CALENDAR ITEM
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PRC 709.1
PRC 2038.1
PRC 7779.1
PRC 7780.1
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SET ASIDE THE OCTOBER 19, 2012 LEASE APPROVALS FOR GENERAL LEASES – MINERAL EXTRACTION PRC NOS. 709.1, 2036.1, 7779.1, AND 7780.1 RELATED TO THE SAN FRANCISCO BAY AND DELTA SAND MINING PROJECT; AND CONSIDER REAPPROVAL OF THE LEASES LOCATED ON SOVEREIGN LANDS IN CENTRAL SAN FRANCISCO BAY, MARIN AND SAN FRANCISCO COUNTIES; FOR COMMERCIAL SAND AND GRAVEL EXTRACTION

APPLICANT:
Hanson Marine Operations
3000 Busch Road
Pleasanton, California 94566

PURPOSE OF CALENDAR ITEM:

The purpose of this calendar item is to comply with the Judgment and Peremptory Writ of Mandate of the Superior Court of California, County of San Francisco, entered on April 28, 2016, in *San Francisco Baykeeper, Inc., v. California State Lands Commission* (Case CPF-12-512620). The Superior Court's judgment and writ implemented the direction of the First District Court of Appeal's November 18, 2015 decision.

The First District Court of Appeal found that although the Commission did not violate the California Environmental Quality Act (CEQA) when it approved the four Central San Francisco Bay mineral Leases on October 19, 2012, it did not adequately address its Public Trust obligations in the public record.[1] Therefore, the court ordered the Commission to set aside its October 2012 lease approvals

[1] A fifth sand mining lease to Suisun Associates, PRC No. 7781.1, approved by the Commission on February 22, 2013, was not challenged by Baykeeper.

and, "before voting on whether to reapprove the Leases, conduct a public trust analysis and reconsider the Leases in light of the common law Public Trust Doctrine consistent with this Court's Judgment and the First District Court of Appeal's November 18, 2015 decision." The court further stated that the Commission is not compelled to exercise its discretion in any particular manner or in any particular form of administrative review.

Staff therefore submits its Public Trust analysis in this calendar item for the Commission's consideration whether to reapprove the Leases. Additional information on the status of the Leases and other regulatory agency approvals is also provided.

The four Leases proposed for reauthorization contain the identical provisions as the leases authorized in 2012.

PROPOSED LEASES:

AREA, LAND TYPE, AND LOCATION:

An aggregate of approximately 2,601 acres of submerged lands in San Francisco Bay; Marin and San Francisco Counties for Lease Nos. PRC 709.1, 2036.1, 7779.1, and 7780.1 (collectively, the Leases)

AUTHORIZED VOLUMES – ENVIRONMENTALLY SUPERIOR ALTERNATIVE:

Commercial sand and gravel extraction – annual maximum volumes (in cubic yards):

PRC 709.1:	290,331
PRC 2036.1:	252,637
PRC 7779.1:	390,440
PRC 7780.1:	127,248
Total:	1,060,656

AUTHORIZED VOLUMES – PROPOSED PROJECT ALTERNATIVE:

Commercial sand and gravel extraction – annual maximum volumes (in cubic yards):

PRC 709.1:	340,000
PRC 2036.1:	450,000
PRC 7779.1:	550,000
PRC 7780.1:	200,000
Total:	1,540,000

LEASE TERM:

10 years, beginning January 1, 2013.

CONSIDERATION:

Annual land rent of $2.00 per acre.

For Lease Nos. PRC 709.1, 2036.1, 7779.1, and 7780.1 the biannual royalty is determined according to the following formula:

R = (Y)(B)

Where R = Royalty in dollars and cents paid to Lessor biannually.

Y = Total cubic yardage of sand and gravel extracted from the leased lands for the biannual period.

B = $2.09 per cubic yard.

Commencing January 1, 2013, the royalty will be adjusted annually according to the Producer Price Index (PPI), finished goods, not seasonally adjusted. The base index to calculate the adjusted annual royalty rate will be the PPI for the month of July 2008.

MINIMUM BIANNUAL ROYALTY AND RENT:

The minimum biannual royalty (MBR) and annual land rent for each lease:

LEASE	MBR (2013-2017)	MBR (2013-2017)	RENT
PRC 709.1	$60,680	$75,850	$1,661
PRC 2036.1	$52,800	$66,000	$464
PRC 7779.1	$81,600	$102,000	$2,552
PRC 7780.1	$26,600	$33,250	$524

SPECIFIC LEASE PROVISIONS:

Insurance:

For each lease, $1,500,000 for personal liability and property damage insurance (combined single limit) and $1,500,000 for an insurance policy for protection of water quality and the environment.

Bond:

The bond amount for the term of each lease will be as follows:

PRC 709.1	$75,850
PRC 2036.1	$66,000
PRC 7779.1	$102,000
PRC 7780.1	$33,250

BACKGROUND:

On October 19, 2012, the Commission certified the Environmental Impact Report (EIR) for the San Francisco Bay and Delta Sand Mining Project (Project) and approved four mineral extraction leases for sand and gravel (collectively sand) in central San Francisco Bay for a 10-year term (CSLC EIR No. 742, State Clearinghouse No. 2007072036; Calendar Item No. 101). The Commission also adopted the Mitigation Monitoring Program, and the Statement of Findings and Statement of Overriding Considerations, set forth in Exhibits C and D, respectively, to Calendar Item No. 101.[2]

The Commission authorized the Reduced Project Alternative (the Environmentally Superior Alternative) with an increased volume option that allowed mining volume levels to increase to the higher Proposed Project mining volumes once two conditions were satisfied. The first condition required Hanson Marine Operations (Hanson or Applicant) to obtain an Incidental Take Permit from the California Department of Fish and Wildlife (CDFW) for impacts to Delta and longfin smelt. The second condition required cleaner burning diesel engines to reduce emissions of criteria pollutants from mining equipment. Satisfaction of these two conditions would ensure that the impacts related to smelt and criteria pollutants were reduced to a less than significant level. Upon the Applicant's request for the Proposed Project volumes and documentation that the conditions were met, the higher volumes would be authorized.

Following the Commission's certification of the EIR and approval of the Project, San Francisco Baykeeper, Inc. (Baykeeper), filed a lawsuit in the Superior Court for the County of San Francisco on November 16, 2012. The lawsuit, as amended, alleged the EIR did not comply with CEQA and the Commission's approval violated the common law Public Trust Doctrine. The Commission prevailed in the trial court, and Baykeeper appealed.

[2] Calendar Item No. 101 is available online: http://archives.slc.ca.gov/Meeting_Summaries/2012_Documents/10-19-12/Items_and_Exhibits/101.pdf.

In November 2015, the First District Court of Appeal held that the EIR complied with CEQA, but that the Commission failed to consider whether the mineral Leases constituted a permissible use of Public Trust property and remanded the case to the trial court (Case A142449).

STATUS OF LEASES:

The Leases authorized by the Commission at its October 2012 meeting were issued for a term of 10 years beginning January 1, 2013, and ending on December 31, 2022. As indicated above, the Commission adopted the Reduced Project Alternative with increased volume option. To obtain the increase in mining volumes, Hanson first had to satisfy two conditions and then had to request the increase to the higher volumes.

The first condition was for Hanson to obtain an Incidental Take Permit from the CDFW. This condition was met in 2014.

The second condition was for Hanson to provide documentation of cleaner burning diesel engines as submitted to the California Air Resources Board (CARB). Currently, CARB has accepted and verified the diesel engine upgrades to the engines within the tug *San Joaquin River*. The diesel engines on the sand mining barge, *Sand Merchant* (TS&G 230), are in compliance through 2017, and the upgrade will be scheduled at a later date to ensure compliance will be maintained. Hanson has not submitted a request to mine the increased volumes because it has not installed the engine upgrade.

The table below shows the actual volumes mined since January 2013, with a comparison to the permitted volumes in the Leases. The combined royalties and rent from the Leases in 2015 totaled about $1.2 million.

