4 Growth-Inducing and Cumulative Effects

4.1 Growth Inducement Potential and Secondary Effects of Growth

Section 15126.2(e) of the California Environmental Quality Act (CEQA) Guidelines requires that an Environmental Impact Report (EIR) discuss "the ways in which the proposed project could foster economic or population growth, or the construction of additional housing, either directly or indirectly, in the surrounding environment. Included in this are projects which would remove obstacles to population growth (a major expansion of a wastewater treatment plant might, for example, allow for more construction in service areas). It must not be assumed that growth in any area is necessarily beneficial, detrimental, or of little significance to the environment."

The Corte Madera Creek Flood Risk Management Project, Phase 1 (project) would not involve any housing construction and therefore would not induce growth directly by constructing housing that would attract people to the area. Project construction would not extend roads or other infrastructure that could indirectly induce growth. Given the size and availability of the regional workforce, project construction would not be expected to induce demand for housing by attracting a substantial number of workers from outside the region. Nor would the project provide new permanent employment opportunities that could attract workers to the area; long-term operation of the project would not increase the number of workers employed by the District.

In some cases, a flood-risk reduction project can remove an obstacle to growth. However, in this case, the project would reduce flood risk in existing developed areas. The project would primarily result in reduced flood risk for 10- and 25-year flood events. The 100-year floodplain would remain similar to existing conditions. Because planning restrictions are focused around the 100-year floodplain, the project would not remove a barrier to development but would improve flood protection in previously developed areas. The project would not allow additional growth to occur nor would it change the locations where this growth is planned to occur. Consequently, implementation of the project would not affect current and/or projected population growth patterns within Marin County and, therefore, would not have a growth-inducing impact.

4.2 Significant Irreversible Changes

Sections 15126(c) and 15126.2(d) of the CEQA Guidelines require a discussion of the significant irreversible environmental changes of a project.

Irreversible commitments of resources are those which cause either direct or indirect use of natural resources such that the resources cannot be restored or returned to their original condition. Construction activities associated with the project would result in an irretrievable and irreversible commitment of natural resources through direct consumption of fossil fuels and use of materials. Construction would include the short-term use of electricity and refined petroleum products during the operation of construction equipment (primarily gas, diesel, and motor oil). The energy consumption for construction would not result in substantial depletion of non-renewable energy resources and would not permanently increase reliance on energy resources that are not renewable. Construction activities would not reduce or interrupt existing electrical or natural gas services such that existing supplies would be constrained.

Project operations that would affect irretrievable resources would be limited to annual maintenance activities. Project maintenance would involve activities similar to maintenance of the existing flood control channel. Maintenance activities would result in irreversible and irretrievable use of energy and material resources from annual testing and emergency use of the stormwater pump station generator, use of electricity to power the stormwater pump station during storms, and use of diesel fuel and oil for maintenance vehicles and equipment. The commitment of non-renewable resources usage would be minor, and therefore, would not be significant.

The use of the nonrenewable resources would not affect the availability of these resources for other needs within the region. Additional information regarding irreversible changes or resource use is discussed in Section 3.5 Energy.

4.3 Cumulative Impacts

Cumulative impacts, as defined in Section 15355 of the CEQA Guidelines, refer to two or more individual effects that, when taken together, are "considerable" or that compound or increase other environmental impacts. A cumulative impact from several projects is the change in the environment that would result from the incremental impact of each project when added to those of other closely related past, present, or probable future projects. Section 15130 of the CEQA Guidelines provides the following pertinent guidance for cumulative impact analysis:

1. An EIR shall discuss cumulative impacts of a project when the project's incremental effect is "cumulatively considerable" (defined by CEQA Guidelines section 15065(e)(3) as the incremental effects of an individual project are considerable when viewed in connection with the effects of past, current, and probable future projects, including those outside the control of the agency, if necessary).
2. An EIR should not discuss impacts that do not result in part from the project evaluated in the EIR.
3. A project's contribution is less than cumulatively considerable, and thus not significant, if the project is required to implement or fund its fair share of a mitigation measure or measures designed to alleviate the cumulative impact.

4. The discussion of impact severity and likelihood of occurrence need not be as detailed as for effects attributable to the project alone.
5. The focus of analysis should be on the cumulative impact to which the identified other projects contribute, rather than on attributes of the other projects that do not contribute to the cumulative impact.

CEQA Guidelines Section 15130(b)(1) provides two approaches to a cumulative impact analysis; the analysis can be based on (a) a list of past, present, and probable future projects producing related or cumulative impacts; or (b) a summary of projections contained in a general plan or related planning document.

Cumulative impact analysis considers the effects of the project together with those of other past, present, or probable future projects. The cumulative considerations and impacts for each section are summarized below. Each analysis of cumulative impacts is based on the same setting, regulatory framework, and significance criteria as the project-specific analysis. Additional mitigation measures are identified if the cumulative analysis determines that a significant cumulative impact could occur and the project's contribution to a significant cumulative impact would be considerable, even with project-level mitigation.

As provided for in CEQA Guidelines Section 15130(b)(1), the analysis in this EIR employs the list-based approach for defining projects to be considered in the cumulative impact analysis — that is, the analysis is based on a list of past, present, and probable future projects that could result in related or cumulative impacts. The probable future projects are subject to independent environmental review and consideration by approving agencies. Consequently, it is possible that some of the projects will not be approved or will be modified prior to approval (e.g., as a result of the CEQA process).

Projects that are relevant to the cumulative analysis include those that could have incremental effects on the same environmental resources and would have similar environmental impacts as those identified for the project in this EIR. The following factors were used to determine an appropriate list of relevant projects to be considered in the cumulative analyses:

1. **Similar Environmental Impacts.** Whether a project contributes to effects on the same environmental resources that are also affected by the project and would have similar or related environmental impacts as those discussed in this EIR (Sections 3.1 through 3.17).
2. **Geographic Scope of the Area Affected and Location.** Whether a project is located within the defined geographic scope for the cumulative effect. The geographic scope of cumulative projects depends on the resource affected and is identified within each section of the EIR. The geographic scope generally coincides with the physical environment described in the setting and could include the areas adjacent to the proposed construction. For some potential impacts, however, the geographic scope would extend farther, such as for the discussion of traffic in which the regional roadway network is relevant, or the

evaluation of air quality effects in which the regional air basin is the appropriate geographic scope for the analysis.

3. **Timing and Duration of Implementation.** Whether the schedule of activities for a relevant project would need to coincide in timing with the effects of the project to result in cumulative impacts. For temporary impacts such as noise and traffic, the cumulative analyses consider the short-term cumulative effects of those projects with overlapping construction schedules as well as the long-term cumulative effects of those projects that would be in operation concurrently with the project and would affect the same environmental resources.

Table 4.3-1 describes the past, present, and probable future projects that are considered in the cumulative analyses (based on the factors described above), and their locations are shown on Figure 4.3-1. The list includes projects that have overlapping construction schedules with the project (or would be completed prior to or following project construction) and that would be constructed in the general vicinity of the project elements. The list also includes projects that would be in operation concurrently with the project.

The cumulative analyses presented below first consider whether there is an impact of the project that could result in adverse physical effects on the environment. If so, the cumulative analysis considers whether any of the projects listed in Table 4.3-1 would result in related impacts or affect the same environmental resources as the project, resulting in a cumulative impact. If the cumulative impact is considered significant based on the identified significance criteria, the analysis next considers whether the project's contribution would be cumulatively considerable, and therefore significant. If the project's contribution would be cumulatively considerable, mitigation measures are identified to reduce the project's contribution to a less-than-significant level. If there is no feasible mitigation to reduce the project's contribution to a less-than-significant level, the project's contribution to the cumulative impact is considered significant and unavoidable.

Table 4.3-1 Projects Considered in Cumulative Impact Analysis

Project No. on Map	Project Name (Project Sponsor or Jurisdiction)	Project Description	Status	Construction Schedule
1	Access Ramp to the Corte Madera Creek Flood Control Channel	The project would involve construction of a new permanent concrete access ramp. The ramp would be constructed within the District's property at the intersection of Locust Avenue and Cedar Avenue and would provide vehicular and equipment access into the Corte Madera Creek flood control channel. The access ramp would be approximately 15 feet wide, 70 feet long, and sloping from Cedar Avenue down to the existing channel at an approximately 15-percent grade. A 6-foot-high flood gate would be installed across the ramp near where the ramp meets Cedar Avenue.	Project planning	• Construction completion scheduled in summer 2021.
2	Meadow Way Bridge (Town of Fairfax)	The Meadow Way Bridge has a low Sufficiency Rating of 44.1 out of 100 and has been designated as "functionally obsolete" by Caltrans. The Town of Fairfax proposes to replace the old bridge with a single-span concrete-arch replacement bridge. The replacement bridge would allow safe passage for both automobiles and pedestrians. The proposed replacement bridge would also include raised reflective pavement markers at proper intervals to alert the drivers and pedestrians of the two separate travel zones. The replacement bridge would comply with federal and state design codes and weight limits.	The CEQA document was adopted on June 3, 2020, by the Town of Fairfax Council.	• Construction is anticipated to begin and complete in 2020.
3 and 4	San Anselmo Flood Risk Reduction Project (Marin County Flood Control & Water Conservation District)	The project is part of the District's 10-Year work plan to mitigate the 25-year flood event in the Ross Valley. The project consists of three District components: 1) the Sunnyside Nursery Flood Diversion and Storage Basin at 3000 Sir Francis Drake Boulevard; 2) the removal of buildings at 632–634 San Anselmo Ave in San Anselmo (Building Bridge #2), a structure that partially obstructs the flow of San Anselmo Creek and related creek restoration; and 3) flood mitigation measures on three	The contract to perform the final phase of design work was approved by the District Board of Supervisors on March 31, 2020.	• Preliminary excavation of the Sunnyside Nursery basin started in September 2020. • The San Anselmo building demolition work was conducted in May 2020.

