RESOURCES AT RISK, SITE PROTECTION STRATEGIES & SITE PRIORITIZATION

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CDFW-OSPR
OSPR Overview

PLANNING SECTION

Prepares and documents Incident Action Plan to accomplish objectives, collects and evaluates information, maintains resource status, and maintains documentation for incident records

- Resources Unit maintains status of all assigned resources at an incident
- Situation Unit collects, organizes, disseminates situation status information
- Environmental Unit responsible for environmental matters associated with response…

Environmental Unit

EU responsible for environmental matters associated with response, including:

- Identify sensitive resources, recommend response priorities
- Develop shoreline cleanup and assessment plans
- Evaluate use of Applied Response Technologies (ARTs)
- Monitor environmental consequences of response actions
- Consult with USFWS and NMFS (ESA) and SHPOs, THPOs (NHPA) for protection of resources during response
- Obtain weather, tides/currents, trajectories…

ENVIRONMENTAL RESOURCES AT RISK

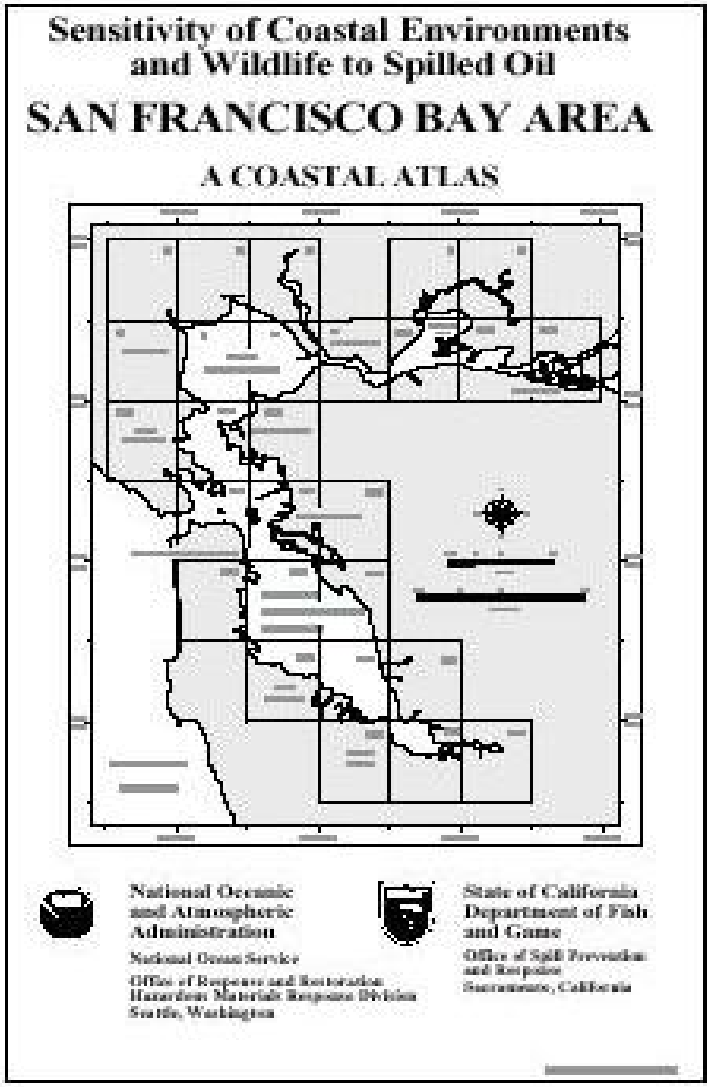
- **Habitats**
  - Wetlands, sand and rocky beaches, estuaries, coastal streams, mudflats, riparian
- **Birds**
  - Seabirds, shorebirds, waterfowl, nesting colonies
- **Marine Mammals**
  - Sea otters, seals and sea lions, fur seals
- **Aquatic Resources**
  - Salmon, aquaculture, crab, herring

Environmental Sensitivity Index (ESI) Maps

What is ESI?

- Index which ranks shorelines by relative sensitivity to oil spills, potential biological injury, ease of cleanup

- Displayed on coastal map




GOLDEN GATE
MONTEREY BAY NATIONAL MARINE SANCTUARY
Common around Point Lobos
85
PACIFIC
OCEAN
Common south of Point Lobos
674
Common along sand beaches
241 241
Common in coastal waters
430 673
673
673 673 682
673
430 673
431
673 676
673
673
426 673 680
676
SOUTH CHANNEL
Mile Rock
201
45
Lands End
525
304
Point Lobos
Seal Rocks
297
223
634
OCEANBEACH
GOLDEN GATE NATIONAL RECREATION AREA
55
298
2
ALERT
221
290
299
Common in area:
Commercial & Recreational Fishing
36

Central California: ESIMAP 36

BIOLOGICAL RESOURCES:

BIRD:

RAR#	Species	S	F	Conc.	J	F	M	A	M	J	J	A	S	O	N	D	Nesting	Migrating	Molting
250	Shorebirds			HIGH	X	X	X	X	X		X	X	X	X	X	X			
295	Brown pelican	E	E	0 500 INDIV.	X	X	X	X	X	X	X	X	X	X	X	X		JUL NOV	
	California least tern	E	E					X	X	X	X	X	X					APR SEP	
	Common yellowthroat				X	X	X	X	X	X	X	X	X	X	X	X	MAR JUL	APR MAY SEP OCT	
	Dabbling ducks				X	X	X	X	X			X	X	X	X			SEP MAR	
	Diving birds				X	X	X	X	X	X	X	X	X	X	X	X			
	Diving ducks				X	X	X	X	X			X	X	X	X			SEP MAY	
	Gulls				X	X	X	X	X	X	X	X	X	X	X	X			
	Raptors				X	X	X	X	X	X	X	X	X	X	X	X		AUG NOV	
	Shorebirds				X	X	X	X	X		X	X	X	X	X	X			
	Wading birds				X	X	X	X	X	X	X	X	X	X	X	X	FEB AUG		
297	Brown pelican	E	E	13 1003 INDIV.	X	X	X	X	X	X	X	X	X	X	X	X		JUL NOV	
298	Gulls			1000S INDIV.	X	X	X	X	X	X	X	X	X	X	X	X			
	Shorebirds			1000S INDIV.	X	X	X	X	X		X	X	X	X	X	X			
	[illegible]			[illegible]								X	X	X	X				
	Western snowy plover		T		X	X	X	X	X	X	X	X	X	X	X	X	MAR SEP		
299	Bank swallow	T					X	X	X	X	X	X					MAR AUG		
[illegible]	[illegible]			[illegible]	[illegible]													[illegible] SEP NOV	
	Loons			HIGH	X	X	X	X	X				X	X	X			OCT MAY	
	Scoters			HIGH	X	X	X	X				X	X	X	X			MAR APR SEP DEC	
454	Black oystercatcher			1 INDIV.	X	X	X	X	X	X	X	X	X	X	X	X	MAR SEP		
	Brandt's cormorant				X	X	X	X	X	X	X	X	X	X	X	X	FEB AUG		
	Pelagic cormorant				X	X	X	X	X	X	X	X	X	X	X	X	MAR SEP		
	Pigeon guillemot			5 INDIV.	X	X	X	X	X	X	X	X	X	X	X	X	FEB AUG		
	Western gull			56 INDIV.	X	X	X	X	X	X	X	X	X	X	X	X	MAR AUG		
464	Pelagic cormorant			2 INDIV.	X	X	X	X	X	X	X	X	X	X	X	X	MAR SEP		
	Pigeon guillemot			2 INDIV.	X	X	X	X	X	X	X	X	X	X	X	X	FEB AUG		
	Western gull			6 INDIV.	X	X	X	X	X	X	X	X	X	X	X	X	MAR AUG		
525	Brandt's cormorant			117 INDIV.	X	X	X	X	X	X	X	X	X	X	X	X	FEB AUG		
	Pigeon guillemot			18 INDIV.	X	X	X	X	X	X	X	X	X	X	X	X	FEB AUG		
	Western gull			14 INDIV.	X	X	X	X	X	X	X	X	X	X	X	X	MAR AUG		
573	Pelagic cormorant			95 INDIV.	X	X	X	X	X	X	X	X	X	X	X	X	MAR SEP		
	Pigeon guillemot			66 INDIV.	X	X	X	X	X	X	X	X	X	X	X	X	FEB AUG		
	Western gull			10 INDIV.	X	X	X	X	X	X	X	X	X	X	X	X	MAR AUG		
614	Black oystercatcher			3 INDIV.	X	X	X	X	X	X	X	X	X	X	X	X	MAR SEP		
	Brandt's cormorant				X	X	X	X	X	X	X	X	X	X	X	X	FEB AUG		
	Western gull			46 INDIV.	X	X	X	X	X	X	X	X	X	X	X	X	MAR AUG		
673	Cassin's auklet			LOW	X	X	X	X	X	X	X	X	X	X	X	X			
	Clark's grebe			MODERATE	X	X	X	X				X	X	X	X			MAR APR SEP NOV	
	Common murre			MODERATE	X	X	X	X	X	X	X	X	X	X	X	X			JUL SEP
	Cormorants			MODERATE	X	X	X	X	X	X	X	X	X	X	X	X			
	Eared grebe			LOW	X	X	X	X				X	X	X	X			MAR APR SEP OCT	
	Gulls			MODERATE	X	X	X	X	X	X	X	X	X	X	X	X			
	Horned grebe			LOW	X	X	X	X				X	X	X	X			OCT APR	
	Pacific loon			MODERATE	X	X	X	X	X				X	X	X			OCT MAY	
	Pelicans			MODERATE			X	X	X	X	X	X	X	X	X	X		JUL NOV	
	Phalaropes			LOW	X	X	X	X	X	X	X	X	X	X	X	X			
	Pigeon guillemot			LOW		X	X	X	X	X	X	X	X						
	Rhinoceros auklet			MODERATE	X	X	X	X	X	X	X	X	X	X	X	X			
	Shearwaters			LOW HIGH	X	X	X	X	X	X	X	X	X	X	X	X			
	Surf scoter			MODERATE	X	X	X	X				X	X	X	X			MAR APR SEP DEC	
	Western grebe			MODERATE	X	X	X	X				X	X	X	X			MAR APR SEP NOV	
	White winged scoter			MODERATE	X	X	X	X					X	X	X			MAR APR OCT NOV	
678	Marbled murrelet	E	T	MODERATE	X	X	X	X	X	X	X	X	X	X	X	X	APR JUL		
682	Sooty shearwater			MODERATE			X	X	X	X	X	X	X	X					APR OCT

HUMAN USE RESOURCES:

ALERT:

ID#	Description
1	Colonial seabirds, keep aircraft away February-September.
2	Snowy plovers year round, contact NPS for vehicle access.

