

Figure 1: Environmental Sensitive Sites + Operational Divisions Overview

ACP 2 – Central San Francisco Bay

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9817 Central San Francisco Bay (GRA 4)

9817.1 Geographic Response Strategies for Environmental Sensitive Sites

9817.1.1 GRA 2 Site Index

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County: San Francisco **ACP Division/Segment:** SF - E - S005 SF - E - S001**NOAA Chart:** Entrance to San Francisco Bay18649 **Map Book:** AAA - San Franc **Decimal Degrees:** 37.791037 -122.388691**Site Description:**

The site consists of the shoreline of San Francisco from Fort Mason to the Bay Bridge. This shoreline consists of manmade structures including piers, seawalls and rip-rap. The bottom of the channels generally consist of soft sediments. Currents can be strong, approaching 6 knots. Shoreline jurisdiction ranges from Fort Mason National Park Service (NPS) to the Port of San Francisco. Pacific herring spawn on pier pilings during the winter months (Nov-Feb) which makes them vulnerable to HAZMAT spills and cleanup operations.

Resources at Risk:*ESI and Habitat:* 8B Sheltered solid man-made structures

6B Riprap

8C Sheltered riprap

List of Resources at Risk:

	Resource Name	Status	Presence	Sensitivity
Birds	seabirds		Year-round	
Birds	double-crested cormorant	FP	Year-round	May-Jul
Fish	Pacific herring		Year-round	Nov - Apr
Fish	longfin smelt	ST	Year-round	Nov - May

FT-Federally Threatened, FE-Federally Endangered, FP-Federally Protected, SE-State Endangered, ST-State Threatened, SP -State Protected, SR-State Rare, SSC-Species of Special Concern, BGEPA-Bald and Golden Eagle Protection Act, SSSP-State Special Status Species

List of Key Contacts:

Type	Name/Title	Organization	Phone
C	/Coordinator	Native American Heritage Commission	(916) 373-3710
C	/Coordinator	Northwest Information Center	(707) 588-8455
O	/Duty Officer (24hr)	San Francisco Dept. of Emergency Management	(415) 260-2591
T	/Agency Representative	California Department of Fish and Wildlife	(707) 644-2812
T	/Agency Representative	Golden Gate National Recreation Area	(415) 561-4731
T	/Dispatch, 24-hr	US National Park Service, Golden Gate NRA	(415) 561-5505

C – Cultural, Historic, Archaeological; E – Entry/Owner/Access; O – Other; S – Safety; T – Trustee; X – Exclusion or Security

Additional Site Summary Comments:

Concerns and Advice to Responders:

This collection strategy should be used to take advantage of the slow water between piers and the boats at anchor to divert oil out of swifter along shore currents to shoreline where collection is possible.

Hazard and Restrictions:

There are submerged obstructions to navigation in many areas, sunken vessels and old pier pilings depending on tidal height.

Site Strategies:**Site Validation Level: II**

Strategy: 2-400.1 Objective: Deflect to Collection at shoreline: recover oil at seawalls where there is shoreline access. Deflect oil to areas where current is slowest to minimize the distance the oil travels, especially on the ebb tide.

Strategy: Deflect oil to the shoreline and setup shore side skimmers (SSS). Some potential collection sites are at the steps on the promenade near the foot of Howard St. and/or the foot of pier 39. Also, deploy short pieces of small boom between piers and other manmade structures down current from the spill source to direct oil to slowest waters at shoreline. The boom should be placed at an angle to the current to prevent entrainment, and should be tightened sufficiently to prevent the current from bending the boom such that some portion of it is perpendicular to the current. Where oil entrains under a boom, another length of boom must be placed down current of the first to catch the entrained oil and deflect it to slower moving water near shore.

Table of Response Resources

Equipment	Sub-Type	Size	Unit	QTY	Unit	Last Page Update
Boom	Harbor	9x9 inch		6000	feet	
Boom	Sorbent			500	feet	
Anchor	Danforth	22 lb		30		
Vessel	Boom Boat			2		
Vessel	Skiff or Punt			2		
skimmer	self propelled			1		
Staff	Staff to Deploy		10			

Logistics:

Directions: Boat launch ramp near pier 50 at Mission Rock Resort, 817 China Basin St. Shoreline access from the Embarcadero and China Basin St.

Land Access: There is access for large trucks on most piers and seawalls.

On-Water Limitations: There are submerged pilings nearshore (tidal height dependent).

Facilities, Staging Areas, Command Posts, Available Equipment: Flat paved areas for staging and field posts are common throughout this area.

Communications Problems: Good cell reception throughout.



County: San Francisco **ACP Division/Segment:** SF - G - S002 SF - G - S003

NOAA Chart: Entrance to San Francisco Bay 18649 **Map Book:** AAA - San Franc **Decimal Degrees:** 37.81001 -122.411369

Site Description:

Pier 39 is the basin bounded by Pier 43 to the west and Pier 35 to the east. It is an abandoned marina w/ a range of 50 to 500 juvenile/adult California sea lions. The artificial haul-out created from former docks create a popular tourist attraction. Shoreline structures managed and leased by The Port of San Francisco. These floating docks and most of Pier 39 are fronted with a sea wall along the outer perimeter. This area is composed entirely of manmade structures. Several times each day, the commuter ferries pass by these floating sealion haul-out docks providing constant wake activity. Tourists can buy baitfish and feed pinnipeds thus attracting more wildlife to the site creating an artificial sensitive site. NPS provides a docent to educate the public about pinnipeds and their life cycle.

Resources at Risk:

ESI and Habitat: 8B Sheltered solid man-made structures
8C Sheltered riprap

List of Resources at Risk:

	Resource Name	Status	Presence	Sensitivity
Fish	longfin smelt	ST	Year-round	Nov - May
Fish	Pacific herring		Year-round	Nov - Apr
Mammals	California sea lion	FP	Year-round	Aug - Mar

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Type	Name/Title	Organization	Phone
C	/Coordinator	Native American Heritage Commission	(916) 373-3710
C	/Coordinator	Northwest Information Center	(707) 588-8455
E	/Agency Representative, 24-hr	Port of San Francisco	(415) 336-0888
E	/Agency Representative, 24-hr	Port of San Francisco	(415) 819-8965
O	/Duty Officer (24hr)	San Francisco Dept. of Emergency Management	(415) 260-2591
T	/Dispatch, 24-hr	US National Park Service, Golden Gate NRA	(415) 561-5505

C – Cultural, Historic, Archaeological; E – Entry/Owner/Access; O – Other; S – Safety; T – Trustee; X – Exclusion or Security

Additional Site Summary Comments:

Concerns and Advice to Responders:

Sea lions that inhale fumes or ingest petroleum can be expected to be injured or be severely impacted.

Hazard and Restrictions:

Beware of heavy ferry boat traffic activity here, large wakes, potential for 2 to 3' wakes. Currents may exceed 4 knots making boom deployments very challenging.

Site Strategies:**Site Validation Level: II**

Strategy: 2-401.1 Objective: Exclude oil by booming from entering breakwater. Cascade boom or staff to permit Ferry traffic.

Strategy: (This is a high traffic and commuter terminal; so, there will need to be staff tending the booms at north entry to allow for traffic, unless the marina is closed by IC/UC). Exclude oil from entering the two vessel entrances to Pier 39 with 9X9+ Hboom. 200 ft is needed at the north entrance and 500 ft is needed at the east entrance. Complete exclusion by booming the north and west side of the marina and breakwater. Approximately 900 ft of 9X9+ Hboom is needed along the breakwall located on the west side of Pier 41 to prevent oil from passing through breakwater and along western margin. At the north mouth, angle boom such that a shore side skimming operation can be operated on pier 39 (access has been verified by Clean Bay). At east entrance, angle boom such that a shore side skimming (SSS) operation can be operated on near the foot of pier 35. A self propelled skimmer (SPS) may be necessary near the north mouth, and shore side staff should confer with on water Ops through ICS. Back entry booms with 700 ft of sorbent boom.

Table of Response Resources

Equipment	Sub-Type	Size	Unit	QTY	Unit	Last Page Update
Boom	Harbor	9x9 inch		1600	feet	
Boom	Sorbent			700	feet	
Anchor	Danforth	22 lb		8		
Vessel	Boom Boat			1		
Vessel	Skiff or Punt			1		
Staff	Staff to Deploy			5		
Staff	Staff to Tend			2		

Strategy: 2-401.2 Objective: Sorbent Protection - complete the sorbent barrier in the interior of the marina breakwater to intercept seepage past booms or through breakwater.

Strategy: Complete the sorbent enclosure inside of breakwalls. Use approximately 1100 ft on east side of Pier 41 to link with the 200 ft at the north entrance. If oil is entering along through the concrete seawall around the Pier 39 marina (east side of pier 39), then an additional 1400 ft of sorbent or swamp boom w/ 5 anchors, will be needed to line the east side breakwater to link up with the 500 ft of sorbent and boom at the east entrance (assess and request additional resources). Light anchoring will be needed to keep sorbent positioned near breakwaters and preventing them from hanging up during high tides.

Table of Response Resources

Equipment	Sub-Type	Size	Unit	QTY	Unit	Last Page Update
Boom	Sorbent			1400	feet	
Anchor	Danforth			5		
Vessel	Skiff or Punt			1		
Staff	Staff to Deploy			2		

Strategy: 2-401.3 Objective: Skimming collectable oil with one Self Propelled Skimmer or one Shoreside Skimmer

Strategy: One shoreside skimmers can be operated at the southeast corner of the marina. A self propelled skimmer should be operated within and mostly at the west side of the pier to collect free-floating oil.

Table of Response Resources

Equipment	Sub-Type	Size	Unit	QTY	Unit	Last Page Update
skimmer	shoreside			1		
skimmer	self propelled			1		
Staff	Staff to Deploy			3		

Logistics:

Directions: From the Oakland-San Francisco Bay Bridge (Highway 80), take the Embarcadero Street exit. Proceed on Embarcadero Street for approx two miles, Pier 39 will be on your right. Access via "K" dock gate from Pier 39.

Land Access: Paved access for vehicles. Coordinate pier and shoreline access thru Port of San Francisco Staff.

On-Water Limitations: Launching: Harbor Drive, Sausalito: Turney St, Sausalito; Berkeley Marina: Emeryville Marina: Fifth Ave. Marina, Oakland; Ballena Isle Marina, Alameda Fuel: Gashouse Cove and Hyde Street Harbor Fuel Dock.

Facilities, Staging Areas, Command Posts, Available Equipment: San Francisco OES will identify available staging areas, field posts and command posts in vicinity.

Communications Problems: Good cell reception throughout.



CDFW - OSPR & USCG Site: 2-401 Name: Pier 39

G. Ewing (OSPR) & M. Schommer (OSPR) Date: 4/27/2020

●●●●● Harbor Boom

—— Sorbent Boom

County: San Francisco **ACP Division/Segment:** SF - H - S001 SF - H - S008

NOAA Chart: Entrance to San Francisco Bay 18649 **Map Book:** AAA - San Franc **Decimal Degrees:** 37.826547 -122.421371

Site Description:

Alcatraz Island is a historical site which includes an old prison and lighthouse. It is part of Golden Gate National Recreation Area (GGNRA) and is managed by the National Park Service (NPS). The island is located in central San Francisco Bay and exposed on all sides to extreme tidal currents, wave action, and weather conditions. The shorelines are rocky intertidal platforms on the west and southwest sides; a gravel beach extends from the southern rocky platforms to the eastern side; rock cliffs are present on the majority of the west, north, and northeast sides; and pier pilings and dock facilities are present on the east side. Bird breeding colonies, all around the island, are a primary concern during spring and summer, though most nests are above the influence of tidal height. Wave refraction off the island shores tend to keep oil off Alcatraz.

Resources at Risk:

ESI and Habitat: 2A Exposed wave-cut platforms in bedrock, mud, or clay

List of Resources at Risk:

	Resource Name	Status	Presence	Sensitivity
Birds	black-crowned night heron	FP	Year-round	Feb - Sep
Birds	Brandt's cormorant	FP	Year-round	Feb - Sep
Birds	great egret	FP	Year-round	Feb - Sep
Birds	western gull	FP	Year-round	Feb - Sep
Fish	Pacific herring		Year-round	Nov - Apr
Fish	longfin smelt	ST	Year-round	Nov - May

FT-Federally Threatened, FE-Federally Endangered, FP-Federally Protected, SE-State Endangered, ST-State Threatened, SP -State Protected, SR-State Rare, SSC-Species of Special Concern, BGEPA-Bald and Golden Eagle Protection Act, SSSP-State Special Status Species

List of Key Contacts:

Type	Name/Title	Organization	Phone
C	/Coordinator	Native American Heritage Commission	(916) 373-3710
C	/Coordinator	Northwest Information Center	(707) 588-8455
E	/Dispatch, 24-hr	US National Park Service, Golden Gate NRA	(415) 561-5505
O	/Duty Officer (24hr)	San Francisco Dept. of Emergency Management	(415) 260-2591
T	/Aquatic Ecologist	US National Park Service, Golden Gate	(415) 289-1838

C – Cultural, Historic, Archaeological; E – Entry/Owner/Access; O – Other; S – Safety; T – Trustee; X – Exclusion or Security

Additional Site Summary Comments:

Concerns and Advice to Responders:

Based on experience, oil doesn't impact this site because waves reflect off the rocky shoreline keeping oil off. Disturbance of nesting birds in Spring and Summer is a real concern. The gravel beach would be difficult to clean if affected. Anchoring is difficult but possible on the W,S, and E sides of the island. Depths range from 30 to 80 ft. close to the island. Strong flood and ebb currents exist here. Back eddies form on the east side during flood tide.

Hazard and Restrictions:

There is a wash rock (aka Little Alcatraz) located off the west tip of the island. There are shallow rock platforms and rocks near shoreline (tide dependent).

Site Strategies:

Site Validation Level: II

Strategy: 2-402.1 Objective: Protection booming in unusual conditions: When wave reflection will not likely keep oil off shoreline, protect the sensitive rocky intertidal zone on the south eastern part of the island.

Strategy: In order to protect the sensitive rocky intertidal zone on the south easterlyside of the island, use 650 to 800 ft of 9X9+ Hboom. Position the boom from the dock around the south and west sides to the end of the rocky intertidal bench located near the bird colony on the cliff. The boom will act to deflect oil into the current and protect the shoreline.

Table of Response Resources

Equipment	Sub-Type	Size	Unit	QTY	Unit	Last Page Update
Boom	Harbor	9x9 inch		800	feet	
Anchor	Danforth	40 lb		7		
Vessel	Boom Boat			1		
Vessel	Skiff or Punt			1		
Staff	Staff to Deploy			5		
Staff	Staff to Tend			2		

Strategy: 2-402.2 Objective: Deflection booming in unusual conditions: When wave reflection will not likely keep oil off shoreline, deflect oil away from and around west end of island when wave refraction is unlikely to keep oil off the shoreline

Strategy: On the west end of the island, position 9X9+ Hboom in a deflection wedge configuration off the bell bouy or anchored to the reef to deflect oil into current away from island. Three boom legs 600 to 1000 ft each.

Table of Response Resources

Equipment	Sub-Type	Size	Unit	QTY	Unit	Last Page Update
Boom	Harbor	9x9 inch		2100	feet	
Anchor	Danforth	40 lb		15		
Vessel	Boom Boat			2		
Staff	Staff to Deploy			6		

Logistics:

Directions: Alcatraz is an island located in central San Francisco Bay. Access is available by boat only. Contact NPS for ferry schedule.

Land Access: Access available by water only.

On-Water Limitations: Submerged rocks on west and south shores. National Park Service maintains landing at east end of island. Otherwise boat services are at San Francisco shoreline.

Facilities, Staging Areas, Command Posts, Available Equipment: Staging, storage and skimming systems from land could be accommodated on the dock located on the east side of the island. Extensive services are at the SF shoreline.

Communications Problems:



County: San Francisco **ACP Division/Segment:** SF - H - S010**NOAA Chart:** Entrance to San Francisco Bay 18649 **Map Book:** AAA - San Francisco Bay **Decimal Degrees:** 37.805507 -122.454274**Site Description:**

Crissy Field Tidal Marsh is a restored wetland at the east end of Crissy Field and includes a tidal channel which opens to San Francisco Bay at the east end of the salt-marsh. This wetland lies within Golden Gate National Recreational Area (GGNRA), under jurisdiction of US National Park Service (NPS). It was constructed and opened to tidal exchange in 1999. It is being revegetated with native species. It is an uncommon habitat for waterbirds and shorebirds in an urban habitat, thus, has great value as a resting/foraging area. The tidal inlet has silted in remarkably and has not yet scoured a low flow channel. There is a large community focus and investment in this salt-marsh habitat restoration area.

Resources at Risk:

ESI and Habitat: 3A Fine- to medium-grained sand beaches
 10A Salt - and brackish-water marshes
 8B Sheltered solid man-made structures

List of Resources at Risk:

	Resource Name	Status	Presence	Sensitivity
Birds	California black rail	FP, ST	Year-round	Mar - Jul
Birds	Western snowy plover	FT, SSC	Year-round	Mar - Sep
Fish	longfin smelt	ST	Year-round	Nov - May
Plants	Pt. Reyes bird's-beak	SSSP	Year-round	Jul - Oct
Plants	California seablite	FE, SSSP	Year-round	Jul - Oct
Plants	San Francisco lessingia	FE, SE	Year-round	Jul - Nov
Plants	congested-headed hayfield tarplant	SSSP	Year-round	Apr - Nov
Plants	San Francisco Bay spineflower	SSSP	Year-round	Apr - Jul

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List of Key Contacts:

Type	Name/Title	Organization	Phone
C	/Coordinator	Native American Heritage Commission	(916) 373-3710
C	/Coordinator	Northwest Information Center	(707) 588-8455
O	/Duty Officer (24hr)	San Francisco Dept. of Emergency Management	(415) 260-2591
T	/Agency Representative	US National Park Service, Golden Gate	(415) 561-4731
T	/Dispatch, 24-hr	US National Park Service, Golden Gate NRA	(415) 561-5505

C – Cultural, Historic, Archaeological; E – Entry/Owner/Access; O – Other; S – Safety; T – Trustee; X – Exclusion or Security

Additional Site Summary Comments:

Concerns and Advice to Responders:

The concern is to keep oil from entering the marsh by excluding it at the tidal entry channel. Avoid disturbing wildlife and tracking oil around the site. This is a high visibility site with a lot of public awareness. Call Golden Gate National Recreational Area to advise of response activities 415-561-4620 (park police dispatch).

Hazard and Restrictions:

Be aware of swift currents directly offshore tidal channel mouth.

Site Strategies:**Site Validation Level: V**

Strategy: 2-403.1 Objective: Primary: Exclude oil from entering the mouth

Strategy: Exclude oil from entering the mouth of the tidal channel using a shallow lopsided chevron boom deployment. Anchor boom to shore west of the tidal mouth and angle out at about 45 degrees with 100 ft boom and then angle back to shore east of mouth using 200 ft of boom. Be sure to provide for a boom seal which will keep oil from getting around the shore boom ends at low tides.

Table of Response Resources

Equipment	Sub-Type	Size	Unit	QTY	Unit	Last Page Update
Boom	Harbor	6x6 inch		300	feet	
Anchor	Danforth	22 lb		3		
Vessel	Skiff or Punt			1		
Staff	Staff to Deploy			2		

Strategy: 2-403.2 Objective: Back-up: exclude / collect: capture of oil which escapes past primary protection

Strategy: Deploy deflection to shoreside collection in the tidal channel. Currents in the tidal channel are swift (can exceed 2 knots). Deploy swamp boom (300') at a very slight angle to collect oil on the east bank of the channel. Use mid boom anchor(s) and lines to keep boom from forming catenary curves (and promoting entrainment of oil). Establish a skimming pocket and backup collection boom (100' swampboom) to confine accumulating oil and allow collection. Back with sorbent. This deployment should be done from land: with the permission of NPS Personnel, you may drive right to the location. There is a foot bridge across the channel, and the channel is very shallow or empty at some tides.

Table of Response Resources

Equipment	Sub-Type	Size	Unit	QTY	Unit	Last Page Update
Boom	Swamp Boom	6x6 inch		400	feet	
Boom	Sorbent			300	feet	
Anchor	Danforth	22 lb		3		
Vac truck				1		
Staff	Staff to Deploy			2		

Strategy: 2-403.3 Objective: Exclude by berming with onsite substrate

Strategy: Using sand at the mouth of the channel and seaward of rip-rap, construct a berm with a culvert to permit tidal exchange. Make provision to block-off culvert if oil threatens. Contact NPS Personnel about front-end loader and culvert which may be available in the park.

Table of Response Resources

Equipment	Sub-Type	Size	Unit	QTY	Unit	Last Page Update
Skiploader				1		
culvert				1		
Staff	Staff to Deploy			3		

Logistics:

Directions: By land, Crissy Field is just east of the Golden Gate Bridge and is just north of Hwy 101. The wetland is at the east end of Crissy Field. By boat, the opening to the wetland is about a half mile west of Marina Park.

2-403-A Site Strategy - Crissy Field Tidal Marsh

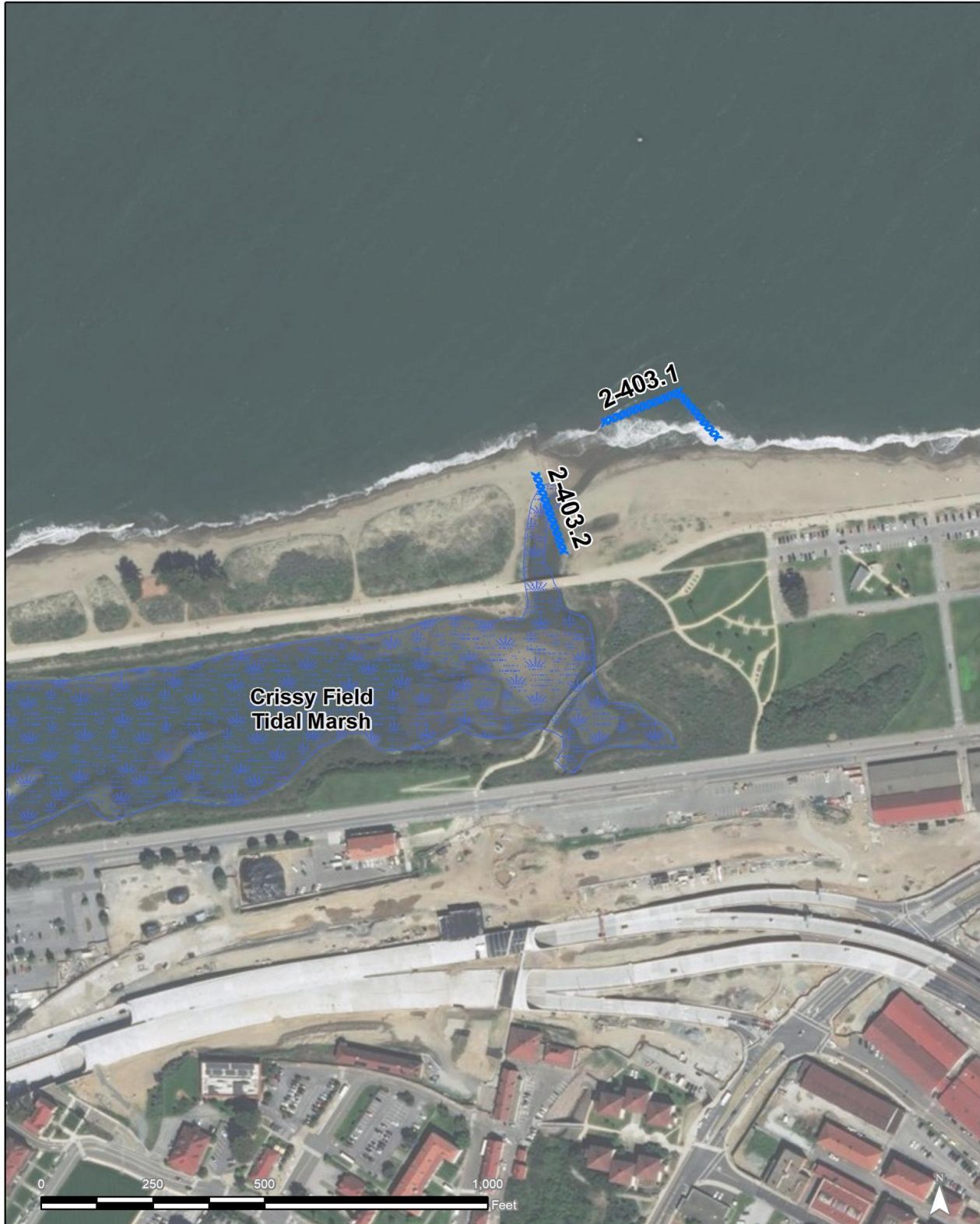
2-403-A

Land Access: All equipment types should coordinate with Park Service (NPS) authorization.