Project No. on Map	Project Name (Project Sponsor or Jurisdiction)	Project Description	Status	Construction Schedule
		downstream private properties that may see a rise in water surface due to the removal of BB2 in San Anselmo.		• The creek related work at both sites are anticipated to begin in Summer 2021.
5	Hillview Pump Station and Stormdrain Improvements (Marin County Flood Control & Water Conservation District)	The City of Larkspur is seeking alternatives to the maintenance-intensive need to perform sediment removal in Corte Madera Creek at storm-drainage outfalls in Hillview Gardens. The project would involve reconfiguring of the storm-drain system in the Hillview Garden neighborhood and rerouting to a new storm drain pump station on Bon Air Road.	The project is currently undergoing feasibility phase under a cost-share agreement between the District and City of Larkspur.	• Construction and future planning are pending on the result of the feasibility study and the timing is unknown.
6	Winship Bridge Replacement Project (Town of Ross)	The project involves replacing the existing Winship Avenue Bridge with a new bridge that is designed to meet current roadway and sidewalk design standards and improve conveyance capacity within San Anselmo Creek by eliminating the arches and center bridge pier in the waterway, widening the opening and raising the elevation of the bridge deck. Other project features would include new curb, gutter, sidewalk, and accessible ramps between Sir Francis Drake Boulevard and Winship Avenue intersections.	The project IS/MND was approved in March 2020	• Construction is scheduled to begin in 2022.
7	375 Crown Road LLC Design Review (P2028) (Marin County Community Development Agency)	This project would include construction of 1,762 square feet of additions to a residence on a developed lot in Kentfield. The proposed development would also include remodeling of a pool and deck remodel with a height of 10 feet above surrounding grade and outward facing walls over 4 feet.	Application in review	• Uncertain
8	Adamson Variance (P2796) (Marin County Community Development Agency)	The applicant proposes to construct a new 390-square-foot addition onto an existing residence in Kentfield.	Approved	• Uncertain

Project No. on Map	Project Name (Project Sponsor or Jurisdiction)	Project Description	Status	Construction Schedule
9	Allbin Design Review and Accessory Dwelling Unit (P2856)	The applicant proposes to tear down an existing garage and is requesting Design Review and Accessory Dwelling Unit Permit approval to construct a new two-story structure on a developed lot in Kentfield.	Application in review	• Uncertain
10	Brewer Design Review (P2827) (Marin County Community Development Agency)	The applicant proposes to construct a new second-story 300-square-foot addition onto an existing residence in Kentfield.	Application filed	• Uncertain
11	Cedar Tentative Map (P2801) (Marin County Community Development Agency)	The applicant proposes to divide the site into two parcels, retaining the existing home and work shed on Parcel 1 at 8,483 square feet. The remaining portion will become Parcel 2 and will be 6,886 square feet, to include the existing garage.	Application in review	• N/A
12	Brownridge Design Review/Tree Removal (P2780) (Marin County Community Development Agency)	The applicant proposes to tear down an existing residence on a developed lot, rendering the lot vacant, to construct a new 4,694-square-foot residence with a 540-square-foot attached garage and to remodel an existing guest house. Various site improvements proposed by the applicant include installation of a new pool and landscaping.	Application in review	• Uncertain
13	Christensen Design Review (P2820) (Marin County Community Development Agency)	The applicant proposes to remodel and expand an existing residence on a 27,009-square-foot lot in Kentfield. The existing 4,735-square-foot residence would be enlarged by 990 square feet. Additionally, the applicant proposes the construction of a 408 -square-foot accessory structure.	Application filed	• Uncertain
14	Cooney Design Review/Tree Removal (P2390) (Marin County	The applicant proposes to construct a new 8,576-square-foot single-family residence on a vacant lot in the community of Kentfield. The project includes a proposal to remove two trees classified as “Protected” per Section	Application in review	• Uncertain

Project No. on Map	Project Name (Project Sponsor or Jurisdiction)	Project Description	Status	Construction Schedule
	Community Development Agency)	22.130.030 of the Marin County Development Code to accommodate construction of the residence and associated site improvements.		
15	Morgan Design Review (P2808) (Marin County Community Development Agency)	The applicant proposes to remodel and expand an existing residence on an approximately 21,000-square-foot developed lot in Kentfield.	Application filed	• Uncertain
16	Marin Healthcare District Design Review (P2787) (Marin County Community Development Agency)	The Marin Health Care District proposes to construct a new five-story, 100,000-square-foot Ambulatory Services Building (ASB) with ground level footprint totaling approximately 20,000 square feet; a new six-story parking structure with ground-level footprint totaling approximately 20,000 square feet, which would be constructed adjacent to the existing parking structure on an existing surface parking lot; and a pedestrian bridge which would connect the existing and proposed parking structures with the new proposed ASB. Other improvements would also be entailed in this project, including the following: site grading to accommodate the new parking structure and ASB; tree removal and planting; on- and off-site landscaping; lighting, wayfinding and identification signs; and roof of the garage structure consisting of solar.	Application in review	• Uncertain
17	Swanson Design Review (P2838) (Marin County Community Development Agency)	The applicant is proposing to construct a new, second-story (above a detached garage), 483-square-foot ADU on a developed lot in Kentfield.	Application in review	• Uncertain
18	Marin Healthcare District Design Review/Sign Review (P2192) (Marin	The Marin Healthcare District proposes to construct the next phase of Marin General Hospital redevelopment project. This phase of construction involves renovation of the existing West Wing building and construction of an	Application in review	• Uncertain

Project No. on Map	Project Name (Project Sponsor or Jurisdiction)	Project Description	Status	Construction Schedule
	County Community Development Agency)	attached, one-story 3,500-square-foot addition. The new construction, along with the renovation, would create a new primary hospital entry, lobby, waiting area, admitting area, café and other associated uses. Other improvements would also be included in this phase, including the following: tree removal and planting, on- and off-site landscaping, lighting, wayfinding and identification signs, midblock pedestrian walkway, relocation of a bus stop, new pedestrian and vehicle entrances, and a pick-up/drop-off circular turnaround as well as off-site improvements to Bon Air Road to create a left-turn pocket into the new vehicular entrance.		
19	Nelson Design Review (P2738) (Marin County Community Development Agency)	The applicant is proposing to construct three new additions totaling 149 square feet onto an existing residence in Kent Woodlands. Various site improvements would also be entailed in the proposed development, including removal of a detached accessory structure.	Approved	• Uncertain
20	Real Equity Tree Removal (P2622) (Marin County Community Development Agency)	The applicant is proposing to remove one heritage redwood tree to accommodate a fire truck turnaround on a lot in unincorporated Kentfield currently undergoing construction.	Approved	• The project is currently under construction.
21	Lower Corte Madera Creek Improvement Study (Marin County Flood Control & Water Conservation District)	The Lower Corte Madera Creek Improvement Study will provide a comprehensive assessment of the current condition of the levee and creek system downstream of the concrete channel and identify and provide recommendations for improvements. The Study is funded by a grant the District received under the Local Levee Assistance Program (LLAP) from the California Department of Water Resources (DWR) that will provide 55% reimbursement of costs for both past and future work covered under the grant. The Study is intended to assess the need for future projects and consider potential	The Study reports were completed in 2019.	• The schedule for the project construction is difficult to estimate because it is dependent upon obtaining grant funding.

