Habitat Restoration and Monitoring** During or f~~F~~ollowing 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: • If needed, as determined by qualified restoration biologist, a~~A~~reas impacted from construction-related activity shall be replanted or reseeded with	**Revised 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.~~ • If the qualified restoration biologist employed by the District determines replanting is necessary, the District shall contract with a landscaping or restoration firm to complete revegetation and restoration requirements. Revegetation of	During or following Project construction	District's Qualified Restoration Biologist and Project Manager

Environmental Impact	Mitigation Measures	Mitigation Monitoring and Reporting Measures	When Implemented	Verified by
	locally-collected and grown native trees, shrubs, wetland vegetation, and herbaceous species under guidance from a qualified restoration biologist • If needed, as determined by qualified restoration biologist, t~~T~~emporary 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 (only applicable to replanted areas); *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. • ~~Restoration of the TRB shall incorporate vertical and horizontal habitat structure to restore the marsh on the outward 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).~~ • ~~Rebuilding of the TRB shall incorporate vertical and~~	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.		

Environmental Impact	Mitigation Measures	Mitigation Monitoring and Reporting Measures	When Implemented	Verified by
	~~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 saltmarsh 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~~			

Environmental Impact	Mitigation Measures	Mitigation Monitoring and Reporting Measures	When Implemented	Verified by
	~~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.~~			
The Project would impact State or federally protected wetlands	**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.	Prior to commencement of any Project construction activities	Flood Control District's Project Manager

Environmental Impact	Mitigation Measures	Mitigation Monitoring and Reporting Measures	When Implemented	Verified by
Cultural Resources				
Project could impact archaeological resources	**Revised Mitigation Measure CUL-1: Archaeological Monitoring.** ~~During Project construction,~~ The District will retain the services of a qualified archaeologist who has expertise in California precontact settings, and a Tribal representative with cultural ties to the Project area ~~shall~~ to monitor all Project related ground-disturbing activities into native soils in the southwestern Project area from the southern terminus of the Project area at Meadows Drive downstream to the portion of the levee at 115 Vendola Drive. Upon completion of ground disturbance in the southwestern Project area, the District shall retain the archaeological and Tribal consultants on an on-call basis in the event of inadvertent discoveries throughout the remainder of the construction period. ~~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 previously undiscovered archaeological materials are discovered during construction, ~~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).~~ all work shall stop until the qualified archaeologist and the Tribal representative have the opportunity to evaluate the find and provide additional treatment recommendations. If the resource is considered significant by the archaeologist and the Tribal representative, all ground disturbance shall be halted until appropriate mitigation measures are implemented, as determined necessary by the qualified archaeologist, the lead agency, and the Tribal representative. Mitigation measures may	**Revised 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 and Tribal representative culturally affiliated with the Project area to perform the construction monitoring. The archaeologist and the Tribal representative shall both be contractually empowered to stop work, if archaeological materials are discovered. The archaeologist and the Tribal representative will report to the District's Project Manager.	Prior to and during any ground-disturbing construction activities in the southern portion of the levee	Flood Control District's Project Manager

Environmental Impact	Mitigation Measures	Mitigation Monitoring and Reporting Measures	When Implemented	Verified by
	include, but are not limited to: planning construction to avoid the resource; deeding the resource into a permanent conservation easement; capping or covering the resource with soil prior to construction; planning parks, greenspaces, or other open space to incorporate the resource; excavation of the resource, if it would otherwise be damaged or destroyed by the Project.			
Project could impact archaeological resources	**Revised Mitigation Measure CUL-2: Construction Personnel Training.** A qualified archaeologist and a Tribal representative with cultural ties to the Project area 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.~~ (1) the reasons for archaeological and Tribal resource monitoring; (2) regulatory policies protecting archaeological and Tribal resources and human remains; (3) basic identification of archaeological and Tribal resources; and (4) the protocol to follow in case of a discovery of such resources. 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.	**Revised Monitoring Measure CUL-2** Prior to the commencement of construction activities, the District shall employ a qualified archaeologist and a Tribal representative with cultural ties to the Project area 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.	Prior to commencement of any ground-disturbing activities	Flood Control District's Project Manager
Project could disturb human remains	**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.	Prior to commencement of any ground-disturbing activities	Flood Control District's Project Manager

Appendix B – Air Quality and GHG Emissions Modeling Output (43 pages)

Santa Venetia Floodwall Project Detailed Report

Table of Contents

8. User Changes to Default Data

1. Basic Project Information

1.1. Basic Project Information

Data Field	Value
Project Name	Santa Venetia Floodwall Project
Construction Start Date	5/1/2024
Lead Agency	Marin County
Land Use Scale	Project/site
Analysis Level for Defaults	County
Windspeed (m/s)	3.60
Precipitation (days)	31.8
Location	Santa Venetia, CA, USA
County	Marin
City	Unincorporated
Air District	Bay Area AQMD
Air Basin	San Francisco Bay Area
TAZ	914
EDFZ	2
Electric Utility	Pacific Gas & Electric Company
Gas Utility	Pacific Gas & Electric
App Version	2022.1.1.19

1.2. Land Use Types

Land Use Subtype	Size	Unit	Lot Acreage	Building Area (sq ft)	Landscape Area (sq ft)	Special Landscape Area (sq ft)	Population	Description
User Defined Linear	1.36	Mile	3.50	0.00	0.00	—	—	—

1.3. User-Selected Emission Reduction Measures by Emissions Sector

Sector	#	Measure Title
Construction	C-5	Use Advanced Engine Tiers

2. Emissions Summary

2.1. Construction Emissions Compared Against Thresholds

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Un/Mit.	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	3.31	29.0	25.6	0.04	1.66	0.76	1.92	1.53	0.19	1.59	—	4,681	4,681	0.27	0.32	5.24	4,709
Mit.	0.61	6.97	28.6	0.04	0.12	0.76	0.80	0.12	0.19	0.23	—	4,427	4,427	0.27	0.32	5.24	4,454
% Reduced	82%	76%	-12%	8%	93%	—	58%	92%	—	86%	—	5%	5%	—	—	—	5%
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	3.31	29.0	25.4	0.04	1.66	0.26	1.92	1.53	0.06	1.59	—	4,665	4,665	0.20	0.07	0.04	4,692
Mit.	0.61	7.01	28.4	0.04	0.12	0.26	0.38	0.12	0.06	0.18	—	4,412	4,412	0.19	0.07	0.04	4,438
% Reduced	82%	76%	-12%	8%	93%	—	80%	92%	—	89%	—	5%	5%	5%	3%	—	5%
Average Daily (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	1.22	10.6	9.33	0.02	0.60	0.12	0.72	0.55	0.03	0.58	—	1,804	1,804	0.08	0.04	0.30	1,816
Mit.	0.23	2.68	10.6	0.01	0.05	0.12	0.17	0.04	0.03	0.07	—	1,720	1,720	0.08	0.03	0.30	1,733
% Reduced	81%	75%	-13%	7%	92%	—	76%	92%	—	87%	—	5%	5%	4%	—	—	5%

