CORTE MADERA

Community Profile: Corte Madera

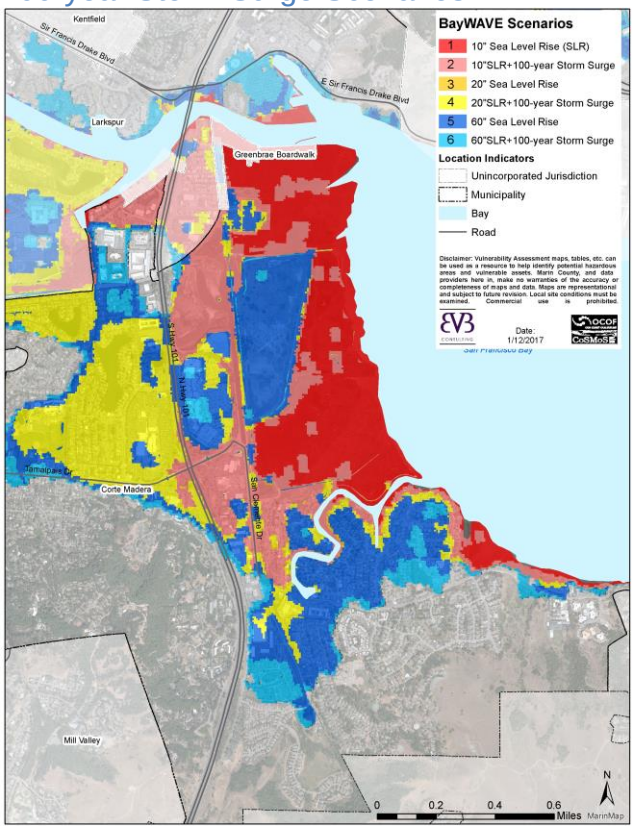
Corte Madera is a primarily residential community with several large commercial areas that take advantage of the highway corridor. These commercial areas serve the entire region and include outdoor malls, auto dealerships, restaurants, and other local business. In the near-term, 230 acres could be exposed to sea level rise. By the long-term, 906 acres could be exposed to sea level rise and 994 acres could be exposed with an additional 100-year storm surge. Key vulnerabilities in Corte Madera include:

- Homes along the tributaries to Corte Madera Creek may be vulnerable in the near-term.
- Commercial areas on Paradise Drive may be vulnerable to sea level rise in the near-term, and storm surges sooner.
- Segments of the 101 could be vulnerable to seasonal storm surges in the near-term, and sea level rise in the medium to long-terms. Access to the community from the US Highway 101 corridor may become increasingly difficult with chronic flooding.
- Marin Country Day School, Marin Montessori, Cove Elementary, and Neil Cummins elementary could be vulnerable across the scenarios.
- Mariner Cove and Marina Village are already susceptible to subsidence and could be vulnerable to sea level rise surface flooding in the near-term.
- Madera Gardens and the Corte Madera Town Center could be vulnerable to the 100-year storm surge in the medium-term, scenario 4, and sea level rise in the long-term, scenario 6.
- Stormwater pump stations could become tidally influenced and overburdened. If the pump station fails or capacity is exceeded, the surrounding neighborhoods could flood.
- Marsh land degradation or loss at the shoreline and Corte Madera Creek tributaries.
- The fire station on Paradise Drive could experience flooding impacts and access issues in the medium-term.
- Police serving the community are headquartered in Larkspur. Flooded roads could increase response times, and at worst, low lying areas become blocked to vehicles.
- California Highway Patrol (CHP) Marin headquarters is vulnerable to subsidence and sea level rise in the medium-term.

IMPACTS AT-A-GLANCE: SCENARIO 6

1,500+ living units	9,500+ people
994 acres exposed	79 commercial parcels
16 miles of roads	
Storm, tidal, and subsidence impacts already occur	Corte Madera Caltrans Central Marin PD Corte Madera Fire CHP Larkspur-Corte Madera School District HOAs Property Owners
$1.4 billion worth of assessed property value; assets vulnerable; $1.5 billion in single family market value[189]	

Map 77. Corte Madera Sea Level Rise and 100-year Storm Surge Scenarios



[189] 2016 dollars

CORTE MADERA

Housing at the end of Lucky Drive. Corte Madera. Credit: Marin County DPW

Vulnerable Assets

Corte Madera's most vulnerable assets in the near-term include commercial and residential south of US Highway 101 and along Corte Madera Creek. In the long-term, flooding could pass through the US Highway 101 corridor, flooding commercial development, and residential west of the highway.

Land

Corte Madera is one of the County's large municipalities and has relatively long length of shoreline that is protected by armoring with development not too far behind in most cases. Corte Madera also features productive tidal marshes that may help preventing major flooding before the medium-term. Note also, that Corte Madera city limits extend well into the upland valleys. However, unlike communities further south, Corte Madera has considerable low-lying areas, especially historic marshes filled for development.

Acres

In the near-term, 230 acres, or eight percent of Corte Madera, could be exposed to tidal flooding and another 200 acres could be exposed to storm surge flooding only. In Medium-term scenario 3, eleven percent of Corte Madera, or about 300 acres could be exposed to sea level rise tidal flooding at MHHW. With the additional 100-year storm surge in scenario 4, twice this area could face nuisance storm-surge flooding. In the long-term more than thirty percent of Corte Madera could be subject to MHHW tidal flooding and 100-year storm surge flooding.

Table 84. Corte Madera Exposed Acres

Scenarios		Acres	
		#	%
Near-term	1	230	8
	2	430	15
Medium-term	3	313	11
	4	640	22
Long-term	5	906	32
	6	994	35

Source: MarinMap, CoSMoS

Table 85. Corte Madera Vulnerable Parcels at MHHW

Scenarios		Parcels	
		#	%
Near-term	1	9	0
	2	201	6
Medium-term	3	68	2
	4	635	17
Long-term	5	1,104	30
	6	1,535	42

Source: MarinMap, CoSMoS

Parcels

Examining how this acreage is divided in to parcels for development and reservation, and what uses are on the land can provide a representation of the human activities that could be vulnerable in Corte Madera. In the near-term, few parcels could be vulnerable to tidal flooding; however, 200 could be vulnerable to 100-year storm surge flooding. In the medium-term, nearly 70 parcels could experience tidal flooding. Several of these are marshes and parklands, though some residential parcels off Lucky Drive could be vulnerable to flooding by this time period. A 100-year storm could flood, almost 20 percent of parcels with bay storm waters. In the long-term, more than 1,100 parcels may be subject to tidal and storm-surge flooding. These parcels constitute one-third of Corte Madera's parcels. With an addition 100-year storm surge, more than 40 percent of Corte Madera could be impacted by flooding. This level of flooding would be devastating to development and property owners.

CORTE MADERA

Table 86. Corte Madera Vulnerable Parcels by Land Use

Land Use	Scenarios					
	1		3		5	
	Near-term		Medium-term		Long-term	
	#	Ac.	#	Ac.	#	Ac.
Commercial Improved			4	3	70	95
Commercial Unimproved					8	3
Industrial Improved					5	8
Industrial Unimproved					3	5
Residential	3	1	57	28	944	152
Multi-Family Improved					3	1
Single Family Attached			2	25	66	3
Single Family Improved	2	0.6	55	9	871	147
Single Family Unimproved	1	0.4	2	0.4	4	1
Tax Exempt	3	237	4	274	52	472
Exemption Improved	1	3			10	10
Exemption Vacant	2	25	1	3	3	27

Source: MarinMap, CoSMoS

Table 87. Corte Madera Vulnerable Residential and Commercial Parcels

Land Use	Scenario					
	1		3		5	
	Near-term		Medium-term		Long-term	
	#	%	#	%	#	%
Residential	3	0	57	3	944	29
Commercial			4	3	79	66

Source: MarinMap, CoSMoS.

Across land uses, the majority of acreage in the near-term is dedicated to tax exempt lands, which are typically parks and open space, and this case, mostly marshes. Residential is also vulnerable in the Marina Village and Mariners Cove. In the medium-term, commercial parcels along San Clemente Drive could expect tidal impacts in the parking lots. In the long-term, all of the marshes are flooded, as are most of the neighborhoods east of Paradise Drive. These nearly 1,000 parcels account for thirty percent of Corte Madera residential parcels. The eighty parcels that could expect tidal flooding impacts on a regular basis account for seventy percent of commercial parcels in Corte Madera. This is a significant portion of commercial properties in the community. Moreover, these businesses serve as a regional center of commerce serving more than just the Corte Madera community. Several of the businesses also sell high value items, such as cars, furniture, and more. Of note, a few industrial use parcels could face tidal flooding.