On-Water Limitations: Nearest marina is Gas House Cove a mile to the east.

Facilities, Staging Areas, Command Posts, Available Equipment: Crissy Field is a possible staging area for local activities - contact National Park Service (NPS).

Communications Problems: Good cell reception.



CDFW - OSPR & USCG Site: 2-403 Name: Chrissy Field Tidal Marsh

G. Ewing (OSPR) & M.Schommer (OSPR) Date: 4/27/2020

XXXXXXXXXXXXXXXXXXXXX Swamp Boom

County: Marin**ACP Division/Segment:** MR - Q - S001 MR - Q - S013**NOAA Chart:** 18649 Entrance to San Francisco Bay**Map Book:** Marin County, S**Decimal Degrees:** 37.876775 -122.489773**Site Description:**

This site includes Richardson Bay, the prolific eelgrass beds, salt-marshes, and tidally influenced, sheltered mudflats in the upper bay. Richardson Bay is a relatively shallow bay with numerous natural resources, most notably the pickleweed salt-marshes in the Pickleweed Inlet arm and in the ecological reserve in the northwest lobe. The mouth of the Bay is about one-mile wide and the length of the bay is about four miles long. Most of the shoreline is urbanized and rip-rapped. The average depth at low tide is about four feet (MLLW), though the south side, where the channel is located, is generally deeper. There are extensive mudflats at low tides, and the bay bottom is mud. There's an extensive bed of eelgrass in the south central portion of the bay, which varies year to year. Pacific herring spawn (Nov-Feb) and deposit their eggs on the eelgrass bed sub-structure and pier pilings. Numerous live-aboards reside on their vessels within Richardson Bay year-round.

Resources at Risk:**ESI and Habitat:** 8B Sheltered solid man-made structures

9A Sheltered tidal flats

8C Sheltered riprap

List of Resources at Risk:

	Resource Name	Status	Presence	Sensitivity
Birds	California Ridgeway's rail	FE, SE	Year-round	Mar - Aug
Birds	California black rail	FP, ST	Year-round	Mar - Jul
Fish	Pacific herring		Year-round	Nov - Apr
Fish	longfin smelt	ST	Year-round	Nov - May
Mammals	salt-marsh harvest mouse	FE, SE	Year-round	Mar - Nov
Mammals	harbor seal	FP	Year-round	Mar - Jul
Plants	eelgrass		Year-round	
Plants	San Francisco lessingia	FE, SE	Year-round	Jul - Nov

FT-Federally Threatened, FE-Federally Endangered, FP-Federally Protected, SE-State Endangered, ST-State Threatened, SP -State Protected, SR-State Rare, SSC-Species of Special Concern, BGEPA-Bald and Golden Eagle Protection Act, SSSP-State Special Status Species

List of Key Contacts:

Type	Name/Title	Organization	Phone
C	/Coordinator	Native American Heritage Commission	(916) 373-3710
C	/Coordinator	Northwest Information Center	(707) 588-8455
O	/Emergency Contact (24hr)	Marin County Emergency 911	(415) 472-0911
O	/Emergency Service Coordinator	Marin County Office of Emergency Services	(415) 250-0267
O	/Dispatch, 24-hr	Marin County Sheriff's Department	(415) 479-2311
O	/Harbor Master	Marin County, Richardson Bay	(415) 971-3919

C – Cultural, Historic, Archaeological; E – Entry/Owner/Access; O – Other; S – Safety; T – Trustee; X – Exclusion or Security

Additional Site Summary Comments:

This is important habitat for migratory marsh and water birds during winter and spring. Exposed rocks are resting habitat for birds and seals. Eelgrass beds are extensive and annually variable.

Concerns and Advice to Responders:

The main objective is to exclude oil from Richardson Bay by exclusion booming of the mouth. This can successfully be executed just inside the mouth, and will protect all the resources of the bay including the marshes at the back shorelines, the mudflats, endangered species, resident and migratory species, eelgrass beds and herring spawning sites. If front exclusion is not successful, secondary strategies will be executed to collect/divert oil.

Hazard and Restrictions:

Be aware of shallows and submerged obstructions. Boat traffic is restricted in northwest lobe of the main bay.

Site Strategies:**Site Validation Level: II**

Strategy: 2-420.1 Objective: Primary: Exclude oil at bay mouth by booming Sausalito main channel and Tiburon minor flood channels. This is main part (part 1) of a total exclusion at the bay mouth which would include Part 2: 2-420.2

Strategy: a) Exclude oil from the south channel by deploying about 1,500 ft of 9X9+ Hboom from the breakwater north of the ferry landing to (or near) Red channel marker "4" Cascade boom in 2 or 3 lengths to allow vessel passage through this exclusion.

B) At the Tiburon shore inside (west) of cone rock, deploy boom at a 45 degree angle across the nearshore channel for 600 ft and then the last 600 ft perpendicular to shore toward the deployment on the south channel.

Table of Response Resources

Equipment	Sub-Type	Size	Unit	QTY	Unit	Last Page Update
Boom	Harbor	9x9 inch		2700	feet	
Boom	Sorbent			300	feet	
Anchor	Danforth	22 lb		15		
Vessel	Boom Boat			1		
Vessel	Skiff or Punt			1		
Staff	Staff to Deploy			6		

Strategy: 2-420.2 Objective: Secondary exclusion; Part 2 - complete exclusion across the low current portion of the bay. This is added-on to previous or concurrent execution of Part 1 substrategy 2-420.1

Strategy: Boom across the bay mouth from end of southerly deployment to the end of the Tiburon side deployment. Connect boom ends if possible. Otherwise uses sorbents or skirted boom to seal the gaps between the boom sets in Strategy 1 and this deployment strategy (2).

Table of Response Resources

Equipment	Sub-Type	Size	Unit	QTY	Unit	Last Page Update
Boom	Harbor	9x9 inch		3300	feet	
Boom	Sorbent			300	feet	
Anchor	Danforth	22 lb		8		
Vessel	Boom Boat			1		
Vessel	Skiff or Punt			1		
Staff	Staff to Deploy			6		

Strategy: 2-420.3 Objective: Exclude/collect oil that has entered Richardson Bay

Strategy: Establish the following collections / exclusions. Depending on the amount and kind of oil, sorbents may be effectively be substituted for shoreside skimming systems (SSS):

a) Deploy 1800' 6X6+ boom diagonal from Strawberry Pt. to the jetty with a J-hook collection pocket; back the collection pocket with 300' sorbent boom. Use channel markers and anchors to maintain diagonal in the current. A cascade may be necessary to accommodate boat traffic. If there are skimmable quantities of oil, deploy a SSS for collection.

B) Deploy 1500' 6X6+ boom diagonal from Strawberry Pt. to the east with a J-hook collection pocket: and back the collection pocket with 300' sorbent boom. If there are skimmable quantities of oil, deploy a SSS for collection.

C) Close the tidegate to Belvedere Lagoon at north east margin.

Table of Response Resources

Equipment	Sub-Type	Size	Unit	QTY	Unit	Last Page Update
Boom	Swamp Boom	6x6 inch		3300	feet	
Boom	Oil Snare (pom-pom)			600	feet	
Boom	Sorbent			600	feet	
Anchor	Danforth	22 lb		12		
Vessel	Boom Boat			2		
Vessel	Skiff or Punt			1		
skimmer	self propelled			1		
Staff	Staff to Deploy			8		

Logistics:

Directions: Closest water access is from Marinas in Sausalito which open to Richardson Bay. By vehicle, marshes can be accessed by exiting Hwy 101 at Sausalito or Tiburon at Almonte or Tiburon Blvd.

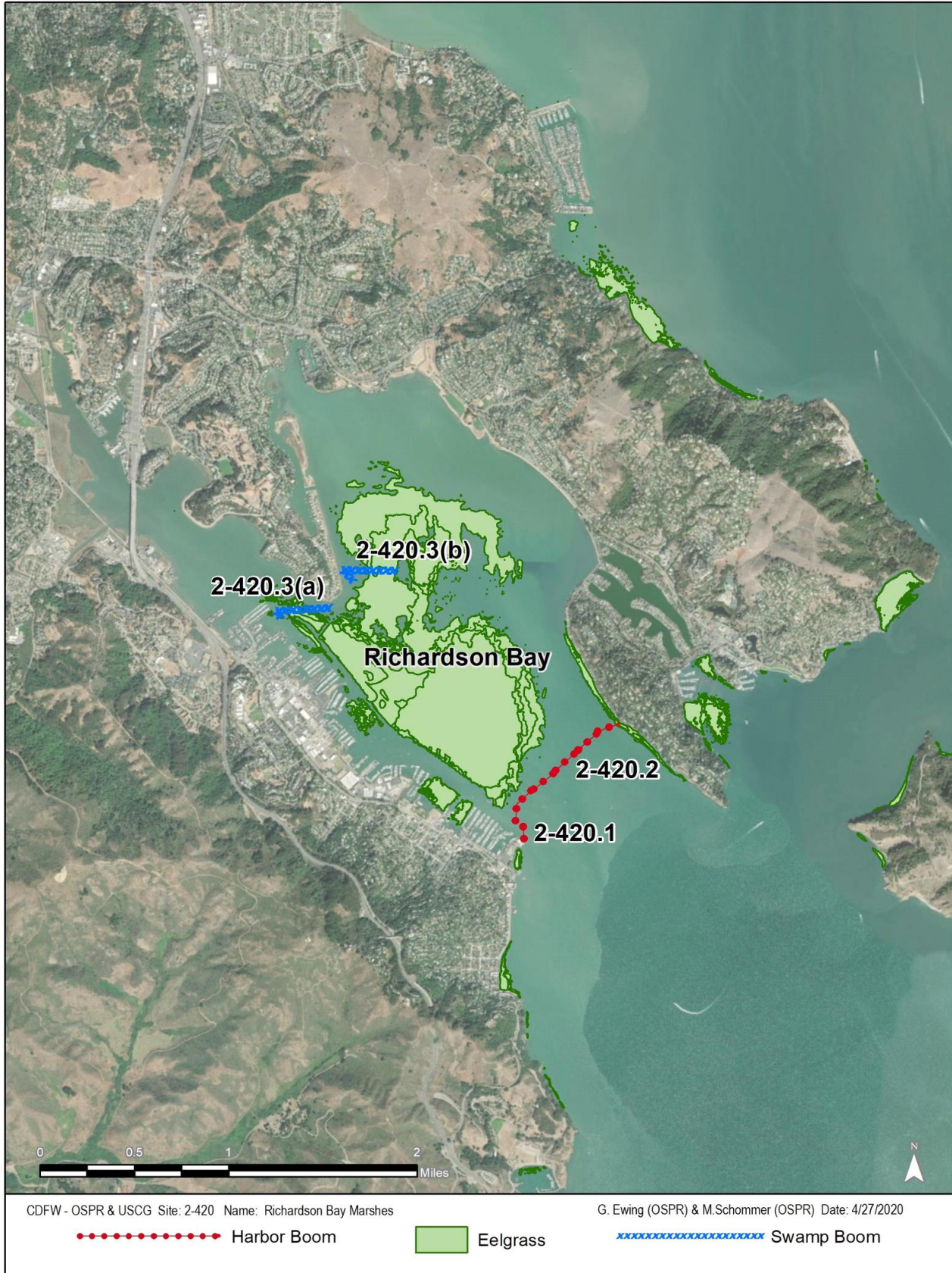
Land Access: Multiple access points throughout Bay.

On-Water Limitations: Shallows everywhere; exceeding shallows in back & north bay. Launch on site at Clipper Yacht Harbor, Harbor Dr. Sausalito. Many marinas and services available.

Facilities, Staging Areas, Command Posts, Available Equipment: US Corp of Engineers dock is onsite and is most convenient site for staging and launch ramp. Many facilities are available at Sausalito.

Communications Problems: Good cell reception throughout area.

Additional Operational Comments: Exclusion by 2-420.1 and 2-420.2 was initially a single strategy and was tested successfully in 2001. Splitting of strategy was done to allow flexibility of response resource utilization.



County: Marin ACP Division/Segment: MR - S - S001 MR - S - S004

NOAA Chart: Entrance to San Francisco Bay 18649 Map Book: AAA - Mill Vall Decimal Degrees: 37.894741 -122.457592

Site Description:

This site includes the eastern shore of the Tiburon Peninsula from Bluff Point in the south to north of El Campo. The current from the north sweeps past the peninsula so that oil and debris collect here naturally. There are a variety of shoreline types on the Tiburon Peninsula. They vary from rock bluff outcroppings and platforms to gravel/cobble and sand beaches. Most are exposed to moderate and high energy from boat wakes, wind waves, and strong nearshore currents. Eelgrass beds are located nearshore north of El Campo and vary in density from year to year. Public health and safety and birds feeding and resting on the beaches and in nearshore waters are the major concerns. The Tiburon Peninsula is a residential area but includes Paradise Cove County Park. Other than the county park, most shorelines are accessible only by water.

Resources at Risk:

- ESI and Habitat: 8A Sheltered scarps in bedrock, mud, or clay
- 8D Sheltered rocky rubble shores
- 8B Sheltered solid man-made structures

List of Resources at Risk:

	Resource Name	Status	Presence	Sensitivity
Amphibians	California red-legged frog	FT, SSC	Year-round	Nov - Apr
Fish	longfin smelt	ST	Year-round	Nov - May
Fish	Pacific herring		Year-round	Nov - Apr
Mammals	harbor seal	FP	Year-round	Mar - Jul
Mammals	sea lion	FP	Year-round	Mar - Aug
Plants	eelgrass		Year-round	

FT-Federally Threatened, FE-Federally Endangered, FP-Federally Protected, SE-State Endangered, ST-State Threatened, SP -State Protected, SR-State Rare, SSC-Species of Special Concern, BGEPA-Bald and Golden Eagle Protection Act, SSSP-State Special Status Species

List of Key Contacts:

Type	Name/Title	Organization	Phone
C	/Coordinator	Native American Heritage Commission	(916) 373-3710
C	/Coordinator	Northwest Information Center	(707) 588-8455
O	/Emergency Contact (24hr)	Marin County Emergency 911	(415) 472-0911
O	/Emergency Service Coordinator	Marin County Office of Emergency Services	(415) 250-0267
O	/Dispatch, 24-hr	Marin County Sheriff's Department	(415) 479-2311
O	/Office	Paradise Cay Yacht Harbor	(415) 435-4292

C – Cultural, Historic, Archaeological; E – Entry/Owner/Access; O – Other; S – Safety; T – Trustee; X – Exclusion or Security

Additional Site Summary Comments:

Seabirds occasion this area for resting and feeding. Harbor seals and sea lions forage here.

Concerns and Advice to Responders:

This is a natural collection zone: oil tends to collect in nearshore eddies, particularly in the southern part of the Paradise Cove adjacent to Pt Chauncey, but little comes ashore. Skimmable quantities of oil can be easily collected by self propelled skimmers due to deep waters. Natural resources of concern such as eelgrass, brown pelicans and waterfowl use this area for feeding and roosting.

Hazard and Restrictions:

Submerged rocks along most beaches, steep cliffs along most shorelines. Avoid eelgrass beds w/ outboard props.

Site Strategies:**Site Validation Level: II**

Strategy: 2-421.1 Objective: At Paradise cove, deflect to collection during ebb and away from shores during flood

Strategy: Deploy 1000 ft 9X9+ deflection booms at both Point Chauncey and El Campo to deflect/divert oil out of currents into nearshore eddies, on ebb tides. Same boom set will also help keep oil in current.

To minimize oiling of Paradise Cove shoreline, use 4,500 ft of swamp boom (6X6+) under most conditions (and 9X9+ when there is wind chop at this protected location).

Table of Response Resources

Equipment	Sub-Type	Size	Unit	QTY	Unit	Last Page Update
Boom	Harbor	9x9 inch		2000	feet	
Boom	Swamp	6x6 inch		4500	feet	
Anchor	Danforth	40 lb		16		
Vessel	Boom Boat			2		
Vessel	Skiff or Punt			1		
Staff	Staff to Deploy			8		

Strategy: 2-421.2 Objective: At Bluff Point, deflect oil to natural collection sites

Strategy: Deploy boom from the two points north of Bluff Point to deflect oil to natural collection sites: 600 ft of 9X9+ Hboom should be deployed from the shore just north of each point at 40 degree angles into the current to direct eddying oil to shoreline. Depending on oil type, oil snare or sorbents at shore may aid collection and reduce shoreline cleanup.

Table of Response Resources

Equipment	Sub-Type	Size	Unit	QTY	Unit	Last Page Update
Boom	Harbor	9x9 inch		1200	feet	
Boom	Oil Snare (pom-pom)			600	feet	
Anchor	Danforth	40 lb		7		
Vessel	Boom Boat			1		
Vessel	Skiff or Punt					

Logistics:

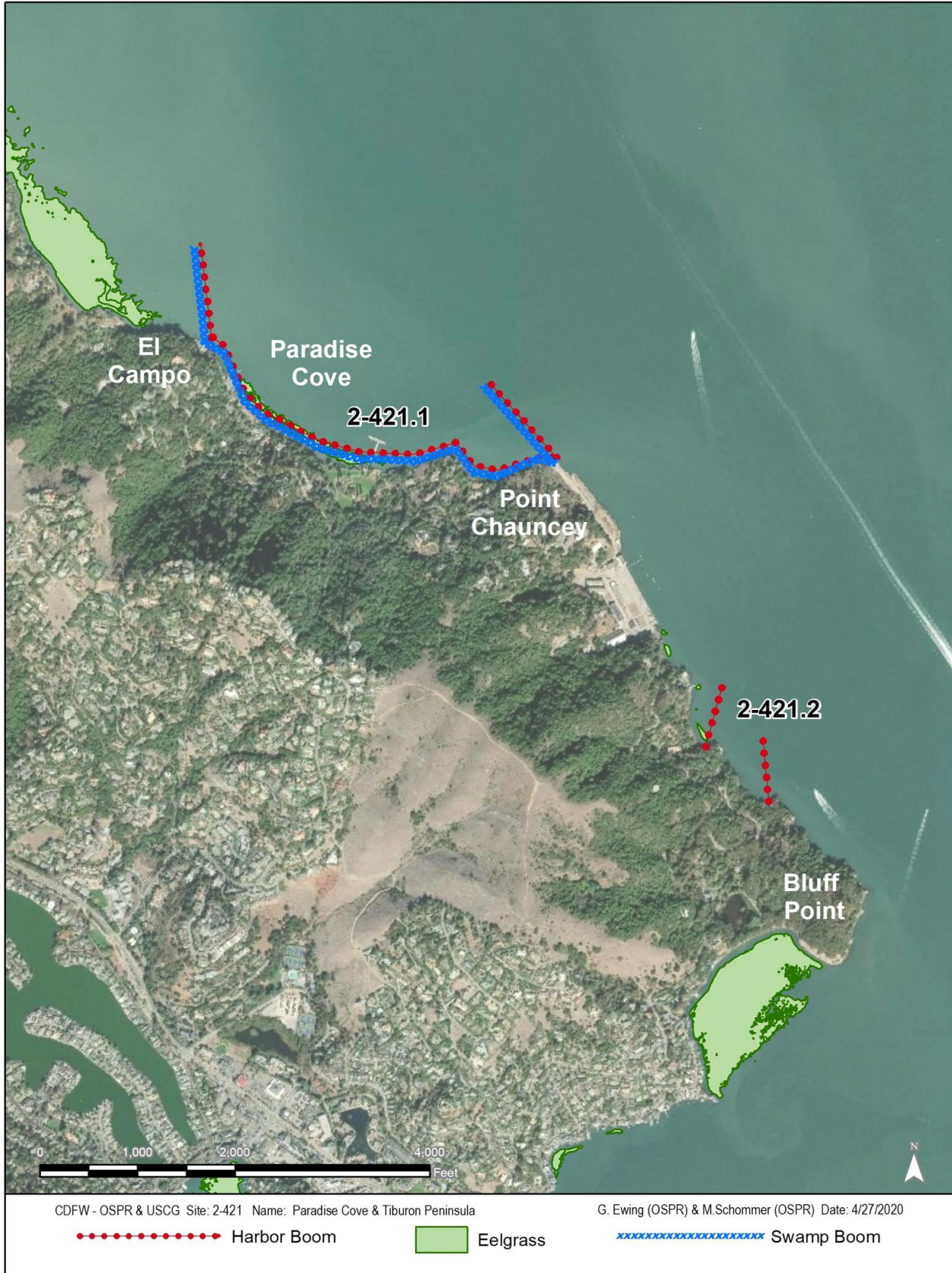
Directions: From the Richmond-San Rafael Bridge, take Highway 101 south and exit at Paradise Drive. Proceed to Paradise Beach County Park.

Land Access: Paved to Paradise Cove County Park. Coordinate with Marin Co Open Space Rangers for access.

On-Water Limitations: Generally good. Occasional submerged rocks. Services located at Sausalito and Richmond.

Facilities, Staging Areas, Command Posts, Available Equipment: The Paradise Cove County Park and Tiburon Oceanographic Center may be used as a staging area or field office.

Communications Problems: Cell reception may be spotty near cliff base.



County: Marin **ACP Division/Segment:** MR - R - S011**NOAA Chart:** Entrance to San Francisco Bay 18649 **Map Book:** AAA - Mill Vall **Decimal Degrees:** 37.880067 -122.442289**Site Description:**

Keil Cove is located on the southeastern shore of the Tiburon Peninsula, adjacent to Raccoon Straits and immediately west of Bluff Point. Keil Cove is a coarse-sand and pebble/gravel/cobble beach bounded by rocky headlands on the south east end of the Tiburon Peninsula. There are eelgrass beds within the cove, which are the primary concern at this locale. The blades of the eelgrass remain below the surface of the water except at the lowest tides. Although some of the strongest currents in San Francisco Bay occur immediately offshore of this cove, the cove itself is more protected from wind waves and strong currents than most of the Tiburon Peninsula. This site and the adjacent land is privately owned residential property.