Annual (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	0.22	1.93	1.70	< 0.005	0.11	0.02	0.13	0.10	0.01	0.11	—	299	299	0.01	0.01	0.05	301
Mit.	0.04	0.49	1.93	< 0.005	0.01	0.02	0.03	0.01	0.01	0.01	—	285	285	0.01	0.01	0.05	287
% Reduced	81%	75%	-13%	7%	92%	—	76%	92%	—	87%	—	5%	5%	4%	2%	—	5%

2.2. Construction Emissions by Year, Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Year	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily - Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2024	3.31	29.0	25.6	0.04	1.66	0.76	1.92	1.53	0.19	1.59	—	4,681	4,681	0.27	0.32	5.24	4,709
Daily - Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2024	3.31	29.0	25.4	0.04	1.66	0.26	1.92	1.53	0.06	1.59	—	4,665	4,665	0.20	0.07	0.04	4,692
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2024	1.22	10.6	9.33	0.02	0.60	0.12	0.72	0.55	0.03	0.58	—	1,804	1,804	0.08	0.04	0.30	1,816
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2024	0.22	1.93	1.70	< 0.005	0.11	0.02	0.13	0.10	0.01	0.11	—	299	299	0.01	0.01	0.05	301

2.3. Construction Emissions by Year, Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Year	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily - Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

2024	0.61	6.97	28.6	0.04	0.12	0.76	0.80	0.12	0.19	0.23	—	4,427	4,427	0.27	0.32	5.24	4,454
Daily - Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2024	0.61	7.01	28.4	0.04	0.12	0.26	0.38	0.12	0.06	0.18	—	4,412	4,412	0.19	0.07	0.04	4,438
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2024	0.23	2.68	10.6	0.01	0.05	0.12	0.17	0.04	0.03	0.07	—	1,720	1,720	0.08	0.03	0.30	1,733
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2024	0.04	0.49	1.93	< 0.005	0.01	0.02	0.03	0.01	0.01	0.01	—	285	285	0.01	0.01	0.05	287

3. Construction Emissions Details

3.1. Mobilization (2024) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Dust From Material Movement	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Dust From Material Movement	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Dust From Material Movement	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.03	0.04	0.65	0.00	0.00	0.14	0.14	0.00	0.03	0.03	—	149	149	< 0.005	< 0.005	0.65	151
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	< 0.005	0.28	0.16	< 0.005	< 0.005	0.05	0.05	< 0.005	0.01	0.01	—	188	188	0.02	0.03	0.39	198
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.02	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	5.72	5.72	< 0.005	< 0.005	0.01	5.79
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	7.74	7.74	< 0.005	< 0.005	0.01	8.15
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	0.95	0.95	< 0.005	< 0.005	< 0.005	0.96
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	1.28	1.28	< 0.005	< 0.005	< 0.005	1.35

3.2. Mobilization (2024) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Dust From Material Movement	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Dust From Material Movement	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Dust From Material Movement	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.03	0.04	0.65	0.00	0.00	0.14	0.14	0.00	0.03	0.03	—	149	149	< 0.005	< 0.005	0.65	151
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	< 0.005	0.28	0.16	< 0.005	< 0.005	0.05	0.05	< 0.005	0.01	0.01	—	188	188	0.02	0.03	0.39	198
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.02	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	5.72	5.72	< 0.005	< 0.005	0.01	5.79
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	7.74	7.74	< 0.005	< 0.005	0.01	8.15
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	0.95	0.95	< 0.005	< 0.005	< 0.005	0.96
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	1.28	1.28	< 0.005	< 0.005	< 0.005	1.35

3.3. Clean up and Demobilization (2024) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.07	8.39	3.55	< 0.005	0.67	—	0.67	0.62	—	0.62	—	346	346	0.01	< 0.005	—	348

Dust From Material Movement	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.04	0.34	0.15	< 0.005	0.03	—	0.03	0.03	—	0.03	—	14.2	14.2	< 0.005	< 0.005	—	14.3
Dust From Material Movement	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.01	0.06	0.03	< 0.005	0.01	—	0.01	< 0.005	—	< 0.005	—	2.36	2.36	< 0.005	< 0.005	—	2.37
Dust From Material Movement	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.03	0.05	0.53	0.00	0.00	0.14	0.14	0.00	0.03	0.03	—	138	138	< 0.005	0.01	0.02	140
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	< 0.005	0.29	0.16	< 0.005	< 0.005	0.05	0.05	< 0.005	0.01	0.01	—	188	188	0.02	0.03	0.01	198

Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.02	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	5.72	5.72	< 0.005	< 0.005	0.01	5.79
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	7.74	7.74	< 0.005	< 0.005	0.01	8.15
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	0.95	0.95	< 0.005	< 0.005	< 0.005	0.96
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	1.28	1.28	< 0.005	< 0.005	< 0.005	1.35

3.4. Clean up and Demobilization (2024) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.06	1.80	2.43	< 0.005	0.01	—	0.01	0.01	—	0.01	—	346	346	0.01	< 0.005	—	348
Dust From Material Movement	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	< 0.005	0.07	0.10	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	14.2	14.2	< 0.005	< 0.005	—	14.3

Dust From Material Movement	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	< 0.005	0.01	0.02	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	2.36	2.36	< 0.005	< 0.005	—	2.37
Dust From Material Movement	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.03	0.05	0.53	0.00	0.00	0.14	0.14	0.00	0.03	0.03	—	138	138	< 0.005	0.01	0.02	140
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	< 0.005	0.29	0.16	< 0.005	< 0.005	0.05	0.05	< 0.005	0.01	0.01	—	188	188	0.02	0.03	0.01	198
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.02	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	5.72	5.72	< 0.005	< 0.005	0.01	5.79
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	7.74	7.74	< 0.005	< 0.005	0.01	8.15
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	0.95	0.95	< 0.005	< 0.005	< 0.005	0.96
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

Hauling	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	1.28	1.28	< 0.005	< 0.005	< 0.005	1.35

3.5. TRB Demolition (2024) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.66	5.16	4.01	0.01	0.38	—	0.38	0.35	—	0.35	—	555	555	0.02	< 0.005	—	557
Dust From Material Movement	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.01	0.07	0.05	< 0.005	0.01	—	0.01	< 0.005	—	< 0.005	—	7.61	7.61	< 0.005	< 0.005	—	7.63
Dust From Material Movement	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	< 0.005	0.01	0.01	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	1.26	1.26	< 0.005	< 0.005	—	1.26

Dust From Material Movement	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.07	0.08	1.29	0.00	0.00	0.28	0.28	0.00	0.07	0.07	—	297	297	< 0.005	0.01	1.30	302
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.04	2.77	1.55	0.01	0.03	0.47	0.51	0.02	0.13	0.15	—	1,884	1,884	0.25	0.30	3.94	1,984
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.01	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	3.81	3.81	< 0.005	< 0.005	0.01	3.86
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	< 0.005	0.04	0.02	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	—	25.8	25.8	< 0.005	< 0.005	0.02	27.2
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	0.63	0.63	< 0.005	< 0.005	< 0.005	0.64
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	< 0.005	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	4.27	4.27	< 0.005	< 0.005	< 0.005	4.50

