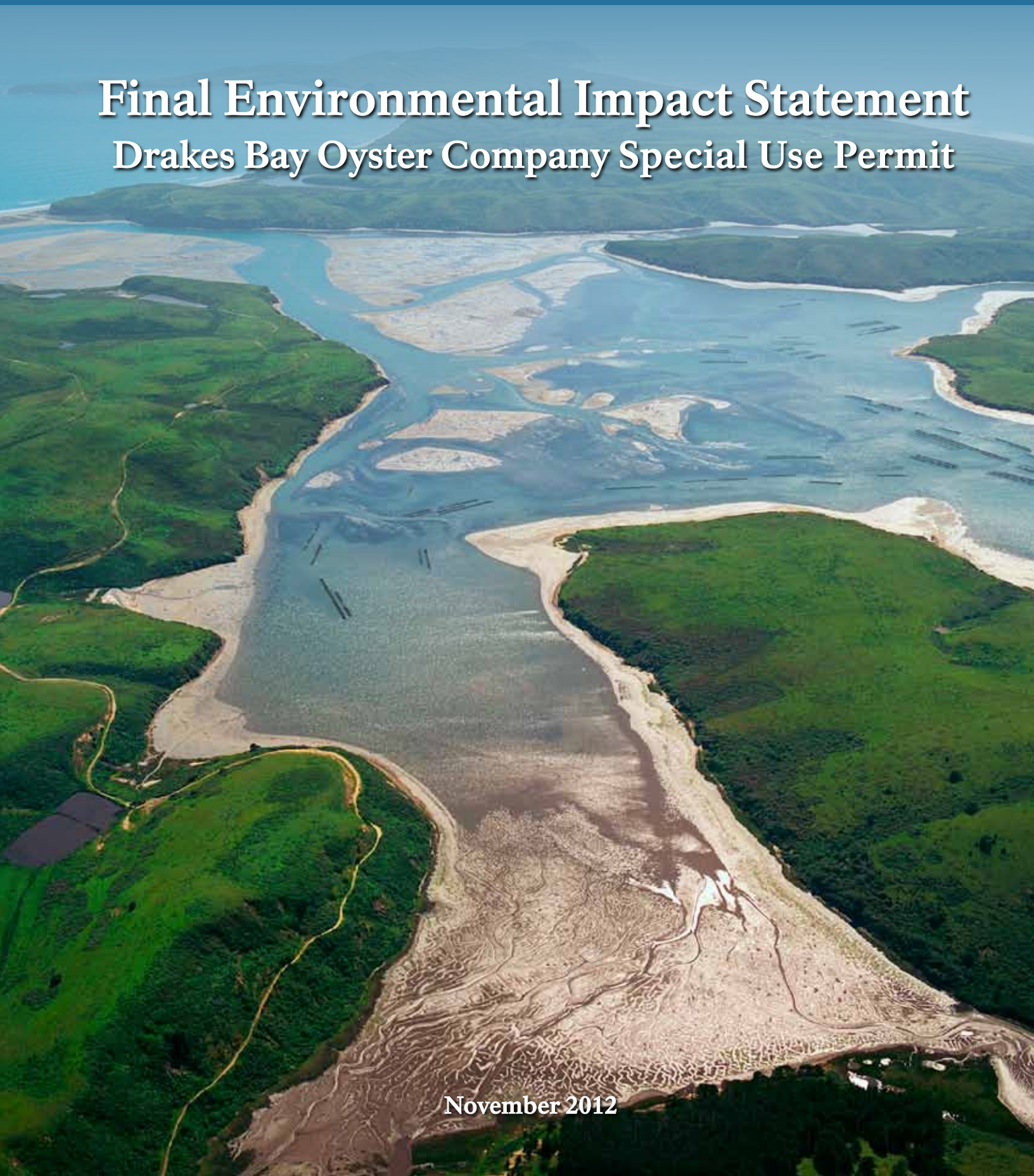
National Park Service
U.S. Department of the Interior