Resources at Risk:

ESI and Habitat: 8D Sheltered rocky rubble shores
 8A Sheltered scarps in bedrock, mud, or clay
 5 Mixed sand and gravel beaches

List of Resources at Risk:

	Resource Name	Status	Presence	Sensitivity
Amphibians	California red-legged frog	FT, SSC	Year-round	Nov-Apr
Fish	Pacific herring		Year-round	Nov - May
Fish	longfin smelt	ST	Year-round	Nov- May
Plants	eelgrass		Year-round	

FT-Federally Threatened, FE-Federally Endangered, FP-Federally Protected, SE-State Endangered, ST-State Threatened, SP -State Protected, SR-State Rare, SSC-Species of Special Concern, BGEPA-Bald and Golden Eagle Protection Act, SSSP-State Special Status Species

List of Key Contacts:

Type	Name/Title	Organization	Phone
C	/Coordinator	Native American Heritage Commission	(916) 373-3710
C	/Coordinator	Northwest Information Center	(707) 588-8455
O	/Emergency Service Coordinator	Marin County Office of Emergency Services	(415) 250-0267
O	/Dispatch, 24-hr	Marin County Sheriff's Department	(415) 479-2311

C – Cultural, Historic, Archaeological; E – Entry/Owner/Access; O – Other; S – Safety; T – Trustee; X – Exclusion or Security

Additional Site Summary Comments:

The coarse sand/gravel substrate beach is difficult to clean. Eelgrass beds are vulnerable at the lowest tides.

Concerns and Advice to Responders:

Eelgrass beds are vulnerable only on the lowest tides, but once oiled would, continue to produce a sheen for several weeks and greatly extend the cleanup period. Herring spawn here during the winter (Feb-Apr). The coarse sand/gravel/cobble beach is very difficult to clean.

Hazard and Restrictions:

The water is very shallow throughout the cove, avoid outboard props in the eelgrass beds at low tides. Although, the gravel beach is steep, experienced boat operators have found that landing of beach cleanup personnel was easiest at the Bluff Point end of the beach.

Site Strategies:**Site Validation Level: II**

Strategy: 2-422.1 Objective: Protection booming for eelgrass and coarse sand beach.

Strategy: Deploy 2400 feet of Swamp boom from just west of Bluff Point to the rock, or gravel beach at the southwest end of the cove. Deploy the boom in the shallow, quiet water of the cove. Use sufficient anchors, every 100 to 200 feet, to prevent the boom from moving into the currents and wind of Raccoon Strait.

Table of Response Resources

Equipment	Sub-Type	Size	Unit	QTY	Unit	Last Page Update
Boom	Swamp	6x6 inch		2400	feet	
Anchor	Danforth	22 lb		7		
Vessel	Boom Boat			1		
Vessel	Skiff or Punt			1		
Staff	Staff to Deploy			6		

Logistics:

Directions: Land access is through private property. Marin County OES may be able to get permission for access across private property. Take highway 101 to Mill Valley, Take the Tiburon Blvd (state highway 131) exit. Take Tiburon Blvd east to the business district of Tiburon. Continue on Paradise Dr. to the residences past Agreste Ave. Access is best by boat. To launch boats take highway 101 to Sausalito, 3 miles north of Golden Gate Bridge. Take Bridgeway exit at north end of Sausalito about 1 mile south of the highway 1 exit. Go southeast on Bridgeway towards downtown Sausalito and the USCOE Bay Model. Turn left on Harbor Drive. Take harbor drive to the launch ramp at Clipper Yacht Harbor.

Land Access: Private Property, access by water with Landowners permission only.

On-Water Limitations: Very shallow water. Services at Sausalito and Richmond.

Facilities, Staging Areas, Command Posts, Available Equipment: Possible staging and field post at Tiburon Oceanographic Center.

Communications Problems: Cell reception varies near cliff base.



County: Marin ACP Division/Segment: MR - R - S001 MR - R - S004

NOAA Chart: Entrance to San Francisco Bay 18649 Map Book: AAA - Mill Vall Decimal Degrees: 37.866413 -122.435129

Site Description:

Angel Island is a state park located approx one-mile SE of the Tiburon Peninsula. It has an area of about one square mille, and a maximum elevation of 781 feet. There is a dock and numerous floating berths in Ayala Cove located on the North Western side of the island. A road runs the perimeter of the island. Sand/gravel/cobble pocket beaches exists on the North Eastern, Eastern and South Eastern shores. Rocky bluffs make up a large part of the shoreline. Strong currents run through Raccoon Straits. Back eddies occur along the South Eastern shore and at numerous other locations around the island. An underwater cable is located between Ayala Cove and Point Stuart. Shorelines have been oiled to different degrees in several spills, and the eastern shoreline is a natural collection area for oil and other floating debris.

Resources at Risk:

- ESI and Habitat: 2A Exposed wave-cut platforms in bedrock, mud, or clay
- 1C Exposed rocky cliffs with boulder talus base
- 5 Mixed sand and gravel beaches

List of Resources at Risk:

	Resource Name	Status	Presence	Sensitivity
Fish	Pacific herring		Year-round	Nov - Apr
Fish	longfin smelt	ST	Year-round	Nov - May
Mammals	harbor seal	FP	Year-round	Mar - Jul
Mammals	California sea lion	FP	Year-round	Mar - Aug
Plants	eelgrass		Year-round	
Plants	northern meadow sedge	SSSP	Year-round	May - Jul

FT-Federally Threatened, FE-Federally Endangered, FP-Federally Protected, SE-State Endangered, ST-State Threatened, SP -State Protected, SR-State Rare, SSC-Species of Special Concern, BGEPA-Bald and Golden Eagle Protection Act, SSSP-State Special Status Species

List of Key Contacts:

Type	Name/Title	Organization	Phone
C	/Coordinator	Native American Heritage Commission	(916) 373-3710
C	/Coordinator	Northwest Information Center	(707) 588-8455
E	/Environmental Scientist	California State Parks	(831) 335-6384
E	/Manager	California State Parks, Angel Island	(415) 435-3149
O	/Northern Comms Center	California State Parks (Dispatch)	(916) 358-1300
O	/Emergency Contact (24hr)	Marin County Emergency 911	(415) 472-0911
O	/Emergency Service Coordinator	Marin County Office of Emergency Services	(415) 250-0267
O	/Dispatch, 24-hr	Marin County Sheriff's Department	(415) 479-2311

C – Cultural, Historic, Archaeological; E – Entry/Owner/Access; O – Other; S – Safety; T – Trustee; X – Exclusion or Security

Additional Site Summary Comments:

Seabirds, pinnepeds, and many other marine plants and animals utilize this site year-round.

Concerns and Advice to Responders:

Oil tends to collect on the eastern shore of the island, particularly on the beaches north of Blunt Point and Quarry Point. The beach between Blunt Point and the pier about 100 yards to the north is a mixture of coarse sand and gravel. Petroleum may penetrate this beach to a depth of six inches. The fine grained sand beach to the north would be much easier to clean. A similar situation exists to the north of Quarry Point where gravel beaches are both north and south of a fine sand grains.

Hazard and Restrictions:

Submerged rocks along most beaches, steep cliffs along most shorelines. Currents around points may be strong on steep tides due to deep water (>50 ft).

Site Strategies:**Site Validation Level: III**

Strategy: 2-423.1 Objective: Objective: Collection: natural collection at Blunt Pt & Quarry Pt.

Strategy: The following are the instructions to use this area as a collection site with a minimal amount of cleanup.

a) At Blunt Pt deploy 600 feet of 9X9+ Hboom in a northeasterly direction from the sand beach north of the pier to collect oil. To prevent oiling of the gravel beach south of the pier, deploy 800 ft of 9X9+ Hboom from the south side of Blunt Point to the pier to the north of Blunt Point.

B) At Quarry Point, the shoreline and the eddies just off the shoreline are natural collection areas for shoreline and onwater recovery. Collect oil on fine grained beach about 1000' north of Quarry Pt by deploying 600 feet of 9X9+ Hboom from the beach in a northeasterly direction. To prevent oiling of the gravel beach to the north of the collection site, deploy 1,000' of boom parallel to the gravel beach. Anchor the ends at the high tide line and anchor the midpoint 50 feet offshore. To prevent oiling of the gravel beach to the south of the collection beach, deploy 600 feet of 9X9+ Hboom from the shoreline near the pier at Quarry Pt to the south end of the fine grained sand beach.

C) Look for oil offshore. Direct on-water recovery vessels to concentrations offshore. Set up Shore Side Skimming

(SSS) as necessary. Both sites have some roads and piers for support of SSS.

Table of Response Resources

Equipment	Sub-Type	Size	Unit	QTY	Unit	Last Page Update
Boom	Harbor	9x9 inch	2600	feet		<i>Strategy Updated:</i>
Boom	Swamp	6x6 inch	1200	feet		<i>Last Test: 7/26/2016</i>
Anchor	Danforth	22 lb	20			
Vessel	Boom Boat		1			
Vessel	Skiff or Punt		1			
Staff	Staff to Deploy		8			

Logistics:

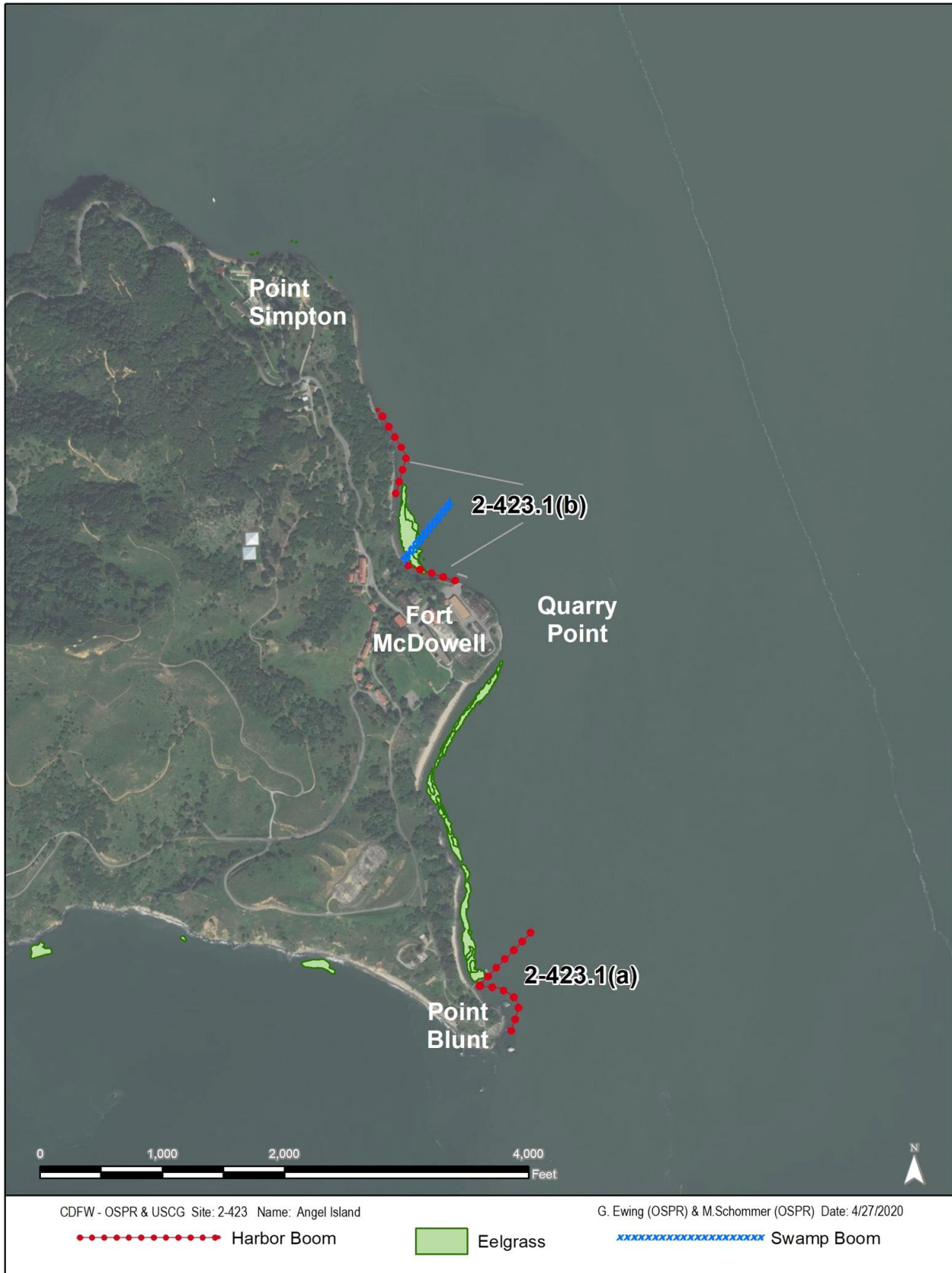
Directions: Angel Island is a state park located SE of the Tiburon Peninsula. Access to the island is by water only. Ferry service is available from Tiburon. Numerous launch ramps and boat launching facilities are located in Sausalito. To launch boats take highway 101 to Sausalito, 3 miles north of Golden Gate Bridge. Take Bridgeway exit at north end of Sausalito about 1 mile south of the highway 1 exit. Go southeast on Bridgeway towards downtown Sausalito and the USCOE bay model. Turn left on Harbor Drive. Take harbor drive to the launch ramp at Clipper Yacht Harbor.

Land Access: Equipment and vehicles would have to be transported over water.

On-Water Limitations: Submerged rocks off most beaches. Berths are available in Ayala Cove. There are piers just north of Blunt Point and at Quarry Point.

Facilities, Staging Areas, Command Posts, Available Equipment: California Parks and recreation can make space available for staging areas, and field posts. Marin County OES may be able to identify a command post.

Communications Problems: Cell coverage may be spotty depending your service.



County: Marin**ACP Division/Segment:** MR - S - S006 MR - S - S005**NOAA Chart:** Entrance to San Francisco Bay 18649 **Map Book:** AAA - Mill Vall **Decimal Degrees:** 37.905978 -122.474655**Site Description:**

Paradise Cay eelgrass bed lies to the north west side of the Tiburon Peninsula. It is bounded on the north by Paradise Cay Marina and on the south by El Campo. The shoreline is protected behind Tiburon Peninsula and prograding, and so, has fine grain sand beach and mudflats extending out from shore. There is an occasional patchy emergent vegetation along the shore. Eelgrass beds are scattered throughout the site in shallow water beginning at Paradise Cay and near the shoreline for over one linear mile. Eelgrass structure is subtidal but fronds are commonly on the surface during low tide cycles.

Resources at Risk:*ESI and Habitat:* 8A Sheltered scarps in bedrock, mud, or clay

8B Sheltered solid man-made structures

5 Mixed sand and gravel beaches

List of Resources at Risk:

	Resource Name	Status	Presence	Sensitivity
Fish	Pacific herring		Year-round	Nov - Apr
Fish	longfin smelt	ST	Year-round	Nov - May
Plants	eelgrass		Year-round	

FT-Federally Threatened, FE-Federally Endangered, FP-Federally Protected, SE-State Endangered, ST-State Threatened, SP -State Protected, SR-State Rare, SSC-Species of Special Concern, BGEPA-Bald and Golden Eagle Protection Act, SSSP-State Special Status Species

List of Key Contacts:

Type	Name/Title	Organization	Phone
C	/Coordinator	Native American Heritage Commission	(916) 373-3710
C	/Coordinator	Northwest Information Center	(707) 588-8455
O	/Emergency Contact (24hr)	Marin County Emergency 911	(415) 472-0911
O	/Emergency Service Coordinator	Marin County Office of Emergency Services	(415) 250-0267
O	/Dispatch, 24-hr	Marin County Sheriff's Department	(415) 479-2311
O	/Office	Paradise Cay Yacht Harbor	(415) 435-4292
T	/Agency Representative	California Department of Fish and Wildlife	(707) 644-2812

C – Cultural, Historic, Archaeological; E – Entry/Owner/Access; O – Other; S – Safety; T – Trustee; X – Exclusion or Security

Additional Site Summary Comments:

Concerns and Advice to Responders:

Eelgrass has high ecological habitat value and is utilized by numerous species. Eelgrass leaves (fronds) are rough, and unlike most water plants, oil will readily attach. Booming off eelgrass beds will also protect the sandy shoreline.

Hazard and Restrictions:

Shallow throughout shoreline (tide dependent). Some obstructions near shore where old piers/pilings are in evident. Avoid outboard prop engines transitting thru eelgrass beds.

Site Strategies:**Site Validation Level: II**

Strategy: 2-424.1 Objective: Primary: Assess vulnerability of eelgrass to oil

Strategy: Assign a scientist to assess eelgrass exposure to oil at prevailing tides. Best vehicle is aircraft or skiff. Eelgrass is only susceptible when at negative tides.

Table of Response Resources

Equipment	Sub-Type	Size	Unit	QTY	Unit	Last Page Update
Personnel	OSPR Staff ES			1		

Strategy: 2-424.2 Objective: Exclusion around eelgrass nearshore area immediately south of Paradise Cay

Strategy: Use 5,100 ft of Harbor boom (9X9) under calm conditions and 9X9+ Hboom when there is chop at this protected location from the southeast corner (jetty) of Paradise Cay Marina to El Campo Point to exclude oil from eelgrass and shoreline.

Table of Response Resources

Equipment	Sub-Type	Size	Unit	QTY	Unit	Last Page Update
Boom	Harbor	9x9 inch		5100	feet	
Anchor	Danforth	22 lb		15		
Vessel	Boom Boat			1		
Vessel	Skiff or Punt			1		
Staff	Staff to Deploy			4		

Strategy: 2-424.3 Objective: Exclude oil from entering Paradise Cay Marina

Strategy: Deploy 250' Harbor boom in chevron configuration at each of two entrances.

Table of Response Resources

Equipment	Sub-Type	Size	Unit	QTY	Unit	Last Page Update
Boom	Harbor	9x9 inch		500	feet	
Anchor	Danforth	22 lb		6		
Vessel	Skiff or Punt			1		
Staff	Staff to Deploy			2		

Logistics:

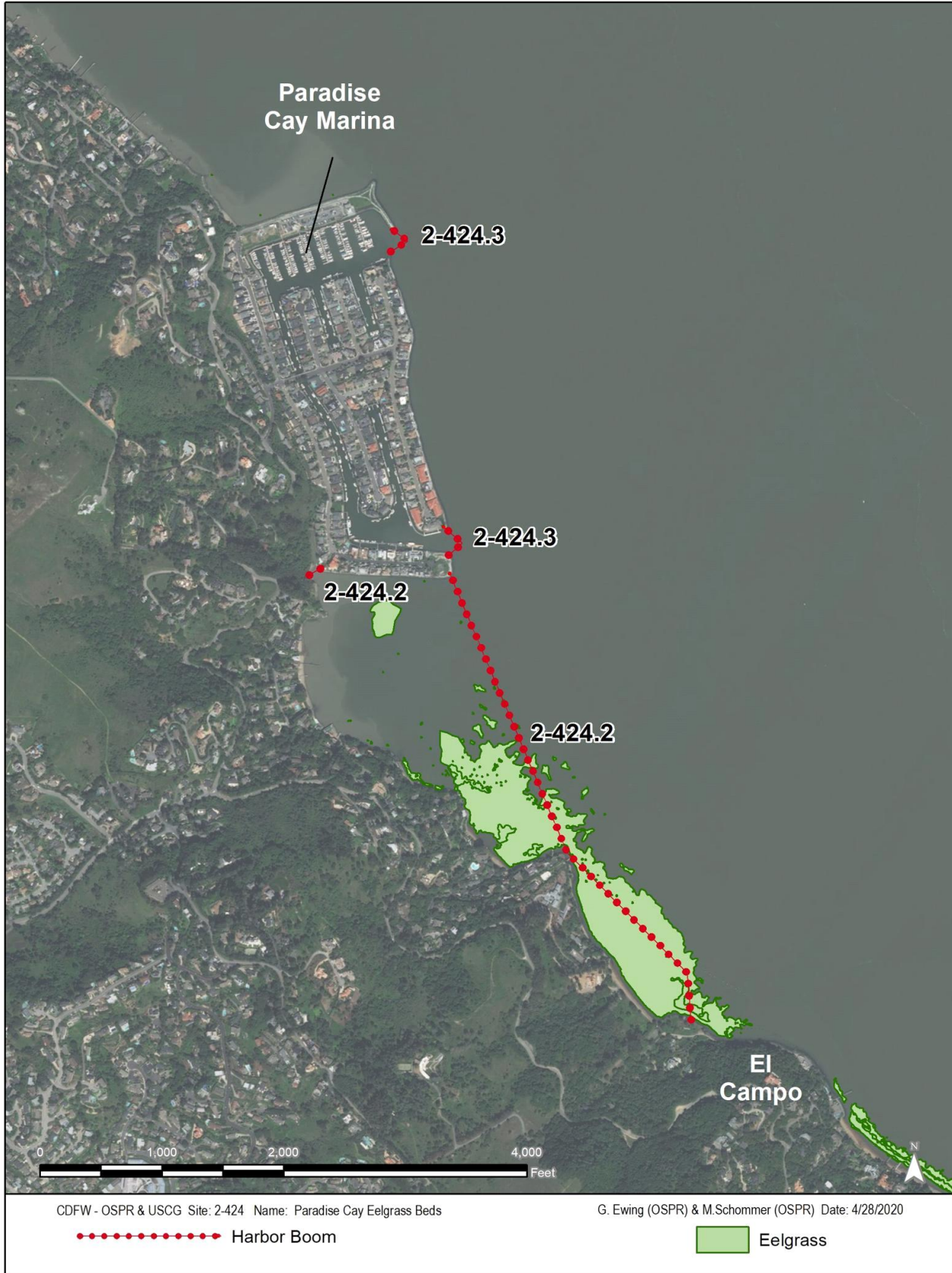
Directions: 1) From the south - US 101 NB to the Tiburon Blvd exit toward E. Blithedale. Turn right onto Tiburon Blvd. Turn left onto Trestle Glen Blvd. Turn left onto Paradise Dr. Turn right onto Antilles Way. Turn right onto Martinique and turn right onto Trinidad Dr and follow down to the end. 2) From the north - US 101 SB to the Tamalpais Dr exit toward Paradise Dr. Turn left onto Tamalpais Dr. Turn right onto San Clemente Dr. San Clemente Dr becomes Paradise Dr. Turn left onto Antilles Way. Turn Left onto Martinique Ave. Turn right onto Trinidad Dr and follow down to the end.

Land Access: Good land access at Paradise Cay Marina.

On-Water Limitations: Shallow water. Services at either Sausalito and Richmond.

Facilities, Staging Areas, Command Posts, Available Equipment: Staging at Paradise Cay. Boom may be pulled from truck onto water. Alternative is Paradise Cove County Park.

Communications Problems: Good cell reception throughout.