Buildings

Buildings on the flatlands of Corte Madera were built on filled in marshes that extend to Kentfield, and are already vulnerable to subsidence. East of U.S> High 101, Mariner Cove is built on fill and is not levee protected. Marina Village is protected to the north by a levee. However, the eastern side of Marina Village is raised by fill and may be susceptible to sea level rise along San Clemente Creek first. Mariners Cove may be susceptible to sea level rise along San Clemente Creek as well. Further east along the roadway are commercial centers that are fronted by marsh lands tempered with an earthen levee used as a trail. These commercial areas, including Aegis Senior Living complex, may be vulnerable across all of the sea level rise scenarios, first impacting the low-lying car dealership area and spreading outwards.

In long-term scenario 5, the area north of US 101 including the Corte Madera Town Center, could also be impacted. While it is plausible this area could be reached by storms in the medium-term, long-term sea level rise could burden the area with regular tidal influences. Water could also impact the area north of the highway from the creek system and channels extending into the city. This area is also impacted by stormwater backups due to tidal influences that would worsen. In fact, this issue may have led to a two week shut down of half of Neil Cummings Elementary School.

CORTE MADERA

Table 88. Corte Madera Vulnerable Buildings by Scenario

Scenarios		Buildings	
		#	%
Near-term	1	5	0
	2	255	7
Medium-term	3	138	4
	4	804	21
Long-term	5	1,283	33
	6	1,468	38

Source: MarinMap, CoSMoS

Table 89. Corte Madera Vulnerable Buildings Average Flood Depths* at MHHW

Flood Depth (feet)	Scenarios		
	Near-term	Medium-term	Long-term
	1	3	5
0.1-1	1	43	34
1.1-2	4	79	240
2.1-3	0	10	206
3.1-4		1	200
4.1-5		2	240
5.1-6			224
6.1-7			106
7.1- 8			15
8.1-9			1

Source: MarinMap, CoSMoS
**Flood depth data is not available for all exposed areas and assets.*

Table 90. Corte Madera Vulnerable Buildings' FEMA Hazus Storm Damage Cost* Estimates in Long-term Scenario 6

Number of Buildings in Scenario 6	1,468
Yellow Tag :Minor Damage **$5,000**	$7,340,000
Orange Tag: Moderate Damage **$17,001+**	$24,957,468
Red Tag-Destroyed **Assessed structural value**	$726,321,314

Source: MarinMap, CoSMoS
** 2016 dollars*

As seen in Table 88, in the near-term, buildings are not impacted until the 100-year storm surge condition is applied, amounting to 255 buildings. In the medium-term, nearly 140 buildings may be vulnerable to tidal flooding. And more than six hundred more buildings are vulnerable with the 100-year storm surge coincidence. These figures constitute one-fifth of the community's buildings. By scenario 5, nearly 1,300 buildings could expect tidal flooding impacts, and a few hundred more could be damaged from storm surge impacts.

Table 89 indicates how many buildings could fill with one, two, or ten feet of water when flooded due to sea level rise at MHHW. In the near-term, five vulnerable buildings could expect less than or equal to two feet of tide waters. This trend continues for the majority of the buildings in scenario 3 as well. In long-term scenario 5, 500 buildings could be flooded with up to three of saltwater. More than 650 buildings could be flooded with more than three feet and up to six feet of water, and about 125 buildings could be flooded with between six and nine feet of saltwater on a regular basis. These properties would be unusable in their current state.

Table 90 estimates costs using FEMA Hazus post-disaster damage tagging levels for buildings and their contents. These figures are based on scenario 6, the worst case scenario examined in this assessment. This analysis assumes every building experiences the same damage level, such that if all 1,500 buildings are yellow-tagged, up to $25 million in damages could incur. At the high end, more than $700 million[190] of structural damages could occur. Reality would likely reflect of mix of these damage levels.

The maps on the following pages illustrate vulnerable buildings by scenario. The areas in the call out circles enable the reader the see areas that are difficult to see on the large scale map. The circles do not indicate that these areas are more vulnerable than others along the shoreline.

[190] 2016 dollars

CORTE MADERA

Map 78. Corte Madera Vulnerable Buildings

Vulnerable Assets

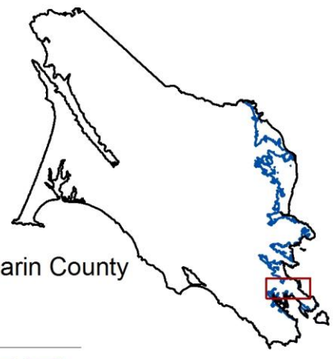
- School
- Emergency Shelter
- Fire Station
- Law Enforcement

Vulnerable Buildings

- Scen. 1: 10" Sea Level Rise (SLR)
- Scen. 2: 10" SLR+Storm Surge
- Scen. 3: 20" Sea Level Rise
- Scen. 4: 20"SLR+Storm Surge
- Scen 5: 60" Sea Level Rise
- Scen. 6: 60"SLR+Storm Surge

Location Indicators

- Unincorporated
- Municipality
- Road
- Bay
- Inland Extent: Sea Level @ 60"+100-year Storm



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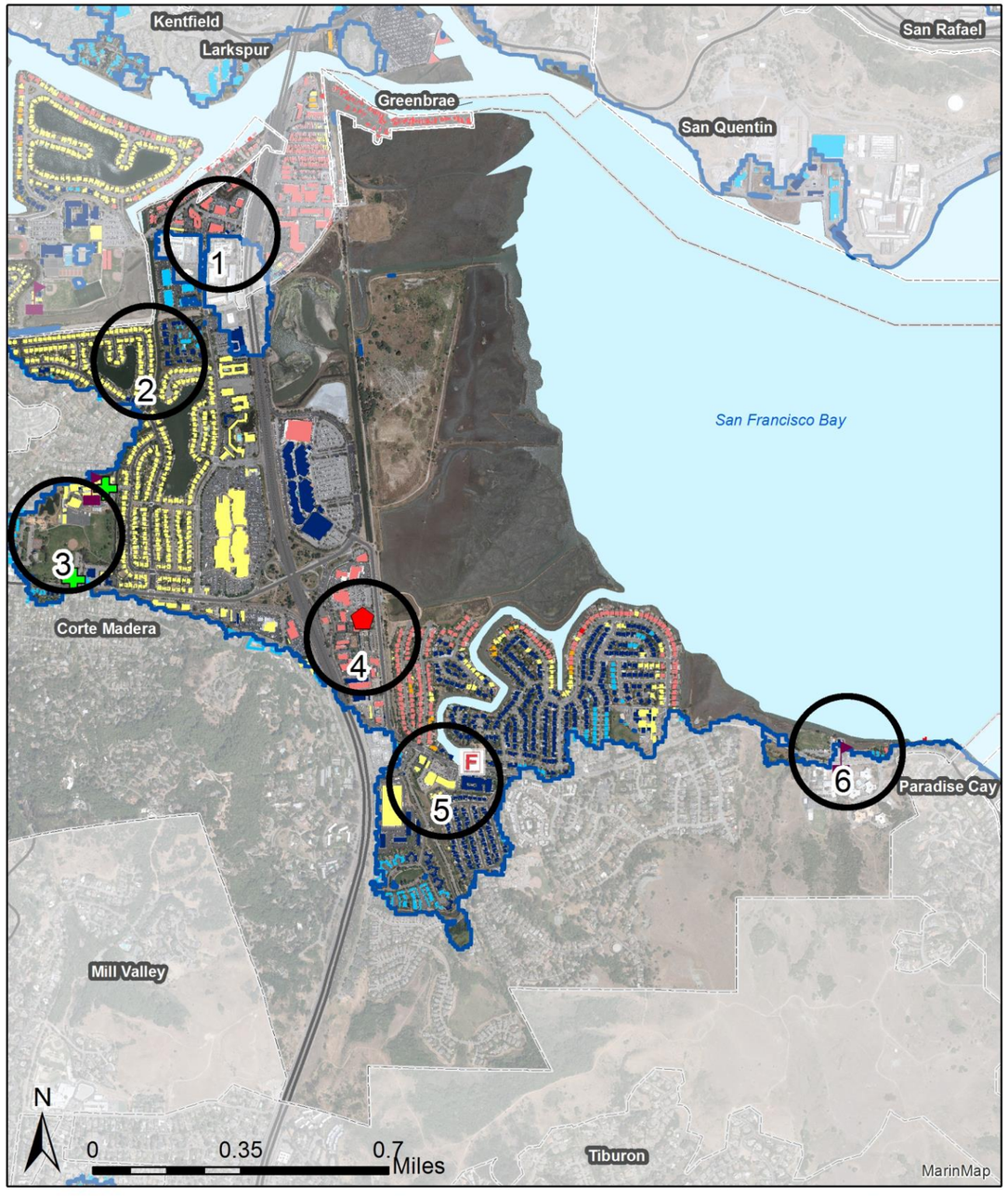
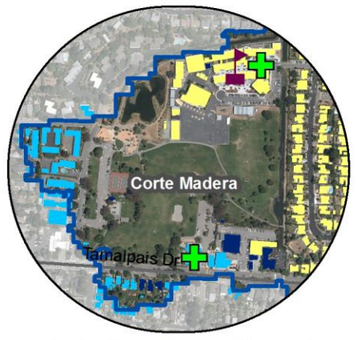


