California Inlets:

A Coastal Management "No Man's Land"

Jamie Pratt

for the

Surfrider Foundation

May 2014

California inlets: A Coastal Management "No Man's Land"

Abstract
Multiple agencies work to maintain the integrity of California's coastline, watersheds, and wildlife. However, at coastal inlets the responsibility for management is unclear. Urban development, hydrological modification, and pollution create harmful repercussions that threaten the integrity of California's coast. Many controversial issues converge, stakes are high, and governance is complex. For these reasons, this study aims to clarify the management of coastal inlets in California. Case studies at nineteen sites were used to better understand governance, and make future recommendations based on answering: What drives management? Who governs management? And, what permits are required?

Introduction

Coastal inlets are abundant in California. Researchers at the Central Coast Wetlands Group have documented a total of six hundred-and-seven. Occurring as bays, harbors, river mouths, estuaries, and lagoons, these places are vital transition zones from land to sea. California's coastal inlets provide habitat for threatened and endangered species, birds migrating on the Pacific Flyway, and humans looking for recreational opportunity[1].

River and ocean processes shape coastal inlets. Tides, waves, and rainfall create dynamic environments that influence sediment transport, water quality, and wildlife. Though most inlets along the California coast are not officially managed, they are affected by urban development, hydrological modification, and pollution[2]. The impacts of human activity on coastal inlets are manifest as problems such as flooding, species loss, and habitat degradation.

Maintaining the health of California's coast is important to residents and resource managers, local to national. This is evident in the numerous organizations, policy frameworks, and grant programs to protect these environmentally sensitive areas. Multiple agencies regulate coastal activity and a variety of stakeholder groups are involved in decision-making[3]. The abundance of governance provides opportunities for public involvement, but the overlap in regulating bodies can also be difficult to understand.

---

[1] California Natural Resources Agency. (2010) "State of the State's Wetlands Report." Retrieved from http://resources.ca.gov/ocean/SOSW_report.pdf.
[2] California Natural Resources Agency. (2010) "State of the State's Wetlands Report." Retrieved from http://resources.ca.gov/ocean/SOSW_report.pdf.
[3] California Natural Resources Agency. (2010) "State of the State's Wetlands Report." Retrieved from http://resources.ca.gov/ocean/SOSW_report.pdf.

This research report was created in order to clarify the current management of coastal inlets in California. What drives management? Who governs management? And what permits are required? Case studies developed at nineteen sites show the physical, biological, and political aspects that contribute to the complexity of inlet management.

This report begins with a brief description of the methods used in research, followed by a summary of the results, and concluding with a discussion of three main lessons learned. First, coastal inlets are rarely included in city planning and whole watershed management plans. Second, this lack of attention at many sites has created a dependence on bulldozers and dredges for continual excavation of sediments and control of beach berms. Third, these dramatic changes to shoreline dynamics have resulted in repercussions to habitats and species, and increased the complexity of issues and number of stakeholders required for equitable management.

The profiles of the nineteen case study inlets are featured at the end of the report. This is followed by supplemental information in Appendices 1 - 5. Appendix 1 gives definitions of key terms. Appendix 2 chronicles State and Federal level coastal governance acts and policies. Appendix 3 identifies Threatened and Endangered Species present at inlets along California's coast. Appendix 4 features agencies involved with permitting, and Appendix 5 lists the professionals who were contacted in order to obtain information for each site featured in this report.

Methods

A list of questions initiated research: Which inlets are managed? Why are they managed? Who manages them? What permits are needed? Keyword searches using Google Scholar, and the United States Army Corps of Engineers website were used to look for answers. Few documents classified the management of places in California where watersheds and coasts converged, so a rough list of sites was compiled using personal knowledge, web searches, and geographic images from Google Map and the California Coastal Records Project[4]. An informational template was created to prioritize and organize site details, including location, surf break, threatened and endangered animals, permits,

[4] Kenneth and Gabrielle Adelman. (2002 – 2013) "California Coastal Records Project, an aerial photographic survey of the California Coastline." Retrieved from http://www.californiacoastline.org

actions, management agency, background, and current specifics. Case studies were selected where management was active, had occurred in the past, or was likely in the future.

Background information about each inlet was collected using publicly available watershed management plans, news articles, biological opinions, and nonprofit websites. Professionals in the field of coastal wetland management who worked with Surfrider Foundation in the past were contacted. Through snowball sampling a final list of coastal inlets and contacts was assembled. Emails were used to introduce the project to professionals at each site and ask for informational interviews. Material collected from conversation, and published documents, was summarized into informational templates for each of the nineteen case studies.

Results

Seasonal flooding, habitat enhancement, and protection of threated or endangered salmonid species were found to most commonly direct management actions. Of the nineteen sites, five are dredged, seven are breached, and one is regularly closed for summer beach and lagoon uses. The remaining six sites have had either emergency manipulation, are currently under restoration, or are in experimental phases of management. Actions to manage for flooding and for the conservation of salmonid populations were both needed at five of the sites. These included Santa Clara River, Goleta Slough, Carmel River, San Lorenzo River, and the Russian River. In each of these cases, flood prevention and species conservation required a compromise of interests and actions. In total, twelve out of the nineteen sites had multiple goals to contend with while managing inlets (See Tables 1, and 2).

For this report the lead agency was considered to be the body responsible for organizing and directing management actions at inlets. Agencies fell under six categories of governance and included city, county, State, Federal, business, or non-profit bodies. In all cases permitting requirements resulted in the involvement of multiple agencies. County departments represented the lead agency for the greatest proportion of case studies, at six out of the nineteen sites. This included Poche outlet, Aliso Creek, Santa Clara River, Carmel River, Pajaro River, and the Russian River. However, management always occurred under consultation with State and Federal Natural Resource agencies even if they were not directing management on the ground (See Table 3).

The intricacy of governance for the management of coastal inlets becomes apparent when identifying permits required for shorelines, critical habitats, human recreation areas, and waterbodies. All inlets require ongoing permitting from the United States Army Corps of Engineers (USACE), the California Coastal Commission, and the California Regional Water Quality Control Board (CRWQCB). Additionally, the National Oceanic and Atmospheric Administration's National Marine Fishery Service (NOAA NMFS) and/or the United States Fish and Wildlife Service (USFWS) must continually be consulted due to the presence of threatened and endangered species. Morro Bay and Humboldt Harbor are exceptions to this. Humboldt Harbor is especially unique because it was created by the federal government in the late 1800's and has been managed solely by USACE ever since (See Table 4).

Table 1: Summary of inlets and management

Site	Inlet Managed	Action	Reason	Lead Agency
Los Peñasquitos Lagoon	yes	breached - maintain open	flooding, habitat, birds, water quality	Los Peñasquitos Lagoon Foundation
San Dieguito Lagoon	yes	dredged - maintain open	habitat	Southern California Edison
San Elijo	yes	breached - maintain open	habitat, nesting birds	San Elijo Lagoon Conservancy
Agua Hedionda	yes	dredged - maintain open	recreation, power plant	NRG Energy
Poche Outlet	yes	breached regularly	water quality, access	Orange County Parks
San Juan Creek	no	past breaches		California Department of Parks and Recreation
Aliso Creek	yes	breached regularly	water quality, access	Orange County Parks
Bolsa Chica	yes	dredged - maintain open	habitat	California State Lands Commission
Malibu Lagoon	no - future likely	restoration period	habitat, recreation, access	California Department of Parks and Recreation
Santa Clara River	no - emergency	emergency - pumping	flooding, steelhead	Ventura County Public Works Agency
Goleta Slough	no - future likely	past breaches	flooding, steelhead	City of Santa Barbara, Airport Planning
Morro Harbor	yes	dredged regularly	harbor	United States Army Corps of Engineers
Carmel River	yes	breached - sandbar management	flooding, steelhead	Monterey County Resource Management Agency
Pajaro River	yes	breach	flooding	County of Santa Cruz Department of Public Works
Soquel Creek	yes	seasonal flume / breach	habitat, steelhead, water quality, recreation	City of Capitola
San Lorenzo River	no - future likely	needs management	flooding, steelhead, water resources	City of Santa Cruz
Pescadero River	no - future likely	breach	steelhead	NOAA Restoration Center, and USFish and Wildlife
Russian River	yes	breach/ channel maintained	flooding, salmonid	Sonoma County Water Agency
Humboldt Harbor	yes	dredged regularly	harbor	United States Army Corps of Engineers

Table 2: Reasons for management at each site

Inlet	Flooding	Habitat	Fish Species	Bird Species	Water Quality	Water Resources	Recreation	Access	Power Plant	Harbor	# drivers per site:
Los Peñasquitos Lagoon		x		x	x						**3**
San Dieguito Lagoon		x									**1**
San Elijo Lagoon		x		x							**2**
Agua Hedionda lagoon							x		x		**2**
Poche Outlet					x			x			**2**
San Juan Creek											
Aliso Creek					x			x			**2**
Bolsa Chica Wetlands		x									**1**
Malibu Lagoon		x					x	x			**3**
Santa Clara River	x		x								**2**
Goleta Slough	x		x								**2**
Morro Bay										x	**1**
Carmel River	x	x	x								**3**
Pajaro River	x										**1**
Soquel Creek		x	x		x		x				**4**
San Lorenzo River	x		x			x					**3**
Pescadero Lagoon			x								**1**
Russian River	x		x								**2**
Humboldt Harbor										x	**1**
# sites per driver:	6	7	7	2	4	1	3	3	1	2	

represents sites were management is not actively occurring

Table 3: Lead agency managing operations at each site

Inlet	City	County	State	Federal	Business	Non-Profit
Los Peñasquitos Lagoon						x
San Dieguito Lagoon					x	
San Elijo Lagoon						x
Agua Hedionda lagoon					x	
Poche Outlet		x				
San Juan Creek			x			
Aliso Creek		x				
Bolsa Chica Wetlands			x			
Malibu Lagoon			x			
Santa Clara River		x				
Goleta Slough	x					
Morro Bay				x		
Carmel River		x				
Pajaro River		x				
Soquel Creek	x					
San Lorenzo River	x					
Pescadero Lagoon				x		
Russian River		x				
Humboldt Harbor				x		
Site totals per agency:	**3**	**6**	**3**	**3**	**2**	**2**