County: Marin**ACP Division/Segment:** MR - T - S001 MR - T - S005**NOAA Chart:** 18649 Entrance to SF Bay **Map Book:****Decimal Degrees:** 37.932787 -122.506461**Site Description:**

The site includes the salt-marshes and mudflats from Corte Madera Channel to Paradise Cay Yacht Harbor and the marshes up Corte Madera Creek. This site also includes Corte Madera Marsh State Marine Park. The site is a very shallow embayment with a prograding shoreline and an emergent salt-marsh at the back bay. Historically, the high marsh had been diked. The diked marshes are now open to tidal exchange, and the north half is the Corte Madera State Ecological Reserve, owned and managed by the CA Dept of Fish and Wildlife. The mudflats in front are very shallow, and there is rarely any significant wave action here. Special Status Species are found here year-round. The site is heavily used by migratory shorebirds and waterfowl during the fall and winter months.

Resources at Risk:**ESI and Habitat:** 10A Salt - and brackish-water marshes

6B Riprap

9B Vegetated low banks

List of Resources at Risk:

	Resource Name	Status	Presence	Sensitivity
Birds	California Ridgeway's rail	FE, SE	Year-round	Mar - Aug
Birds	California black rail	FP, ST	Year-round	Mar - Jul
Fish	longfin smelt	ST	Year-round	Nov - May
Fish	steelhead - Central/Northern California	FT	Year-round	Jan - Apr
Mammals	salt-marsh harvest mouse	FE, SE	Year-round	Mar - Nov
Mammals	harbor seal	FP	Year-round	Mar-Jul
Plants	Pt. Reyes bird's-beak	SSSP	Year-round	Jul - Oct
Plants	salt marsh bird's beak	FE, SE	Year-round	May - Oct

FT-Federally Threatened, FE-Federally Endangered, FP-Federally Protected, SE-State Endangered, ST-State Threatened, SP -State Protected, SR-State Rare, SSC-Species of Special Concern, BGEPA-Bald and Golden Eagle Protection Act, SSSP-State Special Status Species

List of Key Contacts:

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C	/Coordinator	Northwest Information Center	(707) 588-8455
O	/Emergency Contact (24hr)	Marin County Emergency 911	(415) 472-0911
O	/Emergency Service Coordinator	Marin County Office of Emergency Services	(415) 250-0267
O	/Dispatch, 24-hr	Marin County Sheriff's Department	(415) 479-2311
T	/Agency Representative	NOAA National Marine Fisheries Service	(562) 980-3232

C – Cultural, Historic, Archaeological; E – Entry/Owner/Access; O – Other; S – Safety; T – Trustee; X – Exclusion or Security

Additional Site Summary Comments:

There are a number of different habitats at risk at this site.

Concerns and Advice to Responders:

The salt-marshes are very sensitive, with protected species, and are almost impossible to clean or rehabilitate. There are additional marshes up Corte Madera Creek. The strategy is to exclude oil from being carried into the back marsh by closing small tidal inlets and excluding oil from the entire site by cascading boom across the entire marshfront landward of the currents and eddies.

Hazard and Restrictions:

There are shallows and obstructions throughout the bay. Local knowledge is important for navigation here. Larkspur Ferry vessels need access unless vessel traffic is closed by USCG.

Site Strategies:**Site Validation Level: II**

Strategy: 2-425.1 Objective: Exclude oil from entering tidal inlets.

Strategy: At the marshfront, deploy boom across each of the eight tidal sloughs at the margin of the emergent marsh using short lengths of 100 feet of swamp boom backed with sorbent and staked in place.

Table of Response Resources

Equipment	Sub-Type	Size	Unit	QTY	Unit	Last Page Update
Boom	Swamp	6x6 inch		900	feet	
Boom	Sorbent			900	feet	
Anchor	Danforth	22 lb		16		
Anchor	Stakes			16		
Vessel	Boom Boat			1		
Vessel	Skiff or Punt			1		
Staff	Staff to Deploy			6		

Strategy: 2-425.2 Objective: Exclude oil from entering Creek mouth.

Strategy: Deploy 800 ft of 9X9+ Hboom at a diagonal across the mouth of Corte Madera, from the north shoreline next to Ferry terminal, across Corda Madera Creek using green channel marker: G "17" as midpoint, to south shore. Ensure exclusion of large inlet on south shore and sufficient boom to provide shore seals during tide changes.

Table of Response Resources

Equipment	Sub-Type	Size	Unit	QTY	Unit	Last Page Update
Boom	Harbor	9x9 inch		800	feet	
Anchor	Danforth	22 lb		5		
Vessel	Boom Boat			1		
Vessel	Skiff or Punt			1		
Staff	Staff to Deploy			5		

Strategy: 2-425.3 Objective: Exclude oil from entering cove mouth, creek, and tidal creeks

Strategy: To exclude oil from cove, boom across cove (6000' 9X9+ and 1500'6X6+ in 1000' or smaller lengths) from San Quentin Prison shoreline (DO NOT ACCESS SHORELINE without making arrangements through Marin Co OES) directly south to a dock at a school north of Paradise Cay. Boom may be continuous or keep cascades close together to maintain exclusion (leave trailing ends and tie together or close gaps with boom and sorbent). In the Corte Madera Channel, cascade boom to leave a passage though the boom for boat traffic (ferry traffic).

Table of Response Resources

Equipment	Sub-Type	Size	Unit	QTY	Unit	Last Page Update
Boom	Harbor	9x9 inch		6000	feet	
Boom	Swamp	6x6 inch		1500	feet	
Anchor	Danforth	22 lb		22		
Vessel	Boom Boat			3		
Vessel	Skiff or Punt			1		
Staff	Staff to Deploy			12		

Logistics:

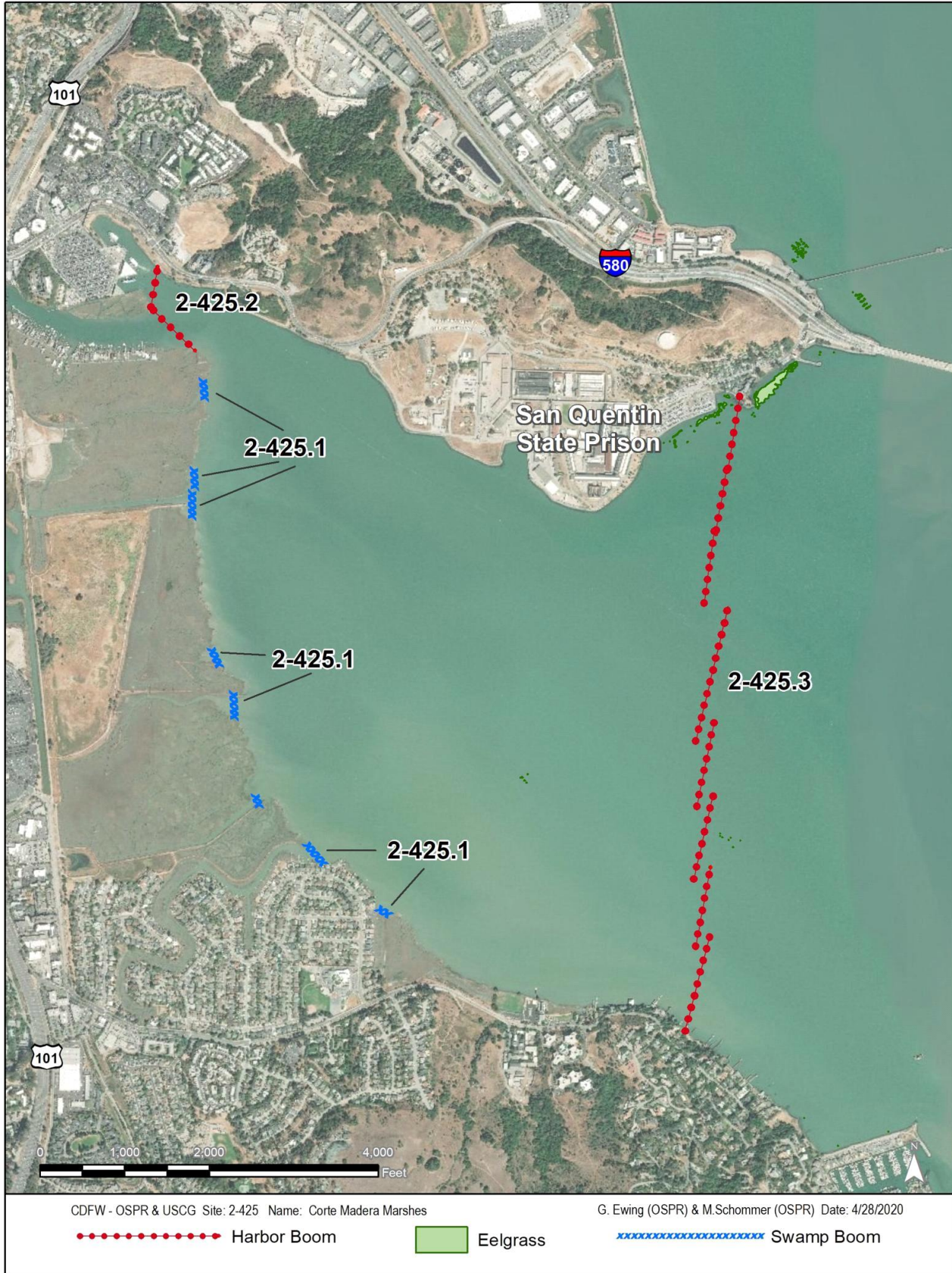
Directions: By water the site is just south of Pt. San Quentin and may be accessible via Corte Madera Channel. Nearest land access is from Paradise Drive and Antilles Way (to Paradise Cay Harbor) on the south side, and on Pt. San Quentin Francisco Road (first exit off I-580 west of San Rafael Bridge).

Land Access: Access to salt-marshes thru adjacent parking lots.

On-Water Limitations: Exceedingly shallow - only very shallow draft boats. Nearest launching is NOAA ramp on Tiburon Peninsula. Morage and fuel available at Paradise Cay. Also launching at Loch Lomond Marina, San Rafael.

Facilities, Staging Areas, Command Posts, Available Equipment: Best staging at NOAA-NFMS Marin center or Paradise Cay Harbor. Also possible staging at Paradise Cove Park. Facilities are available in Corte Madera, Sausalito, and San Rafael. Zone staging at Richmond.

Communications Problems: Good cell reception throughout.



County: Marin ACP Division/Segment: MR - U - S002 MR - U - S007

NOAA Chart: 18649 Entrance to SF Bay Map Book: Marin County Decimal Degrees: 37.96839 -122.488505

Site Description:

This site is San Rafael Creek and the bay fringe salt-marsh and mudflats for one mile north and south of the creek mouth. The marginal salt-marsh habitat near mouth of channel supports several listed, migratory and residential species. The navigation channel connecting San Rafael Marina with San Francisco Bay passes through mud flats and salt-marshes extending about one half mile on each side. The entire area is largely sheltered from north, west and southwesterly winds. San Rafael Creek provides access to significant recreational boating activity from both local residential berths and adjacent marinas.

Resources at Risk:

- ESI and Habitat: 6B Riprap
- 8B Sheltered solid man-made structures
- 10A Salt - and brackish-water marshes

List of Resources at Risk:

	Resource Name	Status	Presence	Sensitivity
Birds	California Ridgeway's rail	FE, SE	Year-round	Mar - Aug
Birds	California black rail	FP, ST	Year-round	Mar - Jul
Fish	longfin smelt	ST	Year-round	Nov - May
Mammals	salt-marsh harvest mouse	FE, SE	Year-round	Mar - Nov
Plants	Pt. Reyes bird's-beak	SSSP	Year-round	Jul - Oct
Plants	Marin dwarf-flax	FT, ST	Year-round	Apr - Jul

FT-Federally Threatened, FE-Federally Endangered, FP-Federally Protected, SE-State Endangered, ST-State Threatened, SP -State Protected, SR-State Rare, SSC-Species of Special Concern, BGEPA-Bald and Golden Eagle Protection Act, SSSP-State Special Status Species

List of Key Contacts:

Type	Name/Title	Organization	Phone
C	/Coordinator	Native American Heritage Commission	(916) 373-3710
C	/Coordinator	Northwest Information Center	(707) 588-8455
O	/Emergency Contact (24hr)	Marin County Emergency 911	(415) 472-0911
O	/Emergency Service Coordinator	Marin County Office of Emergency Services	(415) 250-0267
O	/Dispatch, 24-hr	Marin County Sheriff's Department	(415) 479-2311

C – Cultural, Historic, Archaeological; E – Entry/Owner/Access; O – Other; S – Safety; T – Trustee; X – Exclusion or Security

Additional Site Summary Comments:

The site is heavily used by migratory shorebirds during the fall and winter months.

Concerns and Advice to Responders:

The concern is to prevent oil from entering the creek (and oiling upstream marshes and marinas) and to protect the salt-marshes and mudflats on for about a mile on sides of the channel. All this area has wildlife (including endangered species) and would be difficult to clean if oiled. Avoid disturbing marsh vegetation or trampling oil into sediments.

Hazard and Restrictions:

Air operations, beware of overhead high voltage powerlines. Very shallow mud flats out side of channels. Beware of submerged hazards i.e. old pilings.

Site Strategies:**Site Validation Level: III**

Strategy: 2-426.1 Objective: Exclusion from San Rafael Creek and local harbors

Strategy: Exclude oil with 9X9+ Hboom (3,000 ft) to close off San Rafael Creek Channel mouth and the yacht harbor entrance. Leave a cascaded chevron opening in the channel mouths to allow vessel passage but still exclude oil.

If heavy oil threat is threatening, contact IC for deployment of on-water recovery should be conducted with a skimmer (weir) near the mouth of the creek and in front of the mud flats north of the yacht harbor.

Table of Response Resources

Equipment	Sub-Type	Size	Unit	QTY	Unit	Last Page Update
Boom	Harbor	9x9 inch		3800	feet	<i>Strategy Updated:</i> 1/26/2017
Anchor	Danforth	22 lb		12		<i>Last Test:</i> 1/26/2017
Vessel	Boom Boat			1		
Vessel	Skiff or Punt			1		
Staff	Staff to Deploy			5		

Strategy: 2-426.2 Objective: Shoreline protection when marsh margins are threatened by potential oiling - north and south of creek mouth.

Strategy: Deploy 6,900 ft of 9X9+ Hboom (2500 south of the channel the remainder to the north) to protect the mudflats and marshfront. Use swamp boom (Appox. 600 ft) to connect the harbor boom to the shoreline across shallow mudflats.

Table of Response Resources

Equipment	Sub-Type	Size	Unit	QTY	Unit	Last Page Update
Boom	Harbor	9x9 inch		6900	feet	
Boom	Swamp	6x6 inch		600	feet	
Anchor	Danforth	22 lb		18		
Vessel	Boom Boat			3		
Vessel	Skiff or Punt			2		
Staff	Staff to Deploy			12		

Logistics:

Directions: From the Richmond-San Rafael Bridge, take Highway 101 north to the San Rafael Marina. Also, Loch Lomond Marina may be used as staging and deployment area: Exit Hwy 101 at 3rd St. and proceed east. 3rd becomes Point San Pedro Rd.

Land Access: Some areas only by foot, contact Marin Co Open Space Rangers for access to shoreline, or access by vessel.

On-Water Limitations: Extremely shallow water out of channels, launching, fuel, moorage at Loch Lomond Marina. More services up San Rafael Creek

Facilities, Staging Areas, Command Posts, Available Equipment: All manner of facilities in San Rafael Creek Marinas. Staging at Loch Lomond Marina.

Communications Problems: Good cell reception.



CDFW - OSPR & USCG Site: 2-426 Name: San Rafael Creek Marsh

G. Ewing (OSPR) & M.Schommer (OSPR) Date: 4/28/2020

●●●●● Harbor Boom

■ Eelgrass

XXXXXXXXXXXXXXXXXXXX Swamp Boom

County: Marin*ACP Division/Segment:* MR - U - S008 MR - U - S009*NOAA Chart:* 18649 Entrance to SF Bay *Map Book:**Decimal Degrees:* 37.964693 -122.469111**Site Description:**

This site includes both of Marin Islands (East & West) and the adjacent waters of San Rafael Bay. The site is part of Marin Islands State Marine Park. The two islands are owned & managed by the US Fish & Wildlife Service (USFWS) as a wildlife preserve. This site is one of the most ecologically important and sensitive sites in the San Francisco Bay. These islands support one of the largest heron and egret rookeries in northern California. Each island is less than one-quarter mile in diameter and covered with trees. Both islands rise steep and provide excellent fledgling rookery habitat. The surrounding shores are gravel, cobble, and boulder. The narrow channel is located south of the islands, provides access to San Rafael/San Rafael Creek boat traffic.

Resources at Risk:*ESI and Habitat:* 1C Exposed rocky cliffs with boulder talus base

5 Mixed sand and gravel beaches

6A Gravel Beach

List of Resources at Risk:

	Resource Name	Status	Presence	Sensitivity
Birds	great blue heron	FP	Year-round	Nov-Apr
Birds	great egret	FP	Year-round	Nov-Apr
Birds	black-crowned night heron	FP	Year-round	Feb-Sep
Birds	snowy egret	FP	Year-round	Nov-Apr
Fish	longfin smelt	ST	Year-round	Nov-May

FT-Federally Threatened, FE-Federally Endangered, FP-Federally Protected, SE-State Endangered, ST-State Threatened, SP -State Protected, SR-State Rare, SSC-Species of Special Concern, BGEPA-Bald and Golden Eagle Protection Act, SSSP-State Special Status Species

List of Key Contacts:

Type	Name/Title	Organization	Phone
C	/Coordinator	Native American Heritage Commission	(916) 373-3710
C	/Coordinator	Northwest Information Center	(707) 588-8455
O	/Emergency Contact (24hr)	Marin County Emergency 911	(415) 472-0911
O	/Emergency Service Coordinator	Marin County Office of Emergency Services	(415) 250-0267
O	/Dispatch, 24-hr	Marin County Sheriff's Department	(415) 479-2311
T	/Research Wildlife Biologist	US Geological Survey, SF Bay Estuary	(415) 859-1511
T	/Spill Response Coordinator	USFWS, SF Bay-Delta Office	(916) 799-0588

C – Cultural, Historic, Archaeological; E – Entry/Owner/Access; O – Other; S – Safety; T – Trustee; X – Exclusion or Security

Additional Site Summary Comments:

Concerns and Advice to Responders:

This site is one of the most ecologically important and sensitive sites in the San Francisco Bay. These islands support one of the largest heron & egret rookeries in northern California. Although oil can't reach the nest sites, the disturbance of protection and cleanup could be devastating. For this reason, deploy strategy with as little disturbance and noise as practical and do not get on the islands without explicit instructions from IC and accompanying USFWS staff.

Hazard and Restrictions:

This is a shallow water site. There are several submerged rocks. Proceed with caution. Avoid eelgrass beds with outboard engines.

Site Strategies:**Site Validation Level: II**

Strategy: 2-427.1 Objective: Deflect oil past islands with chevron at east end.

Strategy: Deploy a deflection chevron close to the east tip of East Marin Island: 3000' 9X9+ Harbor boom. Deploy as close to east tip as practical. Anchor with suitable anchors for wind and wave conditions.

Table of Response Resources

Equipment	Sub-Type	Size	Unit	QTY	Unit	Last Page Update
Boom	Harbor	9x9 inch		3000	feet	
Anchor	Danforth	22 lb		10		
Vessel	Boom Boat			1		
Vessel	Skiff or Punt			1		
Staff	Staff to Deploy			5		

Strategy: 2-427.2 Objective: Protective enclosure booming of both islands in the event of heavy oil threat.

Strategy: Wrap both islands completely by linking to existing chevron (see 2-427.1) Secure boom to chevron legs at least 100' back from tips and surround islands (4000' 9X9+ Hboom).

Table of Response Resources

Equipment	Sub-Type	Size	Unit	QTY	Unit	Last Page Update
Boom	Harbor	9x9 inch		4000	feet	
Anchor	Danforth	22 lb		12		
Vessel	Boom Boat			2		
Vessel	Skiff or Punt			1		
Staff	Staff to Deploy			8		

Logistics:

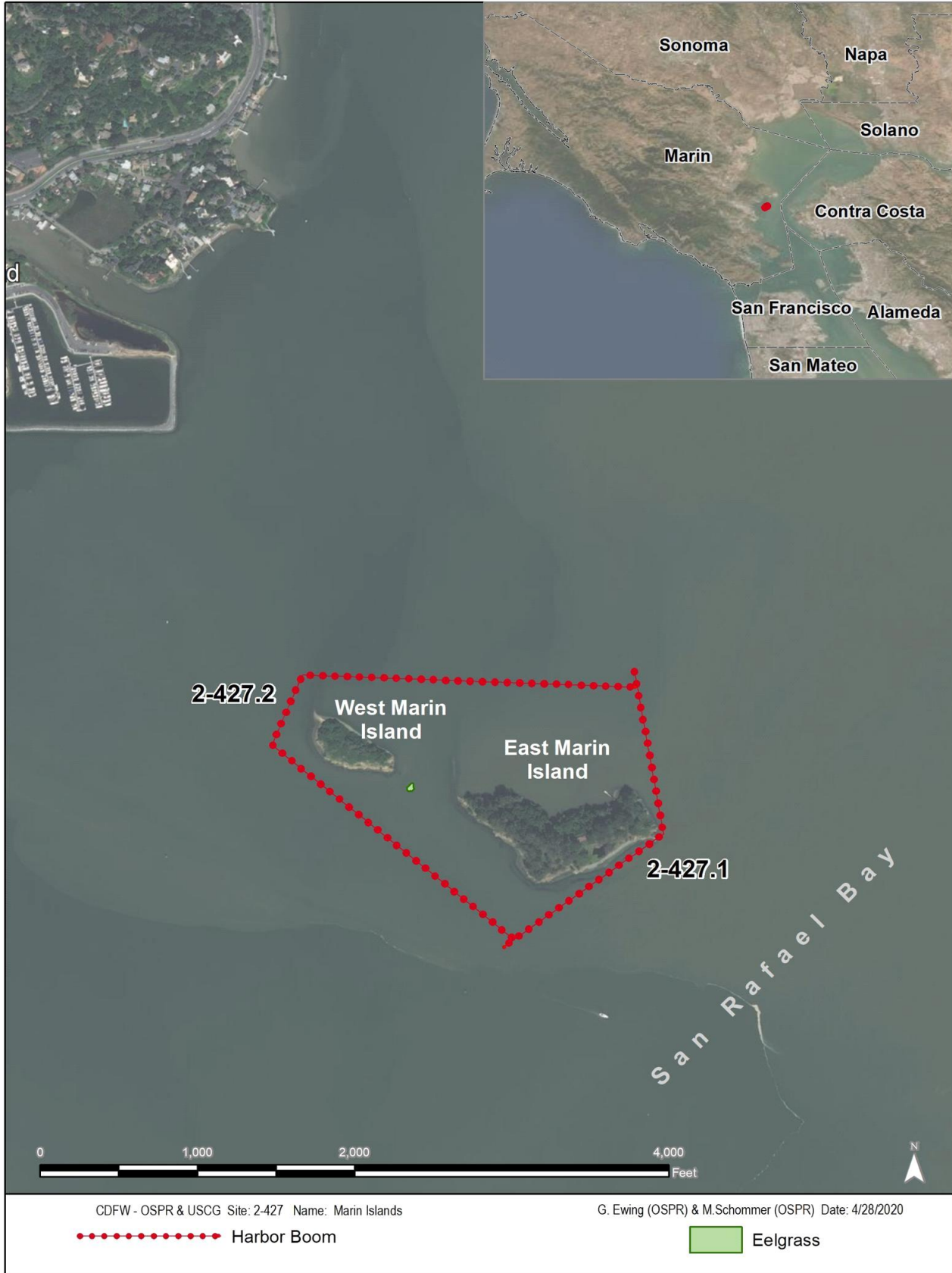
Directions: There is no land access to this site: water access only. The islands are northwest from the San Rafael Bridge. The islands are just north of the channel from the San Rafael Creek and about one-half mile offshore of the Marin Peninsula.