BEACH:

HUN#	Name	Contact	Phone
36	FORT FUNSTON BEACH		
45	MILE ROCK BEACH		
55	OCEAN BEACH		
64	RECREATIONAL BEACH		

SAMPLING SITE:

HUN#	Name	Contact	Phone
130	PISCO:GGNRA	DARREN FONG	415/331 8716

MARINE SANCTUARY:

HUN#	Name	Contact	Phone
219	MONTEREY BAY NATIONAL MARINE SANCTUARY	SUPERINTENDENT	831/647 4201

NATIONAL PARK:

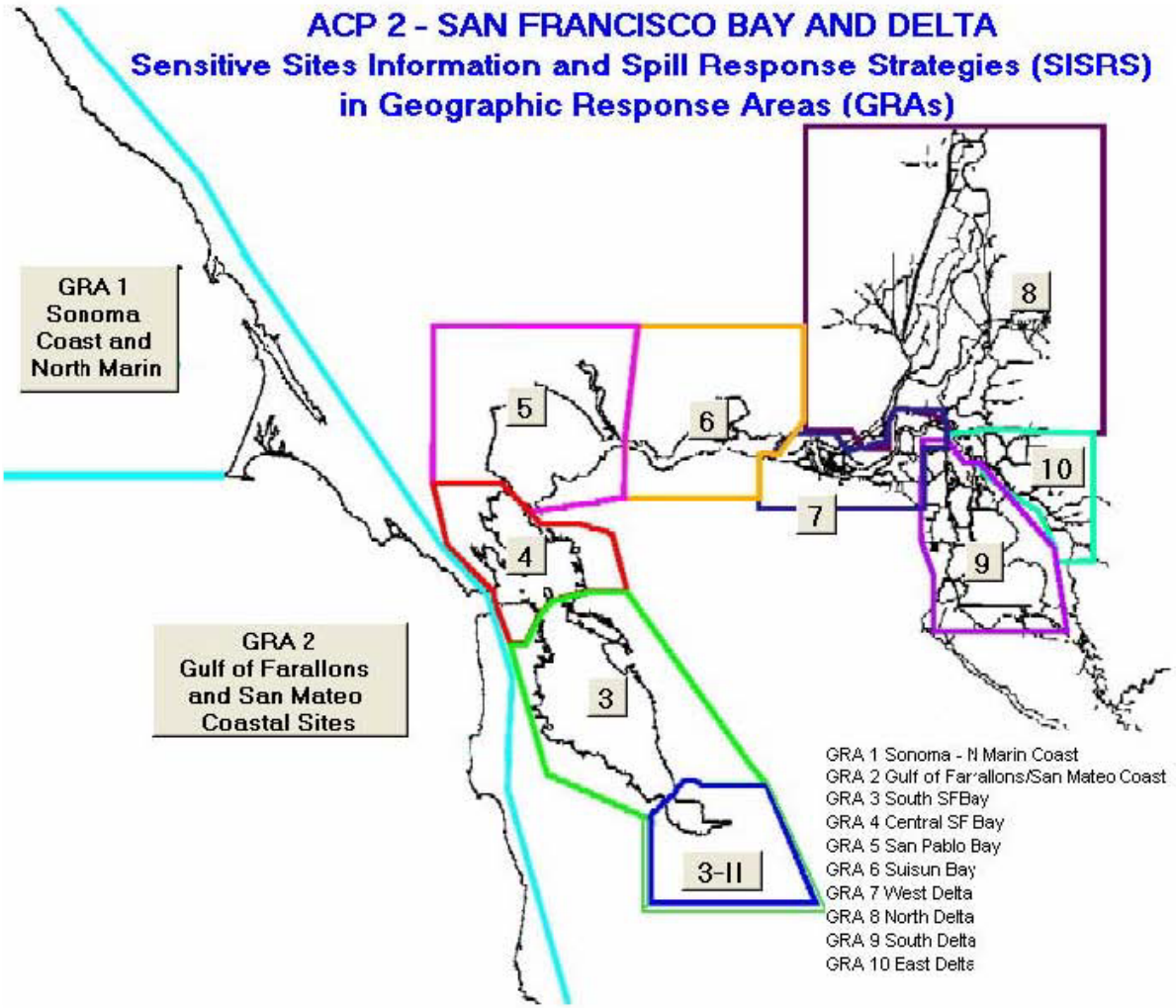
HUN#	Name	Contact	Phone
221	GOLDEN GATE NATIONAL RECREATION AREA	NATIONAL PARK SERVICE	415/561 4700

AREA CONTINGENCY PLAN (ACP)