Point Reyes National Seashore
California

Final Environmental Impact Statement

Drakes Bay Oyster Company Special Use Permit



November 2012

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Final Environmental Impact Statement for the Drakes Bay Oyster Company Special Use Permit
Point Reyes National Seashore
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Lead Agency: National Park Service (NPS), U.S. Department of the Interior
Cooperating Agencies: California Department of Fish and Game (CDFG), U.S. Army Corps of Engineers (USACE), National Oceanic and Atmospheric Administration, National Marine Fisheries Service (NOAA-NMFS), and U.S. Environmental Protection Agency (EPA)

The NPS has used the NEPA process to engage the public to evaluate the effects of issuing a Special Use Permit (SUP) for the commercial shellfish operation of Drakes Bay Oyster Company at Point Reyes National Seashore. As the culmination of the NEPA process, the NPS is making available the Final Environmental Impact Statement (EIS) assessing four alternatives and identifying the environmentally preferable alternative. However, it should be noted that Section 124 of Public Law 111-88 provides that the Secretary's decision whether to issue this permit is "notwithstanding any other provision of law." As such, the NPS has not identified a preferred alternative in the Final EIS.

The Final EIS describes and analyzes four alternatives for federal action related to the operation of DBOC within Point Reyes National Seashore (the Seashore). On October 30, 2009, Congress enacted Section 124 of Public Law (PL) 111-88, which provides to the Secretary of the Interior (Secretary) the discretionary authority to issue a new SUP to DBOC for a period of 10 years. The discretionary authority contained in section 124 now allows the Secretary to permit DBOC's operations for a new 10 year term, until November 30, 2022. The EIS presents a no-action alternative, which considers expiration of existing authorizations and subsequent conversion of the area to congressionally designated wilderness, and three action alternatives, which consider the issuance of a new SUP to DBOC for a period of 10 years with differing levels of onshore facilities and infrastructure and offshore operations.

Alternative A, No New Special Use Permit – Conversion to Wilderness (No-action) considers the expiration of the existing RUO and SUP and subsequent conversion to wilderness consistent with PL 94-567. The existing SUP and RUO expire on November 30, 2012. Under alternative A, the Secretary would not exercise the discretion granted to him under section 124 to issue a new 10-year SUP. Upon cessation of the nonconforming use from Drakes Estero, NPS would convert the area to wilderness. The three action alternatives describe differing levels of onshore facilities and infrastructure and offshore operations associated with the issuance of a new SUP for a period of 10 years.

Alternative B, Issue New Special Use Permit - Existing Onshore Facilities and Infrastructure and Offshore Operations Would be Allowed for a Period of 10 Years, considers a level of use consistent with conditions that were present in fall 2010 when NPS initiated evaluation under the EIS. The existing SUP and RUO expire on November 30, 2012. The Secretary would exercise the discretion granted to him under section 124 to issue a new 10-year SUP to DBOC, expiring November 30, 2022.

Alternative C, Issue New Special Use Permit - Onshore Facilities and Infrastructure and Most Offshore Operations Present in 2008 Would be Allowed for a Period of 10 Years, considers a level of use that was occurring at the time the current SUP was signed in April 2008.The existing SUP and RUO expire on November 30, 2012. Under alternative C, the Secretary would exercise the discretion granted to him under section 124 to issue a new 10-year SUP to DBOC, expiring November 30, 2022.

Alternative D, Issue New Special Use Permit - Expanded Onshore Development and Offshore Operations Would be Allowed for a Period of 10 Years, considers expansion of operations and development of new infrastructure as requested by DBOC as part of the EIS process. The existing SUP and RUO expire on November 30, 2012. Under alternative D, the Secretary would exercise the discretion granted to him under section 124 to issue a new 10-year SUP to DBOC, expiring November 30, 2022.

The Draft EIS was available for public and agency review and comment between September 23, 2011 and December 9, 2011. An electronic copy of the Draft EIS was posted at www.parkplanning.nps.gov/PORE. Copies of the document were distributed to individuals, agencies, and organizations, and were available in local public libraries, at the public meetings, and upon request. This Final EIS provides responses to substantive agency and public comments, and incorporates those comments and suggested revisions, where necessary.