Land Access: Site only accessible from boat. DO NOT ACCESS w/o coordination w/ USFWS Staff.

On-Water Limitations: Boulders, cobbles and shallow water surround these islands. Nearest launch is Loch Lomond Marina at 110 Loch Lomond Drive. Numerous marinas & facilities etc. are located in San Rafael.

Facilities, Staging Areas, Command Posts, Available Equipment: The staging site will depend on the spill scenario. Numerous marinas can be used as staging areas and boat launch sites is San Rafael.

Communications Problems: Good cell reception throughout.



County: Contra Costa **ACP Division/Segment:** CC - Y - S006 CC - Y - S007

NOAA Chart: 18649 Entrance to SF Bay **Map Book:** **Decimal Degrees:** 37.929095 -122.430501

Site Description:

Castro Rocks is a small group of rocky outcroppings and one island (Red Rock) located south of Hwy 580 near the east end of the Richmond-San Rafael Bridge, and just north of the Chevron Long Wharf. Their exposure is variable with the daily tidal cycle. During higher tides and rough conditions, the islands are exposed to aggressive wave action. This is a harbor seal rookery during the spring when the tide is less than 3 feet above mean lower low water: 30 to 60 seals pups haul out at the site. Numerous (100 to 250) pinnipeds haul out at this site during the winter.

Resources at Risk:

ESI and Habitat: 1A Exposed Rocky Shore
 1C Exposed rocky cliffs with boulder talus base
 5 Mixed sand and gravel beaches

List of Resources at Risk:

	Resource Name	Status	Presence	Sensitivity
Birds	double-crested cormorant	FP	Year-round	Mar-Jul
Fish	longfin smelt	ST	Year-round	Nov-May
Mammals	harbor seal	FP	Mar - Jun	

FT-Federally Threatened, FE-Federally Endangered, FP-Federally Protected, SE-State Endangered, ST-State Threatened, SP -State Protected, SR-State Rare, SSC-Species of Special Concern, BGEPA-Bald and Golden Eagle Protection Act, SSSP-State Special Status Species

List of Key Contacts:

Type	Name/Title	Organization	Phone
C	/Coordinator	Native American Heritage Commission	(916) 373-3710
C	/Coordinator	Northwest Information Center	(707) 588-8455
E	/Operations, 24-hr	Chevron Corporation, Long Wharf	(510) 242-4494
O	/24hr Emergency Pager	Contra Costa County Hazardous Materials	(925) 655-3232
O	/Dispatch, 24-hr	Contra Costa County Office of the Sheriff	(925) 468-4421
O	/Dispatch, 24-hr	Contra Costa Water District	(925) 688-8374

C – Cultural, Historic, Archaeological; E – Entry/Owner/Access; O – Other; S – Safety; T – Trustee; X – Exclusion or Security

Additional Site Summary Comments:

Concerns and Advice to Responders:

The concern is that these rocks will become oiled and, in turn, will oil the harbor seals and birds which use them. This is particularly a problem in the spring when harbor seals pup here. During that time, responders must make every effort stay as clear as possible of the islands to minimize disturbance of adults and their pups.

Hazard and Restrictions:

There are submerged rocks surrounding Casto Rocks which are tide dependent on visibility.

Site Strategies:**Site Validation Level: II**

Strategy: 2-451.1 Objective: Deflection/exclusion of oil from west or southwest in ebb or flood - deploy protection legs 1 (SW) and 2 (NW)

Strategy: Deploy 3000' 9X9+ Hboom in a wide angle wedge configuration on the west side of the rocks (legs 1 & 2 of a protective diamond around the rocks). Assess need for back-up deployment if waves are washing oil over the boom requiring backup 2-451.4

Table of Response Resources

Equipment	Sub-Type	Size	Unit	QTY	Unit	Last Page Update
Boom	Harbor	9x9 inch		3000	feet	
Anchor	Danforth	44 lb		10		
Vessel	Boom Boat			1		
Vessel	Skiff or Punt			1		
Staff	Staff to Deploy			5		

Strategy: 2-451.2 Objective: Deflection/protection boom for oil from south and southeast on flood currents in a chevron on the north side of the rocks - deploy protection legs 1 and 3

Strategy: Complete a south-side chevron to deflect oil past site by deploying protection legs 1 and 3 as follows: Deploy the south legs of the chevron first (legs 1 & 3 of the deflection diamond) using 6000' 9X9+ hboom. Optimally deployment should be made before flood due to difficult boat operations in flood current. Advise IC/UC if waves are washing oil over the boom necessitating back-up booming.

Table of Response Resources

Equipment	Sub-Type	Size	Unit	QTY	Unit	Last Page Update
Boom	Harbor	9x9 inch		6000	feet	
Anchor	Danforth	44 lb		9		
Vessel	Boom Boat			2		
Vessel	Skiff or Punt			1		
Staff	Staff to Deploy			8		

Strategy: 2-451.3 Objective: Deflection/exclusion for oil from north or northwest on ebb in a chevron on the north side of the rocks - protection legs 2 (NW) and 4(NE)

Strategy: Complete a north-side chevron to deflect oil past site by deploying protection legs 2 and 4 as follows:

Leg 2: Deploy a total of 1500 ft: 1000 ft 9X9+ boom from the bridge pier to the north and 500 ft from the bridge pier south to terminate west of the rocks on the 40 ft depth contour. The north end of leg 2 should be a little west of center of rocks. Leg 4 is 1500' 9X9+ Hboom from the north apex of leg 2 to the east side of Castro Rocks. Advise IC/UC if waves are washing oil over the boom necessitating back-up booming.

Table of Response Resources

Equipment	Sub-Type	Size	Unit	QTY	Unit	Last Page Update
Boom	Harbor	9x9 inch		3000	feet	
Boom	Swamp	6x6 inch		2500	feet	
Anchor	Danforth	44 lb		12		
Vessel	Boom Boat			2		
Vessel	Skiff or Punt			1		
Staff	Staff to Deploy			8		

Strategy: 2-451.4 Objective: Confine/deflect oil to shore for collection after completion of protection strategy

Strategy: If the source of the spill is between the rocks and shore, divert oil to shoreline for confinement and collection after excuting appropriate protection:

From boom already deployed to protect easterly exposure of the rocks, deploy 2300 feet of 9X9+ Hboom to the sandy pocket beach near the bridge which can be used as an oil recovery area. Beware of submerged debris of the beach; rip rap is on either side as well. (strategy not shown in diagram.) Anchoring will require chain and scope to keep boom from moving.

Table of Response Resources

Equipment	Sub-Type	Size	Unit	QTY	Unit	Last Page Update
Boom	Harbor	9x9 inch		2300	feet	
Anchor	Danforth	44 lb		6		
Vessel	Boom Boat			1		
Vessel	Skiff or Punt			1		
Staff	Staff to Deploy			5		

Strategy: 2-451.5 Objective: Backup secondary boom when oil overwhelms initial protection strategy

Strategy: Deploy a second layer of 6X6 (6000') inside of the overwashing leg and arrange for absorption (600' of sorbents and snare).

Table of Response Resources

Equipment	Sub-Type	Size	Unit	QTY	Unit	Last Page Update
Boom	Swamp	6x6 inch		6000	feet	
Boom	Pom-pom			600	feet	
Anchor	Danforth	44 lb		13		
Vessel	Boom Boat			2		
Vessel	Skiff or Punt			1		
Staff	Staff to Deploy			8		

Logistics:

Directions: Access is by boat only to this small group of rock islands located near the east end of the Richmond-San Rafael Bridge. The nearest launching sites are Richmond Marina or Tiburon Center for Environmental Studies in Marin County. The site is visible from the platform on pier 55 or from the lower deck of the Richmond-San Rafael Bridge.

Land Access: Accessible only by vessel.

On-Water Limitations: There are submerged rocks around this site. The nearest launching sites are Richmond Harbor and Tiburon Center for Environmental Studies in Marin County.

Facilities, Staging Areas, Command Posts, Available Equipment: Nearest staging, facilities, and field outposts are at Richmond Marina and Santa Fe Channel. Staging and fuel may be available at Chevron Refinery.

Communications Problems: Good cell reception throughout.



2-452-A Site Summary - Richmond Eelgrass Beds**2-452-A****County:** Contra Costa **ACP Division/Segment:** CC - X - S002 CC - X - S005 CC - Y - S001**NOAA Chart:** Entrance to San Francisco Bay 18649 **Map Book:** AAA Richmond **Decimal Degrees:** 37.952202 -122.42385**Site Description:**

This site includes all the shallow coves (<10 feet), areas along the east shore of San Francisco Bay from Point San Pablo south along the Richmond Peninsula to Castro Point. Most of the shoreline is under ownership of either Chevron, EBRPD, or City of Richmond. Extensive eelgrass beds are present in shallow waters, and protected areas. The eelgrass beds may expand or contract annually. The beaches south of Point Molate are of fine-grained sand while those to the north consist of coarse-grained sand to pebbles and rip-rapped shorelines. Numerous old underwater pier pilings/structures exist and should be approached on water with caution based on tidal height.

Resources at Risk:

ESI and Habitat: 5 Mixed sand and gravel beaches
 6B Riprap
 8B Sheltered solid man-made structures

List of Resources at Risk:

	Resource Name	Status	Presence	Sensitivity
Birds	double-crested cormorant	FP	Year-round	May-Jul
Fish	Pacific herring		Apr - Nov	
Fish	longfin smelt	ST	Year-round	Nov-May
Plants	eelgrass		Year-round	

FT-Federally Threatened, FE-Federally Endangered, FP-Federally Protected, SE-State Endangered, ST-State Threatened, SP -State Protected, SR-State Rare, SSC-Species of Special Concern, BGEPA-Bald and Golden Eagle Protection Act, SSSP-State Special Status Species

List of Key Contacts:

Type	Name/Title	Organization	Phone
C	/Coordinator	Native American Heritage Commission	(916) 373-3710
C	/Coordinator	Northwest Information Center	(707) 588-8455
E	/Operations, 24-hr	Chevron Corporation, Long Wharf	(510) 242-4494
E	/Dispatch, 24-hr	East Bay Regional Park District	(510) 881-1833
E	/Shoreline Parks Manager	East Bay Regional Park District	(510) 881-1832
O	/Dispatch/Watch Command	City of Richmond Police Department	(510) 233-1214
O	/Dispatch, 24-hr	Contra Costa Water District	(925) 688-8374
T	/Agency Representative	California Department of Fish and Wildlife	(707) 644-2812

C – Cultural, Historic, Archaeological; E – Entry/Owner/Access; O – Other; S – Safety; T – Trustee; X – Exclusion or Security

Additional Site Summary Comments:

Concerns and Advice to Responders:

Should eelgrass become heavily oiled it may produce a sheen for several weeks unless removed. Surface oil can be expected to produce injury and death to waterfowl in area.

Hazard and Restrictions:

Hazards include shallow water with debris, wrecks, and pilings throughout the area. Areas near Point Molate and Castro Point are inside a restricted area with access under the control of Richmond PD.

Site Strategies:**Site Validation Level: II**

Strategy: 2-452.1 Objective: Exclude oil from pocket marsh at Castro Pt.

Strategy: Exclude oil from small pocket marsh just north of Castro Pt using 300' of swamp boom anchored or staked to high beach. There is land access but boom delivery via land is difficult. Water delivery is recommended but must contend with submerged obstructions and shallows.

Table of Response Resources

Equipment	Sub-Type	Size	Unit	QTY	Unit	Last Page Update
Boom	Swamp	6x6 inch		300	feet	
Anchor	Danforth		22 lb	5		
Vessel	Boom Boat or Skiff			1		
Vessel	Skiff or Punt			1		
Staff	Staff to Deploy			4		

Strategy: 2-452.2 Objective: Exclude oil from emergent eelgrass bed in coves between Molate Pt and Pt Orient.

Strategy: Deploy 4000ft of 9X9+Hboom in a chevron from just east of Molate Pt to shore near the base of pier at Pt Orient. Remain outside of Eelgrass beds which can extend up to 1500' offshore from shore in middle of cove.

Table of Response Resources

Equipment	Sub-Type	Size	Unit	QTY	Unit	Last Page Update
Boom	Harbor	9x9 inch		4000	feet	
Anchor	Danforth		22 lb	9		
Vessel	Boom Boat			2		
Vessel	Skiff or Punt			1		
Staff	Staff to Deploy			8		

Strategy: 2-452.3 Objective: Deflect to Collection/confinement at shoreline when oil impacts are likely to be heavy and unavoidable at this site

Strategy: Deploy deflection boom from headlands where there is access for oil recovery equipment and skimming recovery. Locations include:

- a. near Castro Point, 1,500' 9X9+ Hboom from base of Richmond-San Rafael Bridge toward Castro Rocks.
- b. from Point Molate, 2,000' 9X9+ Hboom in a southwesterly direction to collect and recover oil at Pt. Molate.
- c. from Point Orient, 1000 feet of 9X9+ Hboom.

Table of Response Resources

Equipment	Sub-Type	Size	Unit	QTY	Unit	Last Page Update
Boom	Harbor	9x9 inch		4500	feet	
Boom	Swamp	6x6 inch		500	feet	
Anchor	Danforth	22 lb		22		
Vessel	Boom Boat			3		
Vessel	Skiff or Punt			2		
skimmer	self propelled			2		
Staff	Staff to Deploy			15		

Logistics:

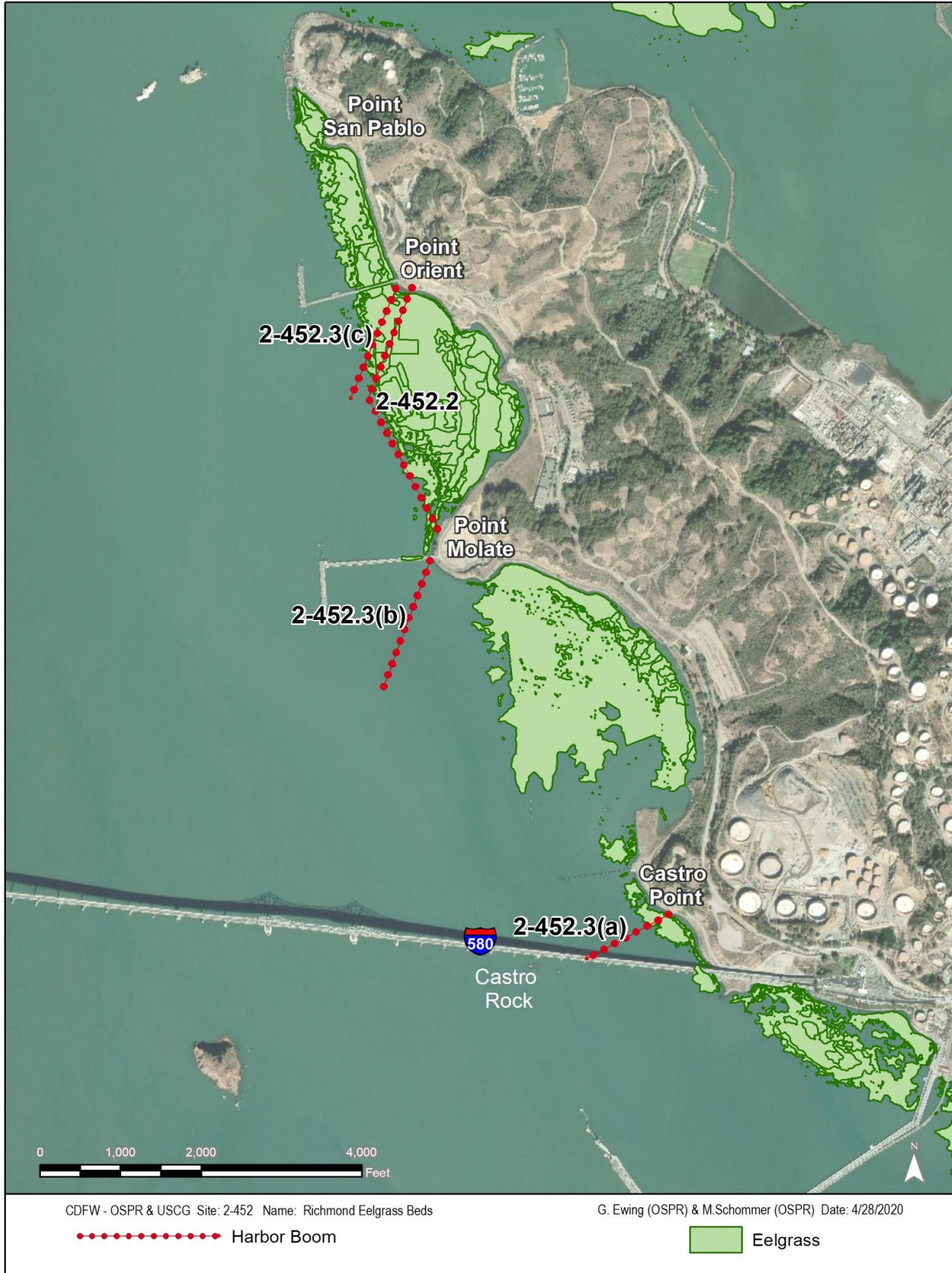
Directions: Primary access by vessel. By land take Hwy 80 to Hwy 580 west. Before toll booth of the Richmond-San Rafael bridge turn right onto Western Drive. Proceed to pocket beach access areas. To access from Hwy 580 eastbound take Cutting Blvd to Garrard Blvd. South, through tunnel to Western Drive and shoreline.

Land Access: Good access for all vehicles along the main road (Western Drive).

On-Water Limitations: This is a shallow water site, submerged obstacles are likely. Launch ramps are available in the Richmond Harbor and at Chevron Refinery, docking facilities are available at the Point San Pablo Yacht Harbor (located NW of Point Orient) and Richmond Marina.

Facilities, Staging Areas, Command Posts, Available Equipment: Numerous staging areas and locations for field posts exist along Western Drive, at the Chevron Long Wharf and in Richmond Marina.

Communications Problems: Cell reception may be spotty depending on location.



County: Contra Costa ACP Division/Segment: CC - Z - S001 CC - Z - S010

NOAA Chart: Entrance to San Francisco Bay 18649 Map Book: AAA Richmond Decimal Degrees: 37.897908 -122.356344

Site Description:

Brook's Island lies south of the Richmond Channel and at the west side of the Richmond Inner Harbor and includes the spit but excluding the westerly one-mile rocky breakwater. It is the property of East Bay Regional Parks District (EBRPD) no trespassing is permitted at any time due the extreme ecological sensitivity. This small rocky island, 400 X 1,700 yards, consists of about 160 acres of rocky upland rising to a maximum elevation of 163 ft. Most of the island's shoreline are mixed sand, gravel & cobble. A one-mile long breakwater is attached to the west end of the island with a shipping channel along its north side. There is a small, 35 acre, seasonal salt-marsh near the breakwater connection to the island. This salt-marsh is protected on the north by the breakwater and a sandy beach. Sand beaches and dunes have accumulated at several points along the breakwater. To the south the salt-marsh is exposed to San Francisco Bay. There are tidal flats to the north, east, and south of Brook's Island and the breakwater. Eelgrass beds are present in shallow water (<10 feet below MLLW) west and south of the breakwater and only exposed to oil at negative tide cycles. The adjacent Eelgrass beds may contract or expand annually.

Resources at Risk:

- ESI and Habitat: 5 Mixed sand and gravel beaches
- 3B Scarps and steep slopes in sand
- 6A Gravel Beach

List of Resources at Risk:

	Resource Name	Status	Presence	Sensitivity
Birds	great egret	FP	Year-round	Feb-Sep
Birds	great blue heron	FP	Year-round	Feb-Sep
Birds	Caspian tern	FP	Year-round	May-Jul
Fish	Pacific herring		Year-round	Nov-Apr
Fish	longfin smelt	ST	Year-round	Nov-May
Mammals	harbor seal	FP	Year-round	
Plants	eelgrass		Year-round	

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E	/Dispatch, 24-hr	East Bay Regional Park District	(510) 881-1833
E	/Shoreline Park Supervisor	East Bay Regional Park District	(510) 881-1832
E	/Operations	Port of Richmond	(510) 215-4600
O	/Dispatch/Watch Command	City of Richmond Police Department	(510) 233-1214
O	/Dispatch, 24-hr	Contra Costa Water District	(925) 688-8374

C – Cultural, Historic, Archaeological; E – Entry/Owner/Access; O – Other; S – Safety; T – Trustee; X – Exclusion or Security

Additional Site Summary Comments:

Concerns and Advice to Responders:

This site has heavy bird nesting activity which is concentrated on the western spit. No foot traffic is permitted on the Island except with biologist supervising. Even activity nearby can be destructive to nesting success. There are tidally influenced salt-marsh habitat at the northwest corner of the island and along north margin of the spit.

Hazard and Restrictions:

Shallow water, debris, and pilings may be present throughout area south and east of island and breakwater. No access shoreline without consultation/notification of East Bay Regional Park District.

Site Strategies:**Site Validation Level: III**

Strategy: 2-453.1 Objective: PRIMARY: Exclusion Booming on south side of spit: exclude oil from high marsh and break in spit

Strategy: On the south side of the Brooks Island spit (on west end), deploy 5000 ft of 9X9+ Hboom across the cove from the SSE spit, forming a chevron configuration to the SW corner of the main island to include Bird Rock. Boom should be anchored on shore, but foot traffic must be kept to absolute minimum to avoid disturbing ground nesting birds and marsh life. Apex of configuration should be directly into prevailing wind to reduce entrainment and overtopping. Place anchors at 500' intervals or as necessary.

Table of Response Resources

Equipment	Sub-Type	Size	Unit	QTY	Unit	Last Page Update
Boom	Harbor	9x9 inch		5000	feet	<i>Strategy Updated: 2/27/2017</i>
Anchor	Danforth	22 lb		12		<i>Last Test: 2/27/2017</i>
Vessel	Boom Boat			2		
Vessel	Skiff or Punt			1		
Staff	Staff to Deploy			7		

Strategy: 2-453.2 Objective: North shore exclusion for north-side threat to shoreline, jetty breach, marsh entry (Sante Fe Channel and Richmond Channel side & threat sources)

Strategy: On the north of the Brooks Island spit (on west end), deploy 3200 ft of swamp boom from the rocky point at northeast tip to west of the jetty breach. Probably only minimal mid-boom anchoring will be necessary. For the opening to the interior marsh, a small length of boom may be staked across the shallow entry in a chevron formation.

Table of Response Resources

Equipment	Sub-Type	Size	Unit	QTY	Unit	Last Page Update
Boom	Swamp	6x6 inch		3200	feet	<i>Strategy Updated:</i>
Anchor	Danforth	22 lb		8		<i>Last Test:</i>
Vessel	Boom Boat			1		
Vessel	Skiff or Punt			1		
Staff	Staff to Deploy			5		

Logistics:

Directions: Access by vessel only. Nearest launch at Richmond Marina. Brook's Island is managed by East Bay Regional Park District and all activity on or near the island must be coordinated with them.