Project No. on Map	Project Name (Project Sponsor or Jurisdiction)	Project Description	Status	Construction Schedule
		project concepts that could be partially funded for final design and construction under the LLAP or from other funding sources.		
22	Lower Sleepy Hollow Creek Improvements (Marin County Flood Control & Water Conservation District)	The Lower Sleepy Hollow Creek Improvements Project is a portion of the Ross Valley Flood Protection & Water Program. Most creek improvements are proposed along Sleepy Hollow Creek from Broadmoor Avenue Bridge down to the Taylor Street Bridge. The goal of all the improvements is to create additional creek-flow capacity. Improvements include bridge replacements, retaining-wall replacements, bank stabilization, building relocation or removal, creek-channel enlargement, concrete removal from the creek bed, and flood barriers along the top of the creek bank.	As of July 2016, Stetson Engineers is working on the Feasibility Study for the project.	• The schedule for the project construction is difficult to estimate because it is dependent upon obtaining grant funding.
23	Corte Madera Creek Project Phase II (Friends of Corte Madera Creek Watershed)	Corte Madera Creek Project Phase II would include removal of the existing concrete channel from College Avenue to Stadium Way along College of Marin property. The channel bed would be in natural substrate. The right bank would be laid back to create a natural creek slope. The left bank would remain with either an existing concrete wall, a new shorter wall, or large rock embankment to protect an existing Ross Valley Sanitation District owned sewer pipeline that runs parallel to the concrete channel left bank. In addition, the proposed project would relocate Bike Route 20 from the right bank to the left bank of the creek.	Project planning	• Not currently scheduled. Engineering and environmental for Phase 2 will begin after completion of Phase I.
24	Sir Francis Drake Boulevard Rehabilitation Project (Marin County Department of Public Works)	The project consists of various physical modifications to Sir Francis Drake Boulevard, including repaving, pedestrian/cyclist safety improvements, striping, intersection and signal improvements, traffic operation improvements, utility infrastructure improvement, and new street lighting.	In construction	• June 2020 – Construction began at the center of the project area. Construction has started in the western and eastern segments of the project.

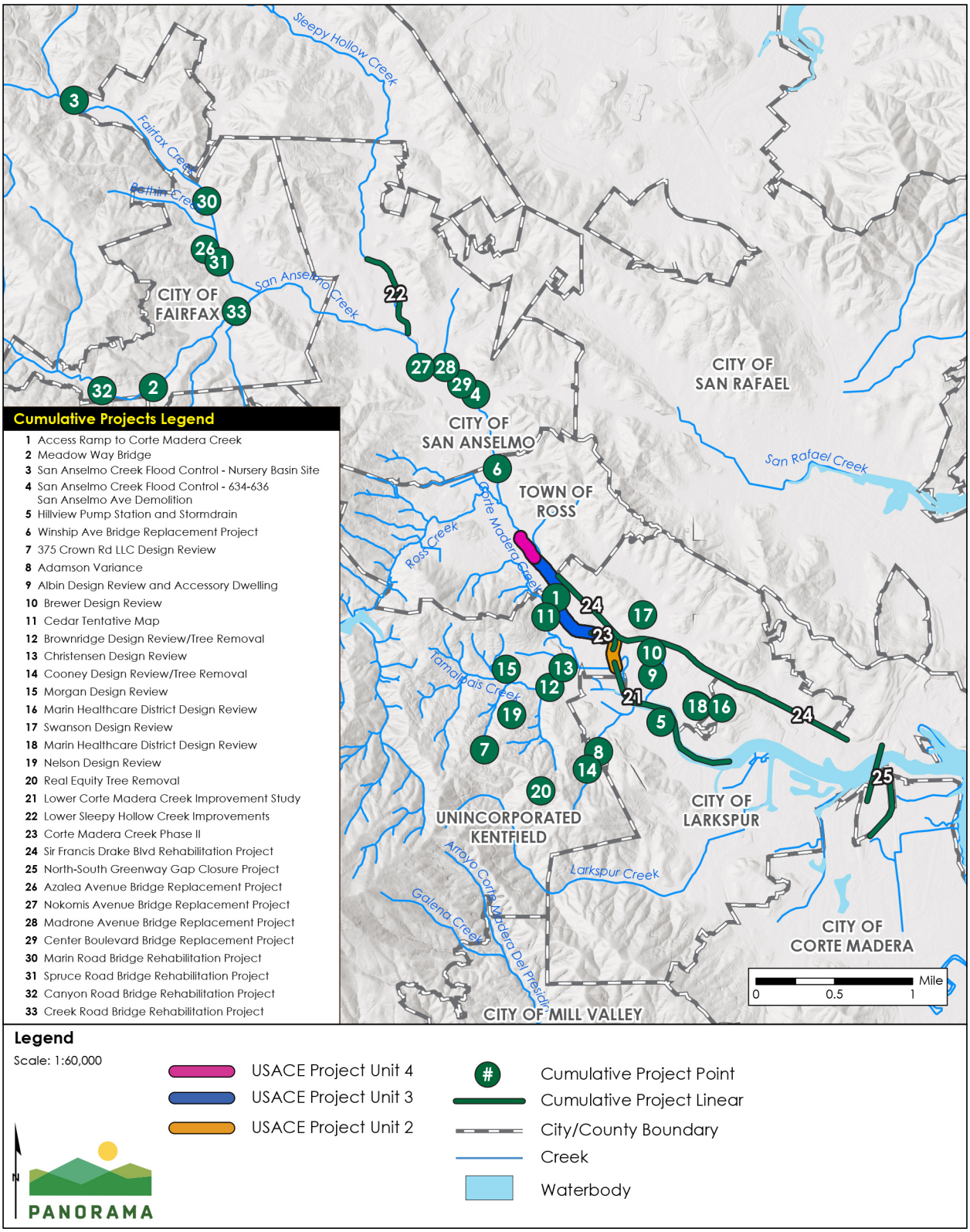
Project No. on Map	Project Name (Project Sponsor or Jurisdiction)	Project Description	Status	Construction Schedule
				• December 2021– Construction is anticipated to be completed.
25	North-South Greenway Gap Closure Project (California Department of Transportation and Transportation Authority of Marin)	The project will close a key gap in the local and regional non-motorized transportation network between the Central Marin Ferry Connector Bridge (CMFC) and the existing multi-use paths at the intersection of Old Redwood Highway and Wornum Drive. The project includes two segments, the Northern Segment and the Southern Segment. The Northern Segment includes replacing the existing narrow sidewalk along the U.S. Highway 101 northbound off-ramp with a wider multi-use pathway and adding a multi-use pathway along a portion of Old Redwood Highway. The Southern Segment includes the area between Corte Madera Creek and Wornum Drive.	The planning, environmental review, and final design process is underway for the Northern Segment. The Southern Segment has been suspended for financial reasons pending identifications of additional funding.	• Northern Segment – construction is anticipated to begin in early 2021 and complete in mid-2022. Pathway closures during construction would be limited to nighttime hours. • Southern Segment – construction schedule is difficult to estimate because it is dependent upon obtaining grant funding.
26	Azalea Avenue Bridge Replacement Project	The proposed bridge replacement project at Azalea Avenue in the Town of Fairfax will remove and replace the existing bridge over Fairfax Creek. The existing bridge configuration restricts flow in the creek and causes water to back up and overtop creek banks during large flood events. By enlarging the bridge opening, Fairfax Creek will have increased flow capacity, which will reduce the risk of flooding in the Fairfax area.	The project is currently in planning.	• Construction has not been scheduled, but could begin as early as 2022.
27	Nokomis Avenue Bridge Replacement Project	The Town of San Anselmo is planning to replace the Nokomis Ave. bridge over San Anselmo Creek, which is functionally obsolete. The replacement bridge will be designed to pass a 100-year storm event within the channel. In addition to the bridge being replaced, there will be temporary in-channel work required to remove the	The project is in planning with Caltrans and the Town of San Anselmo	• The timing of construction is difficult to estimate because the project is in design and planning and requires CEQA compliance and permits. Construction is

Project No. on Map	Project Name (Project Sponsor or Jurisdiction)	Project Description	Status	Construction Schedule
		existing bridge piers, abutments, excavate for the proposed bridge foundations, and relocate some utilities.		anticipated to occur within 5 years.
28	Madrone Avenue Bridge Replacement Project	The Town of San Anselmo is planning to replace the Madrone Ave. bridge over San Anselmo Creek, which is functionally obsolete. The bridge design will need to be consistent with the existing roadway classification and the Town's complete streets policy. The bridge would be replaced with a similar two-lane bridge that will be wider to accommodate vehicles, bicyclists, and pedestrians with standard traffic lanes, shoulders, and ADA compliant sidewalks. Design changes will be considered to improve safety for all roadway users and alleviate congestion at the nearby intersections of Center Boulevard with San Anselmo Avenue/Sycamore Avenue and Bridge Avenue. The bridge will also be designed to pass a 100-year storm event within the channel.	The project is in planning with Caltrans and the Town of San Anselmo	• The timing of construction is difficult to estimate because the project is in design and planning and requires CEQA compliance and permits. Construction is anticipated to occur within 5 years.
29	Center Boulevard Bridge Replacement Project	The Town of San Anselmo is planning to replace the bridge over San Anselmo Creek, which is functionally obsolete. All design alternatives will focus on replacement of the existing bridge with a similar two-lane bridge that will be wider to accommodate vehicles, bicyclists, and pedestrians with standard traffic lanes, shoulders, and ADA compliant sidewalks. Design changes will be considered to improve safety for all roadway users and alleviate congestion at the nearby intersections of Center Boulevard with San Anselmo Avenue/Sycamore Avenue and Bridge Avenue. The bridge will also be designed to pass a 100-year storm event within the channel. In addition to the bridge being replaced, there will be temporary in-channel work required to remove the existing bridge piers, abutments,	The project is in planning with Caltrans and the Town of San Anselmo	• The timing of construction is difficult to estimate because the project is in design and planning and requires CEQA compliance and permits. Construction is anticipated to occur within 5 years.