represents sites were management is not actively occurring

Table 4: Agency and permits involved with management at each site

Inlet	USACE	NOAA NMS	NOAA NMFS	USFWS	CCC	CRWQCB	CDPR	CDFW	CSLC	CalTrans	County	City	agency # per site:
Los Peñasquitos Lagoon	x			x	x	x	x	x					**6**
San Dieguito Lagoon	x		x	x	x	x			x			x	**7**
San Elijo Lagoon	x		x		x	x							**4**
Agua Hedionda lagoon	x		x	x	x	x			x			x	**7**
Poche Outlet	x		x	x	x	x							**5**
San Juan Creek													
Aliso Creek	x		x	x	x	x							**5**
Bolsa Chica Wetlands	x			x	x	x		x		x			**6**
Malibu Lagoon													
Santa Clara River													
Goleta Slough													
Morro Bay	x				x								**2**
Carmel River	x		x	x	x	x		x	x				**7**
Pajaro River	x	x	x	x	x	x		x	x		x		**9**
Soquel Creek	x	x	x	x	x	x		x					**7**
San Lorenzo River													
Pescadero Lagoon	x		x	x	x	x	x	x					**7**
Russian River	x		x		x	x	x	x	x				**7**
Humboldt Harbor	x												**1**
site # per agency:	**14**	**2**	**10**	**10**	**13**	**12**	**3**	**7**	**5**	**1**	**1**	**2**	

represents sites were management is not actively occurring

Conclusion

Before human modification of coastlines occurred, inlets avoided permanent closure by breaching in different locations along shorelines. Movement of water from land to beach was unrestricted by the presence of homes, roads, bridges, and trains[5]. Ongoing development of coasts and watersheds has thus resulted in flooding and damage to public and private property. Oftentimes the presence of a coastal inlet, its ecosystem services, and its wildlife habitat are not fully appreciated until safety or health concerns arise. As realized through the research for this report, substantial mechanical force is continually relied upon in order to manipulate the dynamics of ocean and fresh waters moving across beaches. This is costly, two to three million dollars per dredging event, and is not a desirable long term management tool.

Management of coastal inlets in California mirrors coastal development. Above San Francisco Bay a majority of inlets are not managed, though they have been changed by upstream developments. In highly urbanized places, like Orange County, inlets have to be maintained regularly. Where coastal inlets are preserved and buffered from development vital wetland habitats are able to thrive and investments in dredging and bulldozing is

[5] Hastings & Elwany. (2012). Managing the inlet at Los Penasquitos Lagoon. *Shore & Beach.* Vol.80, 1.

minimized. For example, the 1982 designation of the Tijuana River National Research Estuarine Reserve has served to maintain the shoreline dynamics surrounding this river mouth, thus reducing costly management strategy. [6]

Federal resource agencies, State departments, and county divisions manage coastal inlets. In some cases public agencies are required to meet management regulations that require expertise beyond their scope. This is exemplified in cases where conflicts arise between controlling for flooding and managing for conservation of fish species. USACE serves as an intermediary between Federal, State, and county level agencies. Depending on the wildlife species present at a site, USACE may consult NOAA or USFWS, and the California Department of Fish and Wildlife may also need to be consulted (See Appendix 3: State and Federal Level listings for species).

The primary State agency that governs coastal activity in California is the California Coastal Commission. Under provisions determined by the California Coastal Act, the Commission is mainly concerned with how changes to the coast, like the removal or replacement of sand, will affect natural habitats and public access to beaches. The process required by this agency in order to grant a permit is subjective, which is necessary, but does take time and results in permits that are issued for varying lengths of time. This is different from the permits issued by USACE and the CRWQCB that each last for five years.

The dynamics of watersheds and shorelines are not fully accounted for in development along the coast or throughout California. Permitting agencies regulate jurisdiction of inlets, but there is no clear responsibility for management, so inadequate attention and funding results in the application of short-term solutions. Consideration of broader social, economic, and political aspects upstream and beyond riparian zones would benefit inlet management. Pollution, agriculture, overdevelopment, run-off and use of water resources affect inlets, and require comprehensive management that takes into account factors that span geography and time.

The Goleta Slough in Santa Barbara provides an example of one place fostering a comprehensive approach to inlet management. Twenty years ago the City of Santa Barbara organized the Goleta Slough Management Committee. A staff member coordinates community stakeholders and interacts with the public to facilitate management. Although

[6] National Oceanic and Atmospheric Administration. *National Estuarine Research Reserve System*, *Tijuana River, CA*. http://nerrs.noaa.gov/Reserve.aspx?ResID=TJR

this has not solved problems at the slough, it has helped to incorporate diverse perspectives, minimize delays in project planning, and provide clarity in management goals. Potentially this will improve future management. Using this idea to design committees at other sites could help to organize management throughout the State.

Best management practices now aim to replicate the natural opening and closing of inlets that occurred from weather, shoreline changes, and whole watershed processes throughout history. Although manipulation of inlets has commonly occurred to protect public and private property from flooding, increasingly habitat and species conservation is directing management decisions. New and rising concerns have the potential to complicate management, but proper attention to details and processes can ultimately develop evolving solutions rather than ongoing conflicts. Management is especially important now and into the future with expected climate changes and rising sea levels. Maybe changes will offer opportunity for updated management approaches, and hopefully aid inlet governance along the California coast.

Case Studies, *South to North*

Los Peñasquitos Lagoon

Location: San Diego County, near the residential community of Torrey Pines

Surf break: Torrey Pines State Beach

Threatened & endangered animals: Belding's savannah sparrow, California gnatcatcher, Least Bell's Vireo, Light-footed clapper rail, Western snowy plover

Permitted action: Annual dredging at the mouth of the lagoon to remove the build up of sediment, and to maintain it in an open state through the late spring and summer months. Also, emergency breaching is used during the winter to restore water quality and reduce the risk of flooding.

Agency: California State Parks is the primary landowner while Los Peñasquitos Lagoon Foundation helps to manage the habitat.

Permits identified: (1) United State Army Corps of Engineers (USACE): Section 404 Clean Water Act. (2) United States Fish and wildlife Service: Biological Opinion, consultation under USACE 404 permit.

(3) California Coastal Commission: Coastal Development Permit, five-year term.

(4) California Department of Fish and Wildlife: Waiver for streambed alteration, Consultation under California Endangered Species Act.

(5) California Department of Parks and Recreation: Right of Entry Permit.

(6) California Regional Water Quality Control Board: Section 401d Clean Water Act Water Quality Certification.

Purpose: The inlet is kept open in order to maintain tidal mixing and water quality that preserves habitat for salt marsh species. Public access, safety and beach use is also improved through management of the lagoon and beach nourishment operations.

Background: Historically the lagoon mouth was permanently open and marine flora and fauna thrived. The first alteration of tidal flow and recorded closure of the inlet occurred in 1889 after a railway was constructed at the back of the lagoon. In 1925 the Santa Fe Railroad was constructed through the middle of the lagoon and this further altered tidal flow and biological function within the lagoon. Altered tidal

current patterns resulted in buildup of sand within the inlet that caused the lagoon mouth to close. The construction of the coast highway in the 1930's further inhibited tidal circulation. With urban development, more impermeable surfaces were constructed alongside the watershed, and increased volumes and peak flows of runoff resulted in accelerated sedimentation and freshwater inundation of the lagoon.

When the lagoon inlet remains closed for long periods of time, the balance between evaporation of water and the inflow of freshwater is disrupted. Salinity and dissolved oxygen decrease to levels that stress and threaten the life of aquatic species. Consequently, water quality and vector-borne diseases (like that caused by mosquitos carrying the West Nile Virus) become a concern. In 1983 the Los Peñasquitos Lagoon Foundation was formed, and in 1985 the Los Peñasquitos Enhancement program began, with particular focus on the maintenance of an open inlet. Since 1985 the Los Peñasquitos Lagoon Foundation has been using mechanical force to reestablish the inlet, both through annual maintenance and emergency breaching. In 2005 in an effort to reduce infrastructural impacts from the coast highway, the bridge at Los Peñasquitos Lagoon inlet was reconstructed with four support columns, from the previous seventy-four. This new design reduced the frequency of extended inlet closures, but also resulted in larger sediment buildup as waves carried cobbles and sand further east of the bridge and into the lagoon. Now more sediment has to be removed each year to keep the inlet open.

Specifics: Channel excavation is permitted when either (a) dissolved oxygen levels in the lagoon reach 5 milligrams per liter, (b) the water salinity level in the lagoon is below 25 parts per thousand and dissolved oxygen levels are determine by a qualified biologist to be likely to drop below 5 parts per million within the next two—week sampling interval, or (c) the water salinity level in the lagoon is above 33 parts per thousand. Emergency actions to excavate the lagoon consist primarily of breaching the inlet mouth during winter months in order to restore water quality and control for flooding. Emergency breaches seldom create benefits that last because the inlet tends to close easily. Annual maintenance excavation occurs in the

late spring and keeps the inlet open through the summer by removing more sand from the inlet area. Sand is deposited south of the inlet on Torrey Pines State Beach, where it was previously sent naturally before the coast highway caused entrapment inside the lagoon.

Designation: Torrey Pines State Reserve, Torrey Pines State Beach, And State of California Natural Marsh Preserve.

Sources:
Mike Hastings (personal communication)
Executive Director
Los Peñasquitos Lagoon Foundation

California Coastal Commission. (2012). Los Peñasquitos Lagoon Foundation, Amendment Request, Staff Report and Preliminary Recommendation. Retrieved from: http://documents.coastal.ca.gov/reports/2012/11/Th24a-11-2012.pdf

Hastings, M. & Elwany, H. (2012). Managing the inlet at Los Peñasquitos Lagoon. Shore & Beach. Vol. 80 (1).

"Torrey Pines State Natural Reserve. Los Peñasquitos Marsh," retrieved from: http://www.torreypine.org/parks/penasquitos-lagoon.html

San Dieguito Lagoon

Location: San Diego County, City of Del Mar

Surf break: Del Mar River mouth

Threatened & endangered animals: Belding's savannah sparrow, California least tern, Tidewater goby, Western snowy plover

Permitted action: Southern California Edison performs dredging to maintain an open tidal inlet throughout the year.

Agency: Southern California Edison.

Permits identified: (1) United States Army Corps of Engineers (USACE): Section 404 Clean Water Act (2) United States Fish and Wildlife Service: Biological Opinion, consultation under USACE 404 permit. (3) National Oceanic and Atmospheric Administration's National Marine Fisheries Service: Biological Opinion, consultation under USACE 404 permit. (4) California Coastal Commission: Coastal Development

Permit. (5) California Regional Water Quality Control Board: Section 401d Clean Water Act Water Quality Permit. (6) The City of Del Mar.(7) California State Lands Commission: General Lease.

Purpose: To maintain an open inlet to the coastal lagoon for restoration and enhancement of wetland habitats, and to increase public access and recreational opportunity.