For further information regarding this document, please contact:

Melanie Gunn, Outreach Coordinator
Point Reyes National Seashore
1 Bear Valley Road, Point Reyes Station, California 94956
415-464-5162
Melanie_Gunn@nps.gov

EXECUTIVE SUMMARY

The Environmental Impact Statement (EIS) for the Drakes Bay Oyster Company (DBOC) Special Use Permit (SUP) presents four alternatives. The no-action alternative considers expiration of existing authorizations and subsequent conversion of the area to congressionally designated wilderness. Three action alternatives consider the issuance of a new SUP to DBOC for a period of 10 years with differing levels of onshore facilities and infrastructure and offshore operations. Beneficial and adverse impacts are assessed for all four alternatives evaluated in this EIS. Existing authorizations for DBOC to operate expire November 30, 2012. The National Environmental Policy Act of 1969 (NEPA), as amended, process is being used to inform the decision of whether a new SUP should be issued. If a new SUP is issued, it would authorize DBOC to operate its onshore and offshore[1] operations until November 30, 2022. In the event that a new SUP is issued, it would incorporate all of DBOC's National Park Service (NPS) authorized onshore and offshore operational requirements. There is no authority to issue or extend a reservation of use and occupancy (RUO).

The authority for NPS to issue a new permit to DBOC came about as a result of congressional action. On October 30, 2009, Congress enacted section 124 of Public Law (PL) 111-88, which was part of the Department of the Interior, Environment, and Related Agencies Appropriations Act of 2010. Section 124 states:

> Prior to the expiration on November 30, 2012, of the Drake's Bay Oyster Company's Reservation of Use and Occupancy and associated special use permit (''existing authorization'') within Drakes Estero at Point Reyes National Seashore, notwithstanding any other provision of law, the Secretary of the Interior is authorized to issue a special use permit with the same terms and conditions as the existing authorization, except as provided herein, for a period of 10 years from November 30, 2012: Provided, That such extended authorization is subject to annual payments to the United States based on the fair market value of the use of the Federal property for the duration of such renewal. The Secretary shall take into consideration recommendations of the National Academy of Sciences Report pertaining to shellfish mariculture in Point Reyes National Seashore before modifying any terms and conditions of the extended authorization. (Department of the Interior, Environment, and Related Agencies Appropriations Act of 2010, Pub. L. No. 111-88, section 124, 123 Stat. 2904, 2932 [2009])

Section 124, as it will be referred to in this EIS, provides to the Secretary of the Interior (Secretary) the discretionary authority to issue a new SUP to DBOC for a period of 10 years. Congress granted the Secretary the discretionary authority contained in section 124 in response to NPS's determination that it

[1] In this document, the term offshore is used to refer to operations and facilities in Drakes Estero, including waters, tide and submerged lands, and intertidal areas such as the shoreline and mudflats.

lacked authority to allow DBOC to operate after November 30, 2012. PL 94-544 and PL 94-567 of 1976 designated Drakes Estero as potential wilderness. House Report 94-1680, which accompanied the public law, provided that, "it is the intention that those lands and waters designated as potential wilderness additions will be essentially managed as wilderness, to the extent possible, with efforts to steadily continue to remove all obstacles to the eventual conversion of these lands and waters to wilderness status." The commercial shellfish operation in Drakes Estero, now operated by DBOC, is the only nonconforming use that prevents conversion of the waters of Drakes Estero from congressionally designated potential wilderness to congressionally designated wilderness. The discretionary authority contained in section 124 now allows the Secretary to permit DBOC's operations for a new 10 year term, until November 30, 2022.

PURPOSE OF AND NEED FOR ACTION

PURPOSE AND NEED

Action is needed at this time because pursuant to section 124 of Public Law 111-88, the Secretary has the discretionary authority to issue a SUP for a period of 10 years to DBOC for its shellfish operation, which consists of commercial production, harvesting, processing, and sale of shellfish at Point Reyes National Seashore. The existing RUO and SUP held by DBOC will expire on November 30, 2012. DBOC has submitted a request for the issuance of a new permit upon expiration of the existing authorizations. Consistent with Department of the Interior (DOI) NEPA regulations (43 CFR 46.30), the proposed action for this EIS is the Secretary's decision whether to issue a permit under section 124.