Central Bay Volumes Mined: 2013 – 2015 (in cubic yards [CY])

Lease	Reduced Project with Increased Volume Option (2012)	2013	2014	2015
Presidio Shoals (PRC 709.1)	290,331 / 340,000	102,234	115,509	112,003
Point Knox Shoal South (PRC 2036.1)	252,637 / 450,000	207,557	228,229	212,327
Point Knox Shoal (PRC 7779.1)	390,440 / 550,000	27,756	0	149,546
Alcatraz South Shoal (PRC 7780.1)	127,248 / 200,000	0	0	33,170

Lease	Reduced Project with Increased Volume Option (2012)	2013	2014	2015
Total	1,060,656 / 1,540,000	337,547	343,738	507,046

OTHER REGULATORY APPROVALS:

Commission staff identified several other agencies with regulatory approval over sand mining operations during the CEQA review process, and acknowledged that these agencies would likely impose restrictions and conditions of their own. Since the Commission's 2012 approval, the following state and federal agencies have considered the sand mining operations through their regulatory programs. These agencies include the San Francisco Bay Conservation and Development Commission (BCDC), U.S. Army Corps of Engineers (Corps), San Francisco Bay Regional Water Quality Control Board (SFBRWQCB), CDFW, and National Marine Fisheries Service (NMFS).[3] These agencies imposed additional restrictions and conditions as a result of their regulatory permits and approvals.

The Commission's October 2012 approval contained a provision that "[t]he authorized activity is contingent upon applicant's compliance with applicable permits, recommendations, or limitations issued by federal, State, and local governments."

To make this enforceable, all the Leases contain the following provisions:

> Lessee shall comply…with all conditions and restrictions established by other agencies having jurisdiction over lessee's operations including, but not limited to, the Regional Water Quality Control Board, San Francisco Bay Conservation and Development Commission, California Department of Fish and Game, U.S. Coast Guard, National Marine Fisheries, U.S. Fish and Wildlife Service and the U.S. Army Corps of Engineers. (Section 2, paragraph 7C.)

and

> Lessee hereby agrees to any and all restrictions, mitigation measures and other conditions adopted by the State or Federal agencies related to authorized Sand and Gravel mining activities. Furthermore, lessee agrees to comply with such other terms and

[3] The U.S. Fish and Wildlife Service (USFWS) also issued a Biological Opinion, but it related only to Delta smelt, a species not found in central San Francisco Bay.

conditions or limitations on its operations under this lease which are considered necessary by the State. (Section 2, paragraph 7E.)

There are additional provisions in each lease that require the lessee to comply with all applicable laws, regulations and rules of the United States, the State of California, counties, and cities, and to obtain and maintain all permits or other entitlements. (Section 3, paragraph 6(a) and (b).) As a result, Hanson has been required to limit mining volumes and satisfy all conditions that are more restrictive than those contained in the Commission's Leases. The table below shows the mining volumes previously authorized by the Commission and each of the permitting agencies. The proposed Leases are for the same volumes as previously approved.

The information and table below summarize the permit conditions imposed by the regulatory agencies.

Central Bay – Commission Proposed and Authorized Volumes (in CY)

Lease	Commission– Proposed	BCDC and Corps	SFBRWQCB	CDFW
Central Bay	Reduced / Increased	Average / Peak	Average / Peak	Maximum
Presidio Shoals (PRC 709.1)	290,331 / 340,000	170,000 / 235,000	232,000 / 290,000	340,000
Point Knox Shoal South (PRC 2036.1)	252,637 / 450,000	360,000 / 450,000	360,000 / 450,000	450,000
Point Knox Shoal (PRC 7779.1)	390,440 / 550,000	484,000 / 550,000	484,000 / 550,000	550,000
Alcatraz South Shoal (PRC 7780.1)	127,248 / 200,000	127,000 / 160,000	127,000 / 160,000	200,000
Total	1,060,656 / 1,540,000	1,141,000 / 1,395,000	1,203,000 / 1,450,000	1,540,000

California Department of Fish and Wildlife
Hanson received an Incidental Take Permit (ITP) for Central Valley Spring-run Chinook Salmon, Sacramento River Winter-run Chinook Salmon, Delta smelt, and longfin smelt from CDFW in 2014 for its sand mining operations in the San Francisco Central Bay and Delta. CDFW stated that adherence to the conditions in the ITP would minimize and fully mitigate the impacts of the taking caused by sand mining to the covered species and that sand mining would not jeopardize the continued existence of the covered species.

The ITP contains numerous mitigation measures, including but not limited to:

- The use of a positive barrier fish screen to exclude juvenile and adult fish from entrainment during sand mining
- Compensatory habitat of 0.017 acre of credits from a CDFW-approved mitigation or conservation bank covering smelt and salmonid habitat for impacts from sand mining in Central San Francisco Bay
- Priming and clearing depth of not more than 3 feet off the bottom substrate
- Limited water volume diversions
- Water depth limitations prohibiting sand mining within 200 feet of any shoreline and within 250 feet of water with a depth of 9 feet (Mean Lower Low Water [MLLW]) or less, or 30 feet (MLLW) or less, depending on location

San Francisco Bay Regional Water Quality Control Board

The SFBRWQCB adopted an order with its Waste Discharge Requirements and Water Quality Certification on January 21, 2015. The order contains numerous mitigation measures, including but not limited to:

- Leases from the Commission, permits by CDFW, BCDC, and an approved reclamation plan from the State Mining and Geology Board
- A permit from the Corps under section 10 of the Rivers and Harbors Act of 1899
- The use of a positive barrier fish screen to exclude juvenile and adult fish from entrainment during sand mining
- Priming and clearing depth of not more than 3 feet off the bottom substrate
- Water depth limitations prohibiting sand mining within 200 feet of any shoreline and within 250 feet of water with a depth of 9 feet (MLLW) or less, or 30 feet (MLLW) or less, depending on location
- Establish a 100-foot buffer zone around all hard bottom habitat
- Mining volume reductions, during longfin and Delta smelt spawning season (December 1 through June 30), based on consultation with CDFW and USFWS
- Compensatory habitat credits purchase from a CDFW-approved mitigation or conservation bank
- Study to Evaluate Effluent and Receiving Water Quality (due June 30, 2017)
- Benthic Study Technical Advisory Committee that includes representatives from SLC, the Corps, the Water Board, NOAA

Fisheries, USFWS, CDFW, BCDC, Hanson, Lind Marine, and at least one scientist with expertise in Estuary benthic ecology
- Benthic Habitat Impact Evaluation Study (due by December 31, 2018)

Bay Conservation and Development Commission
BCDC imposed Special Conditions, including but not limited to, the following:
- The use of a positive barrier fish screen to exclude juvenile and adult fish from entrainment during sand mining
- Volume limits consisting of rolling average amounts with peak year volumes as needed to meet market demand
- Monitoring reports including two multibeam bathymetric surveys, one in 2018 and one in 2023, with a written report reviewed by an independent third party for quality control
- GPS tracking system to record mining track lines
- Buffer zones to minimize impacts to shallow water habitat and sensitive rocky subtidal habitat
- Priming and clearing depth of not more than 3 feet off the bottom substrate
- Limited water volume diversions
- Environmentally sensitive area, longfin smelt, and salmonid awareness training for sand mining personnel by a designated biologist
- Compensatory habitat of 0.017 acres of credits from a National Marine Fisheries Service and CDFW-approved mitigation or conservation bank covering smelt and salmonid habitat for impacts from sand mining in Central San Francisco Bay
- Compensation for impacts to Essential Fish Habitat of $83,500 to CalRecycle's Estuary Clean Up Project
- Meet Water Quality Certification and Waste Discharge Requirements
- Fund studies to improve scientific understanding of sand mining impacts:
    1) Sand Budget, Transport and Mining Effects ($960,168); participation in a Technical Advisory Committee and Independent Science Panel to guide the studies (due October 1, 2020)
    2) Benthic Ecology and Mining Effects Study ($220,000) guided by a Benthic Ecology Technical Advisory Committee (due March 31, 2018)
    3) Water Effluent and Mining Effects study (due June 30, 2017)

U.S. Army Corps of Engineers

The Corps imposed most of the same measures imposed by the agencies as listed above. In addition, the Corps requires Hanson to comply with the non-discretionary requirements for incidental take of federally-listed species as set forth in the Biological Opinions entitled:

- Marine Sand Mining 10-year Leases within the San Francisco Bay, Suisun Bay, and Sacramento San Joaquin Confluence Project, Solano and Contra Costa Counties, California (Corps File SPK-2000-249413N) (pages 25-27) dated October 22, 2014; and
- Endangered Species Act (ESA) Section 7(a)(2) Biological Opinion and Magnuson-Stevens Fishery Conservation and Management Act Essential Fish Habitat Consultation 10-Year Permit for Hanson Aggregates and Lind Marine Products Sand Mining Operations in San Francisco Bay Estuary (NMFS Consultation Number: SWR-2013-9570) (pages 48-50) dated January 26, 2015.

STAFF ANALYSIS AND RECOMMENDATION:

Authority:

Public Resources Code sections 6005, 6216, 6301, 6890, 6895, 6897, 6898, 6899, and 6900.