Background: The lagoon mouth began to experience permanent closures in the 1940's when coastal and upstream developments greatly reduced freshwater inflows. In 1980 a grant from the California Coastal Conservancy helped the California Department of Fish and Wildlife begin restoration of the lagoon and construction of the South Basin (80 acres). More recently wetland restoration has been supported through funding from Southern California Edison in order to mitigate for environmental impacts at its San Onofre Nuclear Generating Station in San Clemente. The San Dieguito Wetlands Restoration Project aims to maintain an open tidal inlet, restore wetlands, increase public access, and enhance the overall value of the adjacent river park environments.

Specifics: Southern California Edison performs dredging every eight to twelve months in order to keep the Lagoon inlet open to the ocean, and maintain a stable channel depth. Excavated sand is used for beach replenishment on the City of Del Mar beaches both to the north and south of the inlet.

Sources:

Hany Elwany (personal communication)
Coastal Engineer and Oceanographer
Coastal Environments, Inc.

Coastal Environments. (2010). Update of Restored San Dieguito Lagoon Inlet Channel Excavation and Dredging Plan.

Elwany, H. (2012). San Dieguito Lagoon Restoration Project, 2012 Beach Data Annual Report City of Del Mar, California.

San Dieguito River Park. (2003). San Dieguito Lagoon Wetland Restoration Project. Retrieved from http://www.sdrp.org/projects/coastal.htm

San Elijo Lagoon

Location: San Diego County, Cardiff by the Sea

Surf break: San Elijo

Threatened & endangered animals: Belding's savannah sparrow, California gnatcatcher, Least Bell's vireo, Light-footed clapper rail, Western snowy plover

Permitted action: Maintaining an open lagoon inlet for 90% of the year, including annual maintenance breaching at the beginning of the year; single breaching events during winter the months; and emergency breaching if the inlet closes during the summer months.

Agency: In 2007 a memorandum of understanding was signed between the California Department of Fish and Wildlife, San Diego County, and the San Elijo Lagoon Conservancy for management of the San Elijo Lagoon Ecological Reserve.

Permits identified: (1) United States Army Corps of Engineers (USACE): Section 404 Clean Water Act, ten-year term. (2) National Oceanic and Atmospheric Administration's National Marine Fisheries Service: Biological Opinion, consultation under USACE 404 permit. (3) California Coastal Commission: Coastal Development Permit, five-year term. (4) California Regional Water Quality Control Board: Section 401d Clean Water Act Water Quality Certification, five-year term.

Purpose: To benefit the ecology of the lagoon, the habitat and especially nesting bird species.

Background: Altered hydrology from Highway 101, the 5 Freeway, and the train led to an increase in sedimentation and a reduction in tidal flushing. Prior to 1994 the County of San Diego, and California Department of Fish and Wildlife used bulldozers to open the mouth of the lagoon without a permit. In 1994 a three-year experimental period was initiated in order to determine the best management practices for the lagoon. Now management is based on the results of that experimental period.

Specifics: The San Elijo Lagoon Conservancy maintains the lagoon so that it remains open to the ocean for 90% of the year. During November or December the inlet may close, but each year by late March the inlet is reopened in time for the

bird-nesting season. Sand is deposited to the south of Cardiff State Beach to provide a source of beach rnourishment.

Designations: San Elijo State Beach, Cardiff State Beach, State Ecological Reserve. Waters are part of the Marine Life Protection Act and the area is listed as a State Marine Conservation Area with special status.

Sources:
Doug Gibson (personal communication)
Executive Director/Principal Scientist
San Elijo Lagoon Conservancy

San Elijo Lagoon Conservancy
http://www.sanelijo.org/welcome-san-elijo-lagoon-conservancy

Agua Hedionda Lagoon

Location: San Diego County, City of Carlsbad

Surf break: Tamarack St.

Aquaculture: Carlsbad Aquafarm, Hubbs-Sea World Research Institute

Threatened & endangered animals: Bell's vireo, Coastal California gnatcatcher, Least tern, Tidewater goby

Permitted action: Current dredging of the outer lagoon basin only. Inner and middle lagoon basins were historically dredged.

Agency: Cabrillo Power I LLC is the titled owner of the lagoon, and permittee.

Permits identified: (1) United States Army Corps of Engineers (USACE): Section 404 Clean Water Act. (2) United States Fish and Wildlife Service: Biological Opinion, consultation under USACE 404 permit. (3) National Oceanic and Atmospheric Administration's National Marine Fisheries Service: Biological Opinion, consultation under USACE 404 permit. (4) California Coastal Commission: Coastal Development Permit. (5) California Regional Water Quality Board: Section 401d Clean Water Act Water Quality Certification. (6) California State Lands Commission: General Lease. (7) City of Carlsbad: Special Use Permit.

Purpose: Dredging is used to remove sediment, maintain tidal circulation within the lagoon, and the tidal prism required for power plant cooling.

Background: The Encina Power Plant owned by Cabrillo Power I LLC uses water from the lagoon to cool its power generating units. Water is flushed from the lagoon via a discharge channel. Sand accumulation from littoral drift and human built infrastructure within the lagoon contributes to the need for dredging.
Specifics: Cabrillo Power I LLC dredges the 66-acre outer lagoon basin closest to the ocean during the fall and winter as needed.

Sources:

Sheila Henika (personal communication)
Senior Environmental Specialist
Cabrillo Power I LLC
Encina Power Station

Lisa Rodman (personal communication)
Executive Director
Agua Hedionda Lagoon Foundation

Poche Outlet

Location: Orange County, City of San Clemente

Surf break: Poche Beach

Threatened & endangered animals: California least tern, Western snowy plover, Tidewater goby

Permitted action: Semi-annual outlet maintenance and as-needed minor maintenance to remove ponding and beach berm.

Agency: Orange County Parks.

Permits identified: (1) United States Army Corps of Engineers (USACE): Section 10 Rivers and Harbors Act of 1899, Section 404 Clean Water Act, Section 103 Marine Protection Research and Sanctuaries Act, five-year term. (2) United States department of Fish and Wildlife: Biological opinion, consultation under USACE 40 permit. (3) National Oceanic and Atmospheric Administration's National Marine Fisheries Service: Biological Opinion, consultation under USACE 404 permit. (4) California Coastal Commission: Coastal Development Permit, two-year term. (5)

California Regional Water Quality Control Board: Section 401d Clean Water Act Water Quality Certification, five-year term.

Purpose: To ensure public health and safety, and beach access.

Background: A sand berm naturally forms on the beach that contributes to ponding at the terminal end of the outlet. This compromises beach access, and creates public health and safety concerns.

Specifics: Semi-annual outlet maintenance consists of sediment excavation at the outlet mouth, on the beach, in the fall before the wet season, and in the spring before the summer recreation season. The sediment is discharged onto adjacent beaches above the high tide line. Beach grading also occurs in these areas to prepare the beach for recreational use. Five days prior to activities, Orange County Parks must submit a Pre-Construction Notification to USACE Los Angeles Regulatory Division. Year round, minor maintenance consists of breaching of the beach berm to maintain channel flow. Machinery is used to shape the slope of the outlet, and to establish a notch in the sand berm. The sand berm may be fully removed in order to restore surface water connectivity to the ocean. Orange County Parks determines when maintenance is necessary, with an upper limit of one event every two weeks permitted. In addition, special regulations apply to maintain habitat for the California grunion, California least tern, and Western snowy plover.

Sources:
Susan M. Brodeur (personal communication)
Senior Coastal Engineer
Orange County Parks

Regulatory Permits: (1) Los Angeles Regulatory Division of the United States Army Corps of Engineers. (2) San Diego Regional Water Quality Control Board. (3) California Coastal Commission.

San Juan Creek

Location: Orange County, City of Dana Point

Surf break: Doheny

Threatened & endangered animals: Southern California Coast steelhead, Western snowy plover

Permitted action: There is no permit held for modification of the coastal inlet. A storm water flow, North Creek, located at the northern end of the beach park is kept open by Orange County Public Works.

Landowner: California Department of Parks and Recreation.

Purpose: California Department of Parks and Recreation lets the San Juan Creek coastal inlet operate naturally. The United States Army Corps of Engineers and the County of Orange performed a study in 2002 to assess management of the watershed, but inlet management was not discussed.

Background: About twenty years ago California Department of Parks and Recreation would breach the inlet to prevent mosquitos from nesting in the lagoon, keep the river trail for bikes open, and to keep swimmers out of the lagoon. However, they were not permitted by state or federal agencies to do so and once water quality issues offshore started to become a problem they stopped. This breaching was also halted prior to the 1997 listing of the Southern California Coast steelhead under the Endangered Species Act.

Specifics: The San Juan Creek tidal inlet has historically breached naturally for two to three months every January. Orange County Health Care Services and South Orange County Sanitation District regularly tests offshore water quality. Identified problems that preclude further management include hydrologic regime changes, channel instability, habitat loss, ecosystem degradation, and declining water quality. Water quality at the mouth of the creek is especially problematic.

Designations: Doheny State Beach, Doheny State Marine Park, and Doheny State Marine Conservation Area.

Sources:

David Pryor (personal communication)
Senior Environmental Scientist, Orange Coast District
State of California Department of Parks and Recreation

United States Army Corps of Engineers Los Angeles District. (2002). "San Juan Creek Watershed Management Study Orange County, California." Retrieved from https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentVersionID=19615

Aliso Creek

Location: Orange County, City of Laguna Beach

Surf break: Aliso Creek

Threatened & endangered animals: California least tern, Western snowy plover, Tidewater goby

Permitted action: Semi-annual and as-need routine maintenance to maintain creek flow and remove sand and ponding.

Agency: Orange County Parks.

Permits identified: (1) United States Army Corps of Engineers (USACE): Section 404 Clean Water Act, five-year term. (2) United State Fish and Wildlife Service: Biological Opinion, consultation under USACE 404 permit. (3) National Oceanic and Atmospheric Administration's National Marine Fisheries Service: Biological Opinion, consultation under USACE 404 permit. (4) California Coastal Commission: Coastal Development Permit, ongoing term. (5) California Regional Water Quality Control Board: Section 401 Clean Water Act Water Quality Certification, five-year term.

Purpose: To ensure public health and safety, and maintain beach access.

Background: Sand buildup prevents normal creek flow to the ocean. Creek discharge and shore break on the beach create a steep slope that poses a risk to public safety. Natural meandering of the creek compromises beach access and threatens to erode private property.