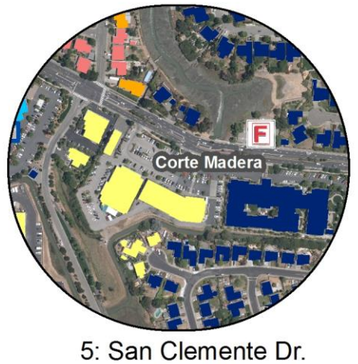
1: Lucky Drive

2: Madera Gardens

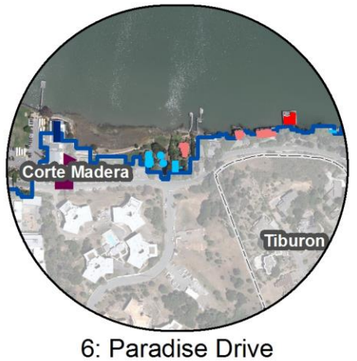


3: Neil Cummins School

4: San Clemente Drive



5: San Clemente Dr. @ Paradise Dr.



6: Paradise Drive

Disclaimer: Vulnerability Assessment maps, tables, etc. can be used as a resource to help identify potential hazardous areas and vulnerable assets. Marin County, and data providers here in, make no warranties of the accuracy or completeness of maps and data. Maps are representational and subject to future revision. Local site conditions must be examined. Commercial use is prohibited.

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Transportation
Nearly every road west of Highway 101 is vulnerable in the near- to medium-terms with a 100-year storm surge. By scenario 5, all of these roads and tens more on the east side of the US Highway 101 could expect tidal flooding. Several of the roads east of US Highway 101 are already, and will continue to be, vulnerable to subsidence. In addition, due to the orientation of the commercial sites, already stressed parking lots could experience impacts first.

Table 91 lists the vulnerable roads and trails in Corte Madera by onset. In near-term scenario 2, 3 miles of road could experience nuisance storm surge flooding. In medium-term scenario 3, 1 mile of road could experience tidal flooding. In scenario 4, this figure jumps to nine miles. This temporary flooding; however, may not be as problematic as roads that only experience may be able to tolerate short-term saltwater exposure. Finally, in the long-term 14 miles could experience tidal flooding, and two more could experience storm surge flooding. Fourteen miles of road closed down twice a day for several days a month several months of the year would be extremely burdensome for travelers. Especially considering the regional impacts of US Highway 101 flooding where it interchanges with Interstate 580.

Preliminary conversations with Caltrans indicate that Caltrans is well aware of the existing and arising concerns in the County.[191] According to Caltrans and the CoSMoS model shows flooding at low spots of US Highway 101 between Corte Madera and San Rafael. These low spots typically benefit from levees and pumps others operate to protect the larger area from flooding. These locations are south of Tamalpais Drive to Nellen Avenue, and from Corte Madera Creek to Lucky Drive.

Transit service along the vulnerable roads could also be compromised. Impacts to transit service could disproportionately impact low-income and Aegis residents. Both Golden Gate Transit and Marin Transit operate in the area. Golden Gate Transit routes 18, 22, 17, 24, 27, 36, 70, 71, 80, and 117 pass through the flooded area at the following stops:

- Paradise Dr. and El Camino Dr.,
- Paradise Dr. and Seawolf Passage,
- Paradise Dr. and Prince Royal Dr.,
- Doherty Dr. and Larkspur Plaza,
- Paradise Dr. and Madera Del Presidio Ave.,
- Paradise Dr. and Harbor Dr.,
- 33 San Clemente Dr.,
- Hwy 101 and Lucky Dr.,
- Hwy 101 and Tamalpais Dr., and
- Hwy 101 and Paradise Dr.

Marin Transit routes 113 and 117 also travel through the flooded areas with stops at:

- Tamal Vista Blvd. and Sandpiper Circle,
- Madera Blvd. and Monona Dr.
- Madera Blvd. and Mohawk Ave.,
- Paradise Dr. and Madera Del Presidio Ave.,
- Paradise Dr. and Harbor Dr.,
- Paradise Dr. and El Camino Dr.,
- Paradise Dr. and Seawolf Passage,
- Paradise Dr. and Robin Dr.,
- 33 San Clemente Drive,
- Tamal Vista Blvd. and Council Crest Dr., and
- Paradise Bus Pads.

Lost or compromised function of these ground transportation features could cut off access to Corte Madera, leading to negative economic impacts for local and regional businesses, emergency vehicle accessibility impacts, residents and commuters dependent on US Highway 101.

Trails along and through the marshes are also vulnerable in the near-term. These paths are typically on or near shoreline armoring. Several miles of bike path and sidewalk along the vulnerable roads are also vulnerable across all scenarios.

Corte Madera Creek at the end of Lucky Drive. Note the low-lying segment of US Highway 101 starts here. Credit. Marin County DPW

[191] Sea Level Rise Vulnerability Assessment Interview. Caltrans. April 30, 2015. J. Peterson. D. Fahey. Marin County Development Agency. BVB Consulting LLC.

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The maps on the following pages illustrate vulnerable transportation features. The areas in the call out circles enable the reader the see areas that are difficult to see on the large scale map. The circles do not indicate that these areas are more vulnerable than others along the shoreline.

Table 91. Corte Madera Vulnerable Transportation Assets

Near-term		Medium-term		Long-term	
Scenario 1	**Scenario 2**	**Scenario 3**	**Scenario 4**	**Scenario 5**	**Scenario 6**
None	**3** miles	**1** mile	**9** miles	**14** miles	**16** miles
	Hwy 101[C] Redwood Hwy[L] Paradise Dr[L] Baja Ct[L] Casa Buena Dr[L] Channel Dr[L] Conow St[L] Ebbtide Passage[L] Echo Ave[L] Fifer Ave[L] Golden Hind Passage[L] Harbor Dr[L] Lucky Dr[L] Nellen Ave[L] San Clemente Dr[L] Tamal Vista Blvd[L] Tamalpais Dr[L] Yolo St[L]		Roads in scenario 2 Apache Rd[L] Arrowhead Ln[L] Birch Ave[L] Cheyenne Way[L] Chickasaw Ct[L] Council Crest Dr[L] Edgemar Way[L] Hickory Ave[L] Lakeside Dr[L] Madera Blvd[L] Madera del Presidio Dr[L] Meadowsweet Dr[L] Mohave Ct[L] Mohawk Ave[L] Monona Dr[L] Navajo Ln[L] Sanford St[L] Seamast Passage[L] Seminole Ave[L] Tradewind Passage[L]	Roads in scenarios 2 and 4 Diamond Head Passage[L] El Camino Dr[L] Estrada Ln[L] Flying Cloud Course[L] Foremast Cv[L] Granada Dr[L] Key Largo Course[L] Key Largo Cv[L] Lanyard Cv[L] Meadow Creek Dr[P] Morning Star Course[L] Pacific Queen Passage[L] Paloma Dr[L] Prince Royal Dr[L] Prince Royal Passage[L] Sandpiper Cir[P] Sandra Marker Trl[L] Seawolf Passage[L] Simon Ranch Rd[P] Spindrift Passage[L] Staghound Passage[L] Wornum Dr[L,C]	Roads in scenarios 2, 4, and 5 Ash Ave[L] Cay Passage[L] Chapman Dr[L] Council Crest Dr[L] Creekside Ct[P] Eastman Ave[L] Hickory Ave[L] Laurel Dr Parkview Cir[P] Pixley Ave[L] Redwood Ave Westward Dr[L]