Public Trust and State's Best Interests:

As general background, the State of California acquired sovereign ownership of all tidelands and submerged lands and beds of navigable lakes and waterways upon its admission to the United States in 1850. Pursuant to statute and the common law Public Trust Doctrine the State holds these lands for the benefit of all people of the State for statewide Public Trust purposes that include, but are not limited to, waterborne commerce, navigation, fisheries, water-related recreation, habitat preservation, and open space.

The Final EIR analyzed the impacts on many resources that are also pertinent for the Public Trust analysis. Therefore, the Final EIR and entire CEQA record of proceedings for the San Francisco Bay and Delta Sand Mining Project are hereby incorporated into this calendar item by reference.

Waterborne commerce

Waterborne commerce is often cited as one of the three traditional purposes of the common law Public Trust Doctrine. A common definition

of commerce is the exchange or buying and selling of commodities on a large scale involving transportation from place to place. Waterborne is commonly defined as conveyed by, traveling on, or involving travel or transportation on water. Thus, waterborne commerce is the exchange or buying and selling of commodities on a large scale involving transportation by water from place to place.

The proposed Leases would authorize Hanson to obtain sand from the bed of the Bay using a trailing arm hydraulic suction dredge and barge in exchange for rent and royalty payments to the State. Sand mining in San Francisco Bay for construction-grade sand has occurred for over 75 years. Mining events typically last approximately 3 to 4.5 hours, during which time approximately 1,500 to 2,500 cubic yards of sand are excavated. At the end of the mining event, a tugboat maneuvers the barge to an offloading site where the sand is processed and sold. Hanson currently owns two sand mining barges and three tugboats used previously in its sand mining operations. Hanson contracts with Foss Maritime Services to perform the actual sand mining using Hanson's barges and tugboats. Hanson has stated it plans to operate only one tug, *San Joaquin River,* and one barge, *Sand Merchant* (TS&G 230) in the future.

The sand resource mined by Hanson is composed of alluvial sand, a highly sought commodity. The sand is valuable as construction aggregate or as construction fill material. The California Geological Survey defines construction aggregate as alluvial sand and gravel or crushed stone that meets standard specifications for use in Portland cement concrete or asphalt concrete. As a construction aggregate resource, alluvial sand has some advantages over crushed stone in terms of concrete workability and impacts on equipment. For example, a wet mix of construction-grade concrete made from crushed stone aggregate is generally more difficult to work with than the same mix made from alluvial aggregate, as the sharp edges of angular fragments of crushed stone increase wear and damage to pumping equipment. Bay sands are preferred sands to use in the concrete industry. Bay sands have rounded edges as result of erosive forces acting on the surface of the sand grains that cause less wear on pumping equipment used to direct concrete and related construction materials.

Alluvial sand is, therefore, a different product than manufactured sand made from crushed rock. The Commission has long acknowledged the

importance of this special commodity by putting lease areas out for competitive bid beginning in 1952. Thus, although the sand mining is a private use of Public Trust lands, the State obtains rent and royalties for the State-owned resource that is mined more effectively by private entities.

Sand is an important commodity necessary for many societal and economic needs. A large portion of the sand mined under the leases has been used for beach and habitat restoration projects in the Bay area. The sand has also been used for nearby public infrastructure such as port projects, roadways, hospitals, and schools. See Exhibit C, Projects Using Sand from Central Bay Leases, for a list of recent projects. An upcoming project expected to use 100,000 tons of sand from the lease areas is the Oro Loma Ecotone Project near Hayward for wetlands restoration and sea level rise protection for a wastewater treatment plant. Regional economic development is dependent on having adequate supplies of sand.

Under these circumstances—mining alluvial sand from deposits under Bay waters in exchange for rent and royalty payments to the State, transporting that commodity by tug and barge over water to an offloading site, selling the product for a variety of uses, many of which are themselves in furtherance of Public Trust purposes such as beach and habitat restoration—staff believes sand mining is a Public Trust use under waterborne commerce.

Navigation

Navigation is also cited as a traditional Public Trust purpose. A simple definition of navigation is the act of moving in a boat or ship over an area of water. The tugs and barges engaged in sand mining leave their berths, move across the Bay to the sand mining location, and at the end of the operation, move to an offloading site, then return to their berths. Although most products transported across the Bay come from land, transportation across water is a Public Trust use. Thus, the tugs and barges are engaged in the Public Trust purpose of navigation on the Bay.

Sand mining operations are also required not to impair or interfere with navigation by other vessels through a lease condition (Lease section 2, paragraph 7D1.) Vessel traffic in the Bay and the role of the U.S. Coast Guard (USCG) was analyzed in the Final EIR section on Hazards and Hazardous Materials, in the context of the potential for an accidental

release of fuel, oil, or hydraulic fluids. Hanson's operator, Foss Maritime Company, met, and continues to meet, regulatory requirements for a California Nontank Vessel Contingency Plan that demonstrates the owner/operator of the vessel has contracted for resources to respond to the reasonable worst case spill within a specific time frame, effectively mitigating the risk of an accidental release (Final EIR, pp. 4.4-7; 4.4-10).

The USCG, the entity responsible for navigational safety on the Bay, submitted a one-page comment letter on the Revised Draft EIR requesting that the EIR address the potential for conflicts between barges and vessel traffic and during special events such as Fleet Week. As stated above, the Final EIR discussed the USCG's authority over navigational and vessel safety. The Final EIR also noted that sand mining vessels would be subject to the same navigational controls as other vessels during special events, and stated that Commission staff is unaware of any past conflicts or accidents involving sand mining vessels during Fleet Week or other recurring events (Final EIR, pp. II-70, 71).

BCDC staff noted in its evaluation of potential navigational impacts from sand mining that

> [f]or Central San Francisco Bay mining areas, the project appears to be consistent with navigational use even though some of the lease areas are overlaid with a federal navigation channel on the western side of Alcatraz Island. Because this area is naturally deeper than the draft needed by the large ships traversing the Bay, the ships can maneuver around the barge and tug without causing a navigation hazard. Similarly, water borne commerce distinct from sand mining and recreational boating would not be inhibited or limited by the mining activity. (BCDC Agenda Item #9, p. 38, March 6, 2015.)

According to Hanson, no navigational conflicts have been reported by the tugboat captains. To the extent mining occurs in shipping channels, the barges move as needed or requested to allow shipping traffic to pass by. The tugboats are equipped with radar and use modern positioning electronics to facilitate navigation. At the start and end of each journey, the tugboat and barge are required to check in with the USCG traffic center, as are other vessels of similar size. The sand mining vessels also have AIS (automatic identification system) so they can see and be seen

by other vessels using AIS receivers. The crews on the vessels are posted as look-outs in restricted waters or whenever necessary. The crews can communicate with other vessels by VHF marine radios on prescribed channels, or they can hail them with a bullhorn or using prescribed ship's horn signals (personal communication, June 9, 2016).

Also, because of the short duration of mining events and relatively small area occupied by the tug and barge, no substantial interference with either recreational or commercial navigation is expected.

In sum, the sand mining vessels are themselves engaged in the Public Trust purpose of navigation on the Bay, and neither the mining itself nor transport by tug and barge substantially impair the public rights to navigation.

Fisheries

Fisheries is generally the third cited traditional Public Trust purpose. The Final EIR evaluated the impacts of sand mining on pelagic and demersal fish species and the benthic invertebrate community. In the Central Bay, studies on pelagic fish show that one species—Northern anchovy—accounts for nearly 91 percent of the total abundance of fish. Two additional species—Pacific herring and Pacific sardine—make up an additional 5.5 and 1.8 percent, respectively, for a total of about 98 percent for these three species. An additional seven species—jacksmelt, shiner surfperch, topsmelt, Pacific pompano, walleye surfperch, California grunion, and white croaker—make up most of the rest. An additional 36 species account for less than 0.1 percent of the fish species present; among these are longfin smelt and California halibut (Final EIR, pp. 4.1-4 through 4.1-6). Longfin smelt are listed under the California Endangered Species Act and has been determined to warrant protection under the federal Endangered Species Act, but is on a waiting list. Northern anchovy is protected under the Coastal Pelagic Fishes Management Plan (Final EIR, p. 4.1-8). There is an important commercial fishery for Pacific herring in the Bay (CDFW comment letter, Final EIR, p. II-57).

Under the Pacific Coast Salmon Fishery Management Plan, the entire San Francisco Bay-Delta Estuary has been designated as Essential Fish Habitat for spring-, fall/late fall-, and winter-run Chinook salmon. Winter- and spring-run Chinook salmon are listed under the federal and state Endangered Species Acts as endangered and threatened, respectively.