Project No. on Map	Project Name (Project Sponsor or Jurisdiction)	Project Description	Status	Construction Schedule
		excavate for the proposed bridge foundation and relocate some utilities		
30, 31, 32, and 33	Marin Road, Spruce Road, Canyon Road, and Creek Road Bridge Rehabilitation	The Town of Fairfax is planning upgrades to four bridges which span San Anselmo and Fairfax Creeks on Marin Road, Spruce Road, and Canyon Road. Major upgrades may require seismic retrofits to address structural issues.	The projects are in early planning and require design and environmental review.	• The construction schedule cannot be determined due to limited information on the design and environmental review process.
34	Learning Resources Center Project (College of Marin)	The project would construct a three-story, 77,000-square-foot replacement facility on the site of the existing building, to address seismic safety and provide upgraded facilities. The associated work would be limited to within the footprint of the existing building, and no alterations would occur to the adjacent pedestrian bridge.	The project currently is under construction.	• The construction would take approximately 12 months.

Sources: (Marin County DPW, 2020; Town of Fairfax, 2020; The District, 2020; The District, 2019; Marin County Community Development Agency, 2020; The District, 2018; The District, 2015a; The District, 2015b; Simonitch, 2020; Houston, 2020) (Larkspur & Corte Madera, 2020)

Figure 4.3-1 Cumulative Projects Locations



Sources: (Tele Atlas North America, Inc. 2019, GHD 2020, USGS 2019, US Geological Survey 2013)

4.4 Cumulative Impact Analysis

The following subsections include a discussion of cumulative impacts by resource topic and, where appropriate, a description of the mitigation measures that would avoid or lessen the project's contribution to a significant cumulative impact. Pursuant to CEQA Guidelines Section 15130(a)(1), an EIR should not discuss impacts that do not result in part from the project evaluated in the EIR. The cumulative impact analysis includes only those impacts that would result from project implementation of the project. The project would have no impact on the following resource topics and would, therefore, not contribute to cumulative impacts on the following:

- Agricultural and forestry resources
- Mineral resources
- Population and housing
- Wildfire
- Socioeconomics

4.4.1 Aesthetics and Visual Resources

Geographic Scope

The geographic scope for the analysis of potential cumulative aesthetic impacts includes the project area and project vicinity within publicly accessible viewsheds of the project, as described in Section 3.1 Aesthetics and Visual Resources. The project viewshed is limited to those areas in close proximity to the project due to the surrounding development and lower elevation of the Corte Madera Creek flood control channel.

Cumulative Projects

Concurrent construction of the project with cumulative projects proposed within the same viewsheds could result in visual impacts during construction. Projects located within the same viewshed as the proposed project include the access ramp to Corte Madera Creek (#1), Lower Corte Madera Creek Improvement Study (#21), ~~and~~ Corte Madera Creek Project Phase II (#23), and the Learning Resources Center Project (#34). All other cumulative projects that would be constructed concurrently with the proposed project are located at a distance from the project and are not located within the same viewshed as the proposed project. There would be no cumulative construction or operational aesthetic impacts with projects that are located outside of the project viewshed.

Cumulative Impact

Impacts Avoided

The project would not result in cumulative impacts from new sources of lighting or glare or impacts on scenic highways.

Scenic Vistas

The proposed project and cumulative projects are not located within a designated scenic vista, but the project and cumulative projects are located within the viewshed of ridgelines along that

include scenic vistas. Due to the limited area of new land disturbance and changes proposed at a distance from any scenic vista, the cumulative impact on scenic vistas would be less than significant.

Visual Quality

The access ramp to Corte Madera Creek would be constructed prior to the proposed project and would be located in proximity to the floodwall. The access ramp would be a small structure that would appear similar to the existing floodwall. As discussed in Section 3.1, the proposed increase in floodwall height would also appear similar to the existing floodwall. The cumulative impact from addition of the floodwall and access ramp would be less than significant. The Corte Madera Creek Project Phase II project and Lower Corte Madera Creek Improvement Study project have not been designed, and the aesthetic impacts of these projects cannot be fully determined. The Corte Madera Creek Project Phase II and Lower Corte Madera Creek Improvement Study would be located near the lower College of Marin concrete channel removal project. Additional removal of the concrete channel and flood-control improvements to areas downstream of the concrete channel would appear consistent with the proposed concrete -channel removal and would result in a beneficial aesthetic impact. The Learning Resources Center Project would be constructed before the proposed project and would be in proximity to the floodwall. The new Learning Resources Center would be three stories in height and would appear similar to the existing two-story building at the project site and within the overall context of the college. The proposed increase in floodwall height also would appear similar to the existing floodwall; therefore, the cumulative aesthetic impact from addition of the floodwall and Learning Resource Center would be less than significant. ~~The cumulative aesthetic impact would be less than significant.~~

4.4.2 Air Quality

Geographic Scope

The geographic scope for criteria air pollutants is the San Francisco Bay Air Basin because regional air pollution is cumulative by nature within the air basin. The geographic scope for TACs includes projects within 1,000 feet of the project area because of the limited TACs generated by the project and because TACs would disperse at distances greater than 1,000 feet.

Cumulative Projects

Criteria Air Pollutants

The analysis of criteria pollutants assumes all projects that would be implemented within the air basin and the existing exceedance of the air quality standards. No single project by itself would be sufficient in size to result in regional non-attainment of ambient air quality standards. The project-level thresholds for criteria air pollutants set by Bay Area Air Quality Management District (BAAQMD) are based on levels by which new sources are not anticipated to contribute to an air quality violation or result in a cumulatively considerable net increase in criteria air pollutants. Therefore, if a project would exceed the identified construction or operational significance thresholds, its emissions would be cumulatively considerable, and if a project

would not exceed the construction or operational significance thresholds, its emissions would not be cumulatively considerable.

Toxic Air Contaminants

The only cumulative projects proposed within 1,000 feet of the proposed project include the Access Ramp to Corte Madera Creek (#1), the Cedar Tentative Map (#11), the Corte Madera Creek Project Phase II (#23), and the Sir Francis Drake Boulevard Rehabilitation (#24), and the Learning Resources Center Project (#34).

Cumulative Impacts

Criteria Air Pollutants

As discussed in Section 3.2 Air Quality, the San Francisco Bay Air Basin is in nonattainment for ozone, PM_{10}, and $PM_{2.5}$. The regional nonattainment status reflects a significant cumulative air quality impact. As discussed in Section 3.2, neither construction nor operation of the project would exceed the criteria air-pollutant thresholds set by BAAQMD. The criteria air-pollutant thresholds were set by BAAQMD to address the significant cumulative impact. The project's contribution to the cumulative air quality impact would be less than considerable and therefore less than significant.

Toxic Air Contaminants

The cumulative projects and the proposed project would generate toxic air contaminants (TACs) during construction and operation. The proposed project would include a new generator, but the generator would only be used up to 50 hours per year and would not be a considerable source of TACs. Construction of the Learning Resources Center Project would be completed before the proposed project and would not contribute to cumulative TACs because it would not generate TACs during the same time frame as the proposed project's construction. The Access Ramp to Corte Madera Creek and Sir Francis Drake Boulevard Rehabilitation would be constructed a year prior to the proposed project. The Corte Madera Creek Project Phase II would be constructed several years after the proposed project because planning, engineering, and funding are still required for the project. None of the cumulative projects would generate TACs at the same time as the proposed project because the construction schedules for the cumulative projects and proposed project do not overlap.

There are five existing permitted sources within 1,000 feet of the project site. The major arterial roads (i.e., Sir Francis Drake Boulevard) in the project vicinity could contribute additional risk; however, this would be small since the road does not have a substantial amount of truck traffic in this area and adequate information on annual average traffic counts and percentage of trucks is not readily available. The HRA prepared for the project (Appendix C) includes analysis of cumulative TACs to address the existing sources and the proposed project. The quantitative analysis of TACs provided in Table 4.4-1 demonstrates that the cumulative impact would not exceed BAAQMD thresholds and would be less than significant.

Table 4.4-1 Estimated Cumulative Health Risk at the Maximally Exposed Individual Receptor

Source	Maximum Cancer Risk (in 1 million)	Chronic Hazard Index	Annual Average $PM_{2.5}$ Exhaust Concentrations ($\mu g/m^3$)
Construction			
Existing permitted stationary sources [a]	13.0	0.026	0.26
Unmitigated project construction [b]	16.5	0.039	0.12
Total cumulative construction health risk	29.5	0.065	0.38
BAAQMD significance thresholds	100.0	10.0	0.80
Threshold exceeded?	No	No	No
Operations			
Existing permitted stationary sources [a]	13.0	0.026	0.26
Unmitigated project operations [b]	0.76	0.0002	0.001
Total cumulative operational health risk	13.77	0.026	0.256
BAAQMD significance thresholds	100.0	10.0	0.80
Threshold exceeded?	No	No	No

Notes:

[a] Permitted sources include generators and gas stations. The BAAQMD Distance Multiplier Tool went to 280 meters for generators, 300 meters for gas stations, and 300 meters for other sources. The health-risk values presented are adjusted to the maximally exposed individual receptor to the proposed project.