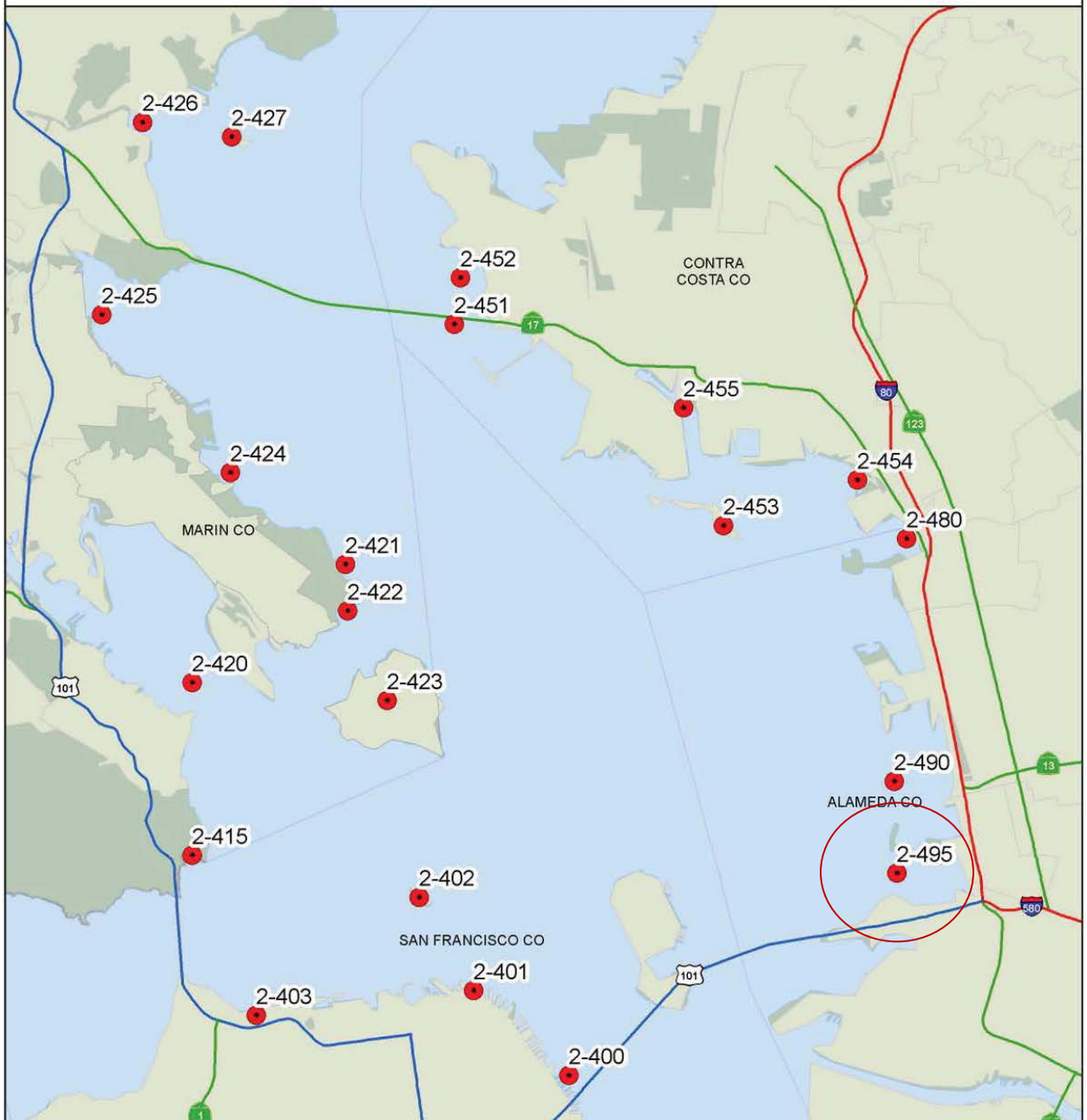
- Sensitive Site Summaries
- Sensitive Site Strategies
- Sensitive Site Diagram
- Economic, Cultural, and Archeological Resources

San Francisco Bay & Delta ACP

Geographic Response Areas (GRAs)



SF Geographic Response Area 4
Central San Francisco Bay
Environmentally Sensitive Sites



2-495 -A Site Summary- Emeryville Lagoon/Mudflats 2-495 -A

		Thomas Guide Location	Latitude N	Longitude W
County:	Alameda		3 7 50	122 29
USGS Quad:	Oakland West	NOAA Chart: 18649/18650 Entrance to SFBay		

Last Page Update: 7/1/2005

SITE DESCRIPTION:

The site is the embayment just north of the Oakland Bay Bridge Toll plaza and includes the waters and marsh easterly 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 marsh perimeter. The northerly margin is ripped fill. 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 Santiary Treatment Plant.

SEASONAL and SPECIAL RESOURCE CONCERN

The marshes are an A priority year around. Site sensitivity is heightened during winter months when it is heavily used by migratory birds. Sensitive species occur here.

RESOURCES OF PRIMARY CONCERN

This habitat is ecologically rich and sensitive. An extensive pickleweed saltmarsh extends along the east and southern margin and is fronted with extensive mudflats; mudflats and open water are heavily used by ducks, shorebirds, and sea birds year around and particularly in the winter.

The marshes are habitat for endangered California clapper rail. The marsh and exposed mudflats are used heavily by shorebirds and wading birds. Waterfowl and seabirds use the area and large rafts of ducks congregate here in winter months.

The pickleweed marsh probably supports the endangered saltmarsh harvest mouse.

The rare plant, north coast bird's beak, Cordylanthus maritimus ssp. Palustris, has been identified from this site.

CULTURAL, HISTORIC, and ARCHEOLOGICAL SENSITIVITIES

Contact the California Dept of Parks and Recreation - Office of Historic Preservation (Eric Allison (916) 653-9125), and the Northwest Information Center, (Leigh Jordan, Sonoma State College ((707) 664-0880) for specific information on historic or cultural resources in this area.

KEY CONTACTS: Trustee (T); Entry/Owner/Access (E); Cultural (C); or Other Assistance (O)

Type	Name / Title	Organization	Phone
TB		NOAA, National Marine Fisheries Service	(562) 980-3232
O	State Water Project Ops C	CA Dept. of Water Resources	(916) 574-2714
B	Peter Baye, Ph.D. Coastal Plant Ecologist		(415) 310-5109
E	EBRP Dispatch EBRP	East Bay Regional Park District	(510) 881-1833
E/T	Anne Rockwell Shoreline Parks Manager	East Bay Regional Park District	(510) 544-3172
E/T	Kevin Takei Park Supervisor	East Bay Regional Park District	(510) 235-1631

2-495 -A Site Strategy - Emeryville Lagoon/Mudflats

County and Thomas Guide Location
Alameda

NOAA CHART
18649/18650 Entrance to SFBay

Latitude N 3 7 50 | Longitude W 122 29

Last Page Update : 7/1/2005

CONCERNS and ADVICE to RESPONDERS:

The prime concern is to exclude oil from entering this bay and impacting birds and marshy margins. Cleanup of the marshy margins would be extremely difficult or not possible, and natural resource injuries would be very great. Responders should stay out of marshes and mudflats unless specifically directed though the IC/UC: activity should be confined to the mouth of the lagoon.