The Bay-Delta is also identified as Essential Fish Habitat for Pacific herring, northern anchovy, and Pacific sardine under the Pacific Pelagic Fishery Management Plan (Final EIR, p. 4.1-8).

Demersal fish species common in the Central Bay include speckled sanddab, bay goby, plainfin midshipman, English sole, Pacific staghorn sculpin, shiner surfperch, white croaker, longfin smelt, and Pacific tomcod. These species accounted for 96 percent of the species present during CDFW surveys. Other species of importance or concern in Central Bay demersal environments include Pacific herring and several native and introduced anadromous species including Chinook salmon, steelhead trout, green sturgeon, white sturgeon (native), and striped bass and American shad (introduced). Other species in the demersal zone include brown rockfish and California halibut.

The Central Bay infauna consists primarily of various worms and amphipods. The Final EIR reported that infauna sampling sites in the Central Bay showed both low species diversity and low abundance. The entire Central Bay area covers approximately 52,900 acres (Tsai and Hoenicke, 2001). About 12,800 acres are characterized as sandy deep-water habitat. The Central Bay lease areas comprise 2,600 acres, a relatively small portion of the Bay and sandy deep-water habitat. Of the total lease acreage, in a high production year (2005), 603 acres were disturbed by mining events, or about 23 percent of the total lease area. In a low production year (2013), only 140 acres were disturbed, or about 5.4 percent of the total lease area. The portion of Central Bay acreage affected by mining events in the high production year of 2005 was 1.14 percent and of sandy deep-water habitat was 4.71 percent.

The Final EIR study found that sampling sites that had been mined within 3 years showed no biological effects from the sand mining, and concluded that

> [i]n summary, sand mining results in short-term changes in habitat composition and associated marine infauna and epifauna in areas of the Bay-Delta mining leases where sand extraction has just occurred; however, these changes do not appear to last more than a few years and do not appear to result in any detectable changes in infaunal composition or forage suitability. Thus the alteration of soft substrate benthic habitat under the proposed Project is not

expected to substantially affect the availability or distribution of foraging habitat for fish, or marine birds and mammals. As a result, this potential impact is considered less than significant. (Final EIR, p. 4.1-44.)

Other benthic species include mobile crustaceans including blackspotted shrimp, bay shrimp, Dungeness crab, and slender rock crab (Final EIR, p. 4.1-11). Of these, bay shrimp (as bait) and Dungeness crab are valuable commercially (CDFW comment letter, in Final EIR, p. II-57). The Final EIR found that although Dungeness crab juveniles would be entrained by sand mining, the effect on future populations of mature crabs would likely range between 0.2 and 1 percent for any single year. The Final EIR study found that commercial landings of Dungeness crab would be reduced between less than 0.01 percent and 0.08 percent per year (Final EIR, p. 4.1-27). For bay shrimp, the Final EIR found that between 3 and 6 percent of the annual commercial landings were entrained; however, landings are driven by local market demand and did not represent either the potential fishery landings or the ability of the bay shrimp population to support a larger fishery (Final EIR, p. 4.1-28).

The potential impacts to the pelagic and demersal fish communities in the Central Bay were determined to be minimal or capable of being mitigated to a less-than-significant level with the exception of entrainment and mortality of longfin smelt. Mitigation measures include required operational measures such as a priming and clearing depth of not more than 3 feet off the bottom substrate, water depth limitations prohibiting sand mining within 200 feet of any shoreline and within 250 feet of water with a depth of 9 feet (MLLW) or less, or 30 feet (MLLW) or less, depending on location, limited mining volumes, mining areas limited to lease parcels, and monitoring requirements (see Final EIR, section 4.1.4 Impact Analysis and Mitigation).

At the time of the 2012 Central Bay lease approvals, the Commission imposed all feasible mitigation measures to lessen the impact on longfin smelt; however, it was determined that these measures likely would not reduce the impact to a less-than-significant-level, and the Commission made the necessary findings and statement of overriding considerations under CEQA. It was expected that the CDFW would establish conditions in an ITP that would fully mitigate the impact to longfin smelt. As discussed above, CDFW issued its ITP in 2014 stating that the additional

permit conditions would minimize and fully mitigate the impacts caused by sand mining to the covered species. These conditions included, in part the use of a positive barrier fish screen, purchase of compensatory habitat credits, and limited water diversion during mining operations. These measures also reduce the already low impacts to other species.

For the reasons discussed above and as a result of the mitigation measures imposed as conditions in the Leases and the additional conditions imposed by CDFW and the other regulatory agencies, sand mining under the proposed Leases would not cause a substantial interference with fisheries.

Because of the short duration of mining events and relatively small area occupied by the tug and barge, sand mining under the proposed Leases will not substantially impair the public rights to recreational or commercial fishing.

Water-related Recreation and Public Access

Water-related recreation and public access have been recognized as important Public Trust purposes in recent times. The Final EIR contained information that no complaints or conflicts with water-related recreational uses such as boating and fishing had been reported associated with sand mining operations over a period of many years. In its earlier permits, BCDC had a provision that allowed it to withdraw approval of sand mining operations on holidays and weekends if conflicts arose; however, none was reported (Final EIR, pp. 4.7-5; 4.7-18). As noted in the section on Navigation above, the BCDC staff report for its 2015 permit approval stated "recreational boating would not be inhibited or limited by the mining activity." (BCDC Agenda Item #9, p. 38, March 6, 2015.)

Sand mining operations will not substantially impair the public rights to water-related recreation or public access because of the limited duration of the mining events on a relatively small area of the Bay.

Potential impacts to recreational beach use are discussed below in the section on Sand Transport and Coastal Morphology.

Benthic Habitat – Mineral Resource Availability

For impacts to benthic species, see the Fisheries section above. Soft bottom habitat is dependent on sediment to support the infauna

community. This will be discussed below in terms of sediment or mineral resource availability.

The extensive analysis conducted for the Final EIR demonstrated through computer modeling and bathymetric data that the replenishment rate for sand in the mining areas was approximately 2 to 5 percent after 10 years of mining (Final EIR, pp. II-12, 13). This low replenishment rate effectively limits sand mining to the material already in place.

The Final EIR also included an analysis of resource availability within the lease areas above -90 feet MLLW and below -3 feet MLLW, the operational range that can be mined using existing equipment. Using bathymetry data acquired over many years at six-month intervals, the analysis evaluated the availability of sediment in terms of material volumes. For the Central Bay Leases, the sediment volumes available decreased at rates between 0.6 and 2.5 percent per year, depending on the lease area (Final EIR, Appendix G, pp. G-14 – G-16).

The table below from Appendix G to the Final EIR shows the yearly rate of sediment volume change for each lease area compared with two control areas. The table is based on detailed plots shown on Final EIR pp. G-70 through G-77.

Table 3-2. Yearly Rate of Sediment Volume Change for Central Bay Lease Areas and Control Sites Between -90 and -3 feet MLLW

Lease Area	Yearly Rate of Sediment Volume Change (%)
PRC 709 South	-0.6
PRC 5871	-1.0
PRC 709 East	-1.3
PRC 7780 South	-0.9
PRC 7780 North	-2.5
PRC 7779 West	+0.3
PRC 2036	-2.3
PRC 709 North	-0.4
PRC 7779 East	-1.1
PRC 7779 North	+0.5
North Control	-1.4
South Control	+0.8

(Final EIR, Appendix G, pp. G-15 – G16)

Thus for the proposed 10-year lease term, between approximately 4 and 25 percent of the available resource within the mining range of -90 and -3 feet MLLW would likely be depleted. If mining were to cease completely, new material would be expected to replenish the areas, although at a very slow rate.

The Final EIR analysis did not evaluate the total sediment volume above bedrock. As Hanson commented on the Revised Draft EIR, the total sediment above bedrock is much greater than what can be mined (Final EIR, p. II-144). The BCDC staff report described the deep sand deposits in the Central Bay as relic or bedded sand. The U.S. Geological Survey studied sediment thickness and identified bedrock at varying depths covered by as much as 90 meters of sediment above (Sediment Thickness in West-Central San Francisco Bay, U.S. Geological Survey: http://pubs.usgs.gov/of/1998/of98-139/sedthick.html).