[b] This receptor location is the location where the maximum health risk would occur based on modeling. No real-world sensitive receptor occurs at this location.

4.4.3 Biological Resources

Geographic Scope

The geographic scope for the analysis of potential cumulative biologic impacts includes the Corte Madera Creek watershed.

Cumulative Projects

Direct cumulative impacts could occur if any projects within the vicinity of the project would be constructed at the same time as the proposed project. Of the projects presented in Table 4.3-1, only construction of the Winship Avenue Bridge Replacement Project could occur concurrently with the project. Indirect cumulative impacts could occur from habitat impacts within the

watershed. The majority of the proposed projects in Table 4.3-1 include some degree of temporary or permanent habitat impacts and are therefore considered in this analysis.

Cumulative Impacts

Impacts Avoided
No Habitat Conservation Plans (HCPs) or Natural Community Conservation Plans (NCCPs) have been approved in the project area or vicinity. No significant impacts from conflicts with an HCP or NCCP would occur.

Special-Status Species
A direct cumulative impact on special-status species would occur if the proposed project and cumulative project impacted the same special-status species. The proposed project and cumulative projects would only cause direct impacts on special-status species during construction. The only cumulative project that would be constructed at the same time as the proposed project is the Winship Avenue Bridge Replacement Project. The Winship Avenue Bridge Replacement Project is located approximately 2,000 feet north of the upstream end of Unit 4. The Winship Avenue Bridge Replacement Project is located on Corte Madera Creek and could impact the same aquatic and terrestrial special-status species as the proposed project in Unit 4. The Winship Avenue Bridge Replacement Project includes mitigation measures that require species pre-construction surveys, environmental awareness training, biological monitoring, fish rescue plan, water diversion and dewatering, steelhead critical habitat and Essential Fish Habitat (EFH) protection, and nesting bird protection. Because the Winship Avenue Bridge Replacement Project construction would be short-term and the impacts would be isolated to the bridge placement area, and the project includes mitigation measures to avoid impacts on special-status species, the potential cumulative impact on special-status species would be less than significant.

Riparian Habitat, Sensitive Natural Communities, and Wetlands
The Meadow Way Bridge (#2), San Anselmo Creek Flood Control – Nursery Basin Site (#3), Winship Avenue Bridge Replacement (#5), Lower Corte Madera Creek Improvement Study (#21), Lower Sleepy Hollow Improvements (#22), and Corte Madera Creek Project Phase II (#23) involve improvements to the creek and would be expected to impact riparian habitats, sensitive natural communities, and wetlands/waters, which also occur within the proposed project area. Each of the cumulative projects would involve long-term benefits to habitat, but construction would include temporary impacts on vegetation communities and habitat. The temporal impact on riparian habitat and sensitive natural communities for the cumulative projects could overlap because of the time needed for vegetation establishment and habitat restoration. The cumulative temporal impact on riparian habitats and sensitive natural communities is significant.

The project would temporarily impact 0.55 acre of riparian habitat and entail 1.56 acres of impact on brackish marsh during construction. The proposed project would also remove oak trees and impact stream and intertidal habitat within the concrete flood control channel. The proposed project would involve a considerable contribution to the temporal impact on riparian

areas, wetlands, and sensitive vegetation communities. The District would implement Mitigation Measure 3.3-1a, 3.3-2a, and 3.3-2b. Mitigation Measure 3.3-1a requires avoidance of sensitive natural communities or compensatory mitigation for any communities that cannot be avoided. Mitigation Measure 3.3-2a requires monitoring and management of the riparian and wetland habitats created by the project to ensure the created habitat is successful and compensates for temporary impacts. Mitigation Measure 3.3-2b requires replacement planting of removed trees, including replacement for oak trees at a minimum ratio of 4:1. The mitigation measures would avoid loss of sensitive natural communities and ensure successful restoration of riparian areas resulting in increased riparian and oak woodland habitat and sensitive natural communities after construction. Therefore, the project's contribution to a significant cumulative impact would be less than considerable after mitigation.

Conflict with Policies Protecting Biological Resources

The cumulative projects are each required to comply with local policies and ordinances for the protection of biological resources. All cumulative projects would need to obtain a tree removal permit for any applicable tree removal. There would be no cumulative conflict with policies and ordinances for the protection of biological resources.

Invasive Species

The proposed project and cumulative projects located on Corte Madera Creek could introduce invasive aquatic and terrestrial species to the area or transport materials to other areas through weeds or eggs on construction equipment or worker boots/waders. The cumulative impact from introduction and spread of invasive species and pathogens is potentially significant. The proposed project could contribute considerably to the cumulative impact because the proposed project would introduce construction equipment to the creek and could introduce new weeds or aquatic invasive species to the areas of temporary impact or transport aquatic invasive species to other areas. The District would implement Mitigation Measures 3.3-1e and 3.3-1g to avoid introduction or transfer of invasive species. Mitigation Measure 3.3-1e would avoid or minimize significant impacts from invasive species by requiring washing of vehicles and specific requirements to prevent introduction of pathogens and invasive plant species. Mitigation Measure 3.3-1g would avoid significant impact from invasive aquatic species through defining specific requirements to ensure construction equipment and materials are free of invasive aquatic species. These mitigation measures would prevent introduction of pathogens and invasive plant species to Corte Madera Creek and the surrounding area. Because the mitigation would avoid introduction of invasive species into the area, the project's contribution to the potentially significant cumulative impact would be less than significant with mitigation.

4.4.4 Cultural Resources and Tribal Cultural Resources

Geographic Scope

Impacts related to cultural resources are generally site-specific, and they depend on the specific localized resources affected and their potential to be found in the area. They are not typically additive or cumulative in nature. The project is not located within a historic district. There is no

indication that the project area has been used for human burial purpose, and no significant archaeological resources are known to exist within the project area.

Cumulative Projects

All identified current and reasonably foreseeable future projects in Table 4.3-1 that are within or in close proximity to the project area that involve ground disturbance have the potential to combine with the impacts of the project to result in cumulative impacts to unknown buried archaeological resources and human remains should they occur in the area. The only cumulative projects located close enough to the proposed project to result in cumulative impacts on cultural resources are the Access Ramp to Corte Madera Creek (#1)~~, and~~ Corte Madera Creek Project Phase II (#23), and the Learning Resources Center Project (#34). The remaining projects are separated from the project by a considerable distance, with intervening developed areas.

Cumulative Impacts

Impacts Avoided

The project would not affect any eligible historic built resources. The project would not contribute to significant impacts on historic architectural resources.

Archaeological Resources and Tribal Cultural Resources

As described in Section 3.4 Cultural Resources, record searches have been conducted to identify potential cultural resources in the project area. Two recorded resources were identified within the project area and eight within a 500-foot search buffer. No significant resources or resources eligible for listing in the National Register of Historic Places/California Register of Historical Resources were identified from these recorded resources. A field survey was conducted on July 28, 2020, to identify archaeological resources in the project area. No archaeological resources were found in the project vicinity. The District also consulted with Native Americans under AB 52 to identify any tribal cultural resources. As discussed in Section 3.15, no tribal cultural resources were identified in the project area. Despite these efforts and results, the inadvertent discovery of unknown archaeological resources or tribal cultural resources during construction from ground-disturbing activities cannot be entirely discounted. The inadvertent discovery of archaeological resources or tribal cultural resources resulting from the proposed project and cumulative projects could result in a significant cumulative impact on archaeological resources or tribal cultural resources if the resources were not adequately addressed to avoid destruction. Because no archaeological or tribal cultural resources are known to occur in the area, the nature of any archaeological or tribal cultural resource encountered during construction cannot be determined, and while unlikely, it is possible that resource encountered during construction of the proposed project could be part of a larger site or district that would potentially be disturbed during construction of cumulative projects. If the project were to encounter archaeological or tribal cultural resources that were part of a larger historic site or district, the project's contribution to the significant impact would be considerable. The District would implement Mitigation Measure 3.4-2, which specifies procedures to follow in the event of an inadvertent discovery to avoid damage of archaeological

resources. Because Mitigation Measure 3.4-2 defines procedures to avoid and minimize potential impacts to previously undiscovered resources including protecting resources in place, the project would avoid impacts on archaeological and tribal cultural resources with mitigation; therefore, the project's contribution to cumulative impacts on archaeological and tribal cultural resources would not be considerable, and would therefore be less than significant with mitigation.

Human Remains

No human remains are known to occur in the project area or vicinity. The cumulative projects and proposed projects would need to comply with Marin Development Code Section 22.20.040 (D), Public Resources Code Section 5097.98, and Health and Safety Code Section 7050.5, which specify requirements for discovery of human remains. No significant cumulative impact would occur due to compliance with state and county requirements for discovery of human remains.

4.4.5 Energy

Geographic Scope

The geographic scope of analysis for cumulative energy impacts is all projects within the Marin County Energy service territory since Marin County Energy would be the energy provider for the project.