3.6. TRB Demolition (2024) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.07	1.09	3.89	0.01	0.01	—	0.01	0.01	—	0.01	—	555	555	0.02	< 0.005	—	557
Dust From Material Movement	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	< 0.005	0.01	0.05	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	7.61	7.61	< 0.005	< 0.005	—	7.63
Dust From Material Movement	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	< 0.005	< 0.005	0.01	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	1.26	1.26	< 0.005	< 0.005	—	1.26
Dust From Material Movement	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.07	0.08	1.29	0.00	0.00	0.28	0.28	0.00	0.07	0.07	—	297	297	< 0.005	0.01	1.30	302
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	0.04	2.77	1.55	0.01	0.03	0.47	0.51	0.02	0.13	0.15	—	1,884	1,884	0.25	0.30	3.94	1,984
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.01	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	3.81	3.81	< 0.005	< 0.005	0.01	3.86
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	< 0.005	0.04	0.02	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	—	25.8	25.8	< 0.005	< 0.005	0.02	27.2
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	0.63	0.63	< 0.005	< 0.005	< 0.005	0.64
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	< 0.005	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	4.27	4.27	< 0.005	< 0.005	< 0.005	4.50

3.7. Sheet Pile Installation (2024) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	3.25	28.7	24.4	0.04	1.66	—	1.66	1.52	—	1.52	—	4,269	4,269	0.17	0.03	—	4,284

Dust From Material Movement	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	3.25	28.7	24.4	0.04	1.66	—	1.66	1.52	—	1.52	—	4,269	4,269	0.17	0.03	—	4,284
Dust From Material Movement	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.07	9.42	8.04	0.01	0.54	—	0.54	0.50	—	0.50	—	1,404	1,404	0.06	0.01	—	1,408
Dust From Material Movement	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.20	1.72	1.47	< 0.005	0.10	—	0.10	0.09	—	0.09	—	232	232	0.01	< 0.005	—	233
Dust From Material Movement	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00

Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.05	0.06	0.97	0.00	0.00	0.21	0.21	0.00	0.05	0.05	—	223	223	< 0.005	0.01	0.97	226
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	< 0.005	0.28	0.16	< 0.005	< 0.005	0.05	0.05	< 0.005	0.01	0.01	—	188	188	0.02	0.03	0.39	198
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.05	0.08	0.80	0.00	0.00	0.21	0.21	0.00	0.05	0.05	—	208	208	< 0.005	0.01	0.03	210
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	< 0.005	0.29	0.16	< 0.005	< 0.005	0.05	0.05	< 0.005	0.01	0.01	—	188	188	0.02	0.03	0.01	198
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.02	0.02	0.26	0.00	0.00	0.07	0.07	0.00	0.02	0.02	—	68.6	68.6	< 0.005	< 0.005	0.14	69.5
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	< 0.005	0.09	0.05	< 0.005	< 0.005	0.02	0.02	< 0.005	< 0.005	< 0.005	—	61.9	61.9	0.01	0.01	0.06	65.2
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.05	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	11.4	11.4	< 0.005	< 0.005	0.02	11.5
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	< 0.005	0.02	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	10.3	10.3	< 0.005	< 0.005	0.01	10.8

3.8. Sheet Pile Installation (2024) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Off-Road Equipment	0.55	6.64	27.5	0.04	0.12	—	0.12	0.12	—	0.12	—	4,016	4,016	0.16	0.03	—	4,030
Dust From Material Movement	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.55	6.64	27.5	0.04	0.12	—	0.12	0.12	—	0.12	—	4,016	4,016	0.16	0.03	—	4,030
Dust From Material Movement	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.18	2.18	9.03	0.01	0.04	—	0.04	0.04	—	0.04	—	1,320	1,320	0.05	0.01	—	1,325
Dust From Material Movement	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—	—
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.03	0.40	1.65	< 0.005	0.01	—	0.01	0.01	—	0.01	—	219	219	0.01	< 0.005	—	219
Dust From Material Movement	—	—	—	—	—	0.00	0.00	—	0.00	0.00	—	—	—	—	—	—	—

Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.05	0.06	0.97	0.00	0.00	0.21	0.21	0.00	0.05	0.05	—	223	223	< 0.005	0.01	0.97	226
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	< 0.005	0.28	0.16	< 0.005	< 0.005	0.05	0.05	< 0.005	0.01	0.01	—	188	188	0.02	0.03	0.39	198
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.05	0.08	0.80	0.00	0.00	0.21	0.21	0.00	0.05	0.05	—	208	208	< 0.005	0.01	0.03	210
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	< 0.005	0.29	0.16	< 0.005	< 0.005	0.05	0.05	< 0.005	0.01	0.01	—	188	188	0.02	0.03	0.01	198
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.02	0.02	0.26	0.00	0.00	0.07	0.07	0.00	0.02	0.02	—	68.6	68.6	< 0.005	< 0.005	0.14	69.5
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	< 0.005	0.09	0.05	< 0.005	< 0.005	0.02	0.02	< 0.005	< 0.005	< 0.005	—	61.9	61.9	0.01	0.01	0.06	65.2
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.05	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	11.4	11.4	< 0.005	< 0.005	0.02	11.5
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	< 0.005	0.02	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	10.3	10.3	< 0.005	< 0.005	0.01	10.8

3.9. Restore Properties (2024) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.85	6.44	7.72	0.02	0.22	—	0.22	0.20	—	0.20	—	1,998	1,998	0.08	0.02	—	2,005
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.07	0.53	0.63	< 0.005	0.02	—	0.02	0.02	—	0.02	—	164	164	0.01	< 0.005	—	165
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.01	0.10	0.12	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	27.2	27.2	< 0.005	< 0.005	—	27.3
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.03	0.05	0.53	0.00	0.00	0.14	0.14	0.00	0.03	0.03	—	138	138	< 0.005	0.01	0.02	140
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	< 0.005	0.29	0.16	< 0.005	< 0.005	0.05	0.05	< 0.005	0.01	0.01	—	188	188	0.02	0.03	0.01	198
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Worker	< 0.005	< 0.005	0.04	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	11.4	11.4	< 0.005	< 0.005	0.02	11.6
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	< 0.005	0.02	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	15.5	15.5	< 0.005	< 0.005	0.01	16.3
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.01	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	1.89	1.89	< 0.005	< 0.005	< 0.005	1.92
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	2.56	2.56	< 0.005	< 0.005	< 0.005	2.70

3.10. Restore Properties (2024) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.23	2.40	11.3	0.02	0.05	—	0.05	0.04	—	0.04	—	1,998	1,998	0.08	0.02	—	2,005
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.02	0.20	0.92	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	164	164	0.01	< 0.005	—	165
Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	< 0.005	0.04	0.17	< 0.005	< 0.005	—	< 0.005	< 0.005	—	< 0.005	—	27.2	27.2	< 0.005	< 0.005	—	27.3