The depletion rate based on the total volume of sediment above bedrock is therefore much less than the depletion rate for the sand within the operational range of sand mining. For example, based on data from the 2007 Bathymetry Report, Hanson calculates an annual rate of 0.45 percent for the PRC 2036 lease area compared with 2.3 percent for the resource within the operational range of existing mining equipment (Final EIR, p. II-144). Over the proposed 10-year lease term, the depletion of the total volume in this lease area would be 4.5 percent. Although it is not known with certainty how much of the Bay sediment is sand, in the early 2000s, the San Francisco Airport Expansion Project estimated that at least 60 million cubic yards of sand were available within the operational range of sand mining equipment based on limited exploratory testing (BCDC Permit No. 2013.004.00, p. 15).

Based on the above information and the more detailed analysis contained in the Final EIR, continued sand mining for the remainder of the proposed lease term, even at the increased Project volumes, would not result in substantial depletion of the sand resource.

Sediment Transport and Coastal Morphology

The Final EIR included a thorough analysis of the predicted impact from sand mining on sand transport and coastal morphology particularly to the San Francisco Bar (Bar) and Ocean Beach. A detailed summary of this analysis was presented in "Master Response 1: Project Impacts on

Sediment Transport and Coastal Morphology" and in Appendix G to the Final EIR. The analysis found that the proposed mining volume from the Central Bay lease areas would have a "negligible impact upon the volume of the Bar and coastal areas outside of the Golden Gate" (p. II-4). This conclusion was based on computer modeling conducted by Coast and Harbor Engineering (CHE) for the Commission that predicted a reduction of between approximately 5,000 and 7,000 cubic yards annually or about 0.2 to 0.3 percent of the long-term erosion rate of the Bar. The Final EIR concluded that:

- The Project is not expected in itself, or in combination with other projects, to result in a substantial alteration of sediment transport patterns or the morphology of the seabed outside of the vicinity of the lease areas;
- The Project is not expected to result in a substantial decrease in the supply of sediment to the San Francisco Bar and Ocean Beach.
- In summary, both the Project-level impact, and the contribution to a cumulative impact, would be less than significant (Final EIR, p. II-21).

Since the Commission's 2012 approval of the Leases, research on sediment transport has continued by government and academic scientists and coastal engineers. A special issue of *Marine Geology* published in 2013 compiled and synthesized the current state of knowledge about sediment transport in San Francisco Bay. CHE provided a supplemental study for BCDC that found the "new studies restate prior conclusions, present new data and some new findings not present in previous publications, however the findings in the new analyses are consistent with those in the F[inal] EIR." (Fenical, et al, 2013, p. 21.)[4]

The CHE report summarized the role of sand mining on the Bar and Ocean Beach by stating that:

> The contribution of sand mining to the sediment transport dynamics in the San Francisco Bay Coastal System needs to be put in

[4]Fenical, S., Tirindelli, M. – Coast & Harbor Engineering, Inc.; Boudreau, C. – Boudreau Associates LLC; Keller, B., *Technical Report: Analysis of Impacts of Sand Mining in San Francisco Bay on Sediment Transport and Coastal Geomorphology in San Francisco Bay, Suisun Bay and Outside the Golden Gate*, December 10, 2013.

> perspective, with respect to the processes that have governed the evolution of the system. Historically, high rates of sediment contribution to the Bay's watershed, including from hydraulic mining activities in the 1800s, may have contributed substantially to the formation and evolution of the Bar. The Bar has been documented to be contracting during the time of historic bathymetric surveys, which correlates temporally with a reduction in the San Francisco tidal prism and sediment supply from the Sierra Nevada and the rest of the rivers watershed (Barnard 2005, Barnard et al., 2013c). ***All studies by a variety of experts suggest that the Bar evolution and related coastal erosion (included erosion at South Ocean Beach) are controlled by much larger-scale and longer-term processes than sand mining***. The incremental contribution of sand mining is so small as to be immeasurable in terms of elevation changes at the Bar. (Fenical, et al, 2013, p. 22; emphasis in the original.)

These conclusions indicate there would be no or negligible impacts to Public Trust uses and values for the Bar or at Ocean Beach such as beach replenishment, recreational use, or public access.

Open Space

Open space is also considered an appropriate Public Trust purpose. San Francisco Bay is a highly modified, largely urbanized area. Ships and barges transit the Bay regularly. Because of the limited duration of the sand mining operations generally lasting from 3.0 to 4.5 hours on a relatively small area of the Bay, no substantial interference with open space, scenic vistas, or aesthetics is expected or has been reported in the past.

Continuing Supervisory Role of Commission: The California Supreme Court in *National Audubon Society v. Superior Court* emphasized the duty of the state as sovereign to retain continuing supervisory control over its navigable waters and the lands beneath those waters. (*National Audubon Society v. Superior Court* (1983) Cal.3d 419, 445.) The proposed leases contain numerous provisions that provide for the Commission's exercise of continuing supervisory control over the Public Trust lands leased for sand mining.

First, the proposed Leases do not alienate the State's fee simple interest or permanently impair public rights. There are several prohibitions on the sale of tide and submerged lands. (Cal. Const., art. X, § 3; Pub. Resources Code, § 7991; Cal. Code Regs., tit. 2, § 2030 subd. (a).) Removal of sand does not affect the State's fee title. Mineral deposits are reserved to the State and are reserved from sale except upon a rental and royalty basis. (Pub. Resources Code, §§ 6401, 6890 et seq.) The Leases would be limited to a 10-year term beginning January 1, 2013, leaving approximately 6½ years before expiration.
Second, the Leases include as enforceable conditions the mitigation measures from the Mitigation Monitoring Program designed to mitigate impacts to the environment, including Public Trust resources, to the maximum extent feasible. The Commission contracts with an environmental consulting firm to monitor compliance with the mitigation measures and report regularly to staff on their effectiveness.

Third, Hanson is required to report quarterly on the amount and quality of sand mined, the number and location of all mining episodes using an automated Global Positioning System, and provide detailed mining episode track lines to defined tolerances.

Finally, the Commission may temporarily suspend mining or any other operation by Hanson under the Leases whenever it "finds that the operation or operations, unless suspended, may pose an immediate and serious threat to life, health, property or natural resources or are otherwise not in the State's best interests." (Section 2, paragraph 7H.)

In sum, the limited duration of the Leases, coupled with implementation of mitigation measures, reporting requirements, and the ability to temporarily suspend operations, provide the Commission with the necessary supervisory control to protect these Public Trust lands and resources.

Staff Recommendation:

Under the facts and circumstances described above, staff believes that sand mining under the proposed Leases is a Public Trust use under the purposes of waterborne commerce and navigation.

In the alternative, even if sand mining is not a Public Trust use, approval of the Leases is consistent with the common law Public Trust Doctrine based upon the particular facts at the lease area locations including the

relatively small amount of material proposed to be mined compared with the total resource available, and the limited geographic area of the Leases compared with other sandy bottom habitat and the entire Bay. Staff therefore recommends that the Commission find that sand mining under the Leases will not interfere with the trusts upon which such lands are held or substantially impair the public rights to navigation, fisheries, water-related recreation, public access, habitat, open space or other Public Trust needs and values at this time and for the limited 10-year lease term beginning January 1, 2013.

Sand mining is in the public interest and the State's best interests. Although sand mining is a private commercial use of Public Trust lands, it is accomplished with strong oversight by the State on a revenue sharing basis (rent and royalties) and sand mining results in many public benefits. Exhibit C contains a list of projects in the Bay area that used sand mined from the lease sites including restoration projects, beach replenishment projects, hospitals, schools, site remediation, and transportation projects.

- The Legislature has declared "the extraction of minerals is essential to the continued economic well-being of the state and to the needs of society" (Pub. Resources Code, § 2711 subd. (a).)
- The Bay's alluvial sands are an important resource for the construction industry and are preferred for use in concrete
- The Leases generate substantial income to the State ($1.2 million in 2015)
- Bay sands may be used for addressing resiliency to climate change and other public projects in the Bay area
- Bay sands benefit the regional economy while helping reduce transportation and construction costs
- Sand mining provides local jobs for vessel captains, crew, and at offloading sites
- Bay sands reduce air emissions from operations (PM_{10} and NO_X) and transportation related to land-based quarries and imports from British Columbia
- Bay sands help reduce local traffic congestion from trucks associated with sand deliveries from local land-based quarries
- Bay sands reduce projected greenhouse gas emissions from land-based quarries and British Columbia sources

In addition, the Leases will provide for insurance and indemnity in favor of protecting the State's interests. For all these reasons, staff recommends finding that approval of the mineral Leases is in the public interest and the best interests of the State at this time.

Strategic Plan

Staff recommends the approval of the proposed Leases, as it promotes 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.