Cumulative Projects

All of the cumulative projects in Table 4.3-1 are located within Marin County Energy territory. However, many of the cumulative projects would only require energy to fuel construction equipment and would not require a long-term energy supply.

Cumulative Impacts

Construction

As discussed in Section 3.5 Energy, under Impact 3.5-1, construction of the project would require the use of energy resources; however, energy consumption would be temporary and limited to the construction phases of the project. Construction would not require a large amount of energy due to the short duration of the construction (seven months) and limited amount of equipment and associated fuel requirement. In addition, the project would comply with Section 2485 of the California Code of Regulations, which reduces use of fuel during idling by limiting idling of heavy trucks traveling to and from the project area.

The projects identified in Table 4.3-1 would be subject to the same regulatory framework as the project for the use of fuel and energy during construction, which includes Bay Area Air Quality Management District Basic Construction Measures and the California Green Building Code. Compliance with the measures identified would ensure compliance with regulatory policies to minimize the potential for cumulative energy impacts. Therefore, the potential for cumulative energy impacts during construction would be less than significant.

Operation
As described in Section 3.5 Energy, under Impact 3.5-1, project operation would only require new energy resources to operate the proposed stormwater pump station. The pump station would only operate immediately following storm events when creek levels rise above the elevation of the existing outfall. The limited energy use from the project would not contribute considerably to a cumulative impact, and a significant cumulative impact would not occur.

4.4.6 Geology and Soils

Geographic Scope
The San Francisco Bay Area is a seismically active region with a wide range of geologic and soils conditions that can vary greatly within a short distance. Accordingly, geologic and soils impacts tend to be site specific and depend on the local geology and soil conditions. For these reasons, the geographic scope for potential cumulative geologic and soils impacts consists of the project elements locations and only the immediately adjacent areas with similar geologic and soil conditions. In general, to have a cumulative impact on geology and soils, two or more projects would have to be located within 1,000 feet or less to cause cumulative geologic and soils impacts.

Cumulative Projects
The Access Ramp to Corte Madera Creek (#1), Cedar Tentative Map (#11), Lower Corte Madera Creek Improvement Study (#21), Corte Madera Creek Project Phase II (#23), and Sir Francis Drake Boulevard Rehabilitation Project (#24), and the Learning Resources Center Project (#34) would occur in proximity to portions of the project.

Cumulative Impacts

Seismic Shaking and Liquefaction
Many parts of the Bay Area are at risk of personal or property damage related to seismic shaking, seiche or tsunami, or liquefaction. People working on the project would be subject to these risks, but this risk is not isolated to the project area. The project area (as with all development projects in the region) must comply with design standards developed to minimize risk from damage from seismic events. The project also does not propose any new structures that could create a risk to life or property as a result of seismic shaking. The cumulative impact would be less than significant.

Soil Loss
All cumulative projects that exceed 1 acre in surface disturbance would be required to obtain Construction General Permit coverage and implement SWPPP. The SWPPP would include best management practices to control runoff and prevent erosion. Through compliance with the Construction General Permit, the potential for erosion impacts and loss of topsoil would be reduced to less-than-significant level. The project would not contribute to a cumulative erosion impact.

Paleontological Resources
As discussed in Section 3.6 Geology and Soils, the geologic and soil units within the project area are of low paleontological sensitivity. A significant cumulative impact on paleontological resources would not occur.

4.4.7 Greenhous Gas Emissions

Greenhouses gases are by nature a cumulative impact as a result of global activities. The analysis of greenhouse gas emission presented in Section 3.7 Greenhouse Gas Emissions is in a cumulative context because the impact is inherently cumulative. The project's contribution to the significant cumulative global greenhouse gas impacts would be less than considerable, as discussed in Section 3.7.

4.4.8 Hazards and Hazardous Materials

Geographic Scope

The geographic scope of analysis for cumulative hazardous materials impacts encompasses the project area and a 0.25-mile buffer from the project and travel routes. Many impacts related to hazardous materials are largely site specific and depend on the nature and extent of the hazardous materials release as well as existing and future soil and groundwater conditions. For example, hazardous materials incidents tend to be limited to a smaller, more localized area surrounding the immediate location and extent of the release and could only be cumulative if two or more hazardous materials releases overlap spatially. (An exception to this is a groundwater plume of contaminants released from an otherwise isolated source.) Consequently, hazardous materials impacts related to routine use, accidental release, or being located on a listed hazardous materials site compiled pursuant to Government Code Section 65962.5 are site specific and are not cumulative in nature. In addition, impacts relative to hazardous materials are also time--specific.

Cumulative Projects

The cumulative projects identified in Table 4.3-1 would likely require transport of hazardous materials on Highway 101 and Sir Francis Drake Boulevard during construction. Construction of cumulative projects #1 through #5, #16, #18, ~~and~~ #22 through #25, and #34 would require transport of small volumes of hazardous materials for vehicle and equipment operations during construction.

Cumulative Impact

Impacts Avoided
As discussed in Section 3.8 Hazards and Hazardous Materials, the project would have no impact with respect to being located near hazardous material sites, within two miles of an airport or airstrip, or within wildland fire hazards. The project does not include the use or installation of septic tanks or alternative water disposal systems. Therefore, the project could not contribute to cumulative impacts related to these topics and are not discussed further.

Routine Use, Transport, or Disposal of Hazardous Materials
The projects identified in Table 4.3-1 would involve construction activities using equipment that would use fuels, oil and lubricants, and cleaning solvents. Construction and demolition activities are required to comply with numerous hazardous materials and stormwater regulations designed to ensure that hazardous materials are transported, used, stored, and disposed of in a safe manner to protect worker safety, to reduce the potential for a release of construction-related fuels or other hazardous materials to affect stormwater and downstream receiving water bodies, and to respond to accidental spills, if any. The cumulative impact from routine use, transport, and disposal of hazardous material would be less than significant.

Handle Hazardous Materials within 0.25 Mile of Schools
As discussed in Section 3.8 Hazards and Hazardous Materials, the project is located within 0.25 mile of three schools. The only cumulative projects located within 0.25 mile of the same schools include the Access Ramp to Corte Madera Creek (#1) and Corte Madera Creek Project Phase II (#23), and the Learning Resources Center Project (#34). Project construction equipment emissions, materials handling, and waste handling would have the potential to impact schools within 0.25 mile of the cumulative project elements. However, the proposed project and cumulative projects are required to adhere to Occupational Safety and Health Administration (OSHA) and California OSHA health and safety requirements when handing hazardous materials; adhere to Resource Conservation and Recovery Act and U.S. Department of Transportation regulations when transporting hazardous materials; and adhere to all applicable federal, state, and local laws when disposing of soil and hazardous waste. The proposed project and cumulative projects would not result in a significant cumulative impact.

Emergency Response
The proposed project would not be constructed at the same time as the Sir Francis Drake Boulevard Rehabilitation Project and would not affect potential emergency evacuation on Sir Francis Drake Boulevard. No cumulative impacts on emergency evacuation would occur.

4.4.9 Hydrology and Water Quality

Geographic Scope
The cumulative geographic scope of analysis for hydrology and water quality is the Corte Madera Creek watershed.

Cumulative Projects
All of the cumulative projects are located within the Corte Madera Creek watershed. Projects that could contribute to significant cumulative water quality impacts include the following:

- Access Ramp to Corte Madera Creek (#1)
- Meadow Way Bridge (#2)
- San Anselmo Creek Flood Control – Nursery Basin Site (#3)
- San Anselmo Creek Flood Control – 634 – 636 Demolition (#4)
- Hillview Pump Station and Storm Drain (#5)
- Winship Avenue Bridge Replacement Project (#6)

- Lower Corte Madera Creek Improvement Study (#21)
- Lower Sleepy Hollow Creek Improvements (#22)
- Corte Madera Creek Project Phase II (#23)
- Azalea Avenue Bridge Replacement Project (#26)
- Nokomis Avenue Bridge Replacement Project (#27)
- Madrone Avenue Bridge Replacement Project (#28)
- Center Boulevard Bridge Replacement Project (#29)

Cumulative Impacts

Impacts Avoided

The project would have no impact related to creating or contributing to runoff water that would exceed the capacity of stormwater drainage systems or placing housing in an area with potential for inundation by seiche, tsunami, or mudflow. Therefore, the project would not have the potential to contribute to a significant cumulative impact of these kinds. The following discussions analyze the cumulative impacts relative to flooding, water quality, erosion, and groundwater.

Flooding within the Ross Valley and Cumulative Projects

As discussed in Chapter 2, Project Description, flooding regularly occurs within the Ross Valley watershed, which includes Corte Madera Creek. The District is implementing the Ross Valley Flood Protection and Watershed Program (Program), which includes multiple projects listed in Table 4.3-1 to address the existing flooding conditions. The Program would implement a phased program over the next 30 years to achieve designated levels 10- to 25-year flood-event protection (Phase 1) and 25- to 100-year flood-event protection (Phase 2). The Program includes a combination of several flood control elements that, once collectively implemented, would provide flood-risk reduction on a watershed-wide scale. The elements include flood diversion and storage (FDS) basins, located in the upper reaches of the watershed to detain peak flows into the creek network during flood events, bridge replacements in Fairfax, San Anselmo, and Ross to remove impediments to flows in the creek and reduce localized flooding, and creek improvements in the lower end of the watershed to increase capacity and stability in the lower reaches to handle flood flows as they move through the watershed. In addition to the FDS basins and elements that increase creek capacity, the Program includes additional flood-risk reduction activities, including policies to encourage low-impact development (LID), flood preparedness, and educational activities throughout the lifespan of the Program. These elements are proposed to reduce the frequency and severity of flooding in the Ross Valley.