Onsite truck	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.03	0.05	0.53	0.00	0.00	0.14	0.14	0.00	0.03	0.03	—	138	138	< 0.005	0.01	0.02	140
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	< 0.005	0.29	0.16	< 0.005	< 0.005	0.05	0.05	< 0.005	0.01	0.01	—	188	188	0.02	0.03	0.01	198
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.04	0.00	0.00	0.01	0.01	0.00	< 0.005	< 0.005	—	11.4	11.4	< 0.005	< 0.005	0.02	11.6
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	< 0.005	0.02	0.01	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	15.5	15.5	< 0.005	< 0.005	0.01	16.3
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	0.01	0.00	0.00	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	1.89	1.89	< 0.005	< 0.005	< 0.005	1.92
Vendor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	—	0.00	0.00	0.00	0.00	0.00	0.00
Hauling	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	2.56	2.56	< 0.005	< 0.005	< 0.005	2.70

4. Operations Emissions Details

4.10. Soil Carbon Accumulation By Vegetation Type

4.10.1. Soil Carbon Accumulation By Vegetation Type - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Vegetation	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e

Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.2. Above and Belowground Carbon Accumulation by Land Use Type - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.3. Avoided and Sequestered Emissions by Species - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Species	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.4. Soil Carbon Accumulation By Vegetation Type - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Vegetation	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.5. Above and Belowground Carbon Accumulation by Land Use Type - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.6. Avoided and Sequestered Emissions by Species - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Species	ROG	NOx	CO	SO2	PM10E	PM10D	PM10T	PM2.5E	PM2.5D	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

5. Activity Data

5.1. Construction Schedule

Phase Name	Phase Type	Start Date	End Date	Days Per Week	Work Days per Phase	Phase Description
Mobilization	Linear, Grubbing & Land Clearing	5/1/2024	5/17/2024	6.00	15.0	—
Clean up and Demobilization	Linear, Grubbing & Land Clearing	10/11/2024	10/31/2024	5.00	15.0	—
TRB Demolition	Linear, Grading & Excavation	5/18/2024	5/23/2024	6.00	5.00	—
Sheet Pile Installation	Linear, Drainage, Utilities, & Sub-Grade	5/24/2024	10/10/2024	6.00	120	—
Restore Properties	Linear, Trenching	11/01/2024	12/5/2024	6.00	30.0	—

5.2. Off-Road Equipment

5.2.1. Unmitigated

Phase Name	Equipment Type	Fuel Type	Engine Tier	Number per Day	Hours Per Day	Horsepower	Load Factor
Clean up and Demobilization	Tractors/Loaders/Backhoes	Diesel	Average	2.00	6.00	67.0	0.37
TRB Demolition	Excavators	Diesel	Average	1.00	8.00	108	0.38
TRB Demolition	Tractors/Loaders/Backhoes	Diesel	Average	1.00	6.00	67.0	0.37
Sheet Pile Installation	Excavators	Diesel	Average	3.00	8.00	108	0.38

Sheet Pile Installation	Tractors/Loaders/Backhoes	Diesel	Average	2.00	6.00	67.0	0.37
Sheet Pile Installation	Excavators	Diesel	Average	2.00	4.00	32.0	0.38
Sheet Pile Installation	Cranes	Diesel	Average	2.00	4.00	367	0.29
Sheet Pile Installation	Dumpers/Tenders	Diesel	Average	2.00	6.00	44.0	0.38
Sheet Pile Installation	Trenchers	Diesel	Average	2.00	8.00	140	0.50
Sheet Pile Installation	Other Construction Equipment	Diesel	Average	2.00	2.00	55.0	0.42
Restore Properties	Off-Highway Trucks	Diesel	Average	2.00	4.00	376	0.38
Restore Properties	Air Compressors	Diesel	Average	2.00	4.00	37.0	0.48
Restore Properties	Cement and Mortar Mixers	Diesel	Average	1.00	4.00	10.0	0.56
Restore Properties	Rough Terrain Forklifts	Diesel	Average	2.00	4.00	96.0	0.40
Restore Properties	Welders	Diesel	Average	1.00	4.00	46.0	0.45

5.2.2. Mitigated

Phase Name	Equipment Type	Fuel Type	Engine Tier	Number per Day	Hours Per Day	Horsepower	Load Factor
Clean up and Demobilization	Tractors/Loaders/Backhoes	Diesel	Tier 4 Final	2.00	6.00	67.0	0.37
TRB Demolition	Excavators	Diesel	Tier 4 Final	1.00	8.00	108	0.38
TRB Demolition	Tractors/Loaders/Backhoes	Diesel	Tier 4 Final	1.00	6.00	67.0	0.37
Sheet Pile Installation	Excavators	Diesel	Average	1.00	8.00	108	0.38
Sheet Pile Installation	Excavators	Diesel	Tier 4 Final	2.00	8.00	108	0.38
Sheet Pile Installation	Tractors/Loaders/Backhoes	Diesel	Tier 4 Final	2.00	6.00	67.0	0.37
Sheet Pile Installation	Excavators	Diesel	Tier 4 Final	2.00	4.00	32.0	0.38
Sheet Pile Installation	Cranes	Diesel	Tier 4 Final	2.00	4.00	367	0.29
Sheet Pile Installation	Dumpers/Tenders	Diesel	Tier 4 Final	2.00	6.00	44.0	0.38

Sheet Pile Installation	Trenchers	Diesel	Tier 4 Final	2.00	8.00	140	0.50
Sheet Pile Installation	Other Construction Equipment	Diesel	Tier 4 Final	2.00	2.00	55.0	0.42
Restore Properties	Off-Highway Trucks	Diesel	Tier 4 Final	2.00	4.00	376	0.38
Restore Properties	Air Compressors	Diesel	Tier 4 Final	2.00	4.00	37.0	0.48
Restore Properties	Cement and Mortar Mixers	Diesel	Average	1.00	4.00	10.0	0.56
Restore Properties	Rough Terrain Forklifts	Diesel	Tier 4 Final	2.00	4.00	96.0	0.40
Restore Properties	Welders	Diesel	Tier 4 Final	1.00	4.00	46.0	0.45

5.3. Construction Vehicles

5.3.1. Unmitigated

Phase Name	Trip Type	One-Way Trips per Day	Miles per Trip	Vehicle Mix
Mobilization	—	—	—	—
Mobilization	Worker	8.00	25.0	LDA,LDT1,LDT2
Mobilization	Vendor	0.00	8.40	HHDT,MHDT
Mobilization	Hauling	2.00	25.0	HHDT
Mobilization	Onsite truck	—	—	HHDT
TRB Demolition	—	—	—	—
TRB Demolition	Worker	16.0	25.0	LDA,LDT1,LDT2
TRB Demolition	Vendor	0.00	8.40	HHDT,MHDT
TRB Demolition	Hauling	20.0	25.0	HHDT
TRB Demolition	Onsite truck	—	—	HHDT
Sheet Pile Installation	—	—	—	—
Sheet Pile Installation	Worker	12.0	25.0	LDA,LDT1,LDT2
Sheet Pile Installation	Vendor	0.00	8.40	HHDT,MHDT
Sheet Pile Installation	Hauling	2.00	25.0	HHDT