The purpose of the document is to use the NEPA process to engage the public and evaluate the effects of issuing a SUP for the commercial shellfish operation. The NEPA process will be used to inform the decision of whether a new SUP should be issued to DBOC for a period of 10 years.

PROJECT OBJECTIVES

Project objectives build from the project purpose and identify those goals that are "critical to meet if NPS is to consider the proposal successful" (NPS 2001b). Project objectives should be grounded in the park's enabling legislation, purpose, significance, and mission goals; as well as relevant legislation; NPS plans (such as general management plans [GMPs]); or other NPS standards and guidelines. Project objectives should be broad enough to allow for a reasonable range of alternatives without narrowing the focus or intentionally excluding an alternative. The following project objectives have been identified:

- Manage natural and cultural resources to support their protection, restoration, and preservation.
- Manage wilderness and potential wilderness areas to preserve the character and qualities for which they were designated.
- Provide opportunities for visitor use and enjoyment of park resources.

DBOC GOALS

On July 6, 2010, DBOC submitted a request for the issuance of a new SUP upon expiration of the existing permit. Specifically, DBOC seeks to "occupy and utilize the buildings and lands on the shores of Drakes Estero" (Latham & Watkins, LLP 2010). DBOC requested that the EIS consider DBOC's needs and goals, as the project applicant. DBOC requested that its objective of "operating an environmentally-friendly and sustainable oyster farm for a renewable 10-year period under a Service-issued SUP" be included both during scoping as well as during public review of the Draft EIS (DBOC 2010n, 2011i). DBOC also requested that the purpose and need be modified "to reference DBOC's request that the renewed SUP be issued under [the] same terms and conditions present in the RUO/SUP, for permission to complete work authorized under the 1998 Environmental Assessment, and for permission to make select physical improvements." DBOC suggested that language regarding discussion of mitigation measures and historical context be added to the purpose and need, as well (DBOC 2011i).

The goals provided by DBOC are included here as background information. DBOC's goals have not been added to the NPS purpose, need, and objectives because doing so would limit the range of reasonable alternatives to only those that further DBOC's goals, which may not reflect the broader public interest, and would be inconsistent with the Secretary's discretion under section 124.

Specifically, DBOC's goal that NPS issue a "renewable" SUP is not consistent with section 124, which authorizes only one, 10-year permit term. Similarly, DBOC's goal that the new permit be limited to its onshore operations only is inconsistent with section 124, which specifies that a new permit must mirror the terms of the existing permit. DBOC's existing SUP authorizes onshore and offshore operations, consistent with NPS's jurisdiction over Drakes Estero. A new permit issued under section 124 would therefore authorize both onshore and offshore operations.

BACKGROUND

The original Drakes Bay Oyster Company (no relation to the present day DBOC) operated on the banks of Drakes Estero near the head of Schooner Bay, from 1938 to 1945 (Caywood and Hagen 2011). In 1946, the Drakes Estero oyster allotment was transferred to Larry Jensen (Caywood and Hagen 2011). During the Jensen tenure, the ownership of the 5-acre parcel containing the processing plant was integrated with the state water allotment lease in Drakes Estero. In April 1954, Larry Jensen entered into an "agreement of sale" with Van Camp Seafood for his oysters, state oyster allotments, and the 5 acres of upland real property that accompanied the state water bottom leases. In turn, it was quickly transferred to the Coast Oyster Company (Caywood and Hagen 2011; CDFG 1954, 1955). In 1958, Charles W. Johnson took over the oyster operation in Drakes Estero and soon founded the Johnson Oyster Company (JOC). Mr. Johnson cultivated shellfish (mostly oysters) in Drakes Estero and operated onshore processing facilities from 1961 through 2003. Mr. Johnson purchased 5 acres of onshore land where the existing processing facilities were located in 1961. He and his wife moved to the oyster plant at Creamery Bay.