Specifics: Maintenance activities in the non-wetland, tidal waters are permitted on a semi-annual basis, and when deemed necessary by Orange County Parks. A bulldozer is used to grade the beach at the creek mouth, and to relocate sand up the coast. Relocated sand is used to maintain water flow in a direction perpendicular to the beach. Five days prior to activities Orange County Parks must submit a Pre-Construction Notification to USACE Los Angeles Regulatory Division. Routine maintenance is utilized to steer creek flow and consists of breaching the berm, or creating a notch in the berm, to direct water towards the ocean.

Source:
Susan M. Brodeur (personal communication)
Senior Coastal Engineer
Orange County Parks

Bolsa Chica Wetlands

Location: Orange County, City of Huntington Beach

Surf break: Bolsa Chica

Threatened & endangered animals: Belding's savannah sparrow, California coastal gnatcatcher, California least tern, Light-footed clapper rail, San Clemente loggerhead shrike, Western snowy plover

Permitted action: The tidal basin east of the Pacific Coast Highway was created through excavation and dredging in 2006. Since then, the tidal basin has been dredged in 2008, and in 2010. Excavated sand was deposited south of the basin on the beach for replenishment.

Agency: California State Lands Commission owns the property and holds funds for the project in trust, including those for dredging contracts. The property is leased to the California Department of Fish and Wildlife for daily management.

Permits identified: (1) United States Army Corps of Engineers (USACE): Section 404 Clean Water Act. (2) United States Fish and Wildlife Service: Biological Opinion, consultation under USACE 404 permit. (3) California Coastal Commission: Consistency Determination. (4) California Regional Water Quality Control Board: Section 401d Clean Water Act, Waver Quality Certification. (5) California Regional Water Quality Control Board: National Pollution Discharge Elimination System permit. (6) California Department of Fish and Wildlife: Incidental Take Permit California Endangered Species Act. (7) California Department of Transportation: Encroachment permit.

Purpose: To restore wetland habitats and their ecological functions.

Background: In the 1920's the discovery of oil along the coast led to the development of the Bolsa Chica marsh and wetlands for extractive purposes. During the 1970's large-scale residential and commercial developments were proposed for the remaining areas, but local opposition and regulation by the California Coastal Commission prevented this. In 1997 the State of California was able to use environmental impact mitigation funds from the Ports of Los Angeles and Long Beach to purchase the remaining Bolsa Chica wetlands. In 2004 a restoration project was developed to create a tidal basin and enhance remaining wetland

habitat. In 2006 the tidal inlet was opened at the south end of Bolsa Chica State Beach for enhanced tidal flushing. Stone jetties, levees, and three tidal control structures were constructed to manage tidal movements within the wetlands. Representatives from the California Department of Fish and Wildlife, and nonprofit groups that include Amigos de Bolsa Chica, Bolsa Chica Conservancy, and Bolsa Chica Land Trust discuss current management issues every two months.
Specifics: Since the initial tidal basin and channel was dredged in 2006, two more dredging operations have occurred. The first was in 2008, and the second was in 2010. These operations were contracted by the State Lands Commission, and cost about 2.5 million dollars. An open inlet is necessary in order to create fish and bird habitats, which is the primary reason for management at the Bolsa Chica wetlands. Many long-term management options are being investigated for the coastal inlet. The most sustainable option will depend on the availability of funding. One future possibility is that management agencies will purchase a private dredge and hire a team to perform necessary operations.

Sources:
Pamela Griggs (personal communication)
Senior Staff Counsel
California State Lands Commission

Kelly O'Reilly (personal communication)
Environmental Scientist
Bolsa Chica Ecological Reserve
California Department of Fish & Wildlife

Bolsa Chica Lowlands Resotration Project. (2009). Site History. Retrieved from www.bolsachicarestoration.org/history.php

Malibu Lagoon

Location: Los Angeles County, City of Malibu

Surf breaks: Malibu Point - First Point, Second Point, Third Point

Threatened & endangered animals: Belding's savannah sparrow, Southern California Coast steelhead, Tidewater goby, Western snowy plover

Permit desired: Inlet management to maintain a western breach of the river.
Active stakeholders: Surfrider Foundation, Heal the Bay, Malibu Surfing Association, California State Lifeguards, Los Angeles County Department of Beaches and Harbors, City of Malibu, Santa Monica Bay Restoration Foundation, Santa Monica Baykeeper, Resource Conservation district of the Santa Monica Mountains.
Purpose: To maintain a western oriented position of the river breach so that historical sediment distribution and wave dynamic are preserved.
Background: During the 1980's as part of an environmental impacts mitigation project, the California Department of Parks and Recreation created a wetland north of the Malibu river mouth. Through the early 1990's State lifeguards and the Los Angeles County Department of Beaches and Harbors breached the river mouth when they deemed it necessary. This action was not legally permitted, and after the California Coastal Commission reprimanded them for their actions, from 1996 to 2006 the breach of the river mouth operated somewhat naturally. The river mouth breach was seasonal and shifted from a western to eastern position along the beach. As upstream development occurred, flow direction and sediment load gradually changed, and the inlet was reinforced in a way that favored an eastern breach. This threatens coastal property owned by the State, and also the famous surf breaks at Malibu beach.
Specifics: In 2013 a restoration project was completed to improve water quality and lagoon habitat. Now local stakeholders and recreational users are organizing to support a management plan that will preserve Malibu beach by encouraging a western river breach.
Designations: Malibu State Beach, Surfrider State Beach.

Source:
Nancy Hastings (personal communication)
Southern California Field Coordinator
Surfrider Foundation

Santa Clara River Estuary

Location: Ventura County, City of Oxnard

Surf break: Santa Clara River mouth

Threatened & endangered animals: California least tern, Southern California Coast steelhead, Tidewater goby, Western snowy plover

Emergency Action: Thirty-two inches of water were pumped from the estuary to the ocean through a pipe, and over the beach berm, in order to relieve flooding at the adjacent McGrath State Park.

Agency: Ventura County Public Works Agency.

Emergency permits identified: (1) United States Army Corps of Engineers: Section 404 Clean Water act. (2) National Oceanic and Atmospheric Administration's National Marine Fisheries Service: Letter of Concurrence, Endangered Species Act. (3) United States Fish and Wildlife Service: Letter of Concurrence, Endangered Species Act. (4) California Department of Fish and Wildlife: Emergency 1600 Streambed Alteration Agreement. (5) California Coastal Commission: Emergency Coastal Development Permit. (6) California Regional Water Quality Control Board: Section 401d Clean Water Act Water Quality Certification.

Background: Historically, rains cause the river mouth to breach the sandbar and naturally drain the estuary. Without sufficient storm runoff the river mouth did not breach during the 2012 – 2013 rainy season. This was exacerbated by the fact that the City of Ventura operates a sewage water treatment plant that continually pumps water into the estuary. Without the annual breach from rains, and the rising water levels from the treatment plant discharge, the estuary flooded McGrath State Park.

Specifics: On July 22nd, 2013 the Ventura County Public Works Agency obtained permits to drain thirty-two inches of water from the estuary. Draining the estuary was considered an emergency action because this approach is not part of a long-term management plan. Solutions to avoid future flooding are being considered, including a beach elevation management plan or a relocation plan for McGrath State Park. The agency that would be in charge of future long-term management is not decided at this time.

Sources:
Angela Bonfiglio Allen (personal communication)
Environmental Planner

Ventura County Watershed Protection District

Jeff Pratt (personal communication)
Director
Ventura County Public Works Agency

Lynn Rodriguez (personal communication)
Project Manager
Watershed Coalition of Ventura County

Carlson, C. (2013, March). McGrath campground flooded, could stay closed for rest of year. *Ventura County Star*. Retrieved from http://www.vcstar.com/news /2013/mar/21/mcgrath-state-beach-campground-flooded-closed/

Goleta Slough

Location: City of Goleta, Santa Barbara County

Threatened & endangered animals: Belding's savannah sparrow, California least tern, Light-footed clapper rail, Southern California Coast steelhead, Southwestern willow flycatcher, Tidewater goby, Western snowy plover

Permitted action: Currently no permit for inlet management exists. Until recently though, for over twenty years the Santa Barbara County Flood Control District had permits to open the mouth.

Agency: The City of Santa Barbara has become the leading funder for inlet management activities, and is coordinating the approval process for a dredging permit from the various state and federal regulatory agencies. Previously the Santa Barbara County Flood Control District performed inlet opening.

Goals: To support populations of Southern California Coast steelhead and Tidewater goby through management of the slough that reduces flooding of the slough and adjacent creeks, the incidence of large birds interfering with airport operations, and the extent of habitat available for mosquitos.

Background: Since the early 1990's annual opening of the inlet was performed by the Santa Barbara County Flood Control District, as an action recommended by California Department of Fish and Wildlife. In the mid 1990's the Santa Barbara County Flood Control District obtained a long-term permit (five-year term) from the

United States Army Corps of Engineers to perform inlet opening within two weeks of the natural closing of the inlet, which averaged just over twice per year. In the fall of 2012, National Marine Fisheries Service expressed concern for endangered fish that were present in the watershed. Santa Barbara Flood Control District was asked to prepare biological studies in order to proceed with their activities, but lacking the resources to do so they halted operations. The last breach performed by Santa Barbara County Flood Control District was in the winter of 2012. In March of 2013 the mouth of the slough shut. By April high water levels in the slough caused increased numbers of large birds and interference with airport activities, flooding of adjacent areas including San Jose Creek, and rapid increases in mosquito populations.

Specifics: The Goleta Slough Management Committee is an advisory committee initiated by the City of Santa Barbara in 1991 that plays a large role in coordinating stakeholders of the Goleta Slough. For the past twenty years this management committee has worked to create community dialogue, and meet diverse interests to move projects forward efficiently, and minimize environmental impacts from development within the slough.

Designations: Goleta Slough State Ecological Reserve, Goleta Slough State Marine Conservation Area.

Sources:
Andrew Bermond (personal communication)
City of Santa Barbara, Airport Planner

Patricia Saley (personal communication)
Goleta Slough Management Committee, Staff

Morro Bay

Location: San Luis Obispo County, City of Morro Bay

Surf break: Morro Bay

Threatened & endangered animals: California red-legged frog, Least Bell's vireo, Marbled murrelet, Morro Bay kangaroo rat, Morro shoulderband snail, Southern sea

otter, South-Central California Coast steelhead, Southwestern willow flycatcher, Tidewater goby, Western snowy plover

Permitted action: Mechanical dredging to maintain navigation channel into harbor.

Agency: United States Army Corps of Engineers.