Land Access: Access by vessel only with permission from East Bay Regional Park District (EBRPD).

On-Water Limitations: Very shallow water, Launch ramp at Richmond Marina.

Facilities, Staging Areas, Command Posts, Available Equipment: Large staging area available in Richmond Harbor or at the Richmond Marina. Possible field posts at any of the several marine terminals along Santa Fe Channel in Richmond Harbor.

Communications Problems: Cell reception very good.



County: Contra Costa ACP Division/Segment: CC - Z - S018 CC - Z - S028

NOAA Chart: Entrance to San Francisco Bay 18649 Map Book: AAA Richmond Decimal Degrees: 37.906068 -122.328611

Site Description:

This site lies near the southern boundary of the city of Richmond and is bounded on the north by the residential/business area east of the Richmond Marina, on the east by Hwy 580 and on the south by Point Isabel. Hoffman Marsh and most of the land bayward is managed by East Bay Regional Park District (EBRPD). This shallow bay surrounded by salt-marshes is biologically rich and very vulnerable to oiling. Most of the salt-marshes are tidally influenced and support pickleweed and various salt-marsh vegetation. Hoffman Marsh is separated from the bay by an old railroad grade and is connected to the Bay by a narrow channel, lined with rip-rap, which opens to the Bay at Point Isabel. The Inner Harbor marshes are protected by approximately two miles of rip-rap shoreline, with two openings to the Richmond Inner Harbor, each about a 300 meters across. There are extensive intertidal mudflats and shallows both in front and behind the rip-rapped shoreline.

Resources at Risk:

- ESI and Habitat: 10A Salt - and brackish-water marshes
- 8C Sheltered riprap
- 8B Sheltered solid man-made structures

List of Resources at Risk:

	Resource Name	Status	Presence	Sensitivity
Birds	California Ridgeway's rail	FE, SE	Year-round	Feb-Aug
Fish	longfin smelt	ST	Year-round	Nov-May
Fish	Pacific herring		Year-round	Nov-Apr
Mammals	salt-marsh harvest mouse	FE, SE	Year-round	
Plants	eelgrass		Year-round	

FT-Federally Threatened, FE-Federally Endangered, FP-Federally Protected, SE-State Endangered, ST-State Threatened, SP -State Protected, SR-State Rare, SSC-Species of Special Concern, BGEPA-Bald and Golden Eagle Protection Act, SSSP-State Special Status Species

List of Key Contacts:

Type	Name/Title	Organization	Phone
C	/Coordinator	Native American Heritage Commission	(916) 373-3710
C	/Coordinator	Northwest Information Center	(707) 588-8455
E	/Dispatch	California Department of Parks and Recreation	(916) 358-1300
E	/Dispatch, 24-hr	East Bay Regional Park District	(510) 881-1833
E	/Shoreline Parks Manager	East Bay Regional Park District	(510) 881-1832
E	/Operations	Port of Richmond	(510) 215-4600
O	/Dispatch/Watch Command	City of Richmond Police Department	(510) 233-1214
O	/Dispatch, 24-hr	Contra Costa Water District	(925) 688-8374

C – Cultural, Historic, Archaeological; E – Entry/Owner/Access; O – Other; S – Safety; T – Trustee; X – Exclusion or Security

Additional Site Summary Comments:

Concerns and Advice to Responders:

Should oil enter the adjacent marsh, injury and death of vegetation and wildlife can be expected. Keep oil from entering the channels and embayments. Endangered species live in the salt-marshes year-round and may be injured by foot traffic. Oil is also a threat to the many birds which use the open water. Avoid tramping oil into marsh and sediments. Most of the property is under the jurisdiction of East Bay Regional Parks District (EBRPD). Consult with EBRPD personnel for access/entry into salt-marsh.

Hazard and Restrictions:

Navigational hazards include shallow water, a submerged pipeline and old pilings exist. The bottom sediment is soft mud.

Site Strategies:**Site Validation Level: II**

Strategy: 2-454.1 Objective: Exclude oil from marsh entry channels

Strategy: Exclude oil from two major entrances to the marshes and embayments:

a) the southerly entrance is at Pt Isabel Regional Park (Central Avenue off of I-580) and includes two channel openings: first, a long narrow channel which leads about 2000 feet back to a marsh behind the railroad grade (Hoffman Marsh) and second, an opening to a large shallow embayment at the bayfront between the riprap shoreline (north of the channel to Hoffman Marsh) to a riprap breakwater about 100 yds offshore; (Use 1000 feet of 9X9+ exclusion boom from Pt Isabel to the breakwater tip in a shallow chevron formation, and back the harbor boom with 1100 ft of small boom; also, place a small chevron of boom backed with sorbent at the mouth of the long channel.)

b) the northerly entrance is a wide gap in an east-west riprap levee at the north end of the embayment; (Exclude oil with 1100 ft 9X9+ Hboom in a long chevron formation.)

c) there may also be small breeches in the riprap levees which are not shown on maps or strategy diagrams. Deploy 400 ft Hboom in chevron formation at such openings (not shown on diagram).

Table of Response Resources

Equipment	Sub-Type	Size	Unit	QTY	Unit	Last Page Update
Boom	Harbor	9x9 inch		2500	feet	
Boom	Swamp	6x6 inch		1100	feet	
Boom	Sorbent			200	feet	
Anchor	Danforth	22 lb		8		
Vessel	Boom Boat			1		
Vessel	Skiff or Punt			1		
Staff	Staff to Deploy			5		

Strategy: 2-454.2 Objective: Protection for splash-over or porous breakwater

Strategy: Breakwater can be topped by waves at high tide. Strategy may require 3000 ft sorbent boom on either side to prevent seepage through or splash over the breakwater when large concentrations of oil are present.

Table of Response Resources

Equipment	Sub-Type	Size	Unit	QTY	Unit	Last Page Update
Boom	Sorbent			3000	feet	
Anchor	Stakes			16		
Staff	Staff to Deploy			4		

Strategy: 2-454.3 Objective: Protection booming

Strategy: If it appears that the initial response strategy will be unsuccessful, it is recommended that 5000 feet of 9X9+ Hboom be deployed along the outer edge of the mud flat outside the breakwater in the northeast corner of Richmond Inner Harbor. An example of this strategy is described in "Potential Oil-Spill Protection Strategies for San Francisco Bay, California" (Hayes and Montello, 1994)

Table of Response Resources

Equipment	Sub-Type	Size	Unit	QTY	Unit	Last Page Update
Boom	Harbor	9x9 inch		5000	feet	
Anchor	Danforth	22 lb		11		
Vessel	Boom Boat			2		
Vessel	Skiff or Punt			1		
Staff	Staff to Deploy			8		

Logistics:

Directions: From Coast Guard Island, take Highway 80 north and exit at Central Avenue. Turn left and proceed to the rear of the Costco Warehouse. If necessary, small boats can be launched over the beach from Point Isabel, but the nearest marina with a launch ramp is Richmond Marina just to the north. Vehicles may also access the area through Point Isabel Regional Park Shoreline. Turn right on Rydin from Central Ave. Contact East Bay Regional Park District (EBRPD) For access through locked gate(s).

Land Access: Good vehicle access. Coordinate with EBRPD Personnel for access points.

On-Water Limitations: Very shallow water in Richmond Marina, and Berkeley Marina. Launch from either marina.

Facilities, Staging Areas, Command Posts, Available Equipment: Good staging and field post space at Richmond Marina and MSRC Docks. Limited staging and field post opportunities at Point Isabel Regional Shoreline.

Communications Problems: Good cell reception throughout.



County: Contra Costa **ACP Division/Segment:** CC - Z - S014**NOAA Chart:** S Francisco Bay-Angel I - P **Map Book:** AAA West Contra S Pedro **Decimal Degrees:** 37.912796 -122.363308**Site Description:**

The Santa Fe Channel/Harbor Channel make up the main shipping channel of Richmond Harbor. It lies south of Cutting Blvd and highway 580 between Point Richmond and the city of Richmond and Richmond Marina Bay. The shorelines are of man-made materials including rip-rap, pier pilings, and seawalls. There are small patches of mixed sand, gravel beaches and wetland vegetation. There are Eelgrass beds just outside the harbor mouth, these eelgrass beds contract and expand annually. Due to the sheltered channel, currents are generally weak, less than one knot and are generally sheltered from strong wind and seas. Spills are likely to come from local industry within the channel. Local industries within the channel communicate well and work together to mitigate any on-water threats.

Resources at Risk:*ESI and Habitat:* 8B Sheltered solid man-made structures

8C Sheltered riprap

6B Riprap

List of Resources at Risk:

	Resource Name	Status	Presence	Sensitivity
Birds	western gull	FP	Year-round	
Fish	longfin smelt	ST	Year-round	Nov-Apr

FT-Federally Threatened, FE-Federally Endangered, FP-Federally Protected, SE-State Endangered, ST-State Threatened, SP -State Protected, SR-State Rare, SSC-Species of Special Concern, BGEPA-Bald and Golden Eagle Protection Act, SSSP-State Special Status Species

List of Key Contacts:

Type	Name/Title	Organization	Phone
C	/Coordinator	Native American Heritage Commission	(916) 373-3710
C	/Coordinator	Northwest Information Center	(707) 588-8455
E	/Dispatch, 24-hr	East Bay Regional Park District	(510) 881-1833
E	/Shoreline Park Supervisor	East Bay Regional Park District	(510) 881-1832
E	/Operations	Port of Richmond	(510) 215-4600
O	/Dispatch/Watch Command	City of Richmond Police Department	(510) 233-1214
O	/24hr Emergency Pager	Contra Costa County Hazardous Materials	(925) 655-3232
O	/Dispatch, 24-hr	Contra Costa County Office of the Sheriff	(925) 468-4421
O	/Dispatch, 24-hr	Contra Costa Water District	(925) 688-8374

C – Cultural, Historic, Archaeological; E – Entry/Owner/Access; O – Other; S – Safety; T – Trustee; X – Exclusion or Security

Additional Site Summary Comments:

Concerns and Advice to Responders:

This is an industrial area with an elevated risk of spills. It is an excellent site to collect, contain, and recover oil. Oil that escapes this area will present a much greater threat to highly sensitive areas nearby. While plants and animals living on rip-rap, seawalls and pilings, in the water column, and birds resting on the water in Santa Fe Channel may be sensitive and vulnerable to oil, the total impact upon wildlife, and the cost of cleanup and restoration can be limited by the containment and recovery of oil within Harbor Channel.

Hazard and Restrictions:

This is an industrial area. Be aware of truck traffic on the roads and large shipping vessels in the channel. People working on the water, particularly those in small craft must be aware of busy shipping traffic and the potential for objects to fall from docks. Currents are light and the channel waters are generally deep.

Site Strategies:**Site Validation Level: II**

Strategy: 2-455.1 Objective: Contain/collect oil within Channel and prevent oil from leaving the channel and threatening sensitive sites immediately outside of the channel. Divert oil to shore side skimming.

Strategy: Contain the Channel by closing the mouth with repeated boom layers and divert to shore side skimming (SSS). Deploy 2000 feet of 9X9+ Hboom from Sheridan Point Park to Potrero Point. Collect and recover oil at Potrero Point on the ebb tide. Deploy another 2,000 feet of 9X9+ Hboom parallel to and 2,000 feet north of the first. Collect and recover oil along the west side of the channel on the ebb tide. Deploy 1000 feet of boom in a north to south direction from the west side of the confluence of the Lauritzen Canal and the Santa Fe Channel to the opposite side of Santa Fe Channel. Collect oil in Lauritzen Canal on the flood tide. Oil could also be collected in the Parr-Rich Canal on the flood tide using a similar deployment, however, this site would require 2,000 feet of Hboom. The former dry docks immediately west of Potrero Point should be used to collect and recover oil. Collection can be enhanced by deploying a 600 foot length of boom from the southwest corner of a dry dock in a east to southeast direction and anchoring it there. At least two such collection systems should be set up. Sorbent boom should be available to back up and catch any oil that might escape the collection sites.

Table of Response Resources

Equipment	Sub-Type	Size	Unit	QTY	Unit	Last Page Update
Boom	Harbor	9x9 inch		6200	feet	
Boom	Sorbent			500	feet	
Anchor	Danforth	22 lb		17		
Vessel	Boom Boat			3		
Vessel	Skiff or Punt			1		
Staff	Staff to Deploy			10		

Logistics:

Directions: Take highway 580 to Richmond. To reach the Richmond Marina Bay launch ramp, take the Harbor way exit. Turn south onto Harbor Way South. Turn left on Hall and proceed to the Richmond Marina. To reach the oil terminals on the west side of the Santa Fe Channel, take the Canal Blvd. Exit. Turn south onto Canal Blvd and proceed to the appropriate terminal.

Land Access: Good access for trucks and other heavy equipment along most shorelines.

On-Water Limitations: Good access throughout channel with boat launching at Richmond Marina Bay.

Facilities, Staging Areas, Command Posts, Available Equipment: Potential staging areas at most oil terminals along the channel, at MSRC at the end of Canal Blvd. and at Richmond Marina. Most oil terminals can set up small command posts.

Communications Problems: Good cell reception throughout.



County: Alameda*ACP Division/Segment:* CC - Z - S029 AL - A - S001 AL - A - S002*NOAA Chart:* 18649/18650 Entrance to SF Bay *Map Book:* AAA West Contra *Decimal Degrees:* 37.893846 -122.31531**Site Description:**

This site includes the embayment and tributary salt-marshes between Point Isabel peninsula and the Golden Gate Fields Peninsula. Both peninsulas are primarily fill and rip-rapped along most of their perimeter. The two peninsulas roughly form a rectangle with the back salt-marsh making the shore end. The back-bay is pickleweed salt-marsh fronted with a sheltered tidal flat extending and very gradually deepening bayward and around the south side toward the mouth. Over half the bay is exposed tidal flat at low tides. There is little to no wave action at the salt-marsh margin and very little past the mouth. The extensive tidal flats are used by shorebirds for foraging and by water birds for shelter. Most of this site is managed by East Bay Regional Park District (EBRPD).

Resources at Risk:*ESI and Habitat:* 9A Sheltered tidal flats

6B Riprap

9B Vegetated low banks

List of Resources at Risk:

	Resource Name	Status	Presence	Sensitivity
Birds	California Ridgeway's rail	FE, SE	Year-round	Feb-Aug
Birds	Alameda song sparrow	SSC	Year-round	
Birds	migratory waterfowl	FP	Apr - Sep	
Fish	longfin smelt	ST	Year-round	Nov-May
Mammals	salt-marsh harvest mouse	FE, SE	Year-round	
Plants	California seablite	FE, SSSP	Year-round	Jul-Oct

FT-Federally Threatened, FE-Federally Endangered, FP-Federally Protected, SE-State Endangered, ST-State Threatened, SP -State Protected, SR-State Rare, SSC-Species of Special Concern, BGEPA-Bald and Golden Eagle Protection Act, SSSP-State Special Status Species

List of Key Contacts:

Type	Name/Title	Organization	Phone
C	/Coordinator	Native American Heritage Commission	(916) 373-3710
C	/Coordinator	Northwest Information Center	(707) 588-8455
E	/Dispatch	California Department of Parks and Recreation	(916) 358-1300
E	/Dispatch, 24-hr	East Bay Regional Park District	(510) 881-1833
E	/Shoreline Park Supervisor	East Bay Regional Park District	(510) 881-1832
O	/Dispatch, 24-hr	Alameda County Sheriffs Department	(510) 667-7721
O	/Dispatch, 24-hr	Contra Costa County Office of the Sheriff	(925) 468-4421
O	/Dispatch, 24-hr	Contra Costa Water District	(925) 688-8374

C – Cultural, Historic, Archaeological; E – Entry/Owner/Access; O – Other; S – Safety; T – Trustee; X – Exclusion or Security

Additional Site Summary Comments:

Concerns and Advice to Responders:

The concern here is the back bay which has extensive shallow mudflats and pickleweed salt-marshes which support listed species. The habitat is very sensitive and almost impossible to cleanup. Keep oil from entering the mouth of the bay and/or to divert it to shore near the mouth for collection. Please stay out of the salt-marsh and mudflats and avoid trampling vegetation or oil into sediments.

Hazard and Restrictions:

The water is reasonably deep at the mouth, but becomes progressively shallower as you proceed inward to shore. Beware of possible submerged obstructions.

Site Strategies:**Site Validation Level: III**

Strategy: 2-480.1 Objective: Exclude oil from embayment on west or northwesterly winds.

Strategy: Deploy boom from the Golden Gates Fields Peninsula to Pt. Isabel: 1500' 9X9+ Hboom. Leave loose boom at each shoreline anchorage to maintain boom seal when tide is low. In most conditions a second layer of boom will be required to intercept and exclude oil washed over the first layer by wave actions (see 2-480.3). If potential for collection exists, establish collection pocket on Pt. Isabel, with shallow water skimmer and vac truck: double line the collection pocket: advise Incident Command:

Table of Response Resources

Equipment	Sub-Type	Size	Unit	QTY	Unit	Last Page Update
Boom	Harbor	9x9 inch		1500	feet	<i>Strategy Updated: 2/19/2015</i>
Boom	Sorbent			100	feet	<i>Last Test: 2/19/2015</i>
Anchor	Danforth	22 lb		8		
Vessel	Boom Boat			1		
Vessel	Skiff or Punt			1		
Staff	Staff to Deploy			5		

Strategy: 2-480.2 Objective: Exclude oil from embayment on southwesterly winds.

Strategy: Deploy boom from the Golden Gate Fields Peninsula to Pt. Isabel: 1700' 9X9+ Hboom. In most conditions a second layer of boom will be required to exclude oil washed over the first layer by wave actions (see 2-480.3). If significant oil possible: establish collection pocket on Golden Gate Fields Peninsula and deploy shallow water skimmer and vac truck : double line the collection pocket.

Table of Response Resources

Equipment	Sub-Type	Size	Unit	QTY	Unit	Last Page Update
Boom	Harbor	9x9 inch		1700	feet	
Boom	Sorbent			100	feet	
Anchor	Danforth	22 lb		9		
Vessel	Boom Boat			1		
Vessel	Skiff or Punt			1		
skimmer	shoreside			1		
Staff	Staff to Deploy			8		

Strategy: 2-480.3 Objective: Backup initial exclusion strategy when strong winds or wave conditions are likely to move oil past initial exclusion deployment.

Strategy: Repeat the deployment with a second deployment (1,500 ft for 2-456.1 or 1,700 ft for 2-456.2) of swamp boom. Front the deployment with sorbent (1500-1700' sorbent).

Table of Response Resources

Equipment	Sub-Type	Size	Unit	QTY	Unit	Last Page Update
Boom	Swamp	6x6 inch		3200	feet	
Boom	Sorbent			1700	feet	
Anchor	Danforth	22 lb		12		
Vessel	Boom Boat			2		
Vessel	Skiff or Punt			1		
Staff	Staff to Deploy			5		

Strategy: 2-480.4 Objective: Skimming when skimmable thicknesses of oil are present.

Strategy: A skimming pocket will be necessary to keep oil from getting behind exclusion and to ensure that collection oil is focused to skimmer. Back the skimming pocket with sorbents (or Oil Snare if oil is group 4 or 5). Shallow water skimming head will be needed. Whether skimming with 2-456.1 or 2-456.2 exclusion, in both situations the backup exclusion is advisable (2-456.3).

Table of Response Resources

Equipment	Sub-Type	Size	Unit	QTY	Unit	Last Page Update
Boom	Swamp	6x6 inch		200	feet	
Boom	Sorbent			200	feet	
Anchor	Danforth	22 lb		3		
Vessel	Skiff or Punt			1		
skimmer	shoreside			1		
Staff	Staff to Deploy			4		

Logistics:

Directions: There is access to this area from Pt. Isabel Regional Park: From I-80 or I-580 just south of Richmond, exit on Central Ave and drive bayward to Pt. Isabel. (There is also access on the south shore though Golden Gate Fields at Buchannon St exit) By water, the inlet is 2 miles north of Berkeley Marina or Richmond Marina about a mile north of Pt. Isabel.

Land Access: Access good all types except on marsh margin. Coordinate with EBRPD Personnel for access.

On-Water Limitations: Very shallow particularly toward back. Beware, obstructions, Launching, gas, and moorage at Richmond Marina and Berkeley Marina.

Facilities, Staging Areas, Command Posts, Available Equipment: Full facilities and staging both Richmond and Berkeley. Boom can be delivered to shoreline for deployment at Point Isabel or south side point.

Communications Problems: Cell reception good throughout the area.



County: Alameda ACP Division/Segment: AL - A - S015 AL - A - S023

NOAA Chart: Entrance to San Francisco Bay 18649 Map Book: AAA Oakland Decimal Degrees: 37.851099 -122.308756

Site Description:

The eelgrass beds are centered on the shallow bar just north of the Emeryville channel (west and north of channel marker Green "3") and extends from the channel, north about half way to the Berkeley pier. This eelgrass bed, like all eelgrass beds can vary in distribution, density, and height from year to year. Because the most of the bed is deeper than 8 feet (MLLW), it is rarely exposed to oil, only when tides are so low (<- 0.5) that the eelgrass fronds are exposed on the surface (hence the sliding sensitivity).

Resources at Risk:

- ESI and Habitat: 6B Riprap
- 8B Sheltered solid man-made structures
- 8D Sheltered rocky rubble shores

List of Resources at Risk:

	Resource Name	Status	Presence	Sensitivity
Birds	California black rail	FP, ST	Year-round	Mar-Aug
Birds	Alameda song sparrow	SSC	Year-round	
Fish	Pacific herring		Year-round	Nov-Apr
Fish	longfin smelt	ST	Year-round	Nov-May
Plants	eelgrass		Year-round	
Plants	California seablite	FE, SSSP	Year-round	Jul-Oct

FT-Federally Threatened, FE-Federally Endangered, FP-Federally Protected, SE-State Endangered, ST-State Threatened, SP -State Protected, SR-State Rare, SSC-Species of Special Concern, BGEPA-Bald and Golden Eagle Protection Act, SSSP-State Special Status Species

List of Key Contacts:

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C	/Coordinator	Northwest Information Center	(707) 588-8455
E	/Dispatch	California Department of Parks and Recreation	(916) 358-1300
E	/Marina Manager	City of Berkeley, Parks, Recreation and Waterfront	(510) 981-6740
E	/Dispatch, 24-hr	East Bay Regional Park District	(510) 881-1833
E	/Shoreline Park Supervisor	East Bay Regional Park District	(510) 881-1832
O	/Dispatch, 24-hr	Alameda County Sheriffs Department	(510) 667-7721
T	/Agency Representative	California Department of Fish and Wildlife	(707) 644-2812
T	/Agency Representative	NOAA National Marine Fisheries Service	(562) 980-3232

C – Cultural, Historic, Archaeological; E – Entry/Owner/Access; O – Other; S – Safety; T – Trustee; X – Exclusion or Security

Additional Site Summary Comments:

Concerns and Advice to Responders:

When eelgrass is exposed (at low tides), oil quickly attaches and clings to eelgrass fronds. Once eelgrass gets fouled with oil, oil becomes a subsurface threat to fish and other organisms which thrive in this habitat.

Hazard and Restrictions:

Navigational hazards include shallow water, a submerged pipeline and debris.