Sheet Pile Installation	Onsite truck	—	—	HHDT
Clean up and Demobilization	—	—	—	—
Clean up and Demobilization	Worker	8.00	25.0	LDA,LDT1,LDT2
Clean up and Demobilization	Vendor	0.00	8.40	HHDT,MHDT
Clean up and Demobilization	Hauling	2.00	25.0	HHDT
Clean up and Demobilization	Onsite truck	—	—	HHDT
Restore Properties	—	—	—	—
Restore Properties	Worker	8.00	25.0	LDA,LDT1,LDT2
Restore Properties	Vendor	—	8.40	HHDT,MHDT
Restore Properties	Hauling	2.00	25.0	HHDT
Restore Properties	Onsite truck	—	—	HHDT

5.3.2. Mitigated

Phase Name	Trip Type	One-Way Trips per Day	Miles per Trip	Vehicle Mix
Mobilization	—	—	—	—
Mobilization	Worker	8.00	25.0	LDA,LDT1,LDT2
Mobilization	Vendor	0.00	8.40	HHDT,MHDT
Mobilization	Hauling	2.00	25.0	HHDT
Mobilization	Onsite truck	—	—	HHDT
TRB Demolition	—	—	—	—
TRB Demolition	Worker	16.0	25.0	LDA,LDT1,LDT2
TRB Demolition	Vendor	0.00	8.40	HHDT,MHDT
TRB Demolition	Hauling	20.0	25.0	HHDT
TRB Demolition	Onsite truck	—	—	HHDT
Sheet Pile Installation	—	—	—	—
Sheet Pile Installation	Worker	12.0	25.0	LDA,LDT1,LDT2
Sheet Pile Installation	Vendor	0.00	8.40	HHDT,MHDT

Sheet Pile Installation	Hauling	2.00	25.0	HHDT
Sheet Pile Installation	Onsite truck	—	—	HHDT
Clean up and Demobilization	—	—	—	—
Clean up and Demobilization	Worker	8.00	25.0	LDA,LDT1,LDT2
Clean up and Demobilization	Vendor	0.00	8.40	HHDT,MHDT
Clean up and Demobilization	Hauling	2.00	25.0	HHDT
Clean up and Demobilization	Onsite truck	—	—	HHDT
Restore Properties	—	—	—	—
Restore Properties	Worker	8.00	25.0	LDA,LDT1,LDT2
Restore Properties	Vendor	—	8.40	HHDT,MHDT
Restore Properties	Hauling	2.00	25.0	HHDT
Restore Properties	Onsite truck	—	—	HHDT

5.4. Vehicles

5.4.1. Construction Vehicle Control Strategies

Non-applicable. No control strategies activated by user.

5.5. Architectural Coatings

Phase Name	Residential Interior Area Coated (sq ft)	Residential Exterior Area Coated (sq ft)	Non-Residential Interior Area Coated (sq ft)	Non-Residential Exterior Area Coated (sq ft)	Parking Area Coated (sq ft)

5.6. Dust Mitigation

5.6.1. Construction Earthmoving Activities

Phase Name	Material Imported (cy)	Material Exported (cy)	Acres Graded (acres)	Material Demolished (sq. ft.)	Acres Paved (acres)
Mobilization	—	—	3.50	0.00	—
Clean up and Demobilization	—	—	3.50	0.00	—

TRB Demolition	—	—	3.50	0.00	—
Sheet Pile Installation	—	—	3.50	0.00	—

5.6.2. Construction Earthmoving Control Strategies

Non-applicable. No control strategies activated by user.

5.7. Construction Paving

Land Use	Area Paved (acres)	% Asphalt
User Defined Linear	3.50	100%

5.8. Construction Electricity Consumption and Emissions Factors

kWh per Year and Emission Factor (lb/MWh)

Year	kWh per Year	CO2	CH4	N2O
2024	0.00	204	0.03	< 0.005

5.18. Vegetation

5.18.1. Land Use Change

5.18.1.1. Unmitigated

Vegetation Land Use Type	Vegetation Soil Type	Initial Acres	Final Acres

5.18.1.2. Mitigated

Vegetation Land Use Type	Vegetation Soil Type	Initial Acres	Final Acres

5.18.1. Biomass Cover Type

5.18.1.1. Unmitigated

Biomass Cover Type	Initial Acres	Final Acres

5.18.1.2. Mitigated

Biomass Cover Type	Initial Acres	Final Acres

5.18.2. Sequestration

5.18.2.1. Unmitigated

Tree Type	Number	Electricity Saved (kWh/year)	Natural Gas Saved (btu/year)

5.18.2.2. Mitigated

Tree Type	Number	Electricity Saved (kWh/year)	Natural Gas Saved (btu/year)

6. Climate Risk Detailed Report

6.1. Climate Risk Summary

Cal-Adapt midcentury 2040–2059 average projections for four hazards are reported below for your project location. These are under Representation Concentration Pathway (RCP) 8.5 which assumes GHG emissions will continue to rise strongly through 2050 and then plateau around 2100.

Climate Hazard	Result for Project Location	Unit
Temperature and Extreme Heat	9.12	annual days of extreme heat
Extreme Precipitation	15.8	annual days with precipitation above 20 mm
Sea Level Rise	0.00	meters of inundation depth
Wildfire	7.96	annual hectares burned

Temperature and Extreme Heat data are for grid cell in which your project are located. The projection is based on the 98th historical percentile of daily maximum/minimum temperatures from observed historical data (32 climate model ensemble from Cal-Adapt, 2040–2059 average under RCP 8.5). Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.

Extreme Precipitation data are for the grid cell in which your project are located. The threshold of 20 mm is equivalent to about ¾ an inch of rain, which would be light to moderate rainfall if received over a full day or heavy rain if received over a period of 2 to 4 hours. Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.
Sea Level Rise data are for the grid cell in which your project are located. The projections are from Radke et al. (2017), as reported in Cal-Adapt (2040–2059 average under RCP 8.5), and consider different increments of sea level rise coupled with extreme storm events. Users may select from four model simulations to view the range in potential inundation depth for the grid cell. The four simulations make different assumptions about expected rainfall and temperature are: Warmer/drier (HadGEM2-ES), Cooler/wetter (CNRM-CM5), Average conditions (CanESM2), Range of different rainfall and temperature possibilities (MIROC5). Each grid cell is 50 meters (m) by 50 m, or about 164 feet (ft) by 164 ft.
Wildfire data are for the grid cell in which your project are located. The projections are from UC Davis, as reported in Cal-Adapt (2040–2059 average under RCP 8.5), and consider historical data of climate, vegetation, population density, and large (> 400 ha) fire history. Users may select from four model simulations to view the range in potential wildfire probabilities for the grid cell. The four simulations make different assumptions about expected rainfall and temperature are: Warmer/drier (HadGEM2-ES), Cooler/wetter (CNRM-CM5), Average conditions (CanESM2), Range of different rainfall and temperature possibilities (MIROC5). Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.

6.2. Initial Climate Risk Scores

Climate Hazard	Exposure Score	Sensitivity Score	Adaptive Capacity Score	Vulnerability Score
Temperature and Extreme Heat	N/A	N/A	N/A	N/A
Extreme Precipitation	4	0	0	N/A
Sea Level Rise	1	0	0	N/A
Wildfire	1	0	0	N/A
Flooding	N/A	N/A	N/A	N/A
Drought	N/A	N/A	N/A	N/A
Snowpack Reduction	N/A	N/A	N/A	N/A
Air Quality Degradation	0	0	0	N/A

The sensitivity score reflects the extent to which a project would be adversely affected by exposure to a climate hazard. Exposure is rated on a scale of 1 to 5, with a score of 5 representing the greatest exposure.
The adaptive capacity of a project refers to its ability to manage and reduce vulnerabilities from projected climate hazards. Adaptive capacity is rated on a scale of 1 to 5, with a score of 5 representing the greatest ability to adapt.
The overall vulnerability scores are calculated based on the potential impacts and adaptive capacity assessments for each hazard. Scores do not include implementation of climate risk reduction measures.