These proposed elements have been included after technical analysis[1] determined that they were the most suitable actions that can be taken to reduce flooding risk in the Ross Valley watershed, given the regional topography, the existing creek network, flow bottlenecks, and the constraints on available space to develop program elements. According to hydraulic model simulations, neither increasing creek capacity alone nor developing FDS basins alone would be sufficient to prevent flooding within the Corte Madera Creek watershed during a 100-year flood.[2] Notably, implementing all of the creek capacity elements alone will not provide the desired level of flood-risk reduction. To achieve 100-year flood protection, some volume of flood flows will need to be captured in FDS basins. There is some flexibility in the sizing, locations, and operation of the FDS basins throughout the watershed; however, they must be located strategically to assist in meeting the flow-rate targets in each subwatershed. By installing both FDS basins and elements that increase creek capacity, a 100-year flood event similar to the December 2005 flood could be contained within the banks of the stream network, thereby reducing flood risk throughout Ross Valley. Therefore, implementation of the Program would have a beneficial effect on cumulative flooding and flood risk within the Corte Madera Creek watershed.

In order to meet the Program's primary objective, which is to substantially reduce the frequency and severity of flooding within Ross Valley, a hydraulic analysis of the Ross Valley was undertaken to identify where flooding is occurring during various storm-event scenarios.[3] Through this analysis, a combination of critical reaches and flow targets was identified to support the design of the Program, as described below.

Critical Reaches

Based on the analysis, there are four "critical reaches" in Ross Valley where, during large floods, floodwaters overflow and escape from the creeks and flow for extended distances on the historical floodplain as separate side-streams apart from the main channel. During very large floods, these floodwaters damage structures in the floodplain and threaten public safety. Owing to their limited conveyance capacity, these four critical reaches represent the weakest links in the creek system. Accordingly, they are the focus of the Program elements aimed at increasing creek capacity. The four critical reaches are:

1. Fairfax Creek critical reach, located within the Fairfax subwatershed;

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[1] This analysis included the *Capital Improvement Plan Study for Flood Damage Reduction and Creek Management for Flood Zone 9/Ross Valley* (CIP) (Stetson Engineers Inc., 2011), the *Ross Valley Flow Reduction Study Report* (CH2M, 2015), and hydraulic modeling.

[2] The 100-year flood is the flood event that has a 1% chance of occurring or being exceeded in any year based on historical records and model projections.

[3] This analysis included the *Capital Improvement Plan Study for Flood Damage Reduction and Creek Management for Flood Zone 9/Ross Valley* (CIP) (Stetson Engineers Inc., 2011) and hydraulic modeling.

2. Sleepy Hollow Creek critical reach, located within the San Anselmo subwatershed;
3. San Anselmo Creek critical reach, including downtown San Anselmo, located within the San Anselmo subwatershed; and
4. Corte Madera Creek and Ross Creek critical reach, located within the Ross subwatershed.

Flow Targets

Increasing creek capacity in the critical reaches, while important, is not sufficient in all locations by itself to reduce flooding to protect life and property in the area. Rather, the Program must also reduce flows upstream of the critical reaches, an outcome that can be achieved by building FDS basins. Three locations in the watershed (one in each of the Fairfax, San Anselmo, and Ross subwatersheds) have been assigned flow targets – meaning locations where flows should be reduced to specified levels in order to reduce flooding downstream in the critical reaches.

The three key flow targets (#26 on Figure 4.3-1) are as follows:

1. Fairfax Subwatershed: Target 100-year flow of 1,100 cfs at the Fairfax Town Hall.
2. San Anselmo Subwatershed: Target 100-year flow of 4,540 cfs at Sycamore Bridge in San Anselmo.
3. Ross Subwatershed: Target 100-year flow of 5,540 cfs at the USGS Streamflow Gage at Ross.[4]

These targets were developed through hydraulic modeling to reflect the maximum flow rate that could be allowed at each location and still achieve containment of the anticipated flow from a 100-year flood event in the identified critical reaches, assuming all elements identified in the Program to increase the creek capacity are implemented.

Cumulative Development Projects

Implementation of projects in Table 4.3-1 may increase impervious surface areas associated with development. The largest of these projects is the Marin Healthcare District Project, which would include construction of a new five-story building and a six-story parking structure with ground level footprint totaling approximately 40,000 square feet. Each of the development projects would be required to comply with federal, state, and local requirements regarding stormwater management, including Provision E.12 of the State Water Board under the Phase II NPDES Municipal Regional Permit. Provision E.12 of the 2013 MS4 permit includes post-construction stormwater management requirements that permittees (such as Marin County) must incorporate into their land use approvals. Site design measures (such as stream setbacks and buffers, rooftop and impervious area disconnection, and vegetated swales) must be implemented for projects approved by the County that create or replace between 2,500 and

[4] The flow target of 5,540 cfs at the USGS Streamflow Gage at Ross is intentionally in alignment with the proposed design flow rate for the USACE Project.

5,000 square feet of impervious surface. Projects that create and/or replace 5,000 square feet or more of impervious surface must implement measures for site design, source control, runoff reduction, stormwater treatment, and baseline hydromodification management as defined in the 2013 MS4 permit. These requirements have been adopted by Marin County and are codified in Section 24.04.627 (Permanent Stormwater Controls for New and Redevelopment) of the Marin County Municipal Code. Compliance with local ordinances, design review, and Provision E.12 would reduce the contribution of these projects to flood conditions within the Ross Valley such that the cumulative impact from proposed development projects would be less than significant.

Cumulative Effects

Flooding

Implementation of the cumulative flood-risk reduction projects included in the Program would result in a cumulative reduction in flood risk in Ross Valley. The cumulative impact from implementation of the proposed project and cumulative flood-control projects in Ross Valley (including cumulative projects #2, 3, 4, 6, 26, 27, 28, and 29) is shown in the future condition analysis in Section 3.9 Hydrology and Water Quality (refer to Figure 3.9-7 through Figure 3.9-9). The cumulative impact of the proposed project and cumulative projects on flooding would be beneficial and no adverse cumulative impact would occur.

Water Quality, Erosion, and Sedimentation

The proposed project and cumulative projects that involve greater than 1 acre in surface disturbance are required to comply with the Construction General Permit and prepare and implement a project-specific SWPPP and sediment and erosion-control BMPs. Construction of the proposed project and cumulative projects would not result in a significant cumulative impact on water quality, erosion, or sedimentation.

In combination with other projects that alter structures in the Corte Madera Creek channel, in particular the flood-risk reduction projects, the proposed project could alter erosion and sediment deposition processes. The cumulative impact from implementation of the proposed project and cumulative flood-risk reduction projects in Ross Valley are shown in Figure 3.9-7 through Figure 3.9-9. As discussed in Impact 3.9-2 in Section 3.9 Hydrology and Water Quality, the bank and bed stability and channel widening project elements would result in a cumulative beneficial erosion and siltation impact. Because the analysis in Section 3.9 addresses future conditions with implementation of cumulative projects, the analysis also addresses the cumulative impact. As demonstrated in Section 3.9, the cumulative impact would be less than significant.

Groundwater

The project would only require very localized dewatering of groundwater during excavation of the fish pools and the lower Corte Madera Creek concrete-channel removal. The dewatering would be highly localized at each area of excavation and would only last a few weeks. Due to the short duration and limited amount of water that could be removed by the project, there is

no potential for cumulative groundwater impacts because no cumulative project would require dewatering in proximity to the proposed project at the same time.

4.4.10 Noise

Geographic Scope

The geographic context for cumulative noise and vibration impacts includes projects within 1,000 feet of the proposed project. Projects located at distances greater than 1,000 feet from the proposed project would not generate noise levels that would be considerable in combination with anticipated project noise. Vibration dissipates rapidly with distance. The geographic scope of analysis for vibration is 100 feet.

Cumulative Projects

The Access Ramp to Corte Madera Creek (#1), the Cedar Tentative Map (#11), the Lower Corte Madera Creek Improvement Study (#21), Corte Madera Creek Project Phase II (#23), and Sir Francis Drake Boulevard Rehabilitation Project (#24), and the Learning Resources Center Project (#34) are located within 1,000 feet of portions of the project.

Cumulative Impacts

Impacts Avoided

As described under Section 3.10 Noise, the project would have no impact related to exposing people to excess noise due to proximity to an airport or private airstrip. Because the project area would not involve locating people near or increasing use of an airport or private airstrip, there would be no significant cumulative noise impacts to which the project would contribute.