Although the Seashore was established in 1962, NPS did not acquire ownership of all lands and waters within the Seashore's boundary immediately. In 1965, the state-held water bottoms of Drakes Estero were conveyed to NPS by the State of California. In 1972, NPS purchased fee title to the 5-acre upland parcel where the oyster processing facilities were located from Mr. Johnson. As part of the purchase agreement, Mr. Johnson elected to

retain a 40-year RUO over 1.5 acres of the 5-acre parcel. The RUO allowed for "processing and selling wholesale and retail oysters, seafood and complimentary food items, the interpretation of oyster cultivation to the visiting public and residential purposes reasonably incidental thereto" (NPS 1072a).

In December 2004, DBOC purchased the assets of JOC, assuming the remaining seven years of the RUO and SUP that NPS had issued to JOC for the well and septic leach field (DBOC 2011f[i]). There were no changes to the terms of the RUO or to its expiration date. In April 2008, DBOC and NPS signed a SUP (NPS Permit No. MISC-8530-6000-8002) that would allow the commercial shellfish operation in Drakes Estero to remain, with provisions, until November 30, 2012, when it expires concurrently with the RUO.

DESCRIPTION OF THE PROJECT AREA

The Seashore is located in western Marin County in central California, approximately 30 miles northwest of San Francisco and within 50 miles of the nine-county San Francisco Bay Area, the fifth largest metropolitan area in the United States. The Seashore is bounded to the north, west, and southwest by the Pacific Ocean and to the east by the residential communities of Inverness, Inverness Park, Point Reyes Station, Olema, and Dogtown. Western Marin County is primarily rural, with scattered, small, unincorporated towns that serve tourism, agriculture, and local residents. In addition, the Seashore administers the Northern District of the Golden Gate National Recreation Area, adjacent to the Seashore, for a combined management area and legislated boundary of approximately 94,000 acres (figure ES-1).

Drakes Estero is a system of five branching bays encompassing approximately 2,500 acres. The branching bays are stretched to the north and separated by low converging ridges. From west to east, they are: Barries Bay, Creamery Bay, Schooner Bay, Home Bay, and Estero de Limantour (see figures ES-1 and ES-2). Nearly half of the Estero's surface area consists of mud and sand flats that are exposed at low tide (Press 2005). Because of the shallow character of the bay, and its tendency to flush completely within a normal tidal cycle, currents in the main stem and secondary channels are relatively strong.

The Drakes Estero watershed covers approximately 31 square miles, including Drakes Estero itself (Baltan 2006). The Seashore leases most of the lands surrounding Drakes Estero for cattle grazing (approximately 14 square miles within the watershed). Areas draining to and surrounding the Estero de Limantour are primarily within congressionally designated wilderness (approximately 8 square miles within the watershed).

This EIS examines DBOC operations and facilities in and adjacent to Drakes Estero. The project area is roughly 1,700 acres and includes DBOC structures, facilities, and operations in much of the congressionally designated potential wilderness (1,363 acres), 2.6 acres of onshore property, and 2 acres incorporating the well and septic areas, as delineated in the RUO and SUP (see figures 1-3 and 1-4). In order to provide a comprehensive analysis of potential impacts of the alternatives presented in this EIS, the project area also includes the kayak launch parking area and the access road leading from Sir Francis Drake Boulevard. All land and water portions of the project area are owned by NPS. Resources outside the project area may be described if they are subject to impacts resulting from any of the proposed alternatives. The project area as a whole is depicted on figure ES-2, with figures ES-3 and ES-4 showing the detailed location of the onshore operations.