6.3. Adjusted Climate Risk Scores

Climate Hazard	Exposure Score	Sensitivity Score	Adaptive Capacity Score	Vulnerability Score
Temperature and Extreme Heat	N/A	N/A	N/A	N/A
Extreme Precipitation	4	1	1	4
Sea Level Rise	1	1	1	2
Wildfire	1	1	1	2

Flooding	N/A	N/A	N/A	N/A
Drought	N/A	N/A	N/A	N/A
Snowpack Reduction	N/A	N/A	N/A	N/A
Air Quality Degradation	1	1	1	2

The sensitivity score reflects the extent to which a project would be adversely affected by exposure to a climate hazard. Exposure is rated on a scale of 1 to 5, with a score of 5 representing the greatest exposure.
The adaptive capacity of a project refers to its ability to manage and reduce vulnerabilities from projected climate hazards. Adaptive capacity is rated on a scale of 1 to 5, with a score of 5 representing the greatest ability to adapt.
The overall vulnerability scores are calculated based on the potential impacts and adaptive capacity assessments for each hazard. Scores include implementation of climate risk reduction measures.

6.4. Climate Risk Reduction Measures

7. Health and Equity Details

7.1. CalEnviroScreen 4.0 Scores

The maximum CalEnviroScreen score is 100. A high score (i.e., greater than 50) reflects a higher pollution burden compared to other census tracts in the state.

Indicator	Result for Project Census Tract
Exposure Indicators	—
AQ-Ozone	10.6
AQ-PM	21.9
AQ-DPM	15.5
Drinking Water	7.43
Lead Risk Housing	55.4
Pesticides	0.00
Toxic Releases	37.9
Traffic	96.2
Effect Indicators	—
CleanUp Sites	0.00
Groundwater	7.65

Haz Waste Facilities/Generators	39.8
Impaired Water Bodies	90.1
Solid Waste	59.2
Sensitive Population	—
Asthma	17.2
Cardio-vascular	23.3
Low Birth Weights	43.8
Socioeconomic Factor Indicators	—
Education	14.8
Housing	27.8
Linguistic	18.9
Poverty	12.7
Unemployment	58.4

7.2. Healthy Places Index Scores

The maximum Health Places Index score is 100. A high score (i.e., greater than 50) reflects healthier community conditions compared to other census tracts in the state.

Indicator	Result for Project Census Tract
Economic	—
Above Poverty	69.53676376
Employed	96.24021558
Median HI	76.19658668
Education	—
Bachelor's or higher	72.1416656
High school enrollment	8.417810856
Preschool enrollment	46.82407289
Transportation	—
Auto Access	74.57975106

Active commuting	83.83164378
Social	—
2-parent households	76.65853972
Voting	97.8570512
Neighborhood	—
Alcohol availability	64.23713589
Park access	81.35506224
Retail density	40.40805851
Supermarket access	14.79532914
Tree canopy	92.82689593
Housing	—
Homeownership	71.67971256
Housing habitability	48.09444373
Low-inc homeowner severe housing cost burden	12.99884512
Low-inc renter severe housing cost burden	66.94469396
Uncrowded housing	34.55665341
Health Outcomes	—
Insured adults	33.3504427
Arthritis	0.0
Asthma ER Admissions	63.7
High Blood Pressure	0.0
Cancer (excluding skin)	0.0
Asthma	0.0
Coronary Heart Disease	0.0
Chronic Obstructive Pulmonary Disease	0.0
Diagnosed Diabetes	0.0
Life Expectancy at Birth	47.6

Cognitively Disabled	13.7
Physically Disabled	34.8
Heart Attack ER Admissions	84.7
Mental Health Not Good	0.0
Chronic Kidney Disease	0.0
Obesity	0.0
Pedestrian Injuries	43.8
Physical Health Not Good	0.0
Stroke	0.0
Health Risk Behaviors	—
Binge Drinking	0.0
Current Smoker	0.0
No Leisure Time for Physical Activity	0.0
Climate Change Exposures	—
Wildfire Risk	0.0
SLR Inundation Area	13.6
Children	19.0
Elderly	28.2
English Speaking	64.7
Foreign-born	52.3
Outdoor Workers	58.4
Climate Change Adaptive Capacity	—
Impervious Surface Cover	69.4
Traffic Density	72.9
Traffic Access	53.4
Other Indices	—
Hardship	31.5

Other Decision Support	—
2016 Voting	98.8

7.3. Overall Health & Equity Scores

Metric	Result for Project Census Tract
CalEnviroScreen 4.0 Score for Project Location (a)	17.0
Healthy Places Index Score for Project Location (b)	81.0
Project Located in a Designated Disadvantaged Community (Senate Bill 535)	No
Project Located in a Low-Income Community (Assembly Bill 1550)	Yes
Project Located in a Community Air Protection Program Community (Assembly Bill 617)	No

a: The maximum CalEnviroScreen score is 100. A high score (i.e., greater than 50) reflects a higher pollution burden compared to other census tracts in the state.
b: The maximum Health Places Index score is 100. A high score (i.e., greater than 50) reflects healthier community conditions compared to other census tracts in the state.

7.4. Health & Equity Measures

No Health & Equity Measures selected.

7.5. Evaluation Scorecard

Health & Equity Evaluation Scorecard not completed.

7.6. Health & Equity Custom Measures

No Health & Equity Custom Measures created.

8. User Changes to Default Data

Screen	Justification
Construction: Construction Phases	Project Description, August 2023
Construction: Off-Road Equipment	Data Request Memorandum from County Public Works (May 9, 2023)
Construction: Demolition	Data Request Memo from County Public Works (May 9, 2023)
Construction: Trips and VMT	Data Request Memo From County Public Works (May 9, 2023)

Appendix C

2022 Noise and Vibration Monitoring Technical Memorandum

RCH GROUP
planning & environmental consulting

TECHNICAL MEMORANDUM

Date: **November 10, 2022**

To: **Dan Sicular, Sicular Environmental Consulting and Natural Lands Management**

From: **Paul Miller, Senior Noise Scientist, RCH Group**
Luis Rosas, Noise Technical Associate, RCH Group

Re: **Noise & Vibration Monitoring for Gallinas Levee Upgrade Project Sheet Pile Installation Test**

Pursuant to your request, RCH Group (RCH) has completed the noise and vibration monitoring of the sheet pile installation test for the Gallinas Levee Upgrade Project in Marin County, California. The purposes of this memorandum are to provide the methodology, results, and observations from RCH staff during the sheet pile installation test.

TERMINOLOGY

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 report are A-weighted unless noted otherwise.