Noise and Vibration

The proposed project and cumulative projects would only generate substantial noise and vibration during the construction phase. Cumulative noise and vibration impacts would, therefore, only occur if the proposed project and cumulative projects within 1,000 feet of the proposed project were constructed at the same time. The access ramp to Corte Madera Creek, ~~and~~ Sir Francis Drake Boulevard Rehabilitation, and Learning Resources Center Project would be constructed prior to the proposed project and would not cause a cumulative noise impact. The Cedar Tentative Map would subdivide a parcel but would not result in any new noise or vibration. The remaining cumulative projects are in very early planning and design phases and would be constructed after the proposed project. Cumulative noise and vibration impacts would not occur because none of the cumulative projects would be constructed in proximity to the proposed project at the same time as the proposed project.

4.4.11 Public Services

Geographic Scope

The geographic scope of analysis for public services includes the Town of Ross and unincorporated Marin County, which provide public services to the project area.

Cumulative Projects

One of the projects identified in Table 4.3-1 would be under construction at the same time as the project (Winship Avenue Bridge Replacement Project).

Cumulative Impacts

Demand for Public Services

Incidents could occur during construction requiring law enforcement, fire protection, or emergency medical services. As discussed in Section 3.11 Public Services, Impact 3.11-1, construction of the flood-risk reduction project is not expected to increase demand for law enforcement, fire protection, and emergency medical services. In addition, the project construction would be temporary and would not generate additional permanent employees or residents in the project area; therefore, the project would not require the construction of new or physically altered governmental facilities that are not already planned. The project in combination with other projects would have less than significant cumulative impacts related to public services.

Maintenance of Public Facilities Including Roads

The project and cumulative projects would result in temporary increase in truck traffic on Sir Francis Drake Boulevard during construction. Sir Francis Drake Boulevard is currently undergoing pavement rehabilitation. The proposed project and cumulative project truck traffic would be within the design standards for Sir Francis Drake Boulevard. The cumulative impacts on maintenance of public roads would be less than significant.

4.4.12 Recreation

Geographic Scope

The geographic scope of analysis for recreation includes the parks, trails, and bikeways affected by the proposed project.

Cumulative Projects

Cumulative projects that could affect the same parks, bikeways, and trails as the proposed project include the following:

- Lower Corte Madera Creek Improvement Study (#21)
- Corte Madera Creek Project Phase II (#23)
- North-South Greenway Gap Closure Project (#25)

Cumulative Impacts

Impacts Avoided

Construction and operation of the project would not require the designation of additional park land to remain in conformance with locally acceptable or adopted park standards. Therefore, there would be no significant cumulative impact on these resources to which the project would contribute.

Construction of Recreational Facilities
The proposed project and North-South Gap Closure Project would require construction of segments of Bike Route 20. The North-South Gap Closure Project is located over 1 mile from the proposed project and would not result in cumulative impacts from construction and modification of Bike Route 20. Cumulative impacts would not occur.

The Lower Corte Madera Creek Improvement Study and Corte Madera Creek Project Phase II projects could require modifications to Bike Route 20 to allow for the floodplain improvements. Both projects are in early-phase planning and design, and the impacts on Bike Route 20 from either project would be speculative and would occur after the projects were constructed. Cumulative impacts would not occur.

Impacts on Recreational Opportunities
Construction of the proposed project and North-South Greenway Gap Closure Project could occur in 2022. The proposed project's temporary closure of Bike Route 20 and North-South Greenway Gap Closure Project are separated by over 2 miles, and each project would be able to detour bicyclist traffic during construction without affecting the other project. A cumulative adverse impact on recreational opportunities would not occur.

4.4.13 Transportation and Traffic

Geographic Scope
The geographic scope for transportation and traffic impacts includes the roadways that would be used to access the proposed project during construction.

Cumulative Projects
All of the cumulative projects in Table 4.3-1 would require access on Sir Francis Drake Boulevard.

Cumulative Impacts

Conflict with Program, Plan, Ordinance, or Policy Addressing the Circulation System
The Congestion Management Program (CMP) for Sir Francis Drake Boulevard was prepared to address cumulative traffic impacts on Sir Francis Drake Boulevard. The threshold for analysis of cumulative impacts includes generation of greater than 100 vehicle trips during peak hours. As discussed in Section 3.13, Impact 3.13-1, the proposed project would generate an average of 94 trips per day and less than the 100-trips-per-peak-hour CMP threshold. The project would not contribute considerably to a significant cumulative traffic impact on Sir Francis Drake.

Conflict with CEQA Guidelines 15064.3(b)
CEQA Guidelines Section 15064.3 (b), which requires evaluation of vehicle miles traveled, is a cumulative impact analysis by nature and is intended to address new cumulative traffic generated by development. The project-level threshold for evaluating a significant vehicle-miles-traveled impact is therefore the same as the cumulative threshold. As discussed in Section 3.13, Impact 3.13-2, the project construction would generate less than the significance

threshold used for new development. The project would not contribute considerably to a significant vehicle-miles-traveled impact.

Traffic Hazards and Emergency Access
The project would require detours of bicycle and pedestrian traffic during construction. The project would also require very short-term lane closures at College Avenue and Laurel Avenue. The temporary detours and lane closures would not coincide with any other cumulative project construction that would be occurring in the area. No cumulative impact on traffic hazards or emergency access would occur.

4.4.14 Utilities and Service Systems

Geographic Scope
The geographic scope of analysis for utilities and service systems is the region served by the same utility and service providers.

Cumulative Projects
All of the projects in Table 4.3-1 are located in the same utility service area as the proposed project.

Cumulative Impacts

Relocation or Construction of Utilities
As discussed in Section 3.15 Utilities and Service Systems, Impact 3.15-1, the project would not require the construction of new facilities for water or wastewater or require the relocation of any facilities. The project would require a temporary tap to a PG&E electrical line at the stormwater pump station. The temporary tap is not located in proximity to any cumulative projects, and the very limited use of electricity when the pump station is operating would not result in a significant cumulative impact that could cause expansion of any electrical utilities. The cumulative impact would be less than significant.

Sufficient Water Supplies, Wastewater Treatment, and Landfill Capacity
The analysis of water, wastewater, and landfill capacity is by its very nature a cumulative impact analysis because it requires consideration of the capacity of the water supply, wastewater supply, and landfills to adequately serve existing and proposed uses. As described in Section 3.15 Utilities and Service System, project construction would have short-term and less-than-significant impacts on water supplies, wastewater, and landfill capacity. Operation and maintenance activities would not create long-term requirements for additional water, waste water, or landfill capacity. Therefore, the project would not cause a significant cumulative impact on these resources.

4.4.15 Forestry Resources

Geographic Scope

The geographic scope for the analysis of potential cumulative forestry resources impacts includes the Corte Madera Creek watershed.

Cumulative Projects

Several of the cumulative projects will require removal of trees, including the following:

- San Anselmo Creek flood control – nursery basin site (#3)
- Hillview pump station and stormdrain (#5)
- Brownridge tree removal (#12)
- Cooney tree removal (#14)
- Real Equity tree removal (#20)
- Lower Sleepy Hollow Creek Improvements (#22)
- Corte Madera Creek Project Phase II (#23)
- Learning Resources Center Project (#34)

Cumulative Impact

The cumulative projects identified in Table 4.3-1 are required to obtain a permit from Marin County or other local jurisdictions for removal of trees greater than 6 inches diameter at breast height. The County and local tree permits require replacement plantings for trees that will be removed by the cumulative projects. Compliance with the mitigation included in each project's tree removal permit will result in replacement of trees removed by cumulative projects. The cumulative projects in combination with the proposed project would not result in a cumulative impact on forestry resources because each of the cumulative projects would provide mitigation to offset the trees removed. The cumulative impact would be less than significant. ~~Land Use and Planning~~

4.4.16 Land Use and Planning

Geographic Scope

The geographic scope of land use and planning impacts includes the Town of Ross and unincorporated Kentfield areas.

Cumulative Projects

Cumulative projects located within the geographic scope of analysis include the Winship Avenue Bridge Replacement Project (#6), the access ramp to Corte Madera Creek (#1), a number of minor structures, tree removal, and land-use modifications (projects #7 #8, #9, #10, #11, #12, #13, #15, #17, #19, and #20), ~~and~~ the Marin Health Care District, and the Learning Resources Center Project (#34).

Cumulative Impacts

Impacts Avoided
The project would not cause a significant environmental impact due to a conflict with a land use plan or regulation adopted for the propose of avoiding or mitigating an environmental effect and would, therefore, not cause a significant cumulative impact.

Physically Divide a Community
Neither the proposed project nor any cumulative project proposes any infrastructure that would physically divide a community. A significant cumulative impact would not occur.

Substantial Alteration of the Character of the Community
The reduction in canopy cover at Frederick Allen Park would result in a temporary reduction of the urban forest and visual separation from private properties on Sir Francis Drake Boulevard. No cumulative projects are proposed within Frederick Allen Park or the immediate surroundings. The cumulative projects would not affect the character of the park and surrounding residential areas. No cumulative impacts on the character of the community would occur.

4.5 References

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