

**STAFF REPORT  
INFORMATIONAL  
59**

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**INFORMATIONAL UPDATE ON AB 691 (2013, MURATSUCHI)  
STATE GRANTED LANDS AND SEA-LEVEL RISE**

**INTRODUCTION:**

In 2013, the California State Legislature passed AB 691 (Muratsuchi, Chapter 592, Statutes of 2013; Public Resources Code section 6311.5) to require local trustees of granted Public Trust lands with gross revenues that average over \$250,000 annually to inventory their trust assets, assess vulnerability to sea-level rise, begin to formulate feasible and effective adaptation and resiliency measures, and submit their assessment to the State Lands Commission (Commission) by July 1, 2019. There are 32 local trustees required to submit assessments. Commission staff and the consulting firm Revell Coastal are now reviewing the assessments, developing a report to summarize the information, and identifying the data, tools, and resources needed to continue to understand risks to trust assets and options for protecting and adapting them. This staff report provides an update on the review process, including challenges encountered, and plans for next steps.

**BACKGROUND:**

The Legislature has granted certain sovereign Public Trust lands and resources in trust to over 80 local public entities; they are known as grantees or local trustees. These granted lands and resources must be managed in trust for the people of California. The specific uses permitted in each granting statute vary. Some trust grants authorize the construction of ports, harbors, airports, wharves, docks, piers, and other structures necessary to facilitate commerce and navigation, while others allow only visitor-serving recreational uses or open space. All grants reserve to the people the right to fish in the waters over the lands and the right to convenient access to those waters for that purpose.

Local trustees manage granted lands pursuant to the common law Public Trust Doctrine, the specific granting statute(s), the California Constitution, and other laws governing the trust and the trustee's fiduciary duties. While granted Public Trust lands, resources and assets are managed locally, the Commission has residual and review authority over these granted lands. The Commission represents the statewide public interest to ensure that local trustees manage their granted lands in conformance with applicable law.

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Sea-level rise poses significant challenges to the management of granted and ungranted sovereign Public Trust lands and resources. Rapidly warming temperatures and rising waters will result in a wide range of impacts to critical infrastructure, commercial enterprises, navigational safety, public access, recreation and tourism, fisheries, and coastal ecosystems. The Commission and local trustees have a responsibility to the public to ensure that Public Trust values and uses are carefully considered amid these challenges and that there is robust communication and coordination between the State and local jurisdictions so that planning and adaptation efforts are effective.

To learn more about the AB 691 criteria, resources for assessing sea-level rise vulnerability, and the Public Trust, visit the [AB 691 webpage](#).

### **SUBMISSIONS AND REVIEW PROCESS:**

There are 32 local trustees required to submit sea-level rise assessments to the Commission.<sup>1</sup> The assessments were categorized according to physical characteristics and Public Trust asset types to compare similar trustees to one another. These categories and their associated trustees are listed in the following table:

CATEGORY	TRUSTEES
<b>Major Ports</b>	Port of Long Beach, Port of Los Angeles, Port of Oakland, San Diego Unified Port District, San Francisco Port Commission
<b>Smaller Ports or Harbors</b>	City of Crescent City, Moss Landing Harbor District, Dana Point Harbor District, Newport Bay, Santa Cruz Port District, Kings Harbor (Redondo Beach), City of Alameda, City of Benicia, City of Emeryville, Coyote Point (San Mateo County), City of Eureka, Humboldt Bay Harbor and Recreation District, City of Redwood City, City of Sausalito, City of Berkeley, Port San Luis Harbor District
<b>Smaller Ports/Harbors with Open Coastline</b>	City of Avalon, City of Santa Barbara, City of Monterey, City of Long Beach, City of San Diego, Crescent City Harbor District, San Mateo County Harbor District, City of Oceanside, City of Morro Bay
<b>Piers or Wharves with Beaches</b>	City of Newport Beach, City of Santa Cruz, City of Santa Monica, Pescadero (San Mateo County), City of Carpinteria

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<sup>1</sup> There are two local trustees that submitted multiple assessments, corresponding to their geographically distinct areas that generate revenues independent of one another. Orange County submitted one assessment for Newport Bay and one assessment for Dana Point Harbor. San Mateo County submitted one assessment for Coyote Point, one assessment for San Mateo Harbor District, and one assessment for Pescadero. The total number of assessments the Commission received, therefore, is greater than the number of local trustees subject to AB 691.