Permits identified: (1) United States Environmental Protection Agency: Dredged Material Management Plan. (2) California Coastal Commission: Coastal Development Permit.

Background: The city of Morro Bay is not responsible for the dredging of the Federal navigation channel in the harbor because it is a federally designated harbor. The City has undertaken dredging projects in other areas, such as the State Park Marine and mooring area.

Specifics: For approximately twenty days every year between spring and summer, an Army Corps of Engineers' hopper dredge is used to clear the harbor entrance and other critical areas. Every seven to ten years the full channel (from the mouth of the harbor to Fairbank point at the golf course) is dredged using a combination of suction and pipeline dredges, excavator dredges, or hopper dredges. Federally regulated protocol for dredging and dredged material management (DMMT) is followed, and sediment is deposited at two sites. The first is located approximately one mile north of Morro Rock at a designated beach deposition site, and the second is located approximately one mile south of Morro Bay Harbor at a near shore site in 20 – 40 feet of water. Both sites function in beach nourishment.

Designations: Morro Bay National Estuary Program, Morro Strand State Beach, Morro Bay State Marine Recreational Management Area, And Morro Bay State Marine Reserve.

Sources:

Eric Endersby (personal communication)
Harbor Director
City of Morro Bay Harbor Department

Morro Bay National Estuary Program. (2012). Comprehensive conservation and management plan for the Morro Bay estuary: 2012 update. Morro Bay, CA. Retrieved from http://www.mbnep.org/Library/Files/CCMP/CCMP%20Update/CCMP_Update_2013-04.pdf

Carmel River

Location: Monterey County, City of Carmel-by-the-Sea

Surf break: Carmel Beach

Threated & endangered animals: California red-legged frog, Smith's blue butterfly, South Central California coast steelhead, Western snowy plover

Permitted action: Two projects, the Carmel Lagoon Ecosystem Protective Barrier and the Scenic Road Protective Barrier, have been approved by the County and are under review by State and Federal permitting agencies. These projects are designed to avoid the need for continual mechanical opening of the lagoon to the ocean. In the meantime a five-year Interim Sand Bar Management Plan is being used. This allows for opening and closing of the lagoon inlet with the aim of protecting state and private property, the scenic road, and maintaining steelhead habitat.

Agency: Monterey County Resource Management Agency.

Permits: (1) United States Army Corps of Engineers (USACE): 404 Clean Water Act, Section 10 Rivers and Harbors Act. (2) United States Department of Fish and Wildlife: Biological Opinion, consultation under USACE 404 permit. (3) National Oceanic and Atmospheric Administration's, National Marine Fisheries Service: Biological Opinion, consultation under USACE 404 permit.

(4) California Coastal Commission: Coastal Development Permit.

(5) Central Coastal Regional Water Quality Control Board: Section 401d Clean Water Act, Water Quality Certification.

(6) California Department of Fish and Wildlife: 1600 Streambed Alteration Agreement.

(7) California State Lands Commission: General Lease.

Purpose: To protect and preserve critical habitat for steelhead and the California red-legged frog, as well as other aquatic organisms and the ecosystem as a whole, while also protecting surrounding infrastructure from flooding.

Background: The Carmel river inlet has historically been opened and closed to the ocean depending on tides, ocean waves, river inflow and rainfall. When the beach berm forms and closes the inlet, water levels in the lagoon rise, and have the

potential to flood low-lying adjacent properties. Since 1973, the County of Monterey has used bulldozers to artificially breach the berm. In 1992, regulatory agencies determined that flooding of the lagoon was a predictable event, enough so that a long-term management plan with permits for management was needed. In 2005 the Carmel River and lagoon was designated as critical habitat for steelhead, and new management approaches for the lagoon sand bar were recommended. The goals of the new management strategies were to manage flood risk and protect surrounding properties in a manner that preserved and optimized habitat for steelhead in the lagoon throughout the year. In order to fully understand the management approaches that would best meet these goals, a Technical Advisory Committee was formed in 2007, and long-term management goals were identified. In 2012 Monterey County and the USACE, in consultation with the National Marine Fisheries Service, drafted a long-term plan to balance protection of private property with protection of species. The long-term plan moves away from dependence on mechanical breaching of the sandbar as it is expensive and destroys beach and lagoon habitat. Until the long-term plan is approved, the Interim Sandbar Management Plan permits mechanical sandbar breaching and closure of the lagoon, beach grooming, and sand relocation for beach access purposes.

Specifics: In the winter, during the rainy season when water levels in the lagoon reach flood-stage, an outlet channel is constructed along the sandbar in order to reduce the water surface elevation in the lagoon down to a level that alleviates flood risk. The configuration of the channel is intended to control the rate and extent of the lagoon drawdown so that suitable habitat for steelhead is maintained. In the spring or summer, the sandbar outlet channel is mechanically closed (if it has not closed naturally) to maintain a perched lagoon system and preserve good steelhead habitat through the dry, summer season. The Scenic Road Protection and Preservation Project is proposed to prevent erosion under state property and the scenic road bluffs, while also allowing the river to breach more naturally. The Ecosystem Protective Barrier will construct a floodwall around portions of the lagoon that protect residential property, allow for a higher lagoon water level, and avoid mechanical alteration of the sandbar.

Designations: Carmel River State Beach

Sources:
Jacqueline Pearson Meyer (personal communication)
Fishery Biologist – Regional Fish Hydroacoustics Coordinator
NOAA's National Marine Fisheries Service, Southwest Region, Protected Resources Division

Whitson Engineers. (2013). *Carmel River Lagoon Restoration Scenic Road Protection Options.* Retrieved from http://www.co.monterey.ca.us/planning/major/EPB%20and%20Scenic%20Road%20Protection/2487.02%20Scenic%20Rd%20Memo%20130225-v5.pdf

Whitson Engineers. (2013). *Carmel River Lagoon Ecosystem Protective Barrier (EPB) and Scenic Road Protection Structure (SRPS) Projects, Feasibility Report.* Retrieved from http://www.co.monterey.ca.us/planning/major/EPB%20and%20Scenic%20Road %20Protection/Feas%20Rpt_May%2029%202013.pdf

Pajaro River

Location: Santa Cruz and Monterey Counties, City of Watsonville

Surf breaks: Zmudowski State Beach, Moss Landing

Threatened & endangered animals: South - Central California Coast steelhead, Tidewater goby, Western snowy plover

Permitted action: Santa Cruz County can breach the river mouth when water in the lagoon rises above the height designation at Beach Rd.

Agency: County of Santa Cruz Department of Public Works, Pajaro River Flood Management.

Permits: (1) United States Army Corps of Engineers (USACE): Section 404 Clean Water Act. (2) United States Fish and Wildlife Service: Biological Opinion, consultation under USACE 404 permit. (3) National Oceanic and Atmospheric Administration's (NOAA) National Marine Fisheries Service: Biological Opinion, consultation under USACE 404 permit. (4) NOAA Monterey Bay National Marine Sanctuary: Letter of Authorization Section 307 National Marine Sanctuaries Act. (5) California Department of Fish and Wildlife: 1600 Streambed Alteration Agreement. (6) California Regional Water Quality Control Board: Section 401d Clean Water Act

Water Quality Certification. (7) California Coastal Commission: Coastal Development Permit. (8) California State Lands Commission: General Lease-Public Agency Use. (9) California Department of Parks and Recreation: Right of Entry Permit. (10) County of Santa Cruz Planning Department: CEQA. (11) County of Santa Cruz Planning Department: Riparian Exception Permit + Grading Permit.

Purpose: To prevent flooding of Beach road, which is for the passage to the adjacent housing community called Pajaro Dunes.

Background: When the river mouth closes the Watsonville Slough floods adjacent lands.

Specifics: The coastal inlet is open most of the year, but it doesn't always breach naturally. Episodically, and usually in the late fall, the County of Santa Cruz breaches the mouth.

Designations: Zmudowski State Beach, Monterey Bay National Marine Sanctuary.

Sources:
Jonathan Ambrose (personal communication)
Wildlife Biologist
National Oceanic and Atmospheric Administration, Protected Resources Division

Justine Wolcott (personal communication)
Resource Planner III
County of Santa Cruz
Department of Public Works, Pajaro River Flood Management

Soquel Creek

Location: Santa Cruz County, City of Capitola

Surf breaks: Capitola Pier, Capitola Jetty, Bombora, New Brighton State Beach

Threatened & endangered animals: Central California Coast steelhead, Central California Coast Coho salmon, Tidewater goby

Permitted action: A concrete box culvert, or flume, at the mouth of the creek is used to control water flow in and out of the lagoon during the summer months. In late

May just before Memorial day weekend a sandbar is constructed to close the creek and create a freshwater lagoon. This creates a beach for recreational and community activities during the summer months. The lagoon is maintained for as long as possible as habitat to benefit the growth of juvenile steelhead. With the first storm of every year, the creek is opened. Notches are made in the berm to aid in the naturally breaching of the sandbar.

Agency: City of Capitola Public Works Department.

Permits identified: (1) United States Army Corps of Engineers (USACE): Section 404 Clean Water act, and Section 10 Rivers and Harbor Act. (2) National Oceanic and Atmospheric Administration's (NOAA) National Marine Fisheries Service: Biological Opinion, consultation under USACE 404 permit. (3) United States Fish and Wildlife Service: Biological Opinion, consultation under USACE 404 permit. (4) NOAA Monterey Bay National Marine Sanctuary: Letter of Authorization Section 307 National Marine Sanctuaries Act. (5) California Coastal Commission: Coastal Development Permit. (5) California Regional Water Quality Control Board: Section 401d Clean Water Act Water Quality Certification. (6) California Department of Fish and Wildlife: 1600 Streambed alteration agreement.

Purpose: To create a freshwater lagoon of maximal depth that enhances habitat for juvenile steelhead and other aquatic species, as well as creates safe conditions for a summertime beach, attractive for human use.

Background: In the 1950's a concrete box culvert called the "flume" was constructed by the City of Capitola at the mouth of the creek. This enabled the creation of a lagoon and beach during the summer months. A sandbar was constructed and maintained through the summer and flooding of property adjacent to the creek was avoided because water could be drained using the flume. In 1988 the California Department of Fish and Wildlife began work on a management plan in order to protect the habitat critical to steelhead and other species. Community was very involved with management because of their traditional Begonia Festival held during summer months alongside the creek, and because of the presence of adjacent businesses. The community agreed the lagoon needed to be better managed because water quality and pollution were problems due to decomposing kelp

trapped during sandbar creation and wastewater contamination. Long-term inlet management now incorporates water quality tests, fish counts, and the completion of annual monitoring reports.