Several time-averaged scales represent noise environments and consequences of human activities. The commonly used noise descriptors that are included in this noise analysis are described below:

- Leq: The equivalent sound level is used to describe noise over a specified period of time, typically one hour, in terms of a single numerical value. The Leq is the constant sound level which would contain the same acoustic energy as the varying sound level, during the same time period (i.e., the average noise exposure level for the given time period).
- Lmax: The instantaneous maximum noise level for a specified period of time.

Vibration is the periodic oscillation of a medium or object. The rumbling sound caused by the vibration of room surfaces is called structure-borne noise. Sources of ground-borne vibrations include natural phenomena (e.g., earthquakes, volcanic eruptions, sea waves, landslides) or human-made causes (e.g., explosions, machinery, traffic, trains, construction equipment). Vibration generated by construction activity has the potential to damage structures. This damage could be structural damage, such as cracking of floor slabs, foundations, columns, beams, or wells, or cosmetic architectural damage, such as cracked plaster, stucco, or tile (Caltrans, 2013).

Vibration amplitudes are usually expressed in peak particle velocity (PPV), or root mean squared (RMS), as in RMS vibration velocity. The PPV and RMS velocity are normally described in inches per second (in/sec). The RMS of a signal is the average of the squared amplitude of the signal, typically calculated over a 1-second period. As with airborne sound, the RMS velocity is often expressed in decibel notation as vibration decibels (VdB), which serves to compress the range of numbers required to describe vibration (FTA 2018).

TEST DATE, CONDITIONS, AND LOCATIONS

Noise and vibration measurements were conducted for this assessment on November 2, 2022. A vibratory hammer mounted to the end of an excavator arm was used for installing the sheet piles. The site vicinity had several types of soils ranging from very soft bay mud in the marsh area to hard trail gravel on the levee. RCH conducted vibration measurements and observations at approximately 25 feet away from the sheet pile installation site on the levee (Site 1), and at two locations approximately 50 feet away from the sheet pile installation site on very soft marsh mud (Site 2) and on grass surrounding pump station 5 (Site 3). It is RCH's understanding that the test conducted at Site 1 was a worst-case scenario because of the hard soil conditions. Site 2 was chosen to represent a worst-case scenario for soil conditions. This measurement was taken on a very soft mud on the marsh preserve and does not represent the typical soil conditions found in backyards along the levee. Site 3 was chosen to represent the conditions of a typical yard in the neighborhood. During the monitoring period, approximately 3 sheet piles were installed directly north of pump station 5. The first sheet pile took approximately 2 hours to be fully installed due to a boulder that was found underground that was later removed with an excavator.

On the day of testing, weather conditions were calm with no anomalous atmospheric conditions present that would have affected the collection of noise or vibration data.

METHODOLOGY

A Larson Davis LxT was used for recording short-term noise measurements and was calibrated before and after the measurements. A Larson Davis LxT equipped with PCB Electronics velocity transducers was used for recording vibration measurements and was calibrated before and after the measurements.

NOISE AND VIBRATION MEASUREMENT RESULTS

Table NOI-1 summarizes the location and results of the noise and vibration measurements. **Figure NOI-1** shows the noise and vibration measurement locations on a map. Photos of the locations of the short-term noise and vibration measurements are included in this memorandum.

TABLE NOI-1 EXISTING NOISE LEVELS

Location	Time Period	Noise and Vibration Levels (dB/VdB)	Noise and Vibration Sources	Soil Conditions
Site 1: Approximately 25 feet east of the sheet pile installation	Wednesday November 2, 2022 7:37 a.m. to 7:58 a.m.	1-minute noise Leq's ranged from: 43-61 dB	**Noise:** Very quiet background noise recorded before installation of sheet piles 42-50 dB. People talking nearby meter 55 dB. Construction crew arriving 61 dB.	N/A. No vibration measurements taken during this measurement.
Site 1: Approximately 25 feet east of the sheet pile installation	Wednesday November 2, 2022 8:20 a.m. to 8:29 a.m.	1-minute noise Leq's ranged from: 58-77 dB Maximum vibration levels ranged from: 38-78 VdB	**Noise:** Crew begins operating excavator and preparing sheet piles for installation. Loudest noise was the excavator back up beeper up to 81 dB at 25 feet. **Vibration:** Excavator operating nearby meter observed at 78 VdB.	Soil conditions are hard and consist of rock and gravel on the levee trail.
Site 1: Approximately 25 feet east of the sheet pile installation	Wednesday November 2, 2022 8:53 a.m. to 9:09 a.m.	1-minute noise Leq's ranged from: 63-88 dB Maximum vibration levels ranged from: 34-93 VdB	**Noise:** Vibratory hammer pounding into a boulder where sheet pile would not penetrate the soil. The sound of impact was 90 dB. **Vibration:** Vibratory hammer pounding into a boulder where sheet pile would not penetrate the soil. The vibration level from impact was 93 VdB.	Soil conditions are hard and consist of rock and gravel on the levee trail.
Site 2: Approximately 50 feet northeast of the sheet pile installation	Wednesday November 2, 2022 10:30 a.m. to 10:48 a.m.	1-minute noise Leq's ranged from: 43-81 dB Maximum vibration levels ranged from: 32-98 VdB	**Noise:** Vibratory hammer pounding the sheet pile. The sound of impact was 84 dB. **Vibration:** Vibratory hammer pounding the sheet pile. The maximum vibration	Soil conditions are very soft mud on the marsh preserve and do not represent the typical soil conditions found in backyards along the levee.

			level from impact was 98 VdB.	
Site 3: Approximately 50 feet south of the sheet pile installation	Wednesday November 2, 2022 10:48 a.m. to 10:58 a.m.	1-minute noise Leq's ranged from: 44-76 dB Maximum vibration levels ranged from: 33-86 VdB	**Noise:** Vibratory hammer pounding the sheet pile. The sound of impact was 80 dB. **Vibration:** Vibratory hammer pounding the sheet pile. The maximum vibration level was 86 Vdb.	Soil conditions are grassy and consist of regular soil. Representative of typical soil found in backyards along the levee.

SOURCE: RCH GROUP, 2022

FIGURE NOI-1: NOISE MEASUREMENT LOCATIONS

RCH GROUP planning & environmental consulting

Source: RCH Group and Google Earth, 2022

Noise

Typical sonic pile-drivers (i.e., vibratory pile drivers) can generate noise levels of up to 95 dB, Lmax at 50 feet (FTA, 2018). RCH observed and recorded noise from the use of the vibratory hammer at levels of up to 90 dB at 25 feet. This noise level is less than decibel level in the FTA Noise and Vibration Impact Assessment Manual (95 dB at 50 feet). Noise levels of 90 dB were recorded when the vibratory hammer was pounding a large subsurface boulder. It is expected that construction activities could occur as close as 40 feet from the nearest residence (depending on the side of the levee construction occurs on). Based on these measurements, noise from the vibratory hammer would attenuate to approximately 84 dB, Lmax at 50 feet (consistent with **Table NOI-1, Site 2**). The Marin County Municipal Code exempts 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 Municipal 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. Noise generated from the vibratory hammer is not expected to be a significant impact of Project construction due to the limited time at each location and the ability of residents to leave the area or shelter inside during construction activities adjacent to their residence.