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*Note: Seven local trustees are still preparing their assessments for submission—City of Eureka, Humboldt Bay Harbor and Recreation District, City of Redwood City, City of Sausalito, City of Berkeley, Port San Luis Harbor District and City of Carpinteria.*

Staff first reviewed the assessments to determine if the reports contained all required information based on the four main criteria in AB 691, including (1) an assessment of the impact of sea-level rise on granted Public Trust lands; (2) maps showing the areas that may be affected by sea-level rise in the years 2030, 2050, and 2100; (3) an estimate of the financial cost of the impact of sea-level rise; and (4) a description of how the local trustee proposes to protect and preserve natural and constructed resources and facilities. The review team, consisting of Commission staff and the Revell Coastal consultants, initially intended to compare the data across all assessments, determine the most vulnerable priority assets by trustee category, compare preferred adaptation strategies, and develop an estimate of total economic valuation of risk. The analysis would be summarized in a report, and the findings would be used to subsequently develop, in collaboration with local trustees and agency partners, recommendations to the State on the best ways to support implementation of local adaptation strategies.

After the initial review, however, the team recognized that the assessments reflected a great variety of approaches, and many trustees faced numerous challenges developing quantitative information related to vulnerability and adaptation. In response, the review team decided to shift its own approach to analyzing the assessments and will now incorporate a discussion of these challenges and recommendations for solutions into its summary report. One key recommendation will be that the State develop vulnerability assessment guidance, particularly for economic valuation. Another recommendation will be that the State partner with local communities, federal agencies, academic research institutions, and other stakeholders to generate the needed data, resources, and tools to use for vulnerability assessment and adaptation planning.

The review team is working on additional deliverables to engage the public and communicate about the sea-level rise impacts and adaptation strategies being considered. The Commission's [AB 691 webpage](#) will expand to include new resources, visual aids, and interactive features to highlight the individual assessments and the collective findings about risks and adaptation for Public Trust assets. The team is creating one-page summaries for each assessment that will distill the critical information into an easily digestible format. These will be posted to the AB 691 webpage alongside the full assessments.

### **CHALLENGES AND OPPORTUNITIES:**

The intent of AB 691 is to assess the vulnerability of granted Public Trust lands to current and future sea-level rise impacts and begin resiliency planning by

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describing potential protective and adaptive measures. Another intent is that local trustees prioritize sea-level rise planning. This is, however, difficult for several reasons. The overarching challenge that affects assessing vulnerability of Public Trust assets is the ambulatory nature of the Public Trust boundary. To learn more about the ambulatory Public Trust boundary, please see Exhibit A. Because the Public Trust boundary is ambulatory, the assets near the boundary are sometimes within it, sometimes outside it, and sometimes dissected by it. Rising seas exacerbate this conundrum. As the ambulatory boundary travels landward of its general present location, more land will become subject to the Public Trust, and, presumably, more assets. Yet many existing upland assets are not compatible with the Public Trust; they are private property assets, like residential homes. The decision of what to include and not include in a vulnerability assessment significantly affects what how risks are prioritized, the economic values of risk, and what adaptation and protection strategies to employ. A more detailed explanation of this challenge and the others associated with it are discussed below.

### **1. Assessment of impacts of sea-level rise: *Many vulnerable coastal areas excluded or ignored. Other areas over-estimate vulnerability of Public Trust assets by including private assets.***

Pursuant to Public Resources Code section 6311.5, subdivision (b), “The geographic scope of a local trustee’s assessment of the impacts from sea-level rise is not required to go beyond the boundaries of the local trustee’s granted Public Trust lands.” The result of this language is that there was no clear understanding for how to account for the fact that boundaries will change over time as lands and assets that are currently landward of the Public Trust boundary may become part of the local trustee’s trust grant due to the sea-level rise driven migration of the boundary.