EXHIBITS:

A. Land Description
B. Site and Location Map
C. Projects Using Sand from Central Bay Leases

RECOMMENDED ACTION:

It is recommended that the Commission:

PUBLIC TRUST AND STATE'S BEST INTERESTS:

1. Find that sand mining as described under the facts and circumstances above for the four General Leases–Mineral Extraction, Lease Nos. PRC 709.1, PRC 2036.1, PRC 7779.1, and PRC 7780.1, in central San Francisco Bay, for the limited term of 10 years beginning January 1, 2013, is a Public Trust use under the purposes of waterborne commerce and navigation.

2. Find that in the alternative, even if sand mining is not a Public Trust use, approval of the Leases is consistent with the common law Public Trust Doctrine based upon the particular facts at the lease area locations including the relatively small amount of material proposed to be mined compared with the total resource available, and the limited geographic area of the Leases compared with other sandy bottom habitat and the entire Bay, and that sand mining under the Leases will not interfere with the trusts upon which such lands are held or substantially impair the public rights to navigation, fisheries, water-related recreation, public access, habitat, open space or other Public Trust needs and values at this time and for the limited 10-year lease term beginning January 1, 2013.

3. Find that the issuance of the Leases is in the public interest and the best interests of the State at this time.

AUTHORIZATION:

1. Set aside the October 19, 2012 lease approvals for four General Leases–Mineral Extraction, Lease Nos. PRC 709.1, PRC 2036.1, PRC 7779.1, and PRC 7780.1 in Central San Francisco Bay (Calendar Item No. 101).

2. Approve the reissuance of Leases identified as the Reduced Project Alternative with increased volume option for the lands described in Exhibit B attached and by this reference made a part hereof, and the terms and conditions summarized below and more particularly set forth in the Leases on file with the Commission.

   A. A ten-year term beginning January 1, 2013.

   B. The minimum biannual royalty and land rent as set forth below and in the Leases:

LEASE	MBR (2013-2017)	MBR (2013-2017)	RENT
PRC 709.1	$60,680	$75,850	$1,661
PRC 2036.1	$52,800	$66,000	$464
PRC 7779.1	$81,600	$102,000	$2,552
PRC 7780.1	$26,600	$33,250	$524

   C. A royalty rate as set forth in the Leases.

   D. The volumes as set forth below and in the Leases and the Environmental Impact Report for the Environmentally Superior Alternative:

PRC 709.1: 290,331 cubic yards
PRC 2036.1: 252,637 cubic yards
PRC 7779.1: 390,440 cubic yards
PRC 7780.1: 127,248 cubic yards

   E. Surety bond in the amount specified in the Leases.

F. For each Lease, Liability insurance in the amount of $1,500,000 with the State named as an additional insured and a separate policy of $1,500,000 for the protection of water quality and the environment.

G. Beginning with the quarter ending on March 31, 2013, and within 30 days of the end of each quarter (quarter), defined as the three months preceding March 31st, June 30th, September 30th, and December 31st of each year, the Lessee will provide in writing to the State Lands Commission:

1) The number of mining episodes that took place during the preceding quarter for each of the Leases; and

2) The track line of each dredge with the start and endpoint of each sand mining event that took place during the preceding quarter mapped on the most currently available NOAA chart, including a scale and north arrow, with the boundaries of the Leases overlaid on the chart. The name and registration number of such dredge should be identified to correspond to each track line. All data shall be reported in a font of sufficient size so that it is readily legible and the track line can be easily discerned.

3) The track lines will provide the location of the actual mining event and differentiate between the traveling or maneuvering periods of a mining episode and the actual sand mining periods. The recording equipment for the mining episode must meet the minimum reporting accuracy of ten feet (horizontal control) during all loading and transportation operations, and shall record position, at a maximum time interval of ten seconds while within 2,000 feet of the lease area, and at one minute intervals otherwise. These plots and the raw data from the automated system shall also be made available for electronic download through the internet and by compact disc on a format such as "pdf" files to be approved by Commission staff. If the information is provided via the internet by the required report date, the compact disc

copy can be provided in a timely manner after the required reporting date.

H. The authorized activity is contingent upon Applicant's compliance with applicable permits, recommendations, or limitations issued by federal, State, and local governments.

3. Authorize the mining of sand and gravel at the levels of the Proposed Project volumes as stated below and in the Leases and the Environmental Impact Report for the Proposed Project:

PRC 709.1: 340,000 cubic yards
PRC 2036.1: 450,000 cubic yards
PRC 7779.1: 550,000 cubic yards
PRC 7780.1: 200,000 cubic yards

Upon Hanson's request and the submittal to the Commission of:

A. A copy of Lessee's Incidental Take Permit issued by the California Department of Fish and Wildlife.

B. A letter to Lessor from Lessee reciting Lessee's submittal to the California Air Resources Board (CARB) of its Compliance Plan and Demonstration of Compliance to Operate under Title 17, California Code of Regulations, section 93118.5. If requested by Lessor, Lessee shall provide documentation demonstrating such compliance within 15 days of such request.

C. If the documentation is sufficient to confirm Lessee's compliance with all requirements, Lessor's staff shall issue a letter to Lessee authorizing the mining of the increased volume.

EXHIBIT A

PRC 709.1

LAND DESCRIPTION

Three parcels of submerged lands lying in the bed of the San Francisco Bay, San Francisco and Marin Counties, State of California, more particularly described as follows:

PARCEL 1 – PRC 709.1 NORTH

All that land bounded by the lines connecting, sequentially, the following points numbered 1 through 5 and by the line connecting said point 5 with said point 1.

	Latitude North	Longitude West
1)	37°51'28"	122°26'43"
2)	37°50'48"	122°26'15"
3)	37°50'35"	122°27'02"
4)	37°50'35"	122°27'31"
5)	37°50'57"	122°27'30"

EXCEPTING THEREFROM all that portion lying within the Federal Lands as described in Chapter 81, Statutes 1897.

PARCEL 2 – PRC 709.1 EAST

All that land bounded by the lines connecting, sequentially, the following points numbered 1 through 41 and by the line connecting said point 41 with said point 1.

	Latitude North	Longitude West
1)	37°49'23"	122°26'17"
2)	37°49'26"	122°26'16"
3)	37°49'28"	122°26'14"
4)	37°49'30"	122°26'12"
5)	37°49'33"	122°26'07"
6)	37°49'34"	122°26'03"
7)	37°49'36"	122°26'00"
8)	37°49'37"	122°25'57"
9)	37°49'38"	122°25'55"
10)	37°49'39"	122°25'53"
11)	37°49'41"	122°25'49"
12)	37°49'42"	122°25'48"
13)	37°49'43"	122°25'47"
14)	37°49'46"	122°25'46"

15)	37°49'47"	122°25'45"
16)	37°49'49"	122°25'44"
17)	37°49'50"	122°25'42"
18)	37°49'50"	122°25'41"
19)	37°49'50"	122°25'39"
20)	37°49'49"	122°25'37"
21)	37°49'48"	122°25'36"
22)	37°49'47"	122°25'35"
23)	37°49'45"	122°25'33"
24)	37°49'42"	122°25'31"
25)	37°49'40"	122°25'30"
26)	37°49'38"	122°25'29"
27)	37°49'36"	122°25'28"
28)	37°49'34"	122°25'28"
29)	37°49'32"	122°25'29"
30)	37°49'31"	122°25'30"
31)	37°49'30"	122°25'32"
32)	37°49'30"	122°25'34"
33)	37°49'29"	122°25'36"
34)	37°49'29"	122°25'39"
35)	37°49'28"	122°25'42"
36)	37°49'28"	122°25'45"
37)	37°49'27"	122°25'47"
38)	37°49'26"	122°25'50"
39)	37°49'25"	122°25'52"
40)	37°49'24"	122°25'53"
41)	37°49'23"	122°25'53"

EXCEPTING THEREFROM all that portion lying within the Federal Lands as described in Chapter 81, Statutes 1897.

PARCEL 3 – PRC 709.1 SOUTH

All that land bounded by the lines connecting, sequentially, the following points numbered 1 through 76 and by the line connecting said point 76 with said point 1.