Specifics: Every year around May 20th, machinery is used to clear the inlet and contour the creek mouth bottom to create a lagoon. This is done during low tide so that sea grass and kelp can be removed from the area to avoid water quality impairment from decomposing organic matter within the lagoon. Beach sand is used to construct a berm around the concrete flume, and the lagoon is converted to a predominantly freshwater habitat as quickly as possible. The flume functions as a levee system during the summer months helping to maintain an optimal water quality and depth within the lagoon. Most steelhead individuals migrating out of the creek have left by the time of sandbar construction, but fish passage boards are placed inside the flume to allow for any that remain. The lagoon is kept closed for as long as possible because of its benefit to juvenile steelhead, and a fish biologist does weekly habitat monitoring and water quality testing. At the end of every summer a fish count and habitat monitoring report is completed. With the first winter storm a notch is created in the berm and the creek breaches when water levels rise inside the lagoon. The inlet then opens and closes on naturally and is monitored but untouched by the City, until the next May sandbar construction,

Designation: Essential Fish Habitat for Central California Coast steelhead, Monterey Bay National Marine Sanctuary

Sources:

Steve Jesberg (personal communication)
Public Works Director
City of Capitola Department of Public Works

Alley, D., Lyons, K., Chartrand S., and Sherman, Y. (2004). *2004 Soquel Creek Lagoon Management and Enhancement Plan Update.* Retrieved from http://www.mpwmd.dst.ca.us/mbay_irwm/irwm_library/soq_cr_mgt_plan.pdf

National Oceanic and Atmospheric Administration, National Marine Fisheries Service, Southwest Region. (2013). *Biological Opinion, Sanberm Construction across the Mouth of Soquel Creek, City of Capitola, Santa Cruz County, California.* Retrieved fromhttp://swr.nmfs.noaa.gov/bo/Soquel%20Creek%20Sandberm%20Constructio n%20 May%203,%202013.pdf

San Lorenzo River

Location: County of Santa Cruz, City of Santa Cruz

Surf break: San Lorenzo River mouth

Threatened & endangered animals: Black abalone, Central California coast steelhead, Coho Salmon habitat, Southern sea otter, Tidewater goby, Western snowy plover

Permitted action: None at this time.

Agency: City of Santa Cruz

Purpose: To develop a river inlet management plan that balances human use of river resources and the adjacent beach, protects infrastructure, and enhances habitat to restore populations of threatened and endangered species.

Background: In the 1980s the United States Army Corps of Engineers built a levee system to protect downtown Santa Cruz from flooding. With coastal development progressing, infrastructural needs led to part of the lagoon being filled in to create the Beach St. and Riveryway parking lot. Water from the river has been used to meet the needs of the surrounding population, and the development of the harbor and jetty resulted in increased sediment retention at the river mouth. For the past twenty years this has consistently resulted in problems with the river mouth crossing the beach as a berm that builds during the summer months seals the inlet. Once closed, the river water flows along the oceanfront boardwalk, and results in flooding, compromised public access, public safety, emergency vehicle access, and water quality. Without inlet management there are environmental concerns, including habitat and water resource degradation, and property concerns for coastal businesses and homes. The area includes a public beach, privately owned and economically valuable infrastructure, and a historic monument. The boardwalk and theme park attract between one and three million visitors each year. Creating a long-term management plan for the river inlet is in the city's best interest in order to maintain safety of beach visitors, and to meet human water resource needs sustainably.

Specifics: Management of the river mouth is difficult because the down coast harbor jetty has resulted in the accumulation of sand and the doubling in size of the beach

area. Furthermore, human use of the beach, the coast, and river water compromises the ability of threatened and endangered species to thrive. A comprehensive watershed management plan would need to include management of the coastal inlet.

Source:
Scott Collins (personal communication)
Assistant to the City Manager
The City of Santa Cruz

Pescadero Lagoon

Location: San Mateo County, Town of Pescadero
Surf break: Pescadero
Threatened & endangered animals: California red-legged frog, Central California Coast steelhead, San Francisco garter snake, Tidewater goby, Western snowy plover, and potential habitat for Coho salmon.
Permitted Action: A science panel is currently evaluating the physical and biological characteristics of the marsh and lagoon. Meanwhile the National Oceanic and Atmospheric Administration's (NOAA) Restoration Center and United States Department of Fish and Wildlife are initiating an early breach of the sandbar to prevent fish kills that occurs when surface waters overturn with a later season breach.
Agency: California Department of Parks and Recreation is the landowner, however due to water quality deterioration, current tidal inlet management is occurring under projects proposed by the NOAA Restoration Center and the United States Department of Fish and Wildlife. Actions aim to ameliorate impacts to steelhead that are listed as threatened under the Endangered Species Act.
Permits identified: (1) United States Army Corps of Engineers (USACE): Section 404 Clean Water Act, five-year term. (2) United States Fish and Wildlife Service: Biological Opinion, consultation under USACE 404 permit. (3) National Oceanic and

Atmospheric Administration National Marine Fisheries Service: Biological Opinion, informal consultation under USACE 404 permit, one-year term. (4) California Coastal Commission: Coastal Development Permit, on unspecified term under a NOAA Programmatic Restoration Biological Opinion. (5) California Regional Water Quality Control Board: Section 401d Clean Water Act Water Quality Certification, one-year term. (6) California Department of Parks and Recreation: Right of Entry Permit, one-year term. (7) California Fish and Wildlife Service*: signatory in recognition of activity concerning habitat of two State listed no-take species.

* California Fish and Wildlife Service Stream Alteration Permit was not required because applicant, NOAA Restoration Center, is a federal agency.

Purpose: To avoid steelhead kills by manually breaching the tidal inlet of the lagoon, lowering water level slightly earlier than what occurs naturally.

Background: Each year for the last eleven years, mass mortality of steelhead has occurred immediately following the initial fall breach of the tidal sandbar. Fish die because deeper oxygen poor water in the lagoon is mixed to the surface when the sandbar breach releases lagoon waters to the ocean. During a typical year after the sandbar forms water quality, especially in the bottom waters, in the lagoon degrades. During a typical fall breach event, as deep water in the lagoon mixes to the surface, sediments are suspended, dissolved oxygen is lowered, pH changed, and hydrogen sulfide released. All of these changes negatively impact steelhead populations with mass fish kills.

Specifics: In the late fall of 2012 NOAA Restoration Center and United States Fish and Wildlife Service directed a controlled opening of the tidal inlet. The beach berm fully closed in early September. On October 4th, volunteers, staff members, and Camp Glenwood residents used shovels to dig a trench from the lagoon to the ocean. Waves washed ocean water into the lagoon, and shortly after, the trench was filled with sand deposited by waves. The water level in the lagoon was not any lower and this was not considered a successful attempt at an early breach. On October 23rd, excavator machinery was brought onsite to create a larger breach. State Park volunteers monitored the activity of Western snowy plover nearby to record responses to the activity. Water washed in and out of the lagoon. Biologists

monitored water quality parameters to possibly inform future management. By November 3rd, the mechanical breach of the berm was filled with sand and waves were not entering the lagoon.

Designations: Pescadero State Beach, Pescadero Marsh Natural Preserve

Sources:
Patrick Rutten (personal communication)
Restoration Center Southwest Region Supervisor
National Oceanic and Atmospheric Administration, Habitat Restoration Division

Christy Bowles (personal communication)
California Department of Parks and Recreation

Coastside State Parks Association. (2012). "Pescadero: The Saga of the Sandbar." Retrieved from http://www.sanmateocoastnha.com/newsletter/fall_2012_sandbar.htm

Russian River Estuary

Location: Sonoma County, Town of Jenner

Surf break: Russian River mouth

Threatened & endangered animals: California Coastal Chinook salmon, Central California Coast Coho Salmon, Central California Coast steelhead, California red-legged frog, California tiger salamander, Marbled murrelet, Northern spotted owl

Marine Mammals Act: Harbor Seal

Permitted action: Management of the Russian River estuary as a summer lagoon. An outlet channel is created during summer months when the river mouth closes in order to minimize the risk of flooding in low-lying properties, and enhance the rearing habitat of steelhead and salmon. Artificial breaching is permitted outside the lagoon management season, to minimize flood risk.

Agency: Sonoma County Water Agency.

Permits identified: (1) United States Army Corps of Engineers (USACE): Section 404 Clean Water Act. (2) National Oceanic and Atmospheric Administration's National Marine Fisheries Service: Biological Opinion, consultation under USACE 404 permit.

(3) National Oceanic and Atmospheric Administration's National Marine Fisheries Service: Marine Mammal Protection Act Incidental Harassment Authorization. (4) California Coastal Commission: Coastal Development Permit. (5) California Department of Fish and Wildlife: 1600 Streambed Alteration Agreement, Consistency Determination for Endangered Species. (6) North Coast, California Regional Water Quality Control Board: Section 401d Clean Water Act Water Quality Certification. (7) California Department of Parks and Recreation: Lease of lands. (8) California State Lands Commission: General Public Lease.

Purpose: To enhance the rearing habitat of juvenile steelhead, while minimizing flood risk. The marine influence on the estuary is reduced between May 15 and October 15 of each year when juvenile steelhead species are present. Estuary water is maintained at a target water level in the estuary to avoid flooding. Estuary outflows are managed through the implementation of an outlet channel.

Background: Before the 1950's private citizens breached the sandbar before properties near Jenner were flooded. In the 1950's the Sonoma County Public Works Department assumed responsibility for river mouth breaching, and then in 1994 the Sonoma County Water Agency became responsible for breaching operations. In 2008 the National Marine Fisheries Service completed a biological opinion that recommended a new management strategy under section 7 of the Endangered Species Act.

Specifics: The Sonoma County Water Agency is the agency responsible for adaptive management of the outlet channel at the Russian River mouth. Mechanical breaching during the summer lagoon management period will only be used in an emergency situation when flooding becomes likely. Annually a barrier beach outlet channel design plan will be prepared through coordination with the National Marine Fisheries Service, the California Department of Fish and Wildlife, the California Coastal Commission, and USACE. When the barrier beach closes, the outlet channel will be excavated in order to minimize channel scour and maintain the estuary's water surface elevation. Between May and October this elevation will be targeted at 7ft. or greater, and the rest of the year at 3.2 ft. or greater. Beach sand conservation

and the formation of a more extensive beach complex will be encouraged year around through the new management procedures.