In the case of local trustees who have filled tidelands and a fixed boundary line agreement as part of their grant, i.e. the boundary will not migrate landward with sea level rise, an assessment of impacts is generally easier because the assessment area is more clearly defined. However, some local trustees whose Public Trust land is on fill depict their granted land boundary as having private assets, like residential homes, within it. Private assets are not meant to be considered in this effort, and including their value inflates the overall assessment of vulnerability to the granted Public Trust lands.

A few trustees did account for the moving ambulatory Public Trust boundary, but not enough of them did to conduct a comparative impact analysis.

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### **2. Maps of 2030, 2050, and 2100 impacts: *Maps are less informative when the ambulatory nature of the Public Trust boundary is not considered.***

Many projected flood-vulnerable areas (present or future) are excluded from AB 691 maps because they are upland of the current Public Trust boundary. The land within the current Public Trust boundary is shown to be submerged when mapping future rising seas levels. The water depth increases as sea levels rise, but the landward extent of inundation is not depicted on the maps because the visualization of flooding is constrained by the current Public Trust boundary line. Again, it was not broadly understood that maps of 2030, 2050, and 2100 should account for the movement of the ambulatory boundary under future sea-level conditions.

To successfully capture sea-level rise impacts, maps of future flooding vulnerability should display flooding scenarios overlaid with a depiction of the current Public Trust boundary. That approach would provide an example of potential future inundation.

An example of the mapping challenge can be seen in Exhibit B, Figures 1 & 2. Figure 1 shows the AB 691 flooding map created by the City of Newport Beach for sea-level rise projected in 2100, constrained by the current Public Trust boundary. Figure 2 shows the same area, but the extent of inundation is depicted without the current Public Trust boundary, and the water is seen to likely cover a larger area.

### **3. Estimate of financial costs of sea-level rise: *Financial assessment discrepancies.***

Most trustees did not account for changes in financial risk as the ambulatory Public Trust boundary moves landward due to sea-level rise. In addition, many assets span upland private property and Public Trust lands, making it difficult to account for just the part of the asset that is within the Public Trust boundary. Another factor is the lack of detailed asset value information in many coastal areas, or the inability to disclose quantitative asset value information due to proprietary concerns. Finally, trustees used many different approaches and methodologies, making it difficult to compare the financial estimates in the assessments with one another. There was no standard template or guidance issued with this criterion, and therefore the expectations for the data outputs were less clear.

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### **4. Description of how to protect and adapt Public Trust resources: *Uncertainty limits planning options and long-term considerations.***

The purpose of this criterion is to help trustees begin formulating adaptation plans based on their site-specific assessment of future impacts. The requirement was to describe potential strategies for protecting and adapting Public Trust assets that are at risk due to sea-level rise. Many trustees have already invested substantially in engineered water control and related infrastructure such as bulkheads, offshore breakwaters, and levees along the shoreline. Therefore, most of the adaptation strategies in the assessments described repairing and maintaining existing aging protective infrastructure. However, scientists and coastal land managers and regulators are increasingly encouraging a shift away from these conventional armoring strategies because, except in limited circumstances, they are not necessarily the most effective for risk reduction and flood control, nor the best economic investment when considering long-term costs and benefits. Other forms of accommodation or adaptation strategies such as managed retreat or horizontal levees may offer greater benefits and prove more effective over time, but there is uncertainty about how to implement and finance them.

The challenges the team identified in its initial assessment reviews will be considered in the summary report and advance the understanding of the unique considerations and difficulties faced by individual local trustees in protecting and adapting their Public Trust lands and assets. The team will use the lessons learned from reviewing the assessments, along with interviews and discussion with individual trustees, to develop recommendations for how the State can address these challenges and, recognizing there is no one-size-fits-all solution, offer a greater level of support to local trustees for planning and implementing effective strategies to reduce site-specific impacts of sea-level rise.