	Latitude North	Longitude West
1)	37°48'48"	122°26'30"
2)	37°48'48"	122°26'32"
3)	37°48'46"	122°26'36"
4)	37°48'45"	122°26'38"
5)	37°48'45"	122°26'40"
6)	37°48'44"	122°26'43"
7)	37°48'43"	122°26'46"
8)	37°48'42"	122°26'50"
9)	37°48'41"	122°26'52"

10)	37°48'40"	122°26'54"
11)	37°48'39"	122°26'58"
12)	37°48'38"	122°26'59"
13)	37°48'48"	122°27'00"
14)	37°48'37"	122°27'01"
15)	37°48'36"	122°27'04"
16)	37°48'35"	122°27'07"
17)	37°48'35"	122°27'09"
18)	37°48'35"	122°27'10"
19)	37°48'34"	122°27'12"
20)	37°48'34"	122°27'14"
21)	37°48'34"	122°27'16"
22)	37°48'35"	122°27'18"
23)	37°48'35"	122°27'19"
24)	37°48'35"	122°27'21"
25)	37°48'36"	122°27'24"
26)	37°48'36"	122°27'26"
27)	37°48'35"	122°27'29"
28)	37°48'35"	122°27'30"
29)	37°48'34"	122°27'32"
30)	37°48'33"	122°27'33"
31)	37°48'33"	122°27'35"
32)	37°48'33"	122°27'37"
33)	37°48'33"	122°27'39"
34)	37°48'33"	122°27'41"
35)	37°48'34"	122°27'43"
36)	37°48'39"	122°27'45"
37)	37°48'42"	122°27'46"
38)	37°48'43"	122°27'47"
39)	37°48'45"	122°27'47"
40)	37°48'47"	122°27'47"
41)	37°48'48"	122°27'47"
42)	37°48'48"	122°27'46"
43)	37°48'49"	122°27'44"
44)	37°48'50"	122°27'40"
45)	37°48'51"	122°27'37"
46)	37°48'51"	122°27'34"
47)	37°48'52"	122°27'31"
48)	37°48'53"	122°27'28"
49)	37°48'53"	122°27'25"
50)	37°48'54"	122°27'24"
51)	37°48'56"	122°27'20"
52)	37°48'59"	122°27'17"
53)	37°49'00"	122°27'15"
54)	37°49'02"	122°27'13"
55)	37°49'04"	122°27'11"

56)	37°49'05"	122°27'10"
57)	37°49'07"	122°27'07"
58)	37°49'08"	122°27'06"
59)	37°49'08"	122°27'03"
60)	37°49'07"	122°27'02"
61)	37°49'06"	122°27'01"
62)	37°49'05"	122°27'00"
63)	37°49'04"	122°26'59"
64)	37°49'03"	122°26'56"
65)	37°49'02"	122°26'52"
66)	37°49'02"	122°26'50"
67)	37°49'02"	122°26'48"
68)	37°49'02"	122°26'46"
69)	37°49'03"	122°26'44"
70)	37°49'03"	122°26'41"
71)	37°49'04"	122°26'38"
72)	37°49'06"	122°26'34"
73)	37°49'07"	122°26'32"
74)	37°49'08"	122°26'31"
75)	37°49'09"	122°26'30"
76)	37°49'08"	122°26'29"

Said points are Geographic Coordinates referenced to the North American Datum of 1983 (NAD 83).

END OF DESCRIPTION

Prepared 02/27/2012 by the California State Lands Commission Boundary Unit.

EXHIBIT A

PRC 2036

LAND DESCRIPTION

A parcel of submerged lands lying in the bed of the San Francisco Bay, San Francisco and Marin Counties, State of California, more particularly described as follows:

PARCEL 1 – PRC 2036

All that land bounded by the lines connecting, sequentially, the following points numbered 1 through 8 and by the line connecting said point 8 with said point 1.

	Latitude North	Longitude West
1.	37°50'57"	122°27'30"
2.	37°50'35"	122°27'31"
3.	37°50'35"	122°27'02"
4.	37°50'48"	122°26'15"
5.	37°50'44"	122°26'12"
6.	37°50'21"	122°26'59"
7.	37°50'22"	122°27'45"
8.	37°50'51"	122°27'39"

Said points are Geographic Coordinates referenced to the North American Datum of 1983 (NAD 83).

END OF DESCRIPTION

Prepared 02/27/2012 by the California State Lands Commission Boundary Unit.

EXHIBIT A

PRC 7779

LAND DESCRIPTION

Three parcels of submerged lands lying in the bed of the San Francisco Bay, San Francisco and Marin Counties, State of California, more particularly described as follows:

PARCEL 1 – PRC 7779 NORTH

All that land bounded by the lines connecting, sequentially, the following points numbered 1 through 3 and by the line connecting said point 3 with said point 1.

	Latitude North	Longitude West
1)	37°52'08"	122°27'00"
2)	37°51'18"	122°27'22"
3)	37°51'48"	122°26'38"

EXCEPTING THEREFROM all that portion lying within the Federal Lands as described in Chapter 81, Statutes 1897.

PARCEL 2 – PRC 7779 EAST

All that land bounded by the lines connecting, sequentially, the following points numbered 1 through 4 and by the line connecting said point 4 with said point 1.

	Latitude North	Longitude West
1)	37°51'11"	122°26'09"
2)	37°50'37"	122°25'49"
3)	37°50'52"	122°25'13"
4)	37°51'13"	122°25'25"

EXCEPTING THEREFROM all that portion lying within the Federal Lands as described in Chapter 81, Statutes 1897.

PARCEL 3 – PRC 7779 WEST

All that land bounded by the lines connecting, sequentially, the following points numbered 1 through 11 and by the line connecting said point 11 with said point 1.

	Latitude North	Longitude West
1)	37°50'56"	122°27'38"
2)	37°50'44"	122°28'00"

3)	37°49'44"	122°27'59"
4)	37°49'44"	122°26'44"
5)	37°49'47"	122°26'44"
6)	37°49'48"	122°26'00"
7)	37°49'59"	122°26'00"
8)	37°49'59"	122°26'15"
9)	37°50'43"	122°26'14"
10)	37°50'21"	122°26'59"
11)	37°50'22"	122°27'45"

Said points are Geographic Coordinates referenced to the North American Datum of 1983 (NAD 83).

END OF DESCRIPTION

Prepared 02/27/2012 by the California State Lands Commission Boundary Unit.

EXHIBIT A

PRC 7780

LAND DESCRIPTION

Two parcels of submerged lands lying in the bed of the San Francisco Bay, San Francisco County, State of California, more particularly described as follows:

PARCEL 1 – PRC 7780 NORTH

All that land bounded by the lines connecting, sequentially, the following points numbered 1 through 4 and by the line connecting said point 4 with said point 1.

	Latitude North	Longitude West
1)	37°49'59"	122°26'00"
2)	37°49'47"	122°26'00"
3)	37°49'55"	122°25'40"
4)	37°49'59"	122°25'42"

PARCEL 2 – PRC 7780 SOUTH

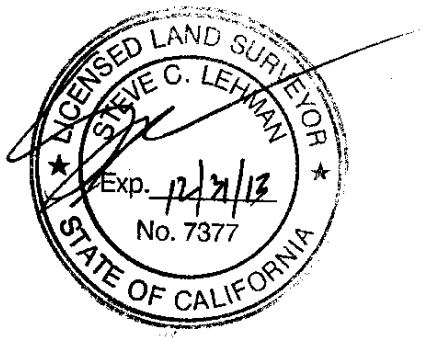
All that land bounded by the lines connecting, sequentially, the following points numbered 1 through 18 and by the line connecting said point 18 with said point 1.

	Latitude North	Longitude West
1)	37°49'29"	122°25'36"
2)	37°49'29"	122°25'39"
3)	37°49'28"	122°25'42"
4)	37°49'28"	122°25'45"
5)	37°49'27"	122°25'47"
6)	37°49'26"	122°25'50"
7)	37°49'25"	122°25'52"
8)	37°49'24"	122°25'53"
9)	37°49'23"	122°25'53"
10)	37°49'23"	122°26'04"
11)	37°48'48"	122°26'04"
12)	37°48'45"	122°25'43"
13)	37°48'46"	122°25'24"
14)	37°49'03"	122°25'13"
15)	37°49'07"	122°25'42"
16)	37°49'12"	122°25'53"
17)	37°49'26"	122°25'39"
18)	37°49'26"	122°25'32"

Said points are Geographic Coordinates referenced to the North American Datum of 1983 (NAD 83).