Site Strategies:**Site Validation Level: II**

Strategy: 2-490.1 Objective: Assess need for protective booming: Eelgrass is only vulnerable at very low tides when eelgrass tops are exposed to floating oil.

Strategy: Biological staff must assess this site to determine if eelgrass is at risk. Because this bed is fairly deep, eelgrass tops are rarely, if ever, exposed to floating oil, and then only at very low (minus) tides. Oil readily sticks to floating eelgrass tops, and once eelgrass gets fouled with oil, oil becomes a subsurface threat to fish and other organisms which thrive in this cover. Scientific staff must review tidal information to see if minus tides less than -0.5 may result in eelgrass exposure, and must conduct on-site evaluation as necessary. Any booming recommendations should be expedited through ICS to operations.

Table of Response Resources

Equipment	Sub-Type	Size	Unit	QTY	Unit	Last Page Update
Personnel	OSPR Staff ES			1		

Strategy: 2-490.2 Objective: Exclusion/deflective booming when oil coming from the west

Strategy: When oil is approaching from the westerly direction, attempt to deflect it away from the eelgrass bed. Deploy deflection Hboom by cascading several 600 foot sections of harbor boom between the Emeryville Marina to about half way to the Berkeley pier. Overlap each section of boom. Oil will probably be wind driven. Set each section of boom at a shallow angle to the wind. Set each section as straight and taut as possible so that oil does not collect anywhere on the boom, but moves continuously along the boom until it falls off the end and is caught by the next section of boom.

Table of Response Resources

Equipment	Sub-Type	Size	Unit	QTY	Unit	Last Page Update
Boom	Harbor	9x9 inch		6000	feet	
Boom	Sorbent			2000	feet	
Anchor	Danforth	22 lb		19		
Vessel	Boom Boat			3		
Vessel	Skiff or Punt			1		
Staff	Staff to Deploy			11		

Strategy: 2-490.3 Objective: Exclusion/deflective/protective booming for oil from the west low wind conditions

Strategy: When winds are low, oil will tend to move north-south and can be kept away from the Berkeley flats, particularly in fall months when waterfowl concentrations are high. Deploy deflection boom by cascading several 600 foot sections of harbor boom between the Berkeley pier to about half way to the Emeryville Marina to link-up with southerly deployment (2-490.2). Overlap each section of boom. Set each section of boom at a shallow angle to the windward. Set each section as straight and tight as possible so that oil does not collect anywhere on the boom (scallops), but moves continuously along the boom until it falls off the end and is caught by the next section of boom (cascading configuration).

Table of Response Resources

Equipment	Sub-Type	Size	Unit	QTY	Unit	Last Page Update
Boom	Harbor	9x9 inch		5000	feet	
Anchor	Danforth	22 lb		14		
Vessel	Boom Boat			2		
Vessel	Skiff or Punt			1		
Staff	Staff to Deploy			8		

Logistics:

Directions: From Coast Guard Island take Hwy 880 north to Hwy 80 north. Exit at Powell Avenue and proceed west. Make a right on Frontage Road and proceed north to the Berkeley Yacht Harbor.

Land Access: Access to shoreline has hazards such as I 80 Hwy.

On-Water Limitations: Waters access from either Berkeley or Emeryville Marinas.

Facilities, Staging Areas, Command Posts, Available Equipment: Both Berkeley and Emeryville Marinas have excellent services and facilities for staging. Emeryville may have slightly better opportunities for security.

Communications Problems: Good cell reception throughout area.



County: Alameda **ACP Division/Segment:** AL - A - S024 AL - A - S027

NOAA Chart: 18649/18650 Entrance to SFBay **Map Book:** AAA West Contra **Decimal Degrees:** 37.831131 -122.306475

Site Description:

The site is the embayment just north of the Oakland Bay Bridge Toll plaza and includes the salt-marsh east from the radio towers (south) to the opposite breakwater tip (north) at Emeryville. This west facing bay transitions from open water to shallows and mudflats to a southerly and easterly pickleweed salt-marsh perimeter. The northerly margin is rip-rapped. At the easterly tip of the lagoon a tidal channel drains from the adjacent urban area east of I-80 and at the southeast corner is another channel which drains from the vicinity of the Oakland Sanitary Treatment Plant. There are sensitive eelgrass beds within this site. Eelgrass beds expand and contract annually, they thrive in shallow waters (< 10.0 ft). Eelgrass remains at risk only when at (< -0.5 ft) tides.

Resources at Risk:

ESI and Habitat: 6B Riprap
9B Vegetated low banks
7 Exposed tidal flat

List of Resources at Risk:

	Resource Name	Status	Presence	Sensitivity
Birds	California Ridgeway's rail	FE, SE	Year-round	Feb-Aug
Birds	California black rail	FP, ST	Year-round	Mar-Aug
Birds	Alameda song sparrow	SSC	Year-round	
Birds	common yellowthroat	FP, SSC	Year-round	Jun-Aug
Fish	longfin smelt	ST	Year-round	Nov-May
Mammals	salt-marsh harvest mouse	FE, SE	Year-round	
Plants	California seablite	FE, SSSP	Year-round	Jul-Oct

FT-Federally Threatened, FE-Federally Endangered, FP-Federally Protected, SE-State Endangered, ST-State Threatened, SP -State Protected, SR-State Rare, SSC-Species of Special Concern, BGEPA-Bald and Golden Eagle Protection Act, SSSP-State Special Status Species

List of Key Contacts:

Type	Name/Title	Organization	Phone
C	/Coordinator	Native American Heritage Commission	(916) 373-3710
C	/Coordinator	Northwest Information Center	(707) 588-8455
E	/Dispatch, 24-hr	East Bay Regional Park District	(510) 881-1833
E	/Shoreline Park Supervisor	East Bay Regional Park District	(510) 881-1832
O	/Dispatch, 24-hr	Alameda County Sheriffs Department	(510) 667-7721
O	/Operations	California Department of Water Resources	(916) 574-2714
T	/Agency Representative	NOAA National Marine Fisheries Service	(562) 980-3232

C – Cultural, Historic, Archaeological; E – Entry/Owner/Access; O – Other; S – Safety; T – Trustee; X – Exclusion or Security

Additional Site Summary Comments:

Concerns and Advice to Responders:

The prime concern is to exclude oil from entering this bay and impacting birds and marsh perimeter. Cleanup of the salt-marsh habitat would be extremely difficult if not possible, and natural resource injuries would be significant. Responders should stay out of marshes and mudflats unless specifically directed and activity should be confined to the mouth of the lagoon.

Hazard and Restrictions:

Very shallow water at the southern and eastern margins. Possible submerged obstructions inside the bay mid to east end. Air traffic beware of radio towers.

Site Strategies:**Site Validation Level: II**

Strategy: 2-495.1 Objective: Exclude/Deflect oil past the site and exclude it from entering lagoon by winds, waves and very light tidal current

Strategy: Deploy a continuous line of harbor boom (3600' 9X9+ Hboom) across the bay from the radio towers north to the Emeryville riprap. A collection may be successful at the Emeryville shore about 200 ft inland from mouth. If oil collects in skimable quantities (contact IC).

Table of Response Resources

Equipment	Sub-Type	Size	Unit	QTY	Unit	Last Page Update
Boom	Harbor	9x9 inch		3600	feet	
Anchor	Danforth	22 lb		8		
Vessel	Boom Boat			2		
Vessel	Skiff or Punt			1		
Staff	Staff to Deploy			8		

Strategy: 2-495.2 Objective: Exclude/Deflect oil when there are aggressive waves.

Strategy: Set cascading boom across the mouth according to the prevailing winds (diagram shows deployment for typical NW winds - adjust if other wind/wave conditions prevail). Deploy 4500' 9X9+ Hboom in 600-1200' lengths at an angle to the prevailing winds and waves. Divert oil to sandy beach west of radio towers on W to NW winds, or to Emeryville spit on S to SW winds, for shore recovery with shore-based skimmers. Link boom ends with sorbent to insure against oil eddying around boom. If oil is threatening to overwhelm the strategy, execute strategy .1 as a backup.

Table of Response Resources

Equipment	Sub-Type	Size	Unit	QTY	Unit	Last Page Update
Boom	Harbor	9x9 inch		4500	feet	
Boom	Sorbent			2000	feet	
Anchor	Danforth	22 lb		18		
Vessel	Boom Boat			2		
Vessel	Skiff or Punt			1		
skimmer	shoreside			1		
Staff	Staff to Deploy			10		

Strategy: 2-495.3 Objective: Collection at shoreline favored by prevailing currents

Strategy: Collection sites are available at either north shore (Emeryville) or south shore (radio towers). Best location on Emeryville shore is inside mouth about 80 yards. Best location near radio towers in on sand spit (this area may become mudflat at some low tides) and may require site modification. Small amount of light boom and sorbents will be necessary to construct skimming pocket. Shoreside skimming system (SSS) for collectable oil quantities, else use pompoms or other sorbents.

Table of Response Resources

Equipment	Sub-Type	Size	Unit	QTY	Unit	Last Page Update
Boom	Swamp	6x6 inch		100	feet	
Boom	Pom-pom			50	feet	
Boom	Sorbent			200	feet	
Anchor	Danforth	22 lb		4		
Vessel	shoreside			1		
Staff	Staff to Deploy			2		

Logistics:

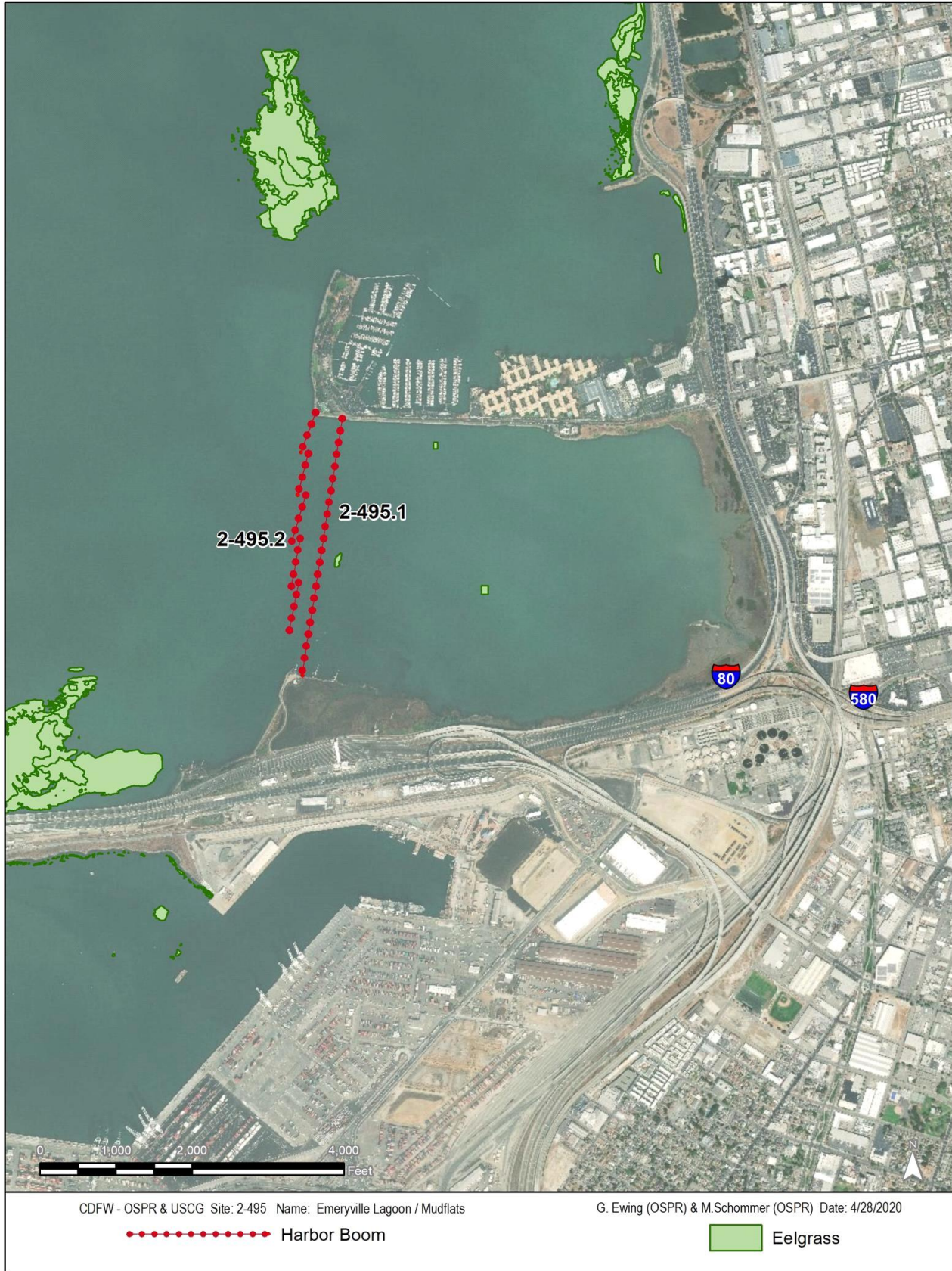
Directions: The site is the embayment just north of the Oakland Bay Bridge Toll plaza. The South side is accessible from the I-80 exist just before the toll plaza. Powell Street (exist from I-80 at Emeryville) borders the north margin. By boat, the nearest launch facility is at the Emeryville Marina at the end of Powell Street.

Land Access: All vehicles, all seasons on north and south access.

On-Water Limitations: Very shallow on south half occasional obstruction through out. The nearest lunch, gas, moorage and service is located at the Emeryville Marina on the north side of Emeryville Spit.

Facilities, Staging Areas, Command Posts, Available Equipment: Staging available at Emeryville Marina. Good service availability and security capability. Boom could be deployed directly from land to water from this local. Emeryville PD and Fire are nearby. Berkeley Marina is 3 miles to the north and provides similar capabilities.

Communications Problems: Good cell reception throughout area.



County: Marin**ACP Division/Segment:** MR - P - S002**NOAA Chart:** 18649 Entrance to SF Bay **Map Book:** Marin County, S **Decimal Degrees:** 37.832729 -122.475992**Site Description:**

Horseshoe Bay, a south facing cove, is located between Point Cavallo on the east and Lime Point on the west. A 750 ft long rip-rapped jetty extends from Point Cavallo to the west. A second 300 ft long rip-rapped jetty is located on the west side of Horseshoe Bay where the USCG Golden Gate station is located. A 200 ft long medium-grain sand/gravel/cobble beach lies along the northern shoreline of the cove. Horseshoe Bay encompasses 16.6 acres, with water depths ranging from 6 to 12ft below MLLW level. Eelgrass beds thrive in the shallow water and provides excellent spawning habitat for Pacific Herring. A large 350' fishing pier lies at the southwestern edge of the site. The Presidio Yacht Club occupies the eastern portion of the bay. Several live-aboard residents occupy the east and southerly docks of Horseshoe Bay.

Resources at Risk:*ESI and Habitat:* 6B Riprap

8B Sheltered solid man-made structures

5 Mixed sand and gravel beaches

List of Resources at Risk:

	Resource Name	Status	Presence	Sensitivity
Birds	western grebe	FP	Year-round	Apr - Jun
Birds	pelagic cormorant	FP	Year-round	May - Jun
Fish	Pacific herring		Year-round	Nov - Apr
Fish	longfin smelt	ST	Year-round	Nov - May
Insects	Mission blue butterfly	FE	Year-round	Mar-Jul
Mammals	harbor seal	FP	Year-round	Mar - Jun
Mammals	California sea lion	FP	Year-round	Mar -Aug
Plants	eelgrass		Year-round	

FT-Federally Threatened, FE-Federally Endangered, FP-Federally Protected, SE-State Endangered, ST-State Threatened, SP -State Protected, SR-State Rare, SSC-Species of Special Concern, BGEPA-Bald and Golden Eagle Protection Act, SSSP-State Special Status Species

List of Key Contacts:

Type	Name/Title	Organization	Phone
C	/Coordinator	Native American Heritage Commission	(916) 373-3710
C	/Coordinator	Northwest Information Center	(707) 588-8455
O	/Emergency Service Coordinator	Marin County Office of Emergency Services	(415) 250-0267
O	/Dispatch, 24-hr	Marin County Sheriff's Department	(415) 479-2311
O	/Office	Presidio Yacht Club	(415) 332-2319
O	/Operations Center	US Coast Guard, Golden Gate Lifeboat Station	(415) 331-8247
T	/Agency Representative	US National Park Service, Golden Gate	(415) 561-4731
T	/Dispatch, 24-hr	US National Park Service, Golden Gate NRA	(415) 561-5505

C – Cultural, Historic, Archaeological; E – Entry/Owner/Access; O – Other; S – Safety; T – Trustee; X – Exclusion or Security

Additional Site Summary Comments:

Eelgrass beds have been shown to occur along the northern and eastern shoreline of Horseshoe Bay and are most vulnerable at low tide (-1ft).

Concerns and Advice to Responders:

Eelgrass located in the northern and eastern portions of the site are the main concerns. Pinnipeds use the sand/gravel beach at low tides. Avoid boat operations in these areas.

Hazard and Restrictions:

Be aware of swift currents that exist outside the cove.

Site Strategies:**Site Validation Level: II**

Strategy: 2-415.1 Objective: Deflection/collection. Prevent oil from impacting eelgrass beds, divert towards boat ramp.

Strategy: Deploy 1000' of 9x9+ Hboom from the end of the East Jetty in an inverted chevron to the Boat Ramp. Establish collection pocket at Boat Ramp, if recoverable oil anticipated. Position a vac truck near Boat Ramp to collect any product accumulated.

Table of Response Resources

Equipment	Sub-Type	Size	Unit	QTY	Unit	Last Page Update
Boom	Harbor	9x9 inch		1000	feet	
Anchor	Danforth	22 lb		3	feet	
Vessel	Boom Boat			1		
Vessel	Skiff or Punt			1		
Vac truck				1		
Staff	Staff to Deploy			6		

Strategy: 2-415.2 Objective: Backup strategy to prevent escaped oil from impacting eelgrass beds.

Strategy: Deploy 650ft of 9x9+ Hboom from the end of the East Jetty across the cove to the north shore, 400ft east of the Boat Ramp. Front line the Hboom with 650ft sorbent boom.

Table of Response Resources

Equipment	Sub-Type	Size	Unit	QTY	Unit	Last Page Update
Boom	Harbor	9x9 inch		650	feet	
Boom	Sorbent			650	feet	
Anchor	Danforth	22 lb		4		
Vessel	Skiff or Punt			1		
Staff	Staff to Deploy			2		

Logistics:

Directions: From Highway 101 (North of Golden Gate Bridge), exit Sausalito turn right towards the NE along Sausalito Lateral Rd/Alexander Ave. Proceed towards Ft. Baker on East Rd. to waterfront. Horseshoe Bay, a south facing cove, is located between Point Cavallo on the east and Lime Point on the west. A 750 ft long rubble-mound breakwater extends from Point Cavallo to the west. A second 300ft long rubble mound breakwater is located on the west side of Horseshoe Bay where the USCG station is located. A 200 ft long sand/gravel/cobble beach lies along the North shoreline of the bay.

Land Access: Site accessible via land and water.

On-Water Limitations: Launch of small boats available on-site.

Facilities, Staging Areas, Command Posts, Available Equipment: Large parking area on-site that could be used to stage equipment.

Communications Problems: Good cell reception in vicinity.



9817.4 Response Summary Tables

A summary of the response resources is listed by site and sub-strategy next.

Summary of ACP 2 GRA 4 Response Resources by Site and Sub-Strategy

Site **Site Name**

Sub-Strategy **PREVENTION OBJECTIVE OR CONDITION FOR DEPLOYMENT**

Equipment	Sub-Type	Size/Unit	QTY/Unit
2-400 San Francisco Waterfront Collection/Protection			
.1 - Deflect to Collection at shoreline: recover oil at seawalls where there is shoreline access. Deflect oil to areas where current is slowest to minimize the distance the oil travels, especially on the ebb tide.			
skimmer	self propelled		1
Staff	Staff to Deploy	10	
Boom	Harbor	9x9 inch	6000 feet
Boom	Sorbent		500 feet
Anchor	Danforth	22 lb	30
Vessel	Boom Boat		2
Vessel	Skiff or Punt		2
2-401 Pier 39			
.1 - Exclude oil by booming from entering breakwater. Cascade boom or staff to permit Ferry traffic.			
Boom	Harbor	9x9 inch	1600 feet
Anchor	Danforth	22 lb	8
Staff	Staff to Deploy		5
Vessel	Boom Boat		1
Staff	Staff to Tend		2
Vessel	Skiff or Punt		1
Boom	Sorbent		700 feet
.2 - Sorbent Protection - complete the sorbent barrier in the interior of the marina breakwater to intercept seepage past booms or through breakwater.			
Staff	Staff to Deploy		2
Boom	Sorbent		1400 feet
Anchor	Danforth		5
Vessel	Skiff or Punt		1
.3 - Skimming collectable oil with one Self Propelled Skimmer or one Shoreside Skimmer			
skimmer	shoreside		1
skimmer	self propelled		1
Staff	Staff to Deploy		3
2-402 Alcatraz Island			
.1 - Protection booming in unusual conditions: When wave reflection will not likely keep oil off shoreline, protect the sensitive rocky intertidal zone on the south eastern part of the island.			
Staff	Staff to Tend		2
Staff	Staff to Deploy		5
Vessel	Skiff or Punt		1
Boom	Harbor	9x9 inch	800 feet
Anchor	Danforth	40 lb	7
Vessel	Boom Boat		1
.2 - Deflection booming in unusual conditions: When wave reflection will not likely keep oil off shoreline, deflect oil away from and around west end of island when wave refraction is unlikely to keep oil off the shoreline			
Staff	Staff to Deploy		6
Vessel	Boom Boat		2
Boom	Harbor	9x9 inch	2100 feet
Anchor	Danforth	40 lb	15

Sub-Strategy **PREVENTION OBJECTIVE OR CONDITION FOR DEPLOYMENT**

Equipment	Sub-Type	Size/Unit	QTY/Unit
2-403 Crissy Field Tidal Marsh			
.1 - Primary: Exclude oil from entering the mouth			
Boom	Harbor	6x6 inch	300 feet
Staff	Staff to Deploy		2
Vessel	Skiff or Punt		1
Anchor	Danforth	22 lb	3
.2 - Back-up: exclude / collect: capture of oil which escapes past primary protection			
Vac truck			1
Staff	Staff to Deploy		2
Boom	Swamp Boom	6x6 inch	400 feet
Boom	Sorbent		300 feet
Anchor	Danforth	22 lb	3
.3 - Exclude by berming with onsite substrate			
Skiploader			1
culvert			1
Staff	Staff to Deploy		3
2-415 Horseshoe Bay			
.1 - Deflection/collection. Prevent oil from impacting eelgrass beds, divert towards boat ramp.			
Boom	Harbor	9x9 inch	1000 feet
Vessel	Skiff or Punt		1
Vac truck			1
Staff	Staff to Deploy		6
Vessel	Boom Boat		1
Anchor	Danforth	22 lb	3 feet
.2 - Backup strategy to prevent escaped oil from impacting eelgrass beds.			
Vessel	Skiff or Punt		1
Staff	Staff to Deploy		2
Anchor	Danforth	22 lb	4
Boom	Sorbent		650 feet
Boom	Harbor	9x9 inch	650 feet
2-420 Richardson Bay Marshes			
.1 - Primary: Exclude oil at bay mouth by booming Sausalito main channel and Tiburon minor flood channels. This is main part (part 1) of a total exclusion at the bay mouth which would include Part 2: 2-420.2			
Staff	Staff to Deploy		6
Boom	Harbor	9x9 inch	2700 feet
Boom	Sorbent		300 feet
Anchor	Danforth	22 lb	15
Vessel	Boom Boat		1
Vessel	Skiff or Punt		1
.2 - Secondary exclusion; Part 2 - complete exclusion across the low current portion of the bay. This is added-on to previous or concurrent execution of Part 1 substrategy 2-420.1			
Vessel	Skiff or Punt		1
Staff	Staff to Deploy		6
Anchor	Danforth	22 lb	8
Boom	Harbor	9x9 inch	3300 feet
Boom	Sorbent		300 feet
Vessel	Boom Boat		1
.3 - Exclude/collect oil that has entered Richardson Bay			
Boom	Swamp Boom	6x6 inch	3300 feet
Boom	Oil Snare (pom-pom)		600 feet
Boom	Sorbent		600 feet
Anchor	Danforth	22 lb	12
Vessel	Boom Boat		2
Vessel	Skiff or Punt		1
skimmer	self propelled		1
Staff	Staff to Deploy		8