HAZARDS 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

There is little current into this bay and that is mostly along the north edge. Extreme shallows on the south side can make booming to shore challenging, and may require wading or monkey fist to secure to shore. Inside the southern spit (radio towers) there are obstructions and extreme shallows which continue all around the south and east margins. Depths are not so limiting at the mouth and along north shore.

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

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).

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

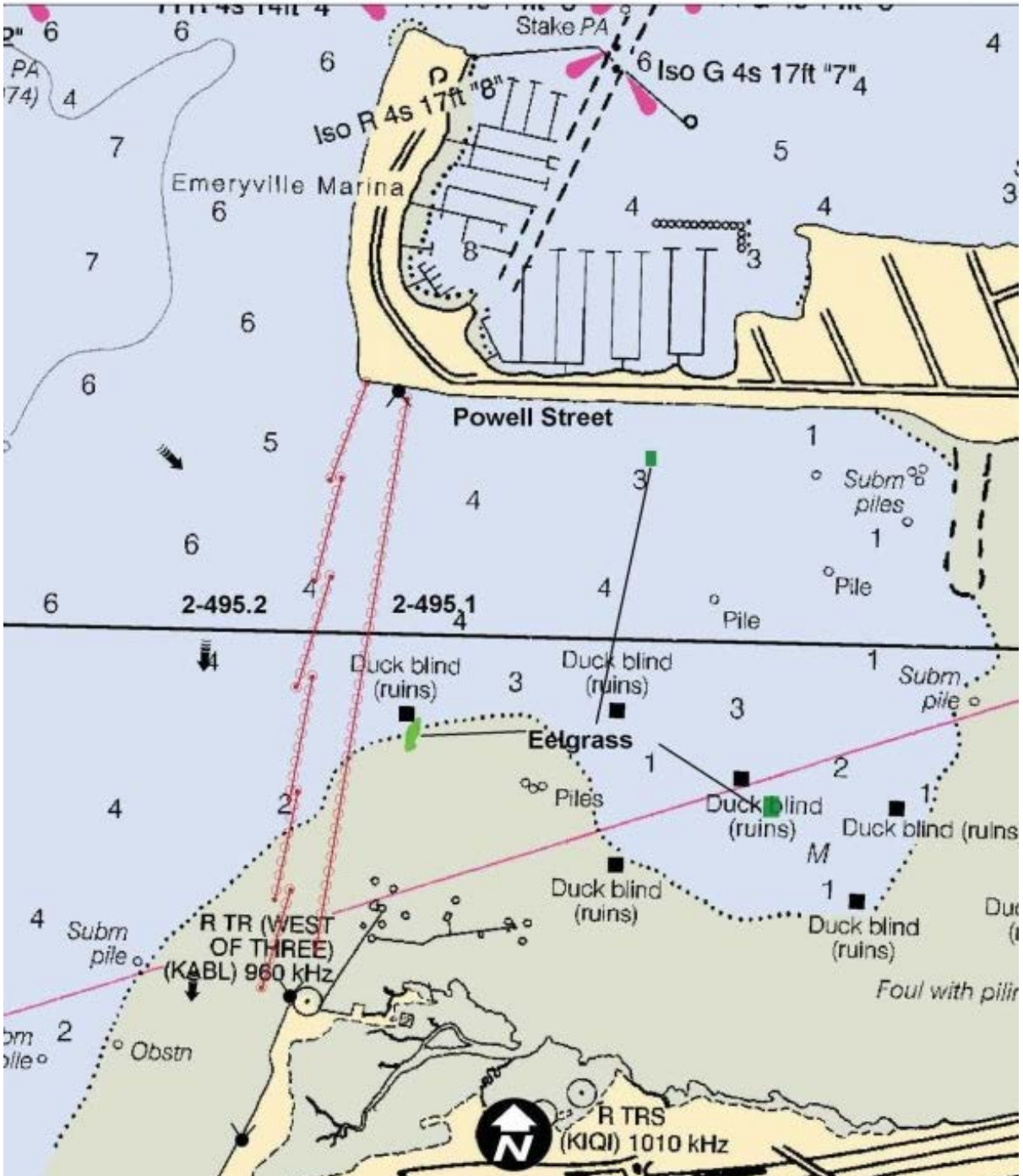
Set cascading boom across the mouth according to the prevailing winds (diagram shows deployment for typical NW winds - adjust if other wind/wave conditions prevail). Deploy 4500' 9X9+ Hboom in 600-1200' lengths at an angle to the prevailing winds and waves. Divert oil to sandy beach west of radio towers 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.