Sources:
Chris Delaney (personal communication)
Senior Engineer
Sonoma County Water Agency

Jessica Martini Lamb (personal communication)
Wildlife Biologist, Environmental Resources Coordinator
Sonoma County Water Agency

ESA PWA & Bodega Marine Laboratory, University of California at Davis. (2012). *Russian River Estuary Outlet Channel Adaptive Management Plan 2012.* Retrieved from http://www.nmfs.noaa.gov/pr/pdfs/permits/scwa_plan2012.pdf

National Marine Fisheries Service, Southwest Region. (2008). *Biological Opinion.* Retrieved from http

Humboldt Harbor

Location: Humboldt County, City of Eureka

Surf break: Humboldt Harbor Entrance

Threatened & endangered animals: California coastal Chinook Salmon, Northern California Coho Salmon, Green Sturgeon, Northern California steelhead, Tidewater goby

Permitted action: Maintenance dredging of Bar and Entrance channel, and four Interior channels.

Agency: United State Army Corps of Engineers (USACE).

Permits: Section 404 Clean Water Act, Section 10 Rivers and Harbors Act.

Purpose: To maintain navigation channel depths for continued safe passage of commerce vessels and to alleviate erosion of sand along the north spit.

Background: Since 1881 the Humboldt Bay has been dredged by USACE in order to maintain shipping commerce. In 1889 twin jetties were constructed in order to try and stabilize the entrance channel.

Specifics: Annual maintenance dredging of the Bar & Entrance channel is performed by USACE with hopper dredges. This occurs for an average of 32 days between the months of March and May. Spot dredging of the four Interior channels (North Bay channel, Eureka channel, Samoa channel, and Field's Landing channel) is also performed using a hopper dredge, and lasts for an average of 30 days between the months of March and April.

Designation: Humboldt Bay National Wildlife Refuge

References:

United States Army Corps of Engineers San Francisco District. (2012). *Five-Year Programmatic Environmental Assessment and 404(b)(1) Analysis Humboldt Harbor and Bay Operations and Maintenance Dredging (FY 2012 – FY 2016).* Retrieved from http://humboldtbay.org/sites/humboldtbay.org/files/documents/Humboldt%20OM%20EA_FY2012-FY2016_09_JAN_2012.pdf

Schlosser, S., and Eicher, A. (2012). *Humboldt Bay and Eel River Estuary Benthic Habitat Project.* Retrieved from http://ca-sgep.ucsd.edu/sites/ca-sgep.ucsd.edu/files/files/Humboldt_Habitats.pdf

Appendix1: Definitions

All definitions are copied in exact terms from cited sources.

Beach nourishment: Beach restoration or augmentation using clean dredged or fill sand. Dredged sand is usually hydraulically pumped and placed directly onto an eroded beach or placed in the littoral transport system. When the sand is dredged in combination with constructing, improving, or maintaining a navigation project, beach nourishment is a form of beneficial use of dredged material.[7]

Channel: 1. A natural or artificial waterway of perceptible extent which either periodically or continuously contains moving water, or which forms a connecting link between two bodies of water. 2. The part of a body of water deep enough to be used for navigation through an area otherwise too shallow for navigation. 3. A large strait. 4. The deepest part of a stream, bay, or strait through which the main volume or current of water flows.[8]

Dredging: The practice of excavating or displacing the bottom or shoreline of a water body. Dredging can be accomplished with mechanical or hydraulic machines. Most is done to maintain channel depths or berths for navigational purposes: other dredging is for shellfish harvesting, for cleanup of polluted sediments and for placement of sand on beaches.[9]

Environmental sensitive area: Any area in which plant of animal life or their habitats are either rare or especially valuable because of their special nature or role in an ecosystem and which could be easily disturbed or degraded by human activities and developments.[10]

Estuary: 1. The part of a river that is affected by tides. 2. The region near a river mouth in which the fresh water of the river mixes with the salt water of the sea.[11]3. A partially enclosed body of water along the coast where freshwater from rivers and streams meets and mixes with salt water from the ocean. Estuaries and the lands surrounding them are places of transition from land to sea and freshwater to salt water. Although influenced by the tides, they are protected from the full force of ocean waves, winds, and storms by such land forms as barrier islands or peninsulas.[12]

Inlet: A short narrow waterway connecting a bay, lagoon, or similar body of water with a large parent body of water.[13]

Lagoon: A shallow body of water, like a pond or sound, partly or completely separated from the sea by a barrier island or reef. Sometimes connected to the sea via an inlet.[14]

---

[7] US Army Corps of Engineers, http://chl.erdc.usace.army.mil/glossary
[8] US Army Corps of Engineers, http://chl.erdc.usace.army.mil/glossary
[9] US Army Corps of Engineers, http://chl.erdc.usace.army.mil/glossary
[10] California Coastal Act, Commission 2010
[11] US Army Corps of Engineers, http://chl.erdc.usace.army.mil/glossary
[12] US Environmental Protection Agency, water.epa.gov/type/oceb/nep/
[13] US Army Corps of Engineers, http://chl.erdc.usace.army.mil/glossary
[14] US Army Corps of Engineers, http://chl.erdc.usace.army.mil/glossary

Littoral cell: A reach of the coast that is isolated sedimentologically from adjacent coastal reaches and that features its own sources and sinks. Isolation is typically caused by protruding headlands, submarine canyons, inlets, and some river mouths that prevent littoral sediment to pass from one cell into the next. Cells may range in size from a multi-hundred meter pocket beach in a rocky coast to a barrier island many tens of kilometers long.[15]

Mouth: Entrance to an inland water body.[16]

Permit: Any license, certificate, approval, or other entitlement for use granted or denied by any public agency, which is subject to the provisions of this division.[17]

Tidal inlet: A natural inlet maintained by tidal flow. Loosely, an inlet in which the tide ebbs and floods.[18]

Watershed: A topographically defined area drained by a river/stream or system of connecting rivers/streams such that all outflow is discharged through a single outlet. Also called a drainage area.[19]

Wetland: 1. Lands whose saturation with water is the dominant factor determining the nature of soil development and the types of plant and animal communities that live in the soil and on its surface.[20] 2. Lands within the coastal zone which may be covered periodically or permanently with shallow water and include saltwater marshes, freshwater marshes, open or closed brackish water marshes, swamps, mudflats, and fens.[21]

[15] http://chl.erdc.usace.army.mil/glossary
[16] http://chl.erdc.usace.army.mil/glossary
[17] California Coastal Act, Commission 2010
[18] http://chl.erdc.usace.army.mil/glossary
[19] http://chl.erdc.usace.army.mil/glossary
[20] http://chl.erdc.usace.army.mil/glossary
[21] California Coastal Act, Commission 2010

Appendix 2: Governance Related to Inlet Management

Federal level:

Rivers and Harbors Appropriation Act

Administered by: United States Army Corps of Engineers
Year: 1899
Purpose: To address projects aimed at improving navigable waters near shorelines, rivers, and harbors; to monitor dredged material transport and disposal; to maintain tidal waters that transport, or could potentially transport, interstate or international commerce.[22]

The Coastal Zone Management Act

Administered by: The National Oceanic and Atmospheric Administration Office of Ocean and Coastal Resource Management
Year: 1972
Goal: Effective management and protection of coasts by States, to "preserve, protect, develop, and where possible, to restore or enhance the resources of the nation's coastal zone."[23]
Programs: 1) The National Coastal Zone Management Program. (2) The National Estuarine Research Reserve System.
Funding: Provided on a cost-share basis to aid states in the development and implementation of their own coastal management programs.[24]

National Marine Sanctuaries Act

Administered by: Secretary of Commerce, and the National Oceanic and Atmospheric Administration Office of Marine Sanctuaries
Year: 1972
Purpose: Protect areas of significance and value for the purpose of conservation, recreation, ecology, history, science, culture, archeology, education or aesthetics.[25]

The National Estuary Program

Administered by: The United States Environmental Protection Agency Office of Wetlands, Oceans and Watersheds
Year: 1987(with the Clean Water Act).
Goal: To protect and improve water quality and enhance living resources through basin-wide planning.
Specifics: A voluntary program operated at the state level. The federal government gives technical and financial assistance to identify an estuary's problems and create a management plan.[26]

---

[22] http://www.sam.usace.army.mil/Missions/Regulatory/RegulatoryFAQ/RiversandHarborsAppropriationActof1899.aspx

[23] Coastal Zone Management Act, p.3

[24] http://coastalmanagement.noaa.gov/about/media/CZMA_10_11_06.pdf

[25] http://sanctuaries.noaa.gov/about/legislation/

[26] http://www.epa.gov/owow/estuaries/nep_home.html

The National Coastal Wetlands Conservation Grant Program

Administered by: United States Fish and Wildlife Service
Year: 1990
Goal: To provide funding for States to protect coastal wetlands.
Specifics: Funds secured from excise taxes on fishing equipment. Motorboat and small engine fuel is granted to states that apply with projects for acquiring, restoring, managing, or enhancing coastal wetlands.[27]

State level:

California Coastal Zone Conservation Initiative (Proposition 20)

Year: 1972
Goal: To develop statewide plans to protect coastal resources.
Result: The 1976 California Coastal Act [28]

California Coastal Act

Year: 1976
Specifics: The primary law that establishes standards for coastal development and governs decisions made by the California Coastal Commission. Of special interest to coastal inlet management is Chapter 3 "Coastal Resource Planning and Management Policies."[29]

California Coastal Commission

This commission consists of twelve voting members, twelve alternates, and 4 non-voting members. The twelve voting members include six from the public and six from locally elected officials from the six coastal regions, as identified in the Coastal Act. The Governor appoints four members who serve for two years, while the Senate Rules Committee and the Speaker of the Assembly both choose four who each serve for four years. In addition to these twelve appointed voting members, the non-voting members are the Secretaries of the Natural Resources Agency, the Business, Transportation and Housing Agency, the Trade and Commerce Agency, and the Chair of the State Lands Commission. Appointees serve as public officials and are not paid. The commission handles permits for almost any event occurring on the beach, and there are six regional offices, located in Arcata, San Francisco, Santa Cruz, Ventura, Long Beach, and San Diego, and a legislative office in Sacramento. [30]

California Coastal Conservancy

A state agency that works as an intermediary between government, private landowners, nonprofits, and other public agencies to protect and enhance coastal resources. State general obligation bonds approved by California voters fund this agency, with a staff of about 75, and an annual budget of $50 million.