M = Marin County; C = State of California; L = Local Municipality; P = Private. Source: MarinMap, CoSMoS

CORTE MADERA

Map 79. Corte Madera Vulnerable Transportation Assets

Vulnerable Assets

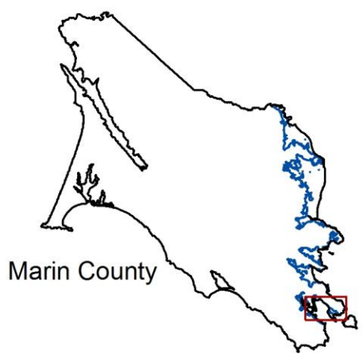
- Bike path
- Bay Trail
- Trail
- MT Bus Stop
- GGT Bus Stop
- Ferry

Vulnerable Roads

- @10" Sea Level Rise (SLR)
- @10"SLR+ 100-year Storm Surge
- @20" Sea Level Rise
- @20"SLR+ 100-year Storm Surge
- @60" Sea Level Rise
- @60"SLR+ 100-year Storm Surge

Location Indicators

- Unincorporated
- Municipality
- Road
- Bay
- Inland Extent: Sea Level @ 60"+100-year Storm



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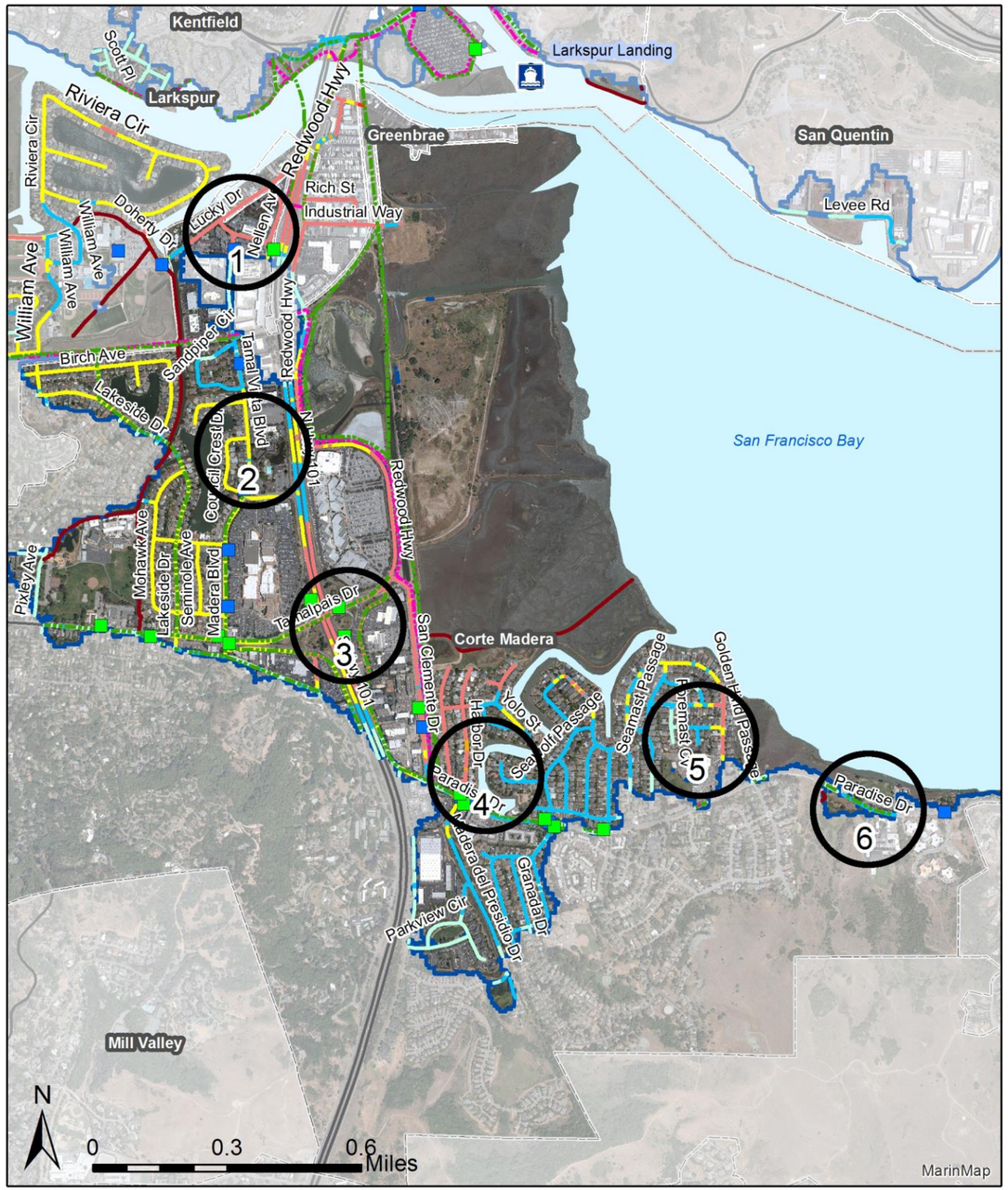
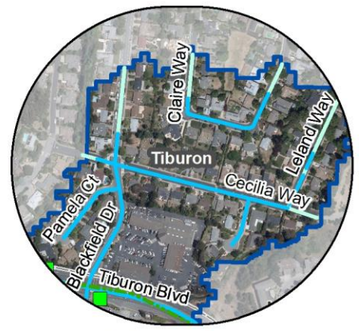
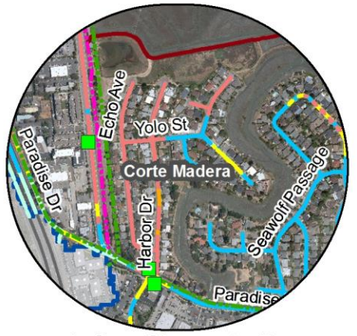




1: Lucky Drive

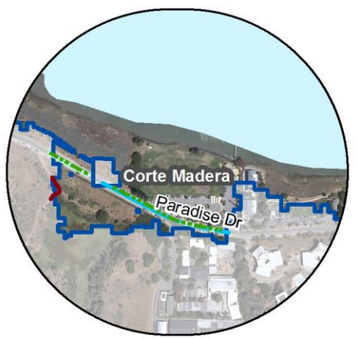
2: Tamal Vista Blvd.

3: U.S. Hwy. 101



4: San Clemente Dr. @ Paradise Dr.

5: Mariner's Cove



6: Paradise Drive

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Utilities

Corte Madera's Sanitary District No. 2 will likely face issues common in other shoreline communities in the study area, including:

- Underground pipes face compounding pressure forces from water and the road,
- Road erosion and collapse with underlain pipes,
- Saltwater inflow and infiltration causing inefficiencies in wastewater treatment,
- Continuously subsiding soils or fill, and
- Escalating activity, capacity demands, energy consumption, and wear and tear on pump stations in stormwater and wastewater systems,
- Aging individual site connections for water, sewer, and electrical, and
- Flood waters interrupting access for employees to reach work sites.

In addition, PG&E has a natural gas pipe line along US Highway 101, Paradise Drive, and Madera del Presidio Drive towards Paloma Drive. They also have transmission towers and lines that travel from Larkspur through the hills across the Corte Madera marshes.

Natural Resources

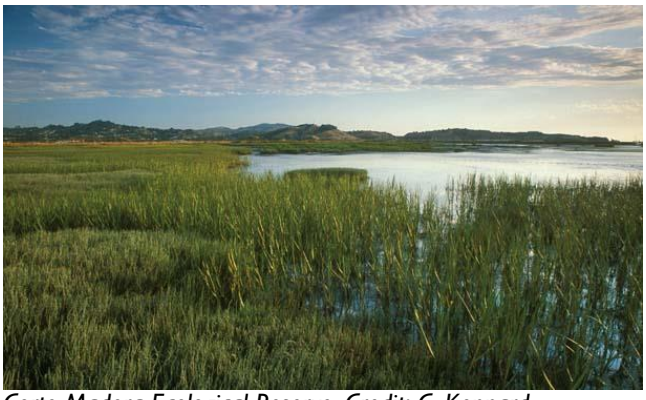
Corte Madera has a rich estuary and marsh system that support robust wildlife populations in the Corte Madera Ecological Reserve, Triangle Marsh, and the lagoon habitats. The marsh lands are extensive and may be able to withstand sea level rise impacts; however, because many sections abut levees, roads, or development, the marshes could get squeezed out in the long-term and turn to mud flats and open water.