### **NEXT STEPS:**

Next steps for the review team include collecting more information from trustees regarding the assessment process, creating accessible resources to summarize and communicate the findings of individual assessments, and drafting a summary report analyzing the assessments and describing the challenges local trustees encountered. The review team is creating a survey for local trustees to fill out so the team can learn more about the challenges trustees faced and receive their input for improving the vulnerability assessment process. The survey will be accompanied by follow-up calls to provide an opportunity for further feedback. The survey responses and discussions will help identify if there are patterns or trends associated with, for example, the size of the grants, geography, geomorphology, or aspect (i.e., which direction the coastline faces), primary types of Public Trust resources.

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The team is also working on completing a one-page summary for each assessment and expanding the resources of the AB 691 webpage to enhance communication and engagement with the public, trustees, and other stakeholders. Finally, the team is developing an interim progress report and a final summary assessment report. These reports will identify best practices in the assessments, determine the most vulnerable priority assets by trustee category, types of adaptation strategies under consideration, and the challenges trustees face in planning for sea-level rise.

### **EXHIBITS:**

- A. Tideland Boundaries and Sea Level Rise Primer
- B. Sea-Level Rise Map Examples, Newport Beach

### **OTHER PERTINENT INFORMATION:**

1. This informational update is consistent with Strategy 1.1 of the Commission's Strategic Plan to deliver the highest levels of public health and safety in the protection, preservation, and responsible economic use of the lands and resources under the Commission's jurisdiction; Strategy 1.4, to incorporate strategies to address climate change, adapt to sea-level rise, incentivize water conservation, and reduce greenhouse gas emissions and the generation of litter and marine debris into all the Commission's planning processes, project analyses and decisions; Strategy 1.4.1, to provide applicants and grantees with the best available science on the impacts of climate change, sea-level rise, and adaptation strategies; Strategy 1.4.2, to coordinate with lessees, grantees and agency partners to implement actions, and where appropriate require lessees, to address impacts of climate change, adapt to sea-level rise, promote and incentivize water conservation, reduce greenhouse gas emissions, and reduce generation of marine debris and litter; and Strategy 1.4.3, to adopt flexible, adaptive approaches to address sea-level rise that protect vulnerable populations and give priority to natural infrastructure solutions consistent with the public's trust needs and the State's climate change adaptation strategy "Safeguarding California" and Executive Order B-30-15 on climate adaptation.

## Exhibit A

### Tideland Boundaries and Sea Level Rise Primer

#### General Background:

In 1850, when California became a state, it received all of the rights, sovereignty, and jurisdiction that had been granted to previously admitted states by nature of the equal-footing doctrine.<sup>1</sup> One such right that California acquired at statehood was absolute and sovereign title to the beds of tidally influenced waters and navigable waters within its boundaries both inland and along the coast.<sup>2</sup> Except in the few instances where the lands were transferred out of the Trust, these sovereign lands are subject to the **Public Trust** and are held in trust by the state for those purposes.<sup>3</sup>

The Commission is the primary land manager for California's sovereign lands subject to the Public Trust. Over the years the legislature has issued over 300 statutes granting certain sovereign lands to more than 80 local entities. Those lands, sovereign in character and commonly referred to as "**Granted Lands**" remain impressed with the **Public Trust** but are managed by the public agency holding the grant.

#### Glossary:

Below are some common terms used for discussing tideland boundaries.

**Mean High Tide Line or Mean High Water Line (MHTL).** The intersection of the tidal plane of **Mean High Water** with the shore.<sup>4</sup> The Mean High Tide Line represents the physical location of the **Ordinary High Water Mark**, except in certain cases.<sup>5</sup> Due to the dynamic nature of the beach, the Mean High Tide Line is not a fixed line, but one that moves over time as the beach face changes, often necessitating multiple surveys of the beach to determine the ambulatory range for the **Mean High Water** intersection.