---

[27] http://www.fws.gov/coastal/coastalgrants/
[28] http://www.coastal.ca.gov/legal/proposition-20.pdf

[29] http://www.coastal.ca.gov/coastact.pdf
[30] http://www.coastal.ca.gov

Entrepreneurial techniques and creative approaches are used to restore, maintain, and ensure public access to coastal environments.[31]

California Coastal Management Program

Approved by: The National Oceanic and Atmospheric Administration Office of Ocean and Coastal Resource Management.
Year: 1978
Goal: Conservation and development planning that addresses public access, environmental resources, recreation, and the establishment of Local Coastal Programs.
Programs: 1) the California Coastal Act of 1976. (2) The California Coastal Conservancy Act of 1976.
Specifics: This program created the California Coastal Commission, the San Francisco Bay Conservation and Development Commission, and the California Coastal Conservancy to regulate land use and find creative approaches to protect coastal resources.[32]

Comprehensive Wetlands Habitat Program

Administered by: California Department of Fish and Wildlife
Year: 1990
Goal: To provide coordination, direction, and funding for wetland habitat programs and activities led by the California Department of Fish and Wildlife.
Specifics: Includes Public Lands Programs, and Private Lands Incentive Programs. Technical and financial assistance is given to conservation organizations, governmental agencies, and private landowners so that wetland habitat preservation and enhancement are accomplished using current wetland management information.[33]

California Wetlands Conservation Policy

Year: 1993
Goal: Reduce and where possible eliminate the loss of wetlands.
Specifics: Established a framework for the achievement of wetland conservation that consisted of statewide policy initiatives, regionally based strategies, and an interagency task force.[34]

Coastal Sediment Management Workgroup

Administered by: United States Army Corps of Engineers, and California Natural Resources Agency
Year: 1999
Goal: Coordinate federal, state, and local efforts in the development and facilitation of regional approaches to the enhancement and preservation of California's coastal beaches and watersheds.[35]

---

[31] http://scc.ca.gov/about/
[32] http://www.coastal.ca.gov/fedcd/ccmp_description.pdf
[33] http://www.dfg.ca.gov/lands/wetland/
[34] http://ceres.ca.gov/wetlands/policies/governor.html

Proposition 13 (2000 Water Bond)

Administered by: The State Water Resources Control Board, Division of Financial Assistance
Year: 2000
Goal: To support sources and production of safe drinking water, and to provide protection from flooding.
Specifics: Financial assistance program that authorized $763.9 million for projects in California.[36]

Proposition 50 (CALFED Watershed Program)

Administered by: California Department of Water Resources, and the State Water Resources Control Board.
Year: 2002
Goal: To fund the development of Integrated Regional Water Management (IRWM), and to coordinate and leverage the resources of multiple agencies to meet multiple needs at once. To support water supply management that fosters multiple benefits like environmentally sensitive area protection, pollution mitigation, flood control, and access to clean drinking water. Projects are supported that develop long-term improvements to water quality and security.
Specifics: Authorized $3.4 billion in general obligation bonds to go towards various specified water and wetland projects, $380 million of which was set aside for IRWM grants.[37]

California Ocean Protection Act

Year: 2004
Goal: Integrate and coordinate State laws and institutions that seek to protect ocean and coastal resources and ecosystems.
Specifics: Established the Ocean Protection Council, the Ocean Trust Fund and five objectives to guide state agencies in conservation and management. Based on research by the US Commission on Ocean Policy, and the Pew Oceans Commission that showed alarming declines in ocean and coastal resources. Revitalized the 1999 Marine Life Management Act, and implemented an expanded network of protected marine areas along California's coast.[38]

Proposition 84 (Safe Drinking Water, Water Quality and Supply, Flood Control, River and Coastal Protection Bond Act of 2006)

Administered by: California Department of Water Resources
Year: 2006
Goal: Provide funds for the reduction and prevention of storm water contamination of rivers, lakes and streams.

---

[35] http://www.dbw.ca.gov/csmw/default.aspx
[36] http://www.waterboards.ca.gov/water_issues/programs/grants_lo ans/propositions/docs/prop13.pdf

[37] http://www.cdph.ca.gov/services/funding/Documents/Prop50/General/Proposition50.pdf
[38] http://www.opc.ca.gov/webmaster/ftp/pdf/docs/Documents_Page/Noteworthy/PRC_26.5/COPA_Jan_2011.pdf

Specifics: Authorized $5.388 billion in general obligation bonds.[39]

Wetland and Riparian Area Protection Policy (Clean Water Act Section 401)

Year: 2008

Goal: To protect State water resources by developing policy that protects wetlands, riparian areas, and all State waters from dredge and fill discharges.

Specifics: Designed to be a three-phase effort. Currently, phase 1 is developing a Draft Program Environmental Impact Report and accompanying draft policy and draft regulation text. Phases 2 and 3 will develop in the future as implementation of policy goals progresses. [40]

[39] http://www.parks.ca.gov/pages/1008/files/prop_84_text.pdf

[40] http://www.waterboards.ca.gov/water_issues/programs/cwa401/wrapp.shtml

Appendix 3: State and Federal Level listings for species

Species	State Threatened	State Endangered	Federal Threatened	Federal Endangered
Amphibians:				
California red legged frog			x	
California tiger salamander	x		x	x
Birds:				
Belding's savannah sparrow		x		
California least tern		x		x
Coastal California gnatcatcher			x	
Least Bell's vireo		x		x
Light-footed clapper rail		x		x
Marbled murrelet		x	x	
Northern spotted owl			x	
San Clemente loggerhead shrike				x
Southwestern willow flycatcher		x		x
Western snowy plover			x	
Crustaceans:				
California freshwater shrimp		x		x
Fishes:				
California coastal Chinook Salmon			x	
Central California Coast Coho salmon		x		x
Northern California Coast Coho salmon	x		x	
Southern California Coast steelhead				x
South Central California Coast steelhead			x	
Central California Coast steelhead			x	
Northern California steelhead			x	
Green Sturgeon			x	
Tidewater goby				x
Gastropods:				
Black Abalone				x
Morro shoulderband snail				x
Insects:				
Smith's blue butterfly				x
Mammals:				
Morro Bay Kangaroo rat		x		x
Southern sea otter			x	

Reptiles:				
San Francisco garter snake		x		x

Source:
State of California, The Natural Resources Agency, Department of Fish and Wildlife, Biogeographic Data Branch, California Natural Diversty Database. (2013). *State & Federally Listed Endangered & Threatened Animals of California.*
Retrieved from http://www.dfg.ca.gov/biogeodata/cnddb/pdfs/TEAnimals.pdf

Appendix 4: Agency, and permits used in managing inlets

Agency	**Permit/ Consultation**
United States Army Corps of Engineers (USACE)	• Section 404 Clean Water Act Permit • Section 10 Rivers and Harbors Act Permit
United States Department of Fish and Wildlife (USFWS)	• Consultation under USACE 404 permit, Biological Opinion for Federal Endangered Species Act
National Oceanic and Atmospheric Administration (NOAA), National Marine Fisheries Service (NMFS)	• Consultation under USACE 404 permit, Biological Opinion for Federal Endangered Species Act
United States Environmental Protection Agency (EPA)	• Dredged Material Management Plan
National Marine Sanctuary	• Letter of Authorization Section 307 National Marine Sanctuaries Act
California Coastal Commission	• Coastal Development Permit • Consistency Determination
California Regional Water Quality Control Board	• Section 401d Clean Water Act Water Quality Certification • National Pollution Discharge Elimination System permit
California Department of Fish and Wildlife	• 1600 Streambed Alteration Agreement Permit • Incidental Take Permit California Endangered Species Act
California Department of Parks and Recreation (CA State Parks)	• Right of Entry Permit
California State Lands	• General Lease (governing tidal lands)
California Department of Transportation	• Encroachment Permit
County	• Subjective – specific regulations vary
City	• Subjective – specific regulations vary

Appendix 5: Professionals interviewed

Site	Agency	Name	Title
Los Peñasquitos Lagoon	Los Peñasquitos Lagoon Foundation	Mike Hastings	Executive Director
San Dieguito Lagoon	Coastal Environments	Hany Elwany	Coastal Engineer and Oceanographer
San Elijo	San Elijo Lagoon Conservancy	Doug Gibson	Executive Director, Principal Scientist
Agua Hedionda	Agua Hedionda Lagoon Foundation	Lisa Rodman	Executive Director
	Cabrillo Power I LLC, Encina Power Station	Sheila Henika	Senior Environmental Specialist
Poche Outlet	Orange County Parks	Susan Brodeur	Senior Coastal Engineer
San Juan Creek	California Department of Parks and Recreation	Dave Pryor	Senior Environmental Scientist, Orange Coast District
Aliso Creek	Orange County Parks	Susan Brodeur	Senior Coastal Engineer
Bolsa Chica	Bolsa Chica Land Trust	Kim Kolpin	Executive Director
	Bolsa Chica Ecological Reserve	Kelly O'Reilly	Environmental Scientist, California Department of Fish & Wildlife
Malibu Lagoon	Surfrider Foundation	Nancy Hastings	Southern California Field Coordinator
Santa Clara River	Watershed Coalition of Venture County	Lynn Rodriguez	WCVC Project Manager
	Ventura County Public Works Agency	Jeff Pratt	Director
	Ventura County Watershed Protection District	Angela Bonfiglio Allen	Environmental Planner
Goleta Slough	Goleta Sough Management Committee	Patricia Saley	Principal Staff Member
	City of Santa Barbara	Andrew Bermond	Airport Project Planner
Morro Bay	City of Morro Bay, Harbor Department	Eric Endersby	Harbor Director
Carmel River	NOAA, NMFS, Southwest Region, Protected Resources Division	Jacqueline Meyer	Fishery Biologist – Regional Fish Hydroacoustics Coordinator
Pajaro River	NOAA, Protected Resources Division	Jonathan Ambrose	Wildlife Biologist
	County of Santa Crus Department of Public Works, Pajaro River Flood Management	Justine Wolcott	Resource Planner III
Soquel Creek	City of Capitola	Steve Jesberg	Public Works Director
San Lorenzo River	City of Santa Cruz	Scott Collins	Assistant to the City Manager
Pescadero Lagoon	California Department of Parks and Recreation	Christy Bowles	Biologist
	NOAA Habitat Restoration Division	Patrick Rutten	Restoration Center Southwest Region Supervisor
Russian River	Sonoma County Water Agency	Ann DuBay	Principal Program Specialist, Community & Governmental Affairs
	Sonoma County Water Agency	Chris Delaney	Engineer, Estuary Management Team
	Sonoma County Water Agency	Jessica Martini Lamb	Wildlife Biologist, Environmental Resources Coordinator
Various	Environmental Science Associates, ESA PWA	Christina Toms	Ecological Engineer
Various	Central Coast Wetlands Group, at Moss Landing	Kevin O'Connor	Biologist