The longfin smelt, Ridgway Rail, and Salt Marsh harvest mouse are the listed endangered species recorded in this area. The smelt is list as threated on the California species list and a candidate for the federal list. The Ridgway Rail and Harvest mouse are federally listed. The San Pablo Song sparrow, though not listed, is unique to the area and has potential habitat in the exposed area.

The Ridgway's rail is one of the largest rails in North America, very secretive, and primarily lives in salt and brackish marshes. The Corte Madera Ecological Reserve supports one of the densest populations of Ridgway's rails in the northern San Francisco Bay.[192]

Salt marsh harvest mice are endangered because of habitat loss, fragmentation, and alteration.[193] These mice are only found in the Bay area, including the marshes of Corte Madera; in the upper half of tidal salt marshes and the adjacent uplands during high tides.[194] Sea level rise would greatly impact this species, especially if the mouse's habitat is trapped by development. If high inundation rates occur in areas without upland habitat then reproduction could be reduced or eliminated.

Lastly, Chinook salmon, an endangered species, young use tidal marshes for cover and the feed as it out-migrates through the estuary. And steelhead trout, a special status species, use tidal marshes and creeks for foraging.[195]



Corte Madera Ecological Reserve. Credit: C. Kennard

[192] Goals Project. 2015. *The Baylands and Climate Change: What We Can Do*. Baylands Ecosystem Habitat Goals Science Update 2015 prepared by the San Francisco Bay Area Wetlands Ecosystem Goals Project. California State Coastal Conservancy, Oakland, CA. Pg. 168

[193] Shellhammer, H. 2000. Salt Marsh Harvest Mouse. Pp. 219 – 228 in Goals Project. 2000. Baylands Ecosystem Species and Community Profiles: Life history and environmental requirements of key plants, fish and wildlife. Prepared by the San Francisco Bay Area Wetlands Ecosystem Goals Project. P. R. Olofson, editor. San Francisco Bay Regional Water Quality Control Board, Oakland, California.

[194] Goals Project. 2015. *The Baylands and Climate Change: What We Can Do*. Appendix 5.1 Salt Marsh Harvest Mouse. Ecosystem Baylands Habitat Goals Science Update 2015 prepared by the San Francisco Bay Area Wetlands Ecosystem Goals Project. California State Coastal Conservancy, Oakland, CA.

[195] Marin Audubon Society. Personal Communication. March 10, 2017.

Recreation
The Bay Trail (County Route 17), Sandra Marker Tail, Corte Madera/Larkspur Bike Path, marsh land pathways, and private boating infrastructure could be vulnerable to sea level rise in the near-term. Additionally, on street bike paths and sidewalks are also compromised. This would greatly impact bicyclists that ride the Tiburon Peninsula. These activities will likely shift to accommodate the changing circumstances of travel. In addition, the Best Western and Marin Suites could be vulnerable.

Emergency Services
Three emergency shelters in Corte Madera may be vulnerable in scenario 6. Fire Station 13 off of Paradise Drive is vulnerable in the long-term to sea level rise and could experience access impacts even sooner. The Tamalpais Drive fire station just misses exposure under these average high tide scenarios. Access south of the facility could be compromised due to flooding. The police headquarters are technically in Larkspur; however, similar access issues could also arise here. When traveling to Corte Madera, that fastest route from the station is typically using US Highway 101, which could likely be flooded to some degree during high tides under all of the BayWAVE scenarios. This could increase response times, and at worst, prevent responses entirely. Finally, the California Highway Patrol Office is in the exposure zone. To learn more about the site's vulnerabilities see the Emergency Services Profile.

Cultural Resources
Corte Madera's inventoried historic assets are located outside of the flood area.

Table 92 lists these assets and others in order of onset and severity of flooding. A 100-year storm surge would add an additional 1 to 3 feet of water to these properties. Note also, above average high tides could impact more properties than accounted for in this analysis.

A few additional select assets could also be vulnerable in scenario 6 with the additional 100-year storm surge condition. These are:

- Marin Country Day School (emergency shelter),
- Holy Innocents Episcopal (emergency shelter), and
- Marin Lutheran Church (emergency shelter).

All three of these sites are existing emergency shelters that by the end of the century could be at the epicenter of emergency and unable to serve their function.

The maps on the following pages illustrate vulnerable utility, natural resource, recreation, emergency and historic features. The areas in the call out circles enable the reader the see areas that are difficult to see on the large scale map. The circles do not indicate that these areas are more vulnerable than others along the shoreline.

CORTE MADERA

Table 92. Example Corte Madera Vulnerable Assets by Sea Level Rise Onset and Flooding at MHHW

Asset	Scenarios		
	Near-term	Medium-term	Long-term
	1	3	5
Paradise Dr. commercial	0-1'2"	9"-3'3"	2'-8'4"
Marina Village	0-1'	4'-2'5"	11'-6'
Mariner Cove	0-1'	2"-2'	5'3"
CHP Headquarters	3"	2'4"	6'
Shorebird Marsh		5'3"	10'9"
Bay Trail		0-3'4"	0-8'6"
Madera Gardens.		9"-3'	2'-7'4"
Paradise Drive		0-2'5"	4"-9'
Neil Cummins Elementary		2'5"	6'6"
San Clemente Dr.		1'2"-2'3"	1'9"-7'4'
Tamalpais Dr.		0-2'	2"-7'6"
Corte Madera Town Center		2'	5'
Aegis Senior Living		1'9"	4'7"
Susan Marker Trail			1'2"-7'6"
Cove Elementary		11"	2'3"
The Village at Corte Madera		10"	2'
Higgins Dock			11'10"
Madera Gardens Lagoons			10'4"
Town Park			9'10"
Hwy 101 North bound			6"-7'8"
Redwood Hwy.			1'2"-6'8"
Hwy 101 South bound off ramp			1'-5'5"
Ring Mountain			3'6"
Skunk Hollow Park			3'
Marin Montessori			1'7"
Corte Madera Ecological Reserve	Floods at existing high tides		

Source: MarinMap, CoSMoS

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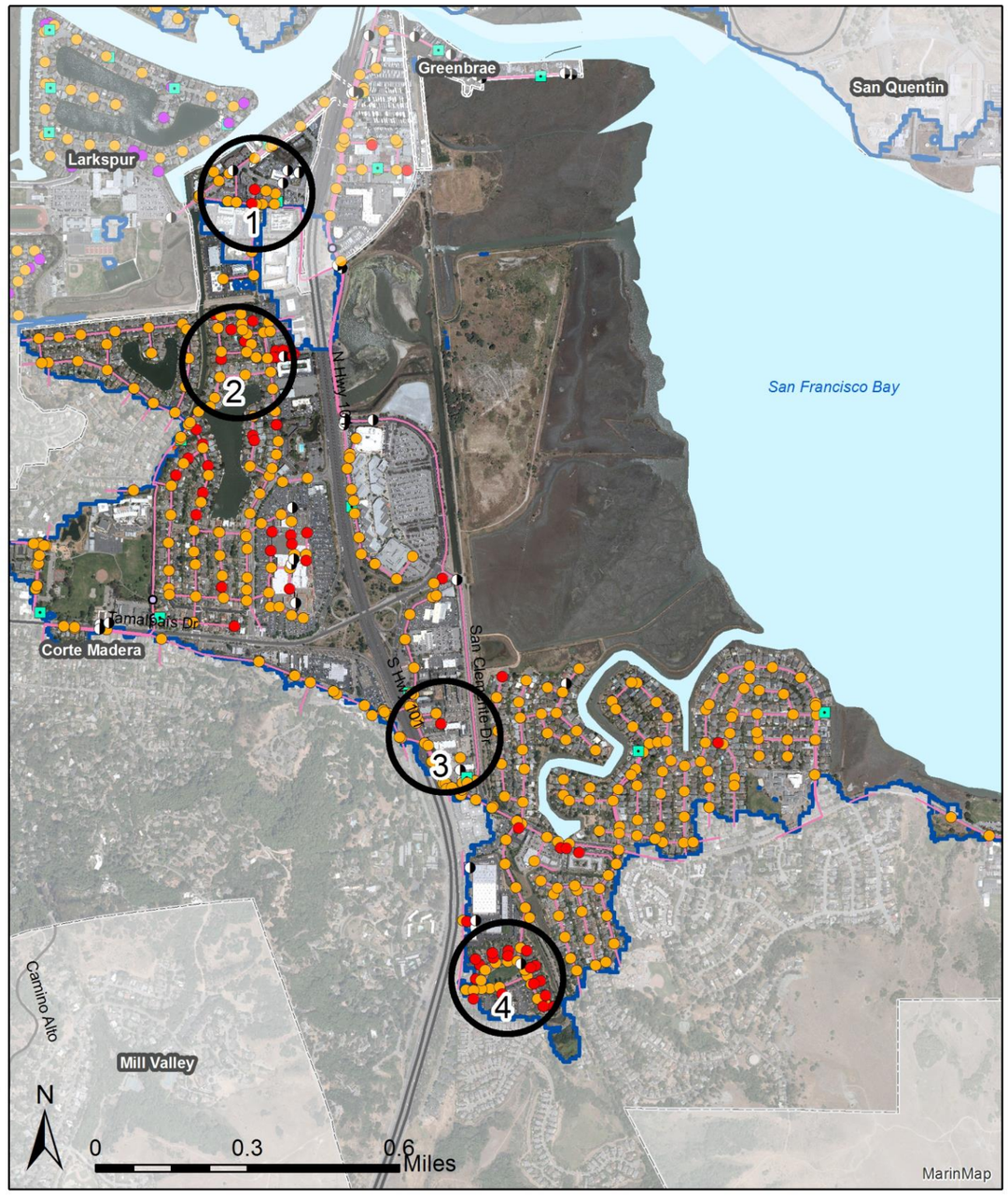
Map 80. Corte Madera Vulnerable Wastewater Utility Assets