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

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

strategy number	harbor boom	swamp boom	Other boom type	sorb boom	Anchoring no	Anchoring type and gear	Boom boat	Skiffs punts	Skimmers No	Skimmers Type	Special Equipment or comment No	Special Equipment or comment and kinds	staff deploy	Staff tend
2-495.1	3600				7	7/22+/danforths + chain	3	2				Bboat: very shallow draft at south side	11	
2-495.2	4500			2000	28	28/22+/danforth + 15' chain	3	3	1	SSS		Bboat: 1 very shallow draft	15	
2-495.3	0	100	50 OS	200	0		0	0	1	SSS	0		2	


Stake PA
Iso G 4s 17ft "7"
Iso R 4s 17ft "8"
Emeryville Marina
Powell Street
Subm piles
Pile
2-495.2
2-495.1
Duck blind (ruins)
Eelgrass
Piles
Subm pile
R TR (WEST OF THREE) (KABL) 960 kHz
Obstn
Foul with pilir
R TRS (KIQI) 1010 kHz


Emeryville

CULTURAL/HISTORIC RESOURCES

- Under NCP Programmatic Agreement for protection under emergency response
- ACPs include information on consideration of cultural/historic resources during oil spill response
- No site-specific information available in ACP, or direct access to California Historical Resources Information System (CHRIS) database, so must contact SHPO (State Historic Preservation Officer) or local regional information center. Tribal Historic Preservation Officer (THPO) (15).

SITE SPECIFIC RESOURCES

- Local experts most aware of presence of sensitive species/habitat, often have site data and resource maps
- Familiar with current land management practices, existing permits, property owners, site access

SENSITIVE SITE PROTECTION

BOOM TECHNOLOGY

- Tool for on-water oil spill response
- Floating fence to direct oil movement
- Key component of response strategies
- Used to:
  - minimize the spread of oil
  - concentrate oil for removal
  - protect resources at risk

BOOM TERMINOLOGY

"Containment Boom"

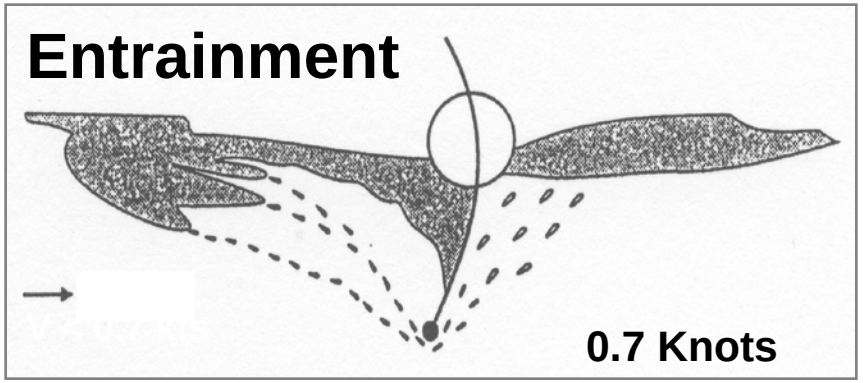
…PVC fabric, flotation, skirt, chain ballast, metal end connectors, usually yellow or orange

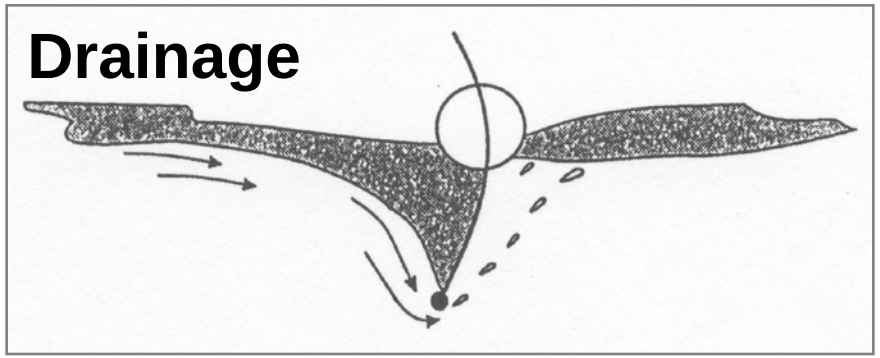
"Sorbent Boom"

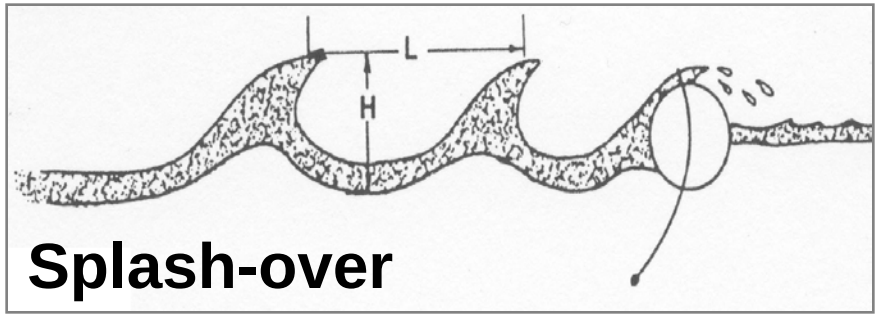
…mesh covering, sorbent material, no skirt, lightweight, usually white

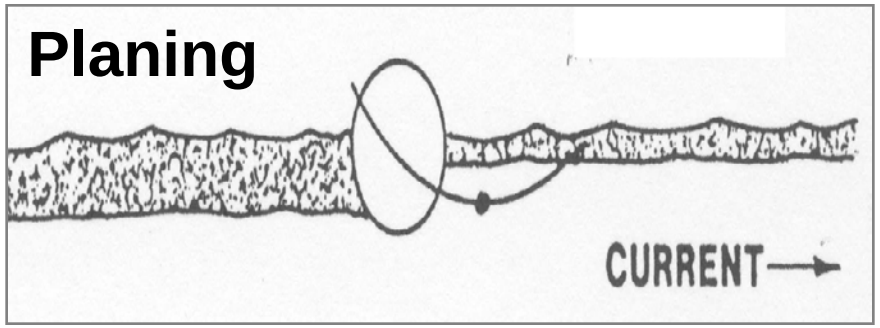
BOOM FAILURE

Five Modes of Operating Failure










…so, what’s wrong with this…?