Sub-Strategy **PREVENTION OBJECTIVE OR CONDITION FOR DEPLOYMENT**

Equipment	Sub-Type	Size/Unit	QTY/Unit
2-421 Paradise Cove & Tiburon Peninsula			
.1 - At Paradise cove, deflect to collection during ebb and away from shores during flood			
Anchor	Danforth	40 lb	16
Staff	Staff to Deploy		8
Vessel	Boom Boat		2
Boom	Swamp	6x6 inch	4500 feet
Boom	Harbor	9x9 inch	2000 feet
Vessel	Skiff or Punt		1
.2 - At Bluff Point, deflect oil to natural collection sites			
Boom	Harbor	9x9 inch	1200 feet
Boom	Oil Snare (pom-pom)		600 feet
Anchor	Danforth	40 lb	7
Vessel	Boom Boat		1
Vessel	Skiff or Punt		
2-422 Keil Cove			
.1 - Protection booming for eelgrass and coarse sand beach.			
Boom	Swamp	6x6 inch	2400 feet
Anchor	Danforth	22 lb	7
Vessel	Boom Boat		1
Vessel	Skiff or Punt		1
Staff	Staff to Deploy		6
2-423 Angel Island			
.1 - Objective: Collection: natural collection at Blunt Pt & Quarry Pt.			
Vessel	Boom Boat		1
Vessel	Skiff or Punt		1
Anchor	Danforth	22 lb	20
Boom	Swamp	6x6 inch	1200 feet
Boom	Harbor	9x9 inch	2600 feet
Staff	Staff to Deploy		8
2-424 Paradise Cay Eelgrass			
.1 - Primary: Assess vulnerability of eelgrass to oil			
Personnel	OSPR Staff ES		1
.2 - Exclusion around eelgrass nearshore area immediately south of Paradise Cay			
Anchor	Danforth	22 lb	15
Staff	Staff to Deploy		4
Vessel	Boom Boat		1
Boom	Harbor	9x9 inch	5100 feet
Vessel	Skiff or Punt		1
.3 - Exclude oil from entering Paradise Cay Marina			
Staff	Staff to Deploy		2
Vessel	Skiff or Punt		1
Anchor	Danforth	22 lb	6
Boom	Harbor	9x9 inch	500 feet

Sub-Strategy **PREVENTION OBJECTIVE OR CONDITION FOR DEPLOYMENT**

Equipment	Sub-Type	Size/Unit	QTY/Unit
2-425 Corte Madera Marshes			
.1 - Exclude oil from entering tidal inlets.			
Anchor	Stakes		16
Vessel	Boom Boat		1
Anchor	Danforth	22 lb	16
Boom	Sorbent		900 feet
Boom	Swamp	6x6 inch	900 feet
Vessel	Skiff or Punt		1
Staff	Staff to Deploy		6
.2 - Exclude oil from entering Creek mouth.			
Anchor	Danforth	22 lb	5
Boom	Harbor	9x9 inch	800 feet
Vessel	Boom Boat		1
Vessel	Skiff or Punt		1
Staff	Staff to Deploy		5
.3 - Exclude oil from entering cove mouth, creek, and tidal creeks			
Staff	Staff to Deploy		12
Vessel	Skiff or Punt		1
Boom	Swamp	6x6 inch	1500 feet
Anchor	Danforth	22 lb	22
Boom	Harbor	9x9 inch	6000 feet
Vessel	Boom Boat		3
2-426 San Rafael Creek Marsh			
.1 - Exclusion from San Rafael Creek and local harbors			
Vessel	Boom Boat		1
Boom	Harbor	9x9 inch	3800 feet
Anchor	Danforth	22 lb	12
Vessel	Skiff or Punt		1
Staff	Staff to Deploy		5
.2 - Shoreline protection when marsh margins are threatened by potential oiling - north and south of creek mouth.			
Staff	Staff to Deploy		12
Boom	Harbor	9x9 inch	6900 feet
Boom	Swamp	6x6 inch	600 feet
Anchor	Danforth	22 lb	18
Vessel	Skiff or Punt		2
Vessel	Boom Boat		3
2-427 Marin Islands			
.1 - Deflect oil past islands with chevron at east end.			
Vessel	Skiff or Punt		1
Vessel	Boom Boat		1
Anchor	Danforth	22 lb	10
Boom	Harbor	9x9 inch	3000 feet
Staff	Staff to Deploy		5
.2 - Protective enclosure booming of both islands in the event of heavy oil threat.			
Staff	Staff to Deploy		8
Boom	Harbor	9x9 inch	4000 feet
Anchor	Danforth	22 lb	12
Vessel	Boom Boat		2
Vessel	Skiff or Punt		1

Sub-Strategy **PREVENTION OBJECTIVE OR CONDITION FOR DEPLOYMENT**

Equipment	Sub-Type	Size/Unit	QTY/Unit
2-451 Castro Rocks			
.1 - Deflection/exclusion of oil from west or southwest in ebb or flood - deploy protection legs 1 (SW) and 2 (NW)			
Vessel	Skiff or Punt		1
Boom	Harbor	9x9 inch	3000 feet
Anchor	Danforth	44 lb	10
Vessel	Boom Boat		1
Staff	Staff to Deploy		5
.2 - Deflection/protection boom for oil from south and southeast on flood currents in a chevron on the north side of the rocks - deploy protection legs 1 and 3			
Anchor	Danforth	44 lb	9
Vessel	Boom Boat		2
Vessel	Skiff or Punt		1
Staff	Staff to Deploy		8
Boom	Harbor	9x9 inch	6000 feet
.3 - Deflection/exclusion for oil from north or northwest on ebb in a chevron on the north side of the rocks - protection legs 2 (NW) and 4(NE)			
Boom	Harbor	9x9 inch	3000 feet
Staff	Staff to Deploy		8
Vessel	Skiff or Punt		1
Vessel	Boom Boat		2
Boom	Swamp	6x6 inch	2500 feet
Anchor	Danforth	44 lb	12
.4 - Confine/deflect oil to shore for collection after completion of protection strategy			
Vessel	Skiff or Punt		1
Boom	Harbor	9x9 inch	2300 feet
Anchor	Danforth	44 lb	6
Vessel	Boom Boat		1
Staff	Staff to Deploy		5
.5 - Backup secondary boom when oil overwhelms initial protection strategy			
Anchor	Danforth	44 lb	13
Vessel	Boom Boat		2
Vessel	Skiff or Punt		1
Staff	Staff to Deploy		8
Boom	Pom-pom		600 feet
Boom	Swamp	6x6 inch	6000 feet
2-452 Richmond Eelgrass Beds			
.1 - Exclude oil from pocket marsh at Castro Pt.			
Staff	Staff to Deploy		4
Boom	Swamp	6x6 inch	300 feet
Anchor	Danforth	22 lb	5
Vessel	Boom Boat or Skiff		1
Vessel	Skiff or Punt		1
.2 - Exclude oil from emergent eelgrass bed in coves between Molate Pt and Pt Orient.			
Anchor	Danforth	22 lb	9
Staff	Staff to Deploy		8
Vessel	Boom Boat		2
Boom	Harbor	9x9 inch	4000 feet
Vessel	Skiff or Punt		1
.3 - Deflect to Collection/confinement at shoreline when oil impacts are likely to be heavy and unavoidable at this site			
Boom	Harbor	9x9 inch	4500 feet
Boom	Swamp	6x6 inch	500 feet
Anchor	Danforth	22 lb	22
Vessel	Boom Boat		3
Vessel	Skiff or Punt		2
skimmer	self propelled		2
Staff	Staff to Deploy		15

Sub-Strategy **PREVENTION OBJECTIVE OR CONDITION FOR DEPLOYMENT**

Equipment	Sub-Type	Size/Unit	QTY/Unit
2-453 Brook's Island			
.1 - PRIMARY: Exclusion Booming on south side of spit: exclude oil from high marsh and break in spit			
Boom	Harbor	9x9 inch	5000 feet
Anchor	Danforth	22 lb	12
Vessel	Skiff or Punt		1
Staff	Staff to Deploy		7
Vessel	Boom Boat		2
.2 - North shore exclusion for north-side threat to shoreline, jetty breech, marsh entry (Sante Fe Channel and Richmond Channel side & threat sources)			
Staff	Staff to Deploy		5
Vessel	Skiff or Punt		1
Vessel	Boom Boat		1
Boom	Swamp	6x6 inch	3200 feet
Anchor	Danforth	22 lb	8
2-454 Richmond Inner Harbor/Hoffman Marsh			
.1 - Exclude oil from marsh entry channels			
Staff	Staff to Deploy		5
Boom	Harbor	9x9 inch	2500 feet
Boom	Swamp	6x6 inch	1100 feet
Boom	Sorbent		200 feet
Anchor	Danforth	22 lb	8
Vessel	Boom Boat		1
Vessel	Skiff or Punt		1
.2 - Protection for splash-over or porous breakwater			
Staff	Staff to Deploy		4
Boom	Sorbent		3000 feet
Anchor	Stakes		16
.3 - Protection booming			
Boom	Harbor	9x9 inch	5000 feet
Anchor	Danforth	22 lb	11
Vessel	Boom Boat		2
Vessel	Skiff or Punt		1
Staff	Staff to Deploy		8
2-455 Santa Fe Channel/Harbor Channel			
.1 - Contain/collect oil within Channel and prevent oil from leaving the channel and threatening sensitive sites immediately outside of the channel. Divert oil to shore side skimming.			
Vessel	Skiff or Punt		1
Boom	Harbor	9x9 inch	6200 feet
Staff	Staff to Deploy		10
Boom	Sorbent		500 feet
Vessel	Boom Boat		3
Anchor	Danforth	22 lb	17

Sub-Strategy **PREVENTION OBJECTIVE OR CONDITION FOR DEPLOYMENT**

Equipment	Sub-Type	Size/Unit	QTY/Unit
2-480 Albany Marsh			
.1 - Exclude oil from embayment on west or northwesterly winds.			
Staff	Staff to Deploy		5
Boom	Harbor	9x9 inch	1500 feet
Boom	Sorbent		100 feet
Anchor	Danforth	22 lb	8
Vessel	Boom Boat		1
Vessel	Skiff or Punt		1
.2 - Exclude oil from embayment on southwesterly winds.			
Staff	Staff to Deploy		8
skimmer	shoreside		1
Vessel	Skiff or Punt		1
Vessel	Boom Boat		1
Anchor	Danforth	22 lb	9
Boom	Harbor	9x9 inch	1700 feet
Boom	Sorbent		100 feet
.3 - Backup initial exclusion strategy when strong winds or wave conditions are likely to move oil past initial exclusion deployment.			
Boom	Sorbent		1700 feet
Anchor	Danforth	22 lb	12
Vessel	Boom Boat		2
Vessel	Skiff or Punt		1
Staff	Staff to Deploy		5
Boom	Swamp	6x6 inch	3200 feet
.4 - Skimming when skimmable thicknesses of oil are present.			
skimmer	shoreside		1
Staff	Staff to Deploy		4
Vessel	Skiff or Punt		1
Anchor	Danforth	22 lb	3
Boom	Sorbent		200 feet
Boom	Swamp	6x6 inch	200 feet
2-490 Berkeley Eelgrass Beds and Cove			
.1 - Assess need for protective booming: Eelgrass is only vulnerable at very low tides when eelgrass tops are exposed to floating oil.			
Personnel	OSPR Staff ES		1
.2 - Exclusion/deflective booming when oil coming from the west			
Boom	Harbor	9x9 inch	6000 feet
Boom	Sorbent		2000 feet
Anchor	Danforth	22 lb	19
Vessel	Boom Boat		3
Vessel	Skiff or Punt		1
Staff	Staff to Deploy		11
.3 - Exclusion/deflective/protective booming for oil from the west low wind conditions			
Vessel	Boom Boat		2
Vessel	Skiff or Punt		1
Anchor	Danforth	22 lb	14
Boom	Harbor	9x9 inch	5000 feet
Staff	Staff to Deploy		8

Sub-Strategy **PREVENTION OBJECTIVE OR CONDITION FOR DEPLOYMENT**

Equipment	Sub-Type	Size/Unit	QTY/Unit
2-495 Emeryville Lagoon/Mudflats			
.1 - Exclude/Deflect oil past the site and exclude it from entering lagoon by winds, waves and very light tidal current			
Boom	Harbor	9x9 inch	3800 feet
Anchor	Danforth	22 lb	8
Vessel	Boom Boat		2
Vessel	Skiff or Punt		1
Staff	Staff to Deploy		8
.2 - Exclude/Deflect oil when there are aggressive waves.			
Anchor	Danforth	22 lb	18
Staff	Staff to Deploy		10
skimmer	shoreside		1
Vessel	Boom Boat		2
Boom	Sorbent		2000 feet
Boom	Harbor	9x9 inch	4500 feet
Vessel	Skiff or Punt		1
.3 - Collection at shoreline favored by prevailing currents			
Staff	Staff to Deploy		2
Boom	Swamp	6x6 inch	100 feet
Boom	Pom-pom		50 feet
Boom	Sorbent		200 feet
Anchor	Danforth	22 lb	4
Vessel	shoreside		1

9817.3 Lists of Economic Resources Susceptible to Oiling

A summary of Human Health and Safety Sites and Economic Resources is listed by GRA next. Refer to Section 9804 for more information.

Economic Sites - GRA 4

Site Information	Site Number & Location	Lat/Long & Priority
<p>Brickyard Cove Marina 1160 Brickyard Cove Rd Richmond CA 94801 Phone: 510-236-1933 Site Description:</p>	<p>Site Number: 2-4-CC-100-D Operational Division:</p>	<p>Public Marinas and Harbors D Lat/Long: 37.91 -122.38</p>
<p>Richmond Marina/Yacht Club 351 Brickyard Cove Rd Richmond CA 94801 Phone: 510-237-2821 Site Description:</p>	<p>Site Number: 2-4-CC-105-D Operational Division:</p>	<p>Public Marinas and Harbors D Lat/Long: 37.91 -122.38</p>
<p>Channel Marina Yacht Club 230 W Cutting Blvd Richmond CA 94804 Phone: 510-233-2246 Site Description:</p>	<p>Site Number: 2-4-CC-110-D Operational Division:</p>	<p>Public Marinas and Harbors D Lat/Long: 37.93 -122.37</p>
<p>Richmond Parks & Rec Boat Ramp 640 W Cutting Blvd Richmond CA 94804 Phone: Site Description:</p>	<p>Site Number: 2-4-CC-115-D Operational Division:</p>	<p>Public Marinas and Harbors D Lat/Long: 37.92 -122.38</p>
<p>Marina Bay Yacht Harbor 1340 Marina Way Richmond CA 94804 Phone: 510-236-1014 Site Description:</p>	<p>Site Number: 2-4-CC-120-D Operational Division:</p>	<p>Public Marinas and Harbors D Lat/Long: 37.91 -122.35</p>
<p>Point Isabella Regional Shoreline 2701 Isabel St Richmond CA 94804 Phone: 888-327-2757 Site Description:</p>	<p>Site Number: 2-4-CC-125-D Operational Division:</p>	<p>Parks, Beaches, Recreational Areas D Lat/Long: 37.9 -122.32</p>
<p>Miller Knox Regional Shoreline 900 Doman Dr Richmond CA 94801 Phone: 888-327-2757 Site Description:</p>	<p>Site Number: 2-4-CC-130-D Operational Division:</p>	<p>Parks, Beaches, Recreational Areas D Lat/Long: 37.91 -122.38</p>
<p>Shimada Friendship Park 79 Harbor View Dr Richmond CA 94804 Phone: 510-620-6793 Site Description:</p>	<p>Site Number: 2-4-CC-135-D Operational Division:</p>	<p>Parks, Beaches, Recreational Areas D Lat/Long: 37.92 -122.34</p>
<p>Point Molate Beach Park 527 Western Dr Richmond CA 94801 Phone: Site Description:</p>	<p>Site Number: 2-4-CC-140-D Operational Division:</p>	<p>Parks, Beaches, Recreational Areas D Lat/Long: 37.94 -122.41</p>
<p>San Francisco Marina Yacht Harbor 3950 Scott Sr San Francisco CA 94123 Phone: 415-831-6322 Site Description:</p>	<p>Site Number: 2-4-SF-105-D Operational Division:</p>	<p>Public Marinas and Harbors D Lat/Long: 37.81 -122.44</p>

Economic Sites - GRA 4

Site Information	Site Number & Location	Lat/Long & Priority
<p>Pier 45</p> <p>San Francisco CA 94133 Phone: 415-775-1943</p> <p>Site Description:</p>	<p>Site Number: 2-4-SF-110-D Operational Division:</p>	<p>Public Marinas and Harbors D Lat/Long: 37.81 -122.42</p>
<p>Larkspur Landing Ferry Terminal</p> <p>Larkspur CA 94939 Phone:</p> <p>Site Description:</p>	<p>Site Number: 2-4-MR-100-D Operational Division:</p>	<p>Public Transit Ferries D Lat/Long: 37.95 -122.51</p>
<p>Tiburon Ferry</p> <p>Tiburon CA Phone:</p> <p>Site Description:</p>	<p>Site Number: 2-4-MR-105-D Operational Division:</p>	<p>Public Transit Ferries D Lat/Long: 37.87 -122.46</p>
<p>Corinthian Yacht Club</p> <p>Tiburon CA 94920 Phone:</p> <p>Site Description:</p>	<p>Site Number: 2-4-MR-110-D Operational Division:</p>	<p>Public Marinas and Harbors D Lat/Long: 37.87 -122.46</p>
<p>San Francisco Yacht Club</p> <p>Tiburon CA 94920 Phone:</p> <p>Site Description:</p>	<p>Site Number: 2-4-MR-115-D Operational Division:</p>	<p>Public Marinas and Harbors D Lat/Long: 37.87 -122.46</p>
<p>Kappas Yacht Harbor</p> <p>Sausalito CA Phone:</p> <p>Site Description:</p>	<p>Site Number: 2-4-MR-120-D Operational Division:</p>	<p>Public Marinas and Harbors D Lat/Long: 37.88 -122.5</p>
<p>Clipper Yacht Harbor</p> <p>Sausalito CA Phone:</p> <p>Site Description: Multiple Harbors</p>	<p>Site Number: 2-4-MR-125-D Operational Division:</p>	<p>Public Marinas and Harbors D Lat/Long: 37.87 -122.5</p>
<p>Fuel Dock Clipper Yacht Harbor</p> <p>310 Harbor Dr Sausalito CA Phone:</p> <p>Site Description:</p>	<p>Site Number: 2-4-MR-130-D Operational Division:</p>	<p>Public Marinas and Harbors D Lat/Long: 37.87 -122.5</p>
<p>Marina Plaza Harbor</p> <p>Sausalito ca 94965 Phone:</p> <p>Site Description:</p>	<p>Site Number: 2-4-MR-135-D Operational Division:</p>	<p>Public Marinas and Harbors D Lat/Long: 37.87 -122.5</p>
<p>Shoonmaker Point Marina</p> <p>85 Liberty Ship Way Sausalito CA Phone:</p> <p>Site Description:</p>	<p>Site Number: 2-4-MR-140-D Operational Division:</p>	<p>Public Marinas and Harbors D Lat/Long: 37.86 -122.49</p>

Economic Sites - GRA 4

Site Information	Site Number & Location	Lat/Long & Priority
<p>Sausalito Yacht Harbor</p> <p>Sausalito CA Phone:</p> <p>Site Description:</p>	<p>Site Number: 2-4-MR-145-D Operational Division:</p>	<p>Public Marinas and Harbors D Lat/Long: 37.86 -122.48</p>
<p>Sausalito Ferry Terminal</p> <p>Sausalito CA 94965 Phone:</p> <p>Site Description:</p>	<p>Site Number: 2-4-MR-150-D Operational Division:</p>	<p>Public Transit Ferries D Lat/Long: 37.86 -122.48</p>
<p>Dunphy Park Bridheway at Napa St Sausalito CA Phone:</p> <p>Site Description:</p>	<p>Site Number: 2-4-MR-155-D Operational Division:</p>	<p>Parks, Beaches, Recreational Areas D Lat/Long: 37.86 -122.49</p>
<p>San Rafael Yacht Harbor</p> <p>San Rafael CA Phone:</p> <p>Site Description:</p>	<p>Site Number: 2-4-MR-160-D Operational Division:</p>	<p>Public Marinas and Harbors D Lat/Long: 37.97 -122.51</p>
<p>Lowrie Yacht Harbor</p> <p>San Rafael CA 94901 Phone:</p> <p>Site Description:</p>	<p>Site Number: 2-4-MR-165-D Operational Division:</p>	<p>Public Marinas and Harbors D Lat/Long: 37.97 -122.51</p>
<p>Paradise Cay Yacht Harbor 300 Trinidad Dr Tiburon CA Phone: 415-435-4292</p> <p>Site Description:</p>	<p>Site Number: 2-4-MR-170-D Operational Division:</p>	<p>Public Marinas and Harbors D Lat/Long: 37.92 -122.48</p>
<p>Crissy Field/Golden Gate Beach 1199 E Beach San Francisco CA 94129 Phone: 415-561-4323</p> <p>Site Description:</p>	<p>Site Number: 2-4-SF-100-D Operational Division:</p>	<p>Parks, Beaches, Recreational Areas D Lat/Long: 37.81 -122.46</p>
<p>Pier 43</p> <p>San Francisco CA 94133 Phone:</p> <p>Site Description:</p>	<p>Site Number: 2-4-SF-115-D Operational Division:</p>	<p>Public Transit Ferries D Lat/Long: 37.81 -122.41</p>
<p>Ferry Building 1 Ferry Building San Francisco CA 94105 Phone: 415-983-8000</p> <p>Site Description:</p>	<p>Site Number: 2-4-SF-120-D Operational Division:</p>	<p>Public Transit Ferries D Lat/Long: 37.8 -122.39</p>
<p>Pier 39 Marina Embarcadero San Francisco CA 94133 Phone: 415-705-5500</p> <p>Site Description:</p>	<p>Site Number: 2-4-SF-120-D Operational Division:</p>	<p>Public Marinas and Harbors D Lat/Long: 37.81 -122.41</p>