Vulnerable Assets

- AP
- Pump Station
- Junction
- Outlet
- Manhole
- Pipe

Location Indicators

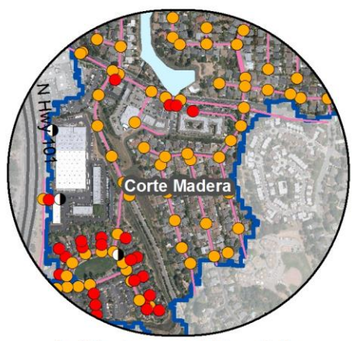
- Unincorporated
- Municipality
- Road
- Bay
- Inland Extent: Sea Level @ 60"+100-year Storm Surge



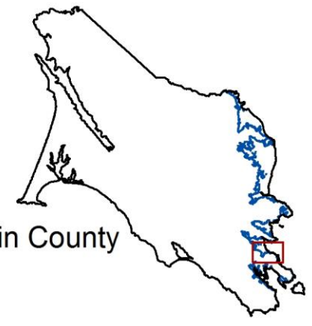
1: Lucky Dr.

2: Madera Gardens

3: San Clemente Drive



4: Madera del Presidio



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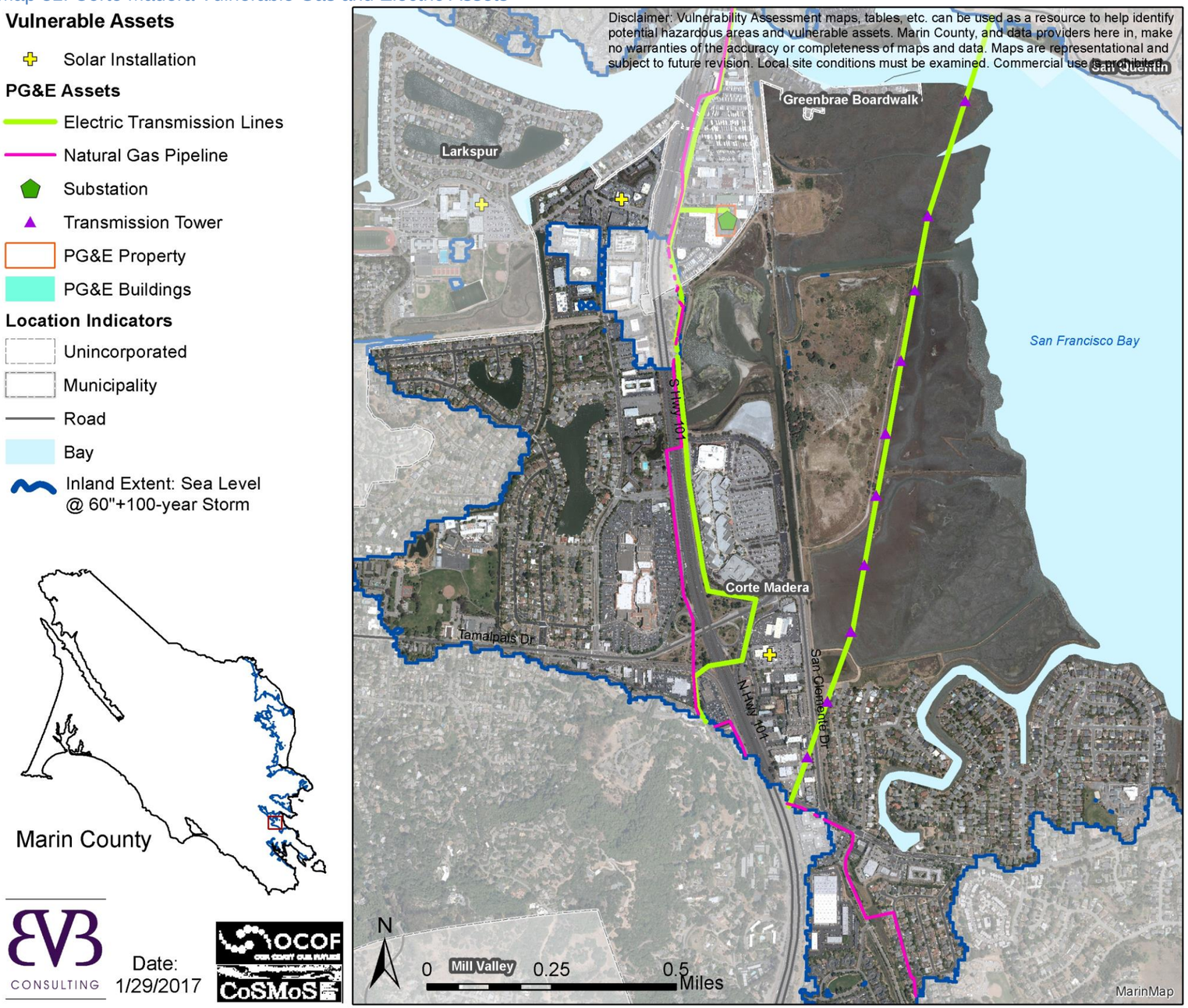
Map 81. Corte Madera Vulnerable Gas and Electric Assets



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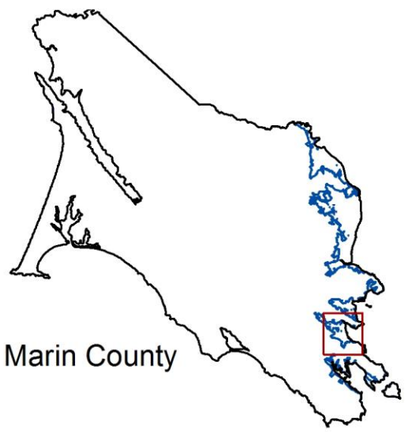
Map 82. Corte Madera Vulnerable Stormwater Utility Assets