**Ordinary High Water Mark (OHWM):** The Ordinary High Water Mark is a legal concept based in English common law and is the line of high water as determined by the course of the tides.<sup>6</sup> The Ordinary High Water Mark is the boundary line for sovereign state lands on tidal waterways and the boundary line for the state's **public trust easement** on non-tidal navigable waterways.<sup>7</sup> This

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<sup>1</sup> *Oregon v. Corvallis Sand and Gravel* (1977) 429 U.S. 363, 370.

<sup>2</sup> *Oregon v. Corvallis Sand and Gravel* (1977) 429 U.S. 363, 372.

<sup>3</sup> *People v. California Fish Company* (1913) 166 Cal. 576.

<sup>4</sup> Shalowitz, *Shore and Sea Boundaries* (1964), Vol. 2, Page 581.

<sup>5</sup> *Borax Consolidated, Ltd. v. Los Angeles*, (1935) 296 U.S. 10.

<sup>6</sup> *Borax Consolidated v. City of Los Angeles* (1935) 296 U.S. 10, 22.

<sup>7</sup> Civil Code section 830; *California v. Lyon* (1981) 29 Cal.3d 210, 226-233.



ambulatory boundary line is indicated at a given place and time by the **Mean High Tide Line**, except in certain cases.<sup>8</sup>

**Public Trust Doctrine.** A legal principle traced back to the Roman emperor Justinian and later rooted in English common law whereby title to lands under tide waters is vested in the Sovereign “as a public trust, to subserve and protect the public right to use them as common highways for commerce, trade and intercourse.”<sup>9</sup> Now established in U.S. common law, each state holds these lands “in trust for the people of the State that they may enjoy the navigation of the waters, carry on commerce over them, and have the liberty of fishing therein freed from the obstruction or interference of private parties.”<sup>10</sup> The State holds its **Sovereign Lands** in Public Trust for the benefit of the people. See **Public Trust (Resources, Uses, etc.)** for description on the application of the Public Trust Doctrine.

**Tidelands.** Lands covered and uncovered by the flow and ebb of the tides or lands situated between the **Ordinary High Water** and **Ordinary Low Water** lines of tidal waters.

**(Granted) Tidelands and Submerged lands.** The legislature has granted sovereign Public Trust lands to over 80 local public entities, known as grantees or local trustees. The granted lands must be managed in trust for the people of California. The specific uses permitted in each granting statute vary. Some trust grants authorize the construction of ports, harbors, airports, wharves, docks, piers, and other structures necessary to facilitate commerce and navigation, while others allow only visitor-serving recreational uses or open space. All grants reserve to the people the right to fish in the waters over the lands and the right to convenient access to those waters for that purpose. Local trustees must manage granted lands in trust pursuant to the common law **Public Trust Doctrine**, the specific granting statute(s), the California Constitution, and other law governing the trust and the trustee’s fiduciary duties. While granted lands and assets are managed locally, the Commission has residual and review authority over these granted lands.

**(Ungranted or Sovereign) Tidelands and Submerged Lands.** Tidelands owned by the State. Most tidelands are ungranted lands where title was derived by virtue of California’s sovereignty. These lands are held in trust for the people of California. Ungranted or Sovereign Tidelands do not include manmade channels built after 1850.

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<sup>8</sup> *Borax Consolidated v. City of Los Angeles* (1935) 296 U.S. 10, 26.

<sup>9</sup> *Illinois Central Railroad Co. v. Illinois* (1892) 146 U.S. 387, 458.

<sup>10</sup> *Illinois Central Railroad Co. v. Illinois* (1892) 146 U.S. 387.

**Mean High Tide Line Surveys:** A **Mean High Tide Line** survey is the technical procedure conducted to determine the location of the **Mean High Tide Line**. The survey must be conducted by a licensed surveyor.