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FIGURE ES-1

Project Location Map

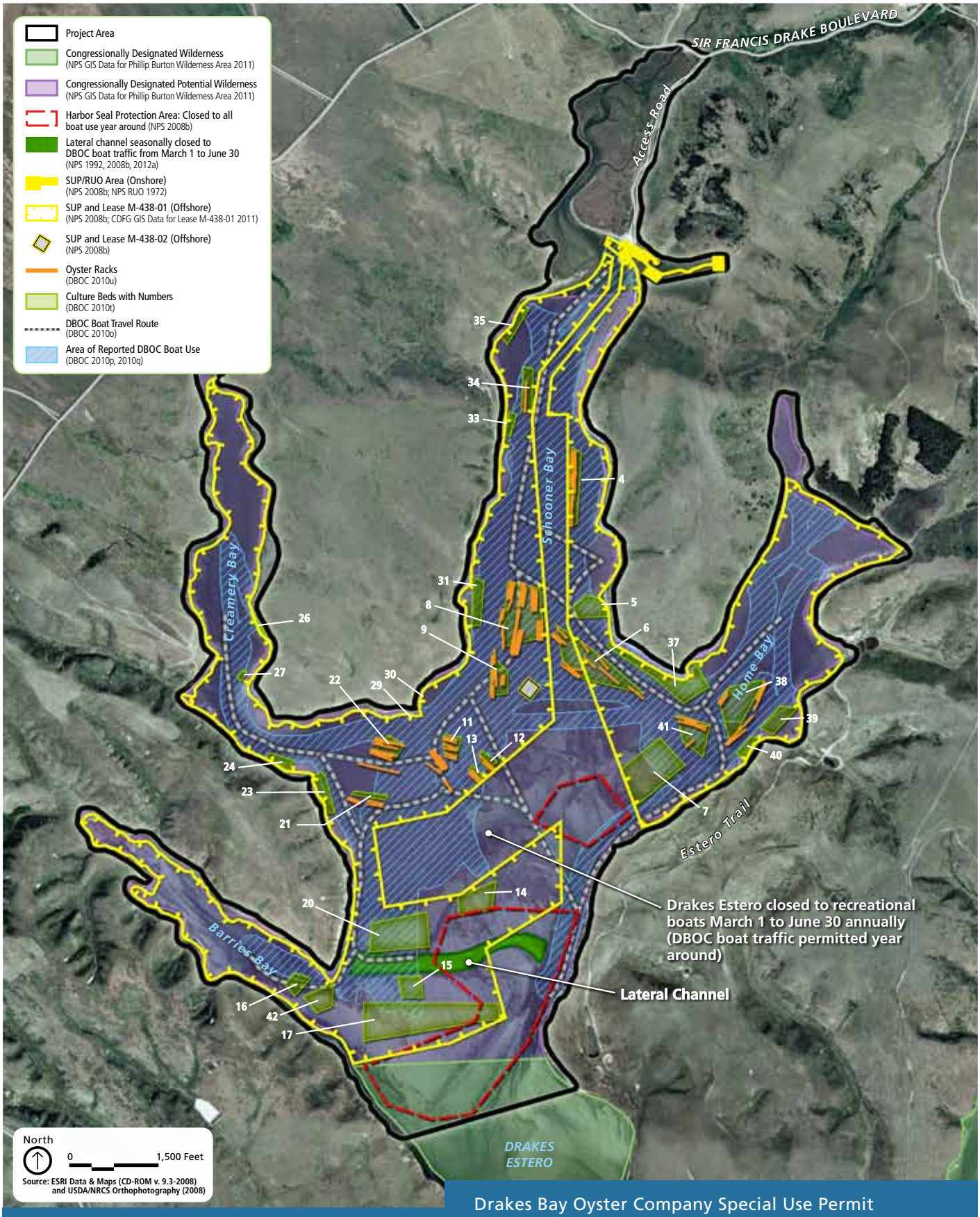

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