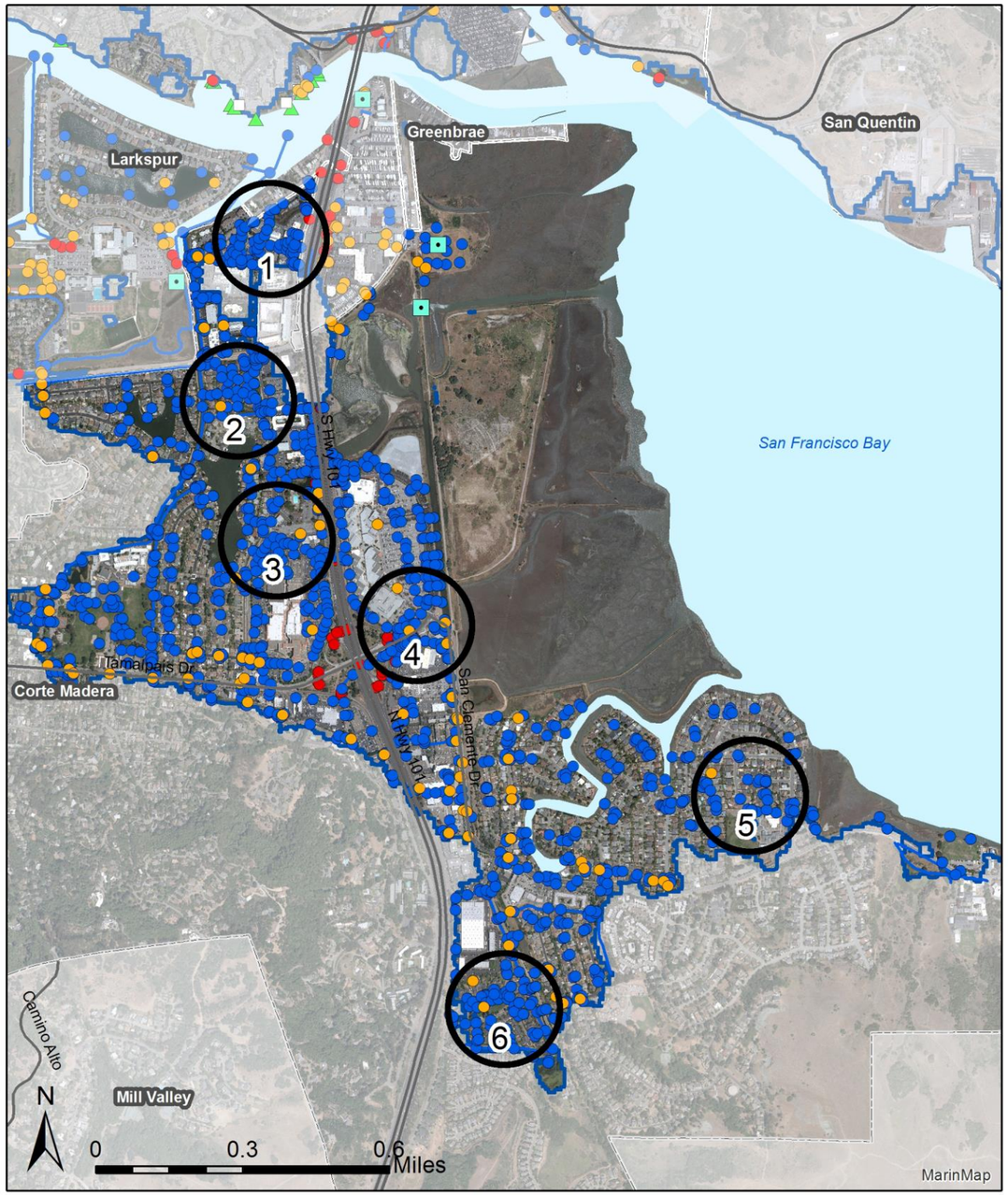
Vulnerable Assets

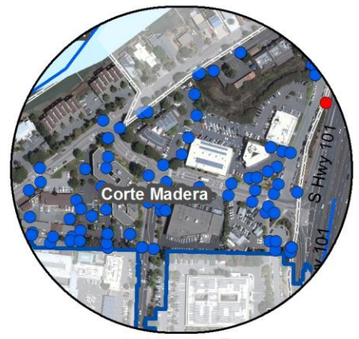
- Catch Basin
- Pump Station
- Manhole
- Pipe Inlet/Outlet
- Box
- Flap Gate
- Node
- Channel
- Culvert

Location Indicators

- Unincorporated
- Municipality
- Road
- Bay
- Inland Extent: Sea Level @ 60"+100-year Storm



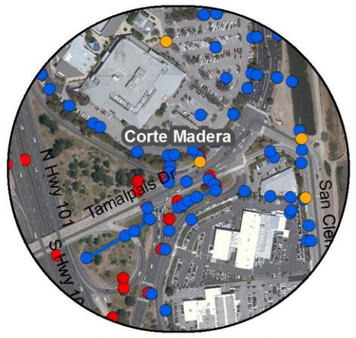




1: Lucky Dr.

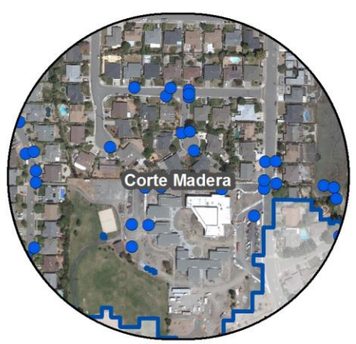
2: Northern Madera Gardens

3: Southern Madera Gardens



4: U.S. Hwy. 101 @ Paradise Dr.

5: Meadow Creek



6: Mariner Cove

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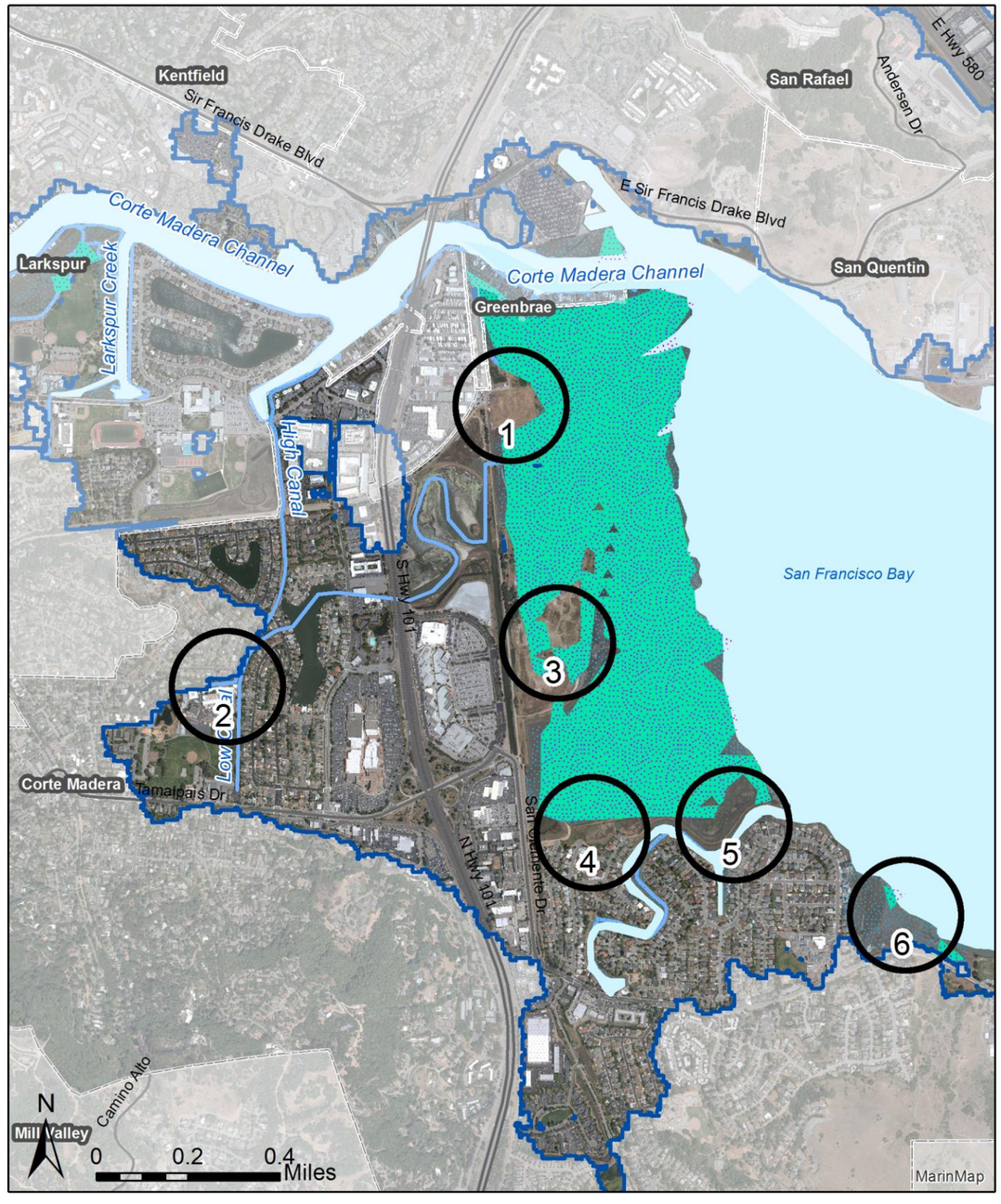
Map 83. Corte Madera Vulnerable Natural Resource Assets