### **Tideland Boundaries and Sea Level Rise:**

The boundary between the State's sovereign tide and submerged lands and privately-owned adjacent uplands is generally the **ordinary high-water mark (OHWM)**, as defined by the Civil Code section 670 and 830. The courts have equated the **OHWM** with the location of the intersection of the elevation of **mean high water (or tide)** and the shore, absent artificial accretions or filling.<sup>11</sup> A survey of the location of this intersection as indicated on a map is designated a **mean high tide line (MHTL) survey**. A particular survey does not establish the boundary as being fixed, but only identifies the location of the **MHTL** at a point in time. The boundary as reflected by the **MHTL**, assuming no artificial accretions or fill, remains an ambulatory moving boundary.<sup>12</sup>

This boundary remains an ambulatory one unless fixed by court decree or formal boundary line agreement between the private owner and the State Lands Commission.<sup>13</sup> In its ambulatory state, this boundary "moves back and forth with the gradual, seasonal accretion<sup>14</sup> and erosion of the shore."<sup>15</sup>

State owned lands and resources under the Commission's jurisdiction will be impacted by rising sea levels. Because of their nature and location, these lands are already vulnerable to a range of natural events, such as storms and extreme high tides. While some of these lands are undeveloped and in their natural state, significant portions have been developed, either pursuant to a lease from the Commission or a legislative grant to a local jurisdiction. Increased storm intensity and sea level rise may put existing structures at risk and may lead to the loss of sandy beaches in some areas along the coast, while some areas may see an increase in the amount of sand deposited on the beach.

The offshore boundary of the state's public trust lands was permanently established in 2014 by an order entered by the United States Supreme Court.<sup>16</sup> This decision permanently fixes the offshore boundary between the United States and California, resolving a dispute that began in 1935 with the discovery of oil in Wilmington, California.

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<sup>11</sup> *City of Los Angeles v. Anderson* (1929) 206 Cal. 662, *Carpenter v. City of Santa Monica* (1944) 63 C.A. 2d 772.

<sup>12</sup> *Lechuza Villas West v. California Coastal Commission* (1997) 60 C.A. 4th 218, 235.

<sup>13</sup> Pub. Resources Code §§ 6301, 6336, 6339, 6342, 6357; *Bollay v. Office of Administrative Law* (2011) 193 Cal.App.4th 103, 108.

<sup>14</sup> Accretion is "the gradual and imperceptible accumulation of land due to the action of a boundary river, stream, lake, pond or tidal waters." (*Lovelace, supra*, 11 Cal.4th at p. 63, n. 1.)

<sup>15</sup> *Lechuza, supra*, 60 Cal.App.4th at p. 235, n. 13.)

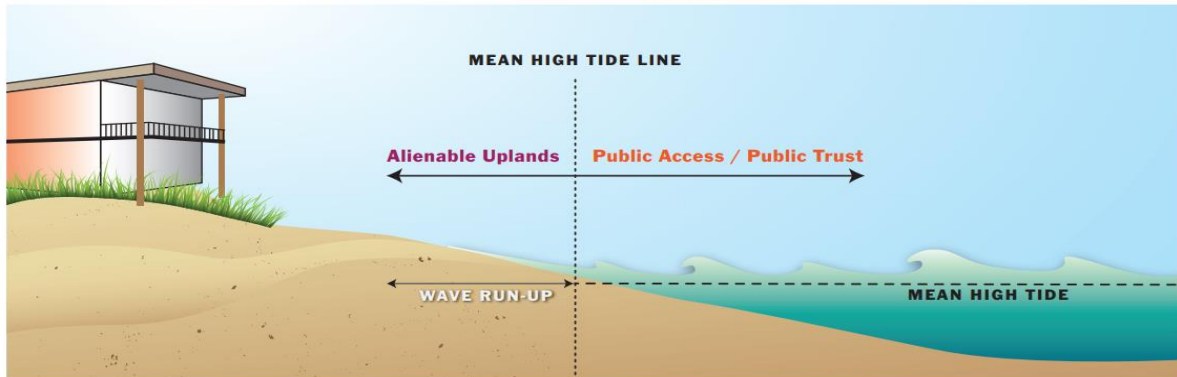
<sup>16</sup> *United States of America v. State of California* (2014) 135 S. Ct. 563.

There is now a fixed boundary approximately 3 nautical miles off the coast of California extending from Mexico to Oregon.