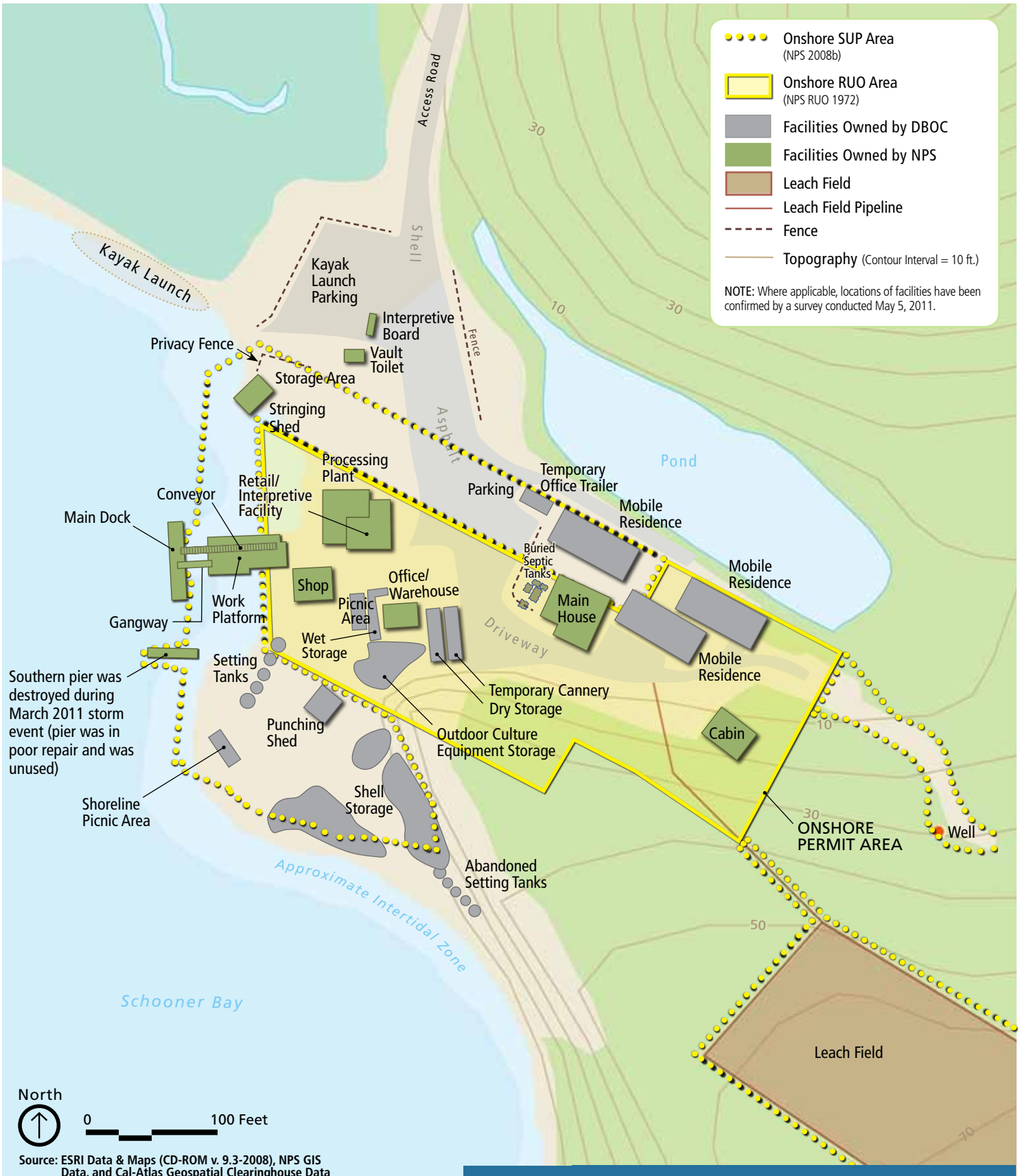
FIGURE ES-2

Existing Conditions (Offshore Operations)



Source: ESRI Data & Maps (CD-ROM v. 9.3-2008), NPS GIS Data, and Cal-Atlas Geospatial Clearinghouse Data