…so, what's right about this…?

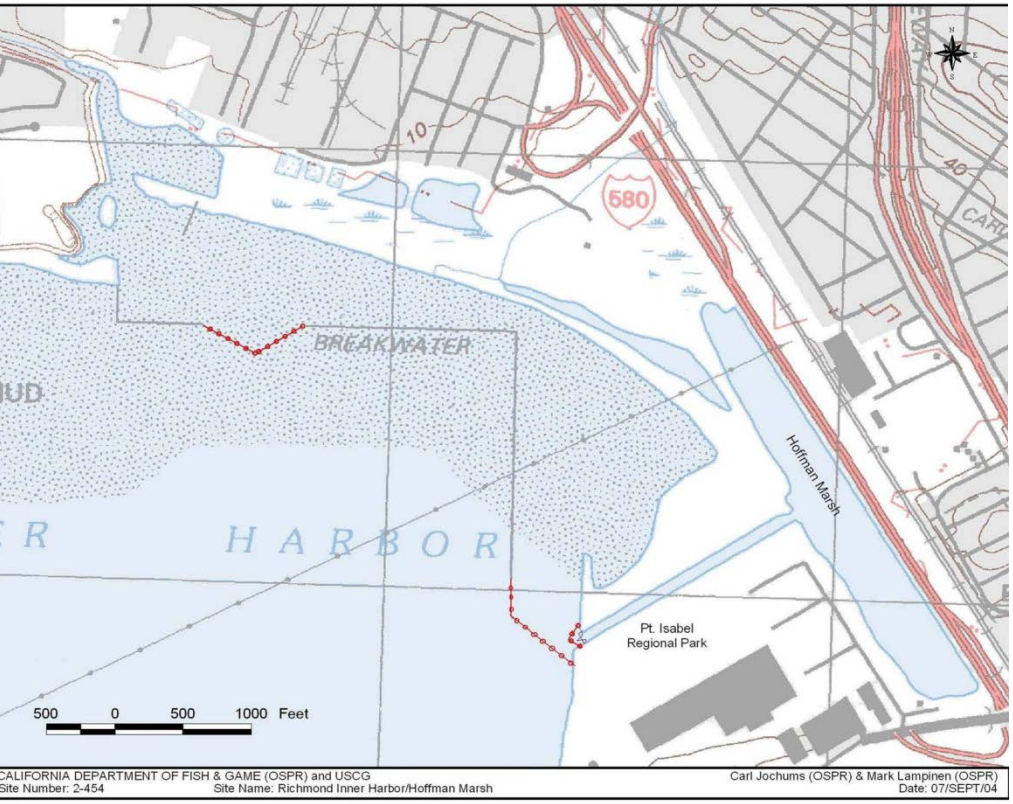
SITE PROTECTION STRATEGIES

- Containment and Recovery (Water, Land)
- Exclusion (Mudflat, Inlet)
- Deflection
- Shoreline Protection (not RipRap)

Containment and Recovery

Containment and Recovery

Exclusion Inlet
Richmond Inner Harbor/Hoffman Marsh (2-454A)



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

ACP DATE 7/1/2005

Exclude oil from two major enterances to the marshes and embayments:
a) the southerly enterance 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 enterance is a wide gap in an east-west riprap levee at the north end of the embayment; (Exclude oil with 1100 ft 9X9+ harbor boom in a long chevron formation.)
c) there may also be small breeches in the riprap levees which are not show on maps or strategy diagrams. Deployboom in chevron formation at such openings (no diagram shown).

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

ACP DATE

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

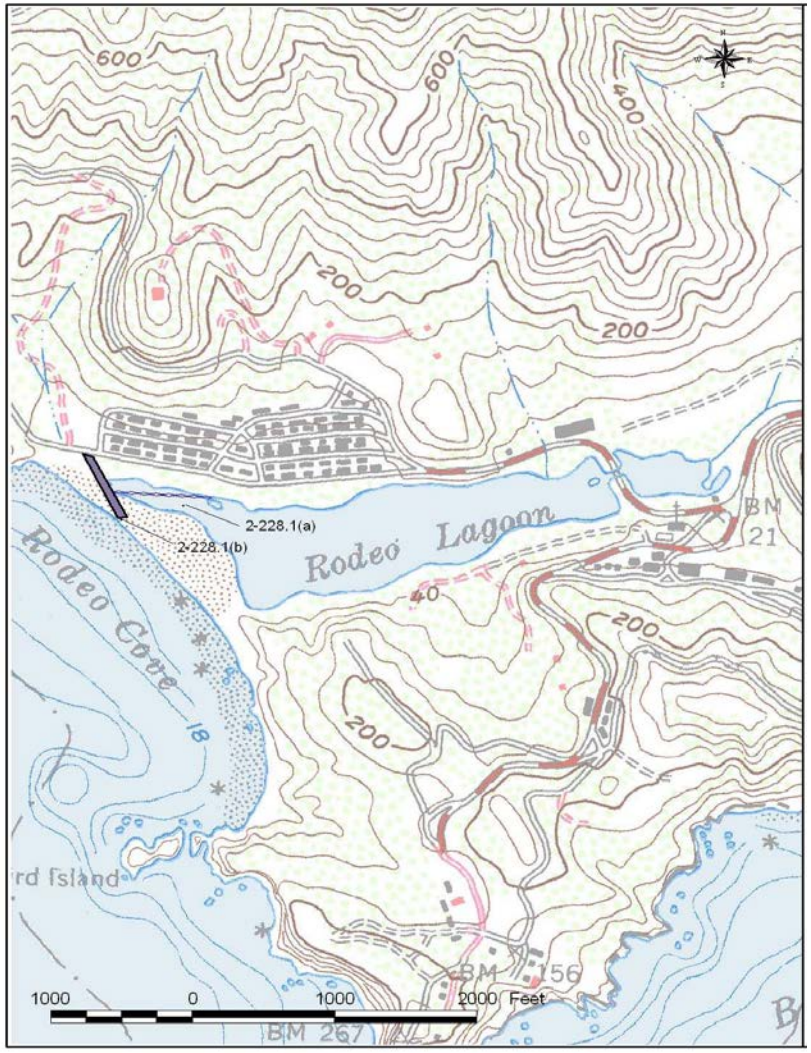
Strategy 2-454.3 Objective: Protection booming