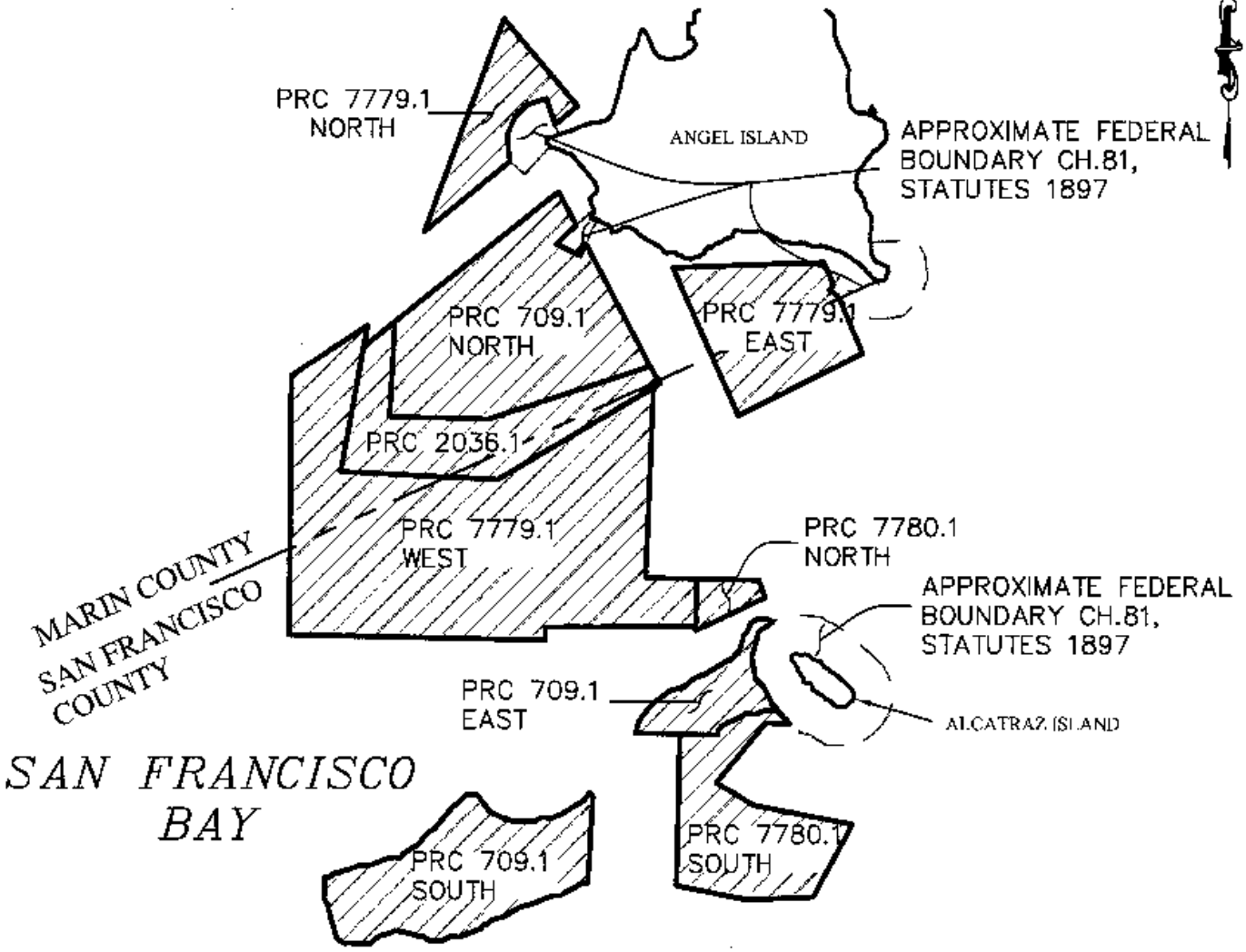
END OF DESCRIPTION

Prepared 02/27/2012 by the California State Lands Commission Boundary Unit.



NO SCALE

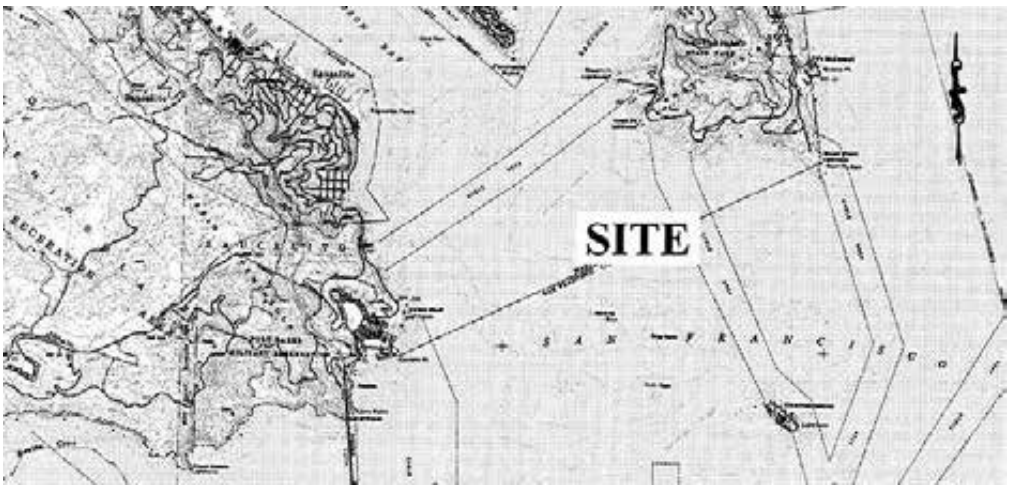
SITE



HANSON SAND MINING OPERATIONS

NO SCALE

LOCATION



MAP SOURCE: USGS QUAD

This Exhibit is solely for purposes of generally defining the lease premises, is based on unverified information provided by the Lessee or other parties and is not intended to be, nor shall it be construed as, a waiver or limitation of any State interest in the subject or any other property.

Exhibit B

PRC 709.1, PRC 2036.1,
PRC 7779.1, PRC 7780.1
HANSON MINING
OPERATIONS
GENERAL LEASE
SAN FRANCISCO &
MARIN COUNTIES

DJF 09/20/12

EXHIBIT C
Projects Using Sand from Central Bay Leases

Project	Owner/Proponent	Tons
Crown Beach Restoration Project, Alameda Beach restoration and sea level rise defense	East Bay Regional Parks District	130,000
Alameda Point-Least Tern habitat restoration	U.S. Fish and Wildlife Service	1,200
Pier 94 Wetlands Restoration Project San Francisco, Restoration of natural wetlands	Port of San Francisco	500
San Francisco Water Emergency Transportation Agency, Alameda Naval Air Station Restoration of bird habitat nesting area	San Francisco Water Emergency Transportation Agency	3,200
City and County of San Francisco Pier 70 Crane Cove Park beach replenishment	City and County of San Francisco	6,000
Port of Oakland–ongoing projects	Port of Oakland	1,100
Hunters Point Naval Station Site Remediation San Francisco; clean fill placement	HPNS/Gilbane Environmental	6,000
Presidio Parkway Project-San Francisco Partnership to utilize local materials	Caltrans/Private/Public	30,000
Bay Bridge-Yerba Buena Island Interchange	Caltrans/Bay Area Toll Authority	16,000
San Francisco Public Utilities Commission Building - LEEDS Platinum Building	San Francisco Public Utilities Commission	15,000
San Francisco General Hospital LEEDS Silver Building	City and County of San Francisco	10,000
Kaiser Hospital-San Leandro LEEDS Gold Building	Kaiser Foundation	5,000
Kaiser Hospital/Medical Office Building-Oakland LEEDS Gold Building	Kaiser Foundation	10,000
St. Lukes Hospital, San Francisco Replacement hospital	CPMC- Sutter Health	9,000
UC Berkeley-Haas School of Business New 6-story building	University of California	11,000
SFO-Temporary Bridge from parking structure to Terminal 1	San Mateo County	1,800
James Lick Middle School-San Francisco School renovation	San Francisco Unified School District	1,600
Menlo School-Atherton New cafeteria; expanded office buildings	Menlo School	2,500
Transbay Center-San Francisco New transit center and retail shops	Transbay Joint Powers Authority	17,000
UC Berkeley-Bowles Hall Renovation of college dormitory	University of California	4,000
UC Berkeley-Intercollegiate Aquatics Center New aquatics facility	University of California	8,000
Ida B Wells High School-San Francisco School renovation	San Francisco Unified School District	4,000
Willie Brown Jr. Middle School-San Francisco School renovation	San Francisco Unified School District	2,000
Oro Loma Sanitation District-San Lorenzo Construction of sanitation leachate field	Oro Loma Sanitation District	4,600
PG&E Technology Court, Backfill sand slurry for pipeline rehabilitation	PG&E/Griffin Soil	24,000
PG&E, San Francisco area-ongoing projects	PG&E	14,500
City of Oakland Public Works-ongoing projects	City of Oakland Public Works	800
City and County of San Francisco Street and Sewer Department-ongoing projects	City and County of San Francisco Street and Sewer	5,500
City and County of San Francisco Water Department-ongoing projects	City and County of San Francisco Water Department	2,500
City of Hayward Public Works-ongoing projects	City of Hayward Public Works	500