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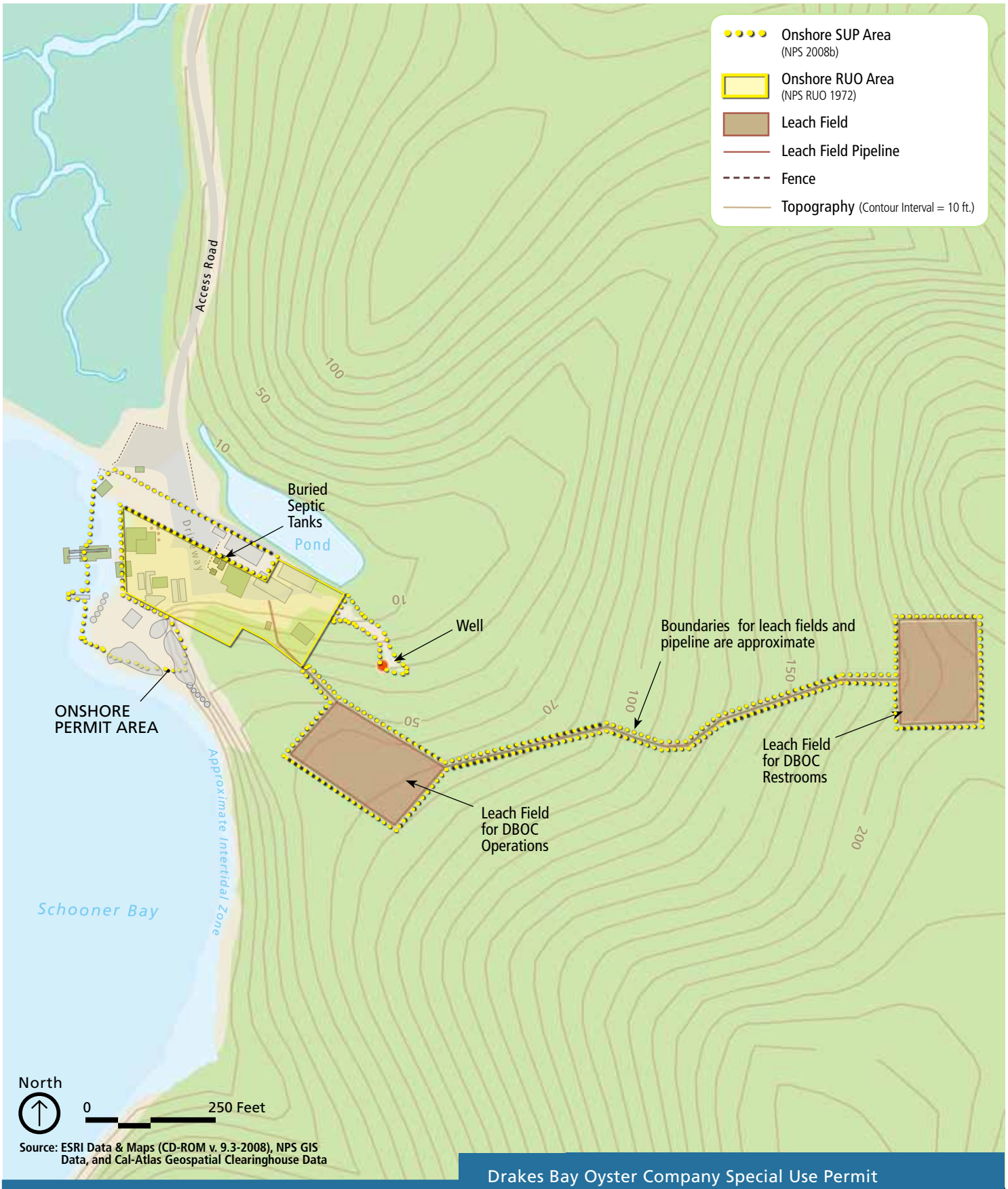
FIGURE ES-3

Existing Conditions (Onshore Operations)



Source: ESRI Data & Maps (CD-ROM v. 9.3-2008), NPS GIS Data, and Cal-Atlas Geospatial Clearinghouse Data

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FIGURE ES-4

Existing Water and Septic Utilities

EXISTING DBOC OPERATIONS

DBOC's operations occur on uplands adjacent to Drakes Estero and on tide and submerged lands within the Estero. All of the upland, tidal, and submerged lands on which DBOC conducts its operations are located within the Seashore and are owned in fee by the United States. Pursuant to 36 CFR 1.2, activities occurring on lands and waters under the jurisdiction of NPS are subject to applicable NPS laws and regulations.

DBOC currently grows two species of shellfish: Pacific oyster and manila clam. The 2008 SUP authorized DBOC to generally operate within the same offshore boundaries as contained in Lease M-438-01 (1,049 acres)[2] and Lease M-438-02 (1 acre). Within the offshore lease boundaries, DBOC maintains 142 acres of shellfish growing areas. Shellfish growing areas are otherwise known as "culture beds" or simply "beds" and can include any of the shellfish cultivation methods. The 142 acres comprise 42 numbered culture beds (see figure ES-2). DBOC cultivates shellfish using three primary methods: hanging culture, floating culture, and bottom culture. Oysters are