Vibration

Typical sonic pile-drivers can generate vibration levels of up to 93 VdB at 25 feet (typical range) and vibration levels of up to 105 VdB at 25 feet (upper range). RCH observed and recorded vibration levels from the use of a vibratory hammer at levels of up to 93 VdB at 25 feet (Site 1). The FTA guidelines show that the threshold of perception for humans is approximately 65 VdB. A vibration level of 85 VdB or more in a residence can result in strong annoyance (FTA, 2018). The FTA guidelines also show that a vibration level of up to 102 VdB is considered safe for buildings consisting of reinforced concrete, steel, or timber (no plaster[1]), and would not result in any construction vibration damage (FTA, 2018). It is expected that construction activities could occur as close as 40 feet from the nearest residence (depending on the side of the levee construction occurs on).

Site 1

As shown in **Table NOI-1,** the maximum vibration level of 93 VdB at 25 feet was recorded at Site 1 was the result of the vibratory hammer pounding the sheet pile into a subsurface boulder. It is very unlikely that installation of sheet piles along the levee would occur on hard soil conditions observed in Site 1 and would instead occur on softer soil conditions. However, vibration levels from this worst-case scenario would attenuate to approximately 87 VdB at 40 feet. This would be well below the 102 VdB threshold. Regardless, vibration levels of 87 VdB would result in a strong annoyance for residents along the levee.

[1] Plaster is more brittle and is not commonly used for interior wall finishing. The most common wall covering is drywall which are more vibration resistant than plaster finishes.

Site 2

As shown in **Table NOI-1,** the maximum vibration recorded at Site 2 was the result of taking vibration measurements on very soft mud on the marsh. This site does not represent the typical soil conditions found in the backyards along the levee and should not be used to assess potential construction vibration damage.

Site 3

As shown in **Table NOI-1,** a maximum vibration level of 86 VdB at 50 feet was recorded at Site 3. The soil conditions at Site 3 are representative of the typical soil conditions found in the backyards along the levee. Vibration levels would be approximately 89 VdB at 40 feet. This would be well below the 102 VdB threshold for structural damage. Regardless, vibration levels of 89 VdB would result in a strong annoyance for residents along the levee. However, temporary vibration generated from the vibratory hammer is not expected to be a significant impact of Project construction.

REFERENCES

California Department of Transportation (Caltrans) 2013. *Transportation and Construction Vibration Guidance Manual* (CT-HWANP-RT-13-069.25.3).

Federal Transit Administration (FTA). 2018. *Transit Noise and Vibration Impact Assessment*.

Site Photos

Photo 1: Vibratory hammer mounted on the end of an excavator used to install sheet piles.

Photo 2: Excavator preparing to install a 20’ sheet pile.

Photo 3: Noise and vibration meters at Site 1.

Photo 4: Noise and vibration meters at Site 2.

Photo 5: Noise and vibration meters at Site 3.

Appendix D
List of Trees Slated for Removal

Appendix D. List of Trees Slated for Removal

Conifers and Hardwoods	Palms	Other	Vendola Drive Address	Comments
			5	
			7	
			9	
			11	
			13	
			15	
			17	
			19	
			21	
2X			23	REMOVE: 2-Oaks: 8" dia
			25	
	2X		27	REMOVE: Date Palms: ~24" dia
x			29	REMOVE: 1-Black Acacia:12" dia

Appendix D. List of Trees Slated for Removal

Conifers and Hardwoods	Palms	Other	Vendola Drive Address	Comments
			31	
			33	
	x		35	
	x		37	REMOVE: Date Palm: Huge ~36" dia
			39	
			45	
			51	
	X		53	
X			55	Lg Live Oak
			57	
			59	
			61	
2X			63	MED LIVE OAK; MED CAMPHOR TO BE REMOVED

Appendix D. List of Trees Slated for Removal

Conifers and Hardwoods	Palms	Other	Vendola Drive Address	Comments
		X	65	6-8ft CENTURY PLANT TO BE REMOVED
			67	
			69	
			71	
X			73	REMOVE: 1-SIlver Acacia
			75	
		X	77	1-Oleander removal: 6ft tall
			79	
			PS1	
			101	
			103	
			105	PRUNING: Live Oak branch over TRB
			107	

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Conifers and Hardwoods	Palms	Other	Vendola Drive Address	Comments
			109	
			111	
		X	113	CENTURY PLANT TO BE REMOVED
X		X	115	CENTURY PLANT TO BE REMOVED
X			117	LG LIVE OAK
X			119	REMOVE: 1-Multi-trunk Blue Gum Euc: Major job to remove stump and roots (resprout potential)
2X			121	REMOVE: 2-Oaks: 4" dia
X			123	REMOVE: 1-Oak: 6" dia
			125	
			127	
			129	
			131	LG PALM TO BE SAVED
			133	

Appendix D. List of Trees Slated for Removal

Conifers and Hardwoods	Palms	Other	Vendola Drive Address	Comments
			135	
			137	
			201	
			203	
8X	X		205	MEX FAN PALM GROWING DIRECTLY ON THE LEVEE; REMOVE: 2-Oaks: 6" dia; 6-Fruit Trees
X			207	REMOVE: 1-Plum: 6" dia
			209	
			211	
			215	
			301	
			303	
			305	
			307	

Appendix D. List of Trees Slated for Removal

Conifers and Hardwoods	Palms	Other	Vendola Drive Address	Comments
			309	
			311	
			313	
X			401	REMOVE: 1-Pine: 8" dia
			PH2	
			405	
			407	
			409	
			411	
			501	
			503	
			505	
X			507	REMOVE; 1-Pine: 8" // SAVE: 1-Oak: 4" dia

Appendix D. List of Trees Slated for Removal

Conifers and Hardwoods	Palms	Other	Vendola Drive Address	Comments
			601	
			603	
			605	
			607	
X			609	1-Silver Acacia
			PS1	
			613	
			617	
	X		619	REMOVE: 1-Mexican Fan Palm
			621	
X	X		623	REMOVE: 1-Date Palm: 36" dia; REMOVE: 1-Oak: 4" dia
			625	
			627	

Appendix D. List of Trees Slated for Removal

Conifers and Hardwoods	Palms	Other	Vendola Drive Address	Comments
			629	
X			631	REMOVE: 1-Live Oak: 18" dia
			633	
			635	
			637	
X			701	REMOVE: 1-Pepper Tree: 12" dia
			703	
			705	
X			707	REMOVE: 1-Italian Cypress: 8" dia
2X			801	REMOVE: 1-Fig Tree: 6" dia; REMOVE: 1-Pine: 6" dia
			803	
			805	
			807	

Appendix D. List of Trees Slated for Removal

Conifers and Hardwoods	Palms	Other	Vendola Drive Address	Comments
			809	
			811	
X			813	REMOVE: 1-Multi-Trunk Eucalyptus: ~20' Tall x 24" dia
	X		817	
	X		821	1- 36" Date Plam
			825	
2X			8S5	(2) NATIVE SHRUBS (`10ft TALL MATURE) ALONG TRB ALIGNMENT AS TURNS TOWARDS PS5 TO BE REMOVED