## Visualizing the Ambulatory Boundary Between State Lands and Private Uplands:

The following selection of visual aids are included here to help illustrate many of the previous terms and highlight how in many cases individual terms interrelate.

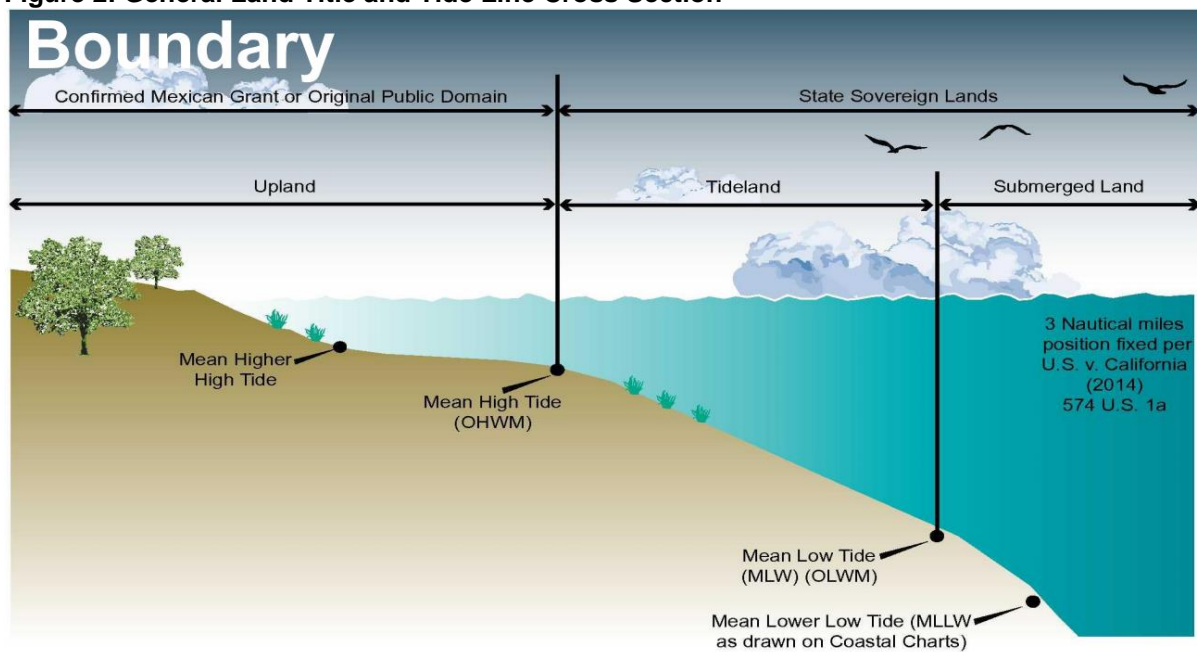
**Figure 1: Location of Public Trust Lands and Private Uplands**



**FIGURE 1** Important coastal boundaries. The mean high water line, or mean high tide line, is the boundary between public tidelands and uplands in California.

Source: Center for Ocean Solutions. *The Public Trust Doctrine: A Guiding Principle for Governing California's Coast Under Climate Change* (2017), p.17.