ACP DATE

If it appears that the initial response strategy will be unsuccessful, it is recommended that 5000 feet of harbor boom 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)

Environmental Sensitive Site

Exclusion Inlet
Rodeo Lagoon (Site 2-228A)



SITE STRATEGIES

The Lagoon is open intermittently in winter-spring but experiences significant overwash all year. Also, the beach may be narrow seasonally when storms wash sediment offshore. In addition to on-water containment and recovery efforts, the following site-specific protection measures should also be carried out:

Strategy 2-228.1 Objective: Exclude oil by booming at lagoon mouth

Deploy swamp and sorbent booms or fence boom across lagoon and mouth as a precautionary measure. Place sorbent along backside of sand spit. Use 50ft of Oil Snare (OS) and/or 100ft of sorbent boom to recover oil that may accumulate. If oil accumulates in skimmable quantities, advise IC with recommendations for skimming.

Strategy 2-228.2 Objective: Exclude oil using sediment dike

Block entrance with sediment dike (coarse-grained sand, granules, and pebbles). Dike should extend from the vegetated dune portion of the spit to the rock scarp adjacent to the inlet mouth on the northwest side of the lagoon (approx 800 ft). Height of the dike will be determined by wave conditions. Construct dike with gated culverts, if necessary for runoff during winter. If large surf conditions exist, construct a dike with a runnel (a shallow ditch behind dike) to catch overwash. This can only be done if sand is plentiful and beach is wide enough.

Environmental Sensitive Site

Deflection - Brooks Island

Environmental Sensitive Site

Deflection -Alameda Eelgrass Beds and San Leandro Bay

Environmental Sensitive Site

Shoreline Protection - Crissy Field

Environmental Sensitive Site

Shoreline Protection- Oakland Middle Harbor

Environmental Sensitive Site

Exclusion Inlet- SF Water Intake

Economic Sensitive Site

Structure Protection - Fort Mason

Economic Sensitive Site

SITE PRIORITIZATION

BASED ON:

- Oil Overflight and/or Trajectory Information
- Tides and Currents
- Likelihood of Impact
- Human Health and Safety
- Sensitive Environmental Resources at Risk
- Economic Resources
- Already Impacted

ICS FORM 232

Resources at Risk Summary

1. Incident Name	2. Operational Period (Date/Time) From: To:	RESOURCES AT RISK ICS 232-OS

3. Environmentally-Sensitive Areas and Wildlife Issues

Site #	Strategy #	Priority	Site Name and/or Physical Location	Site Issues
2-307	.2	1	Alameda Eelgrass Beds	Oil readily sticks to eelgrass. The beds are an important spawning substrate for herring from November through April, and eelgrass is the sole
2-351	.1	1	Yerba Buena Island	Coarse grain beaches and steep rocky slopes are habitat for pinnipeds and birds.
2-309	.1, .2	1	San Leandro Bay	The main habitat of concern is the 50-acre Arrowhead Marsh. There are also cordgrass marshes along the margins. There are extensive mudflats.
2-310	.2	1	Bay Farm Island Eelgrass Beds	This site is traditional saltmarsh that has undergone some filling. It provides valuable wetland habitat in a heavily industrialized portion of the
2-350	.1	2	San Francisco South Collection/Economic Strategies	Aquatic vegetation and invertebrates growing on pilings, seawalls and riprap may be injured by oil and cleanup activities. Herring spawn on
2-354	.1	2	Islais Creek - Pier 94 Saltmarsh	This site is traditional saltmarsh that has undergone some filling. It provides valuable wetland habitat in a heavily industrialized portion of the
2-312	.2	2	Oyster Bay Marshes	The endangered salt marsh harvest mouse, California least tern, and the California clapper rail are known to occur in the general area. The area is
2-353	.1	3	Heron's Head Park - India Basin	This is a wetland restoration site. It has high ground vegetation, pickleweed marsh, and saltmarsh ponds and lagoons. The site is
2-352	.1	3	South Basin, Hunters Point	There are fringe marshes and tidal mudflats of importance at this site.
2-361	.1	3	Airport Mudflat	The major habitat types present are marshes, mudflats, and riprap. The marsh is at the back of the cove at the northwest margin and behind the
2-495	.1	3	Emeryville Lagoon/Mudflats	This habitat is ecologically rich and sensitive. An extensive pickleweed saltmarsh extends along the east and southern margin and is fronted with
2-490	.1	3	Berkeley Eelgrass Beds and Cove	Eelgrass beds are an important habitat for numerous species. Oil readily sticks to eelgrass when it makes contact.

Interaction with Local Government

What we can do for you:

- Provide cooperating and responding agencies with information and recommendations for sensitive site protection and prioritization

What you can do for us:

- Provide current status information on Resources at Risk
- Deploy and track boom grant equipment to protect economic sensitive sites
- Assist with monitoring environmental sensitive site strategies


QUESTIONS?