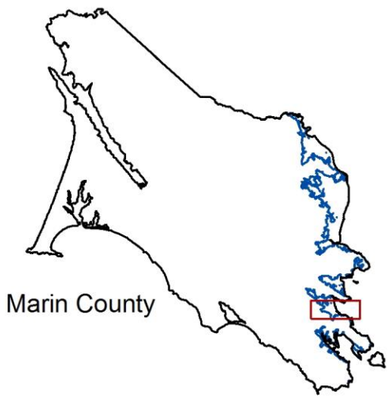
Vulnerable Assets

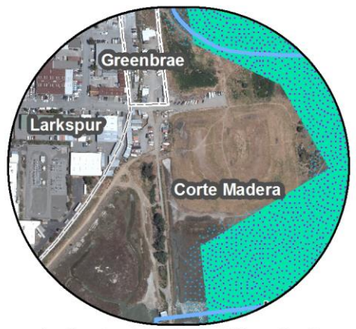
- Streams
- Marsh
- Estuary
- Wetland

Location Indicators

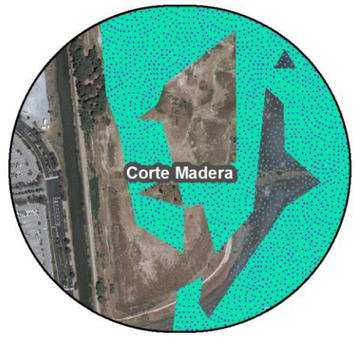
- Unincorporated
- Municipality
- Road
- Bay
- Inland Extent: Sea Level @ 60"+100-year Storm





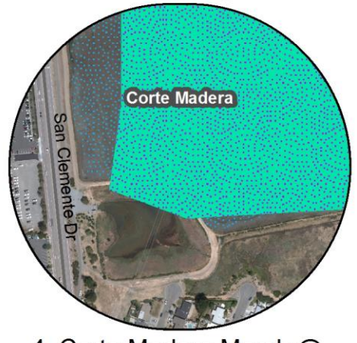


1: Corte Madera Marsh @ Greenbrae Boardwalk

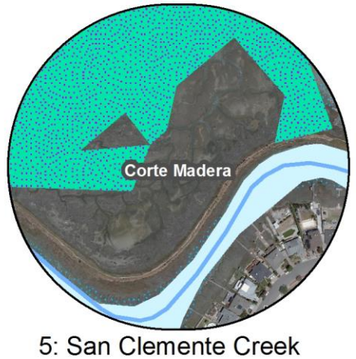


2: Corte Madera Marsh @ The Village

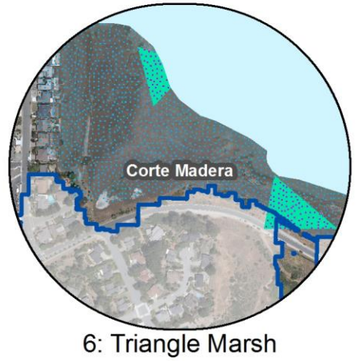
3: High & Low Canals



4: Corte Madera Marsh @ San Clemente Drive



5: San Clemente Creek



6: Triangle Marsh

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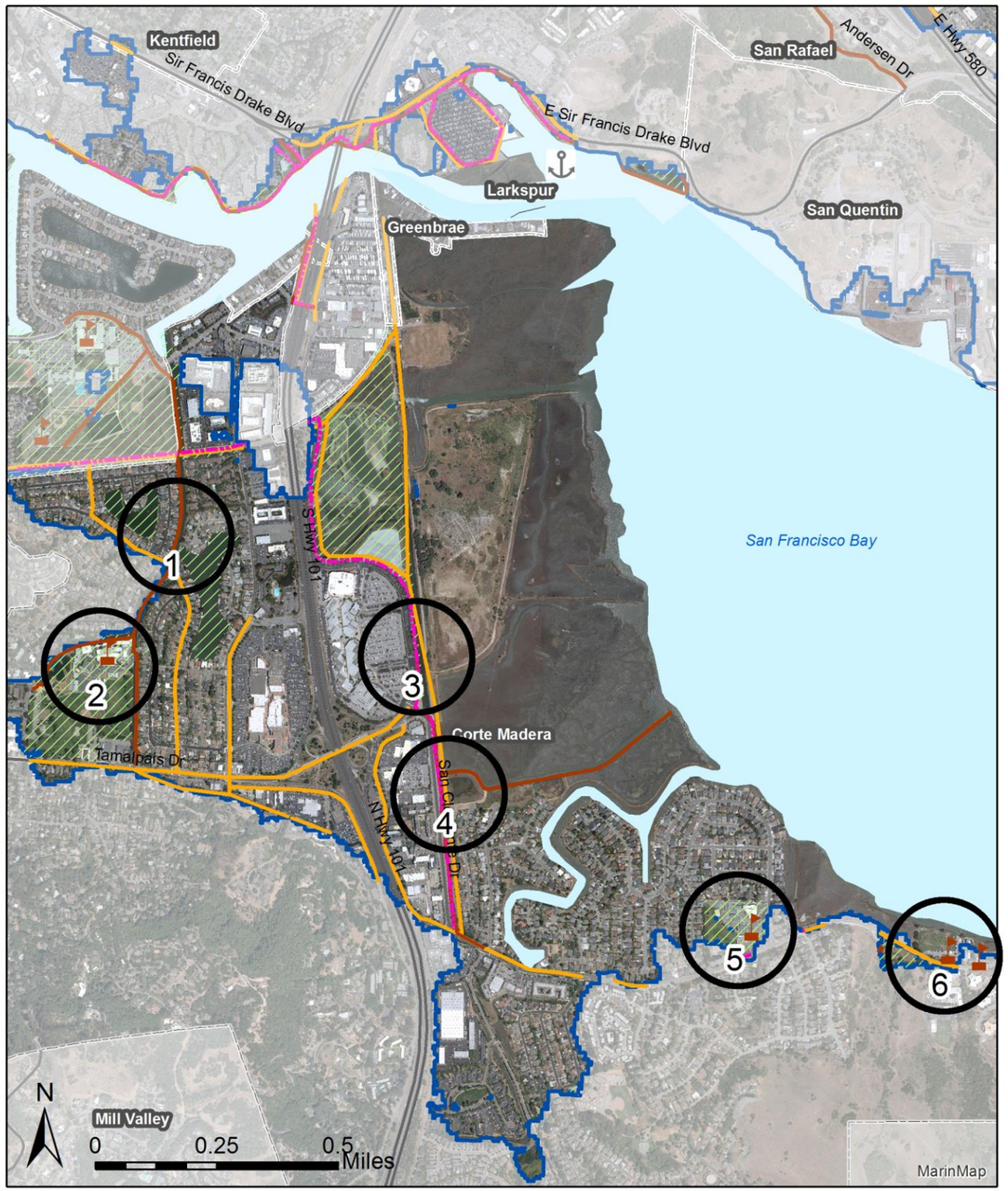
Map 84. Corte Madera Vulnerable Recreation Assets

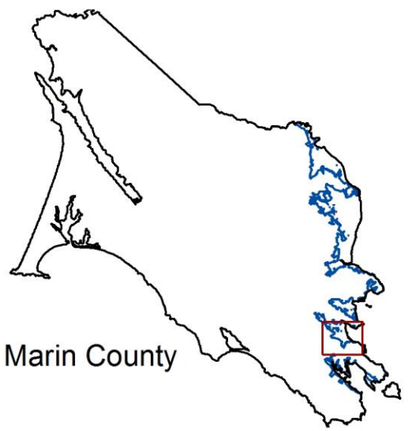
Vulnerable Assets

- School
- Bay Trail
- Trail
- Bikeway
- Park

Location Indicators

- Unincorporated
- Municipality
- Road
- Bay
- Inland Extent: Sea Level @ 60"+100-year Storm





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1: Madera Gardens

2: Corte Madera Town Park

3: Shorebird Marsh

4: San Clemente Dr.

5: San Clemente Park & Cove School

6: Marin Country Day School/ Marin Montessori

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Map 85. Corte Madera Vulnerable Emergency Service Assets

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