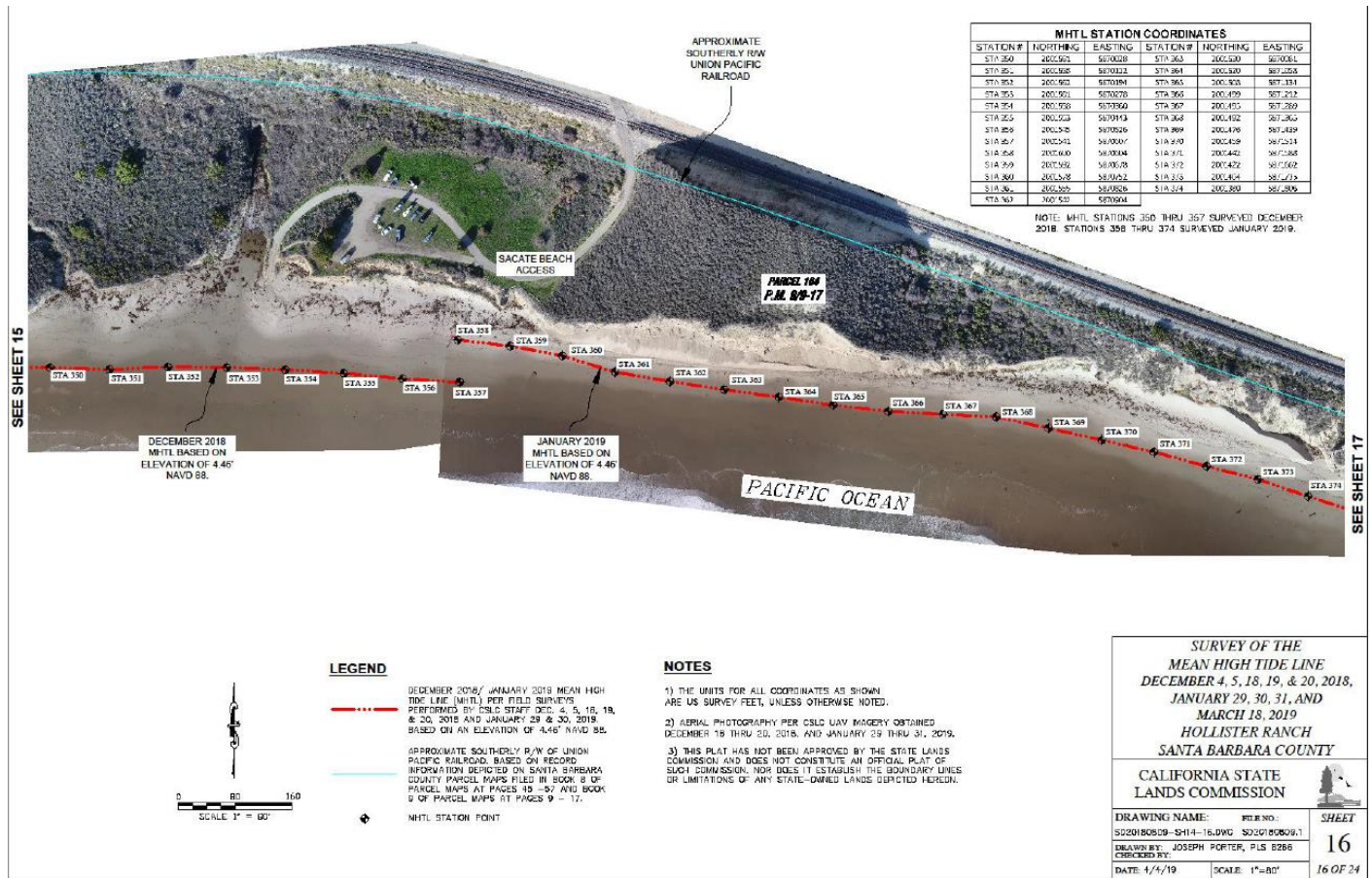
**Figure 2: General Land Title and Tide Line Cross Section**



**General Land Title and Tide Line Cross Section Along the Pacific Ocean**

Source: CSLC

**Figure 3: Ambulatory MHTL Boundary**



Source: CSCL. The figure demonstrates the ambulatory nature of the Mean High Tide Line based on the status of the shoreline at any given time of year. In this case, the image shows a section of the Hollister Ranch shoreline surveyed in December 2018 and January 2019, demonstrating a shift landward of the MHTL in just one month's time.



## Exhibit B

**Figure 1: Screenshot of Figure 5-24 from the *City of Newport Beach Public Trust Lands Sea Level Vulnerability Assessment – 4.9ft. of sea-level rise in 2100***



Figure 5-24: Upland Development Assets with 4.9 Feet SLR (Year 2100) Hazards – Reach 2

**Figure 2: Extent of City of Newport Beach vulnerability as shown in CoSMoS - 4.9 ft. of sea-level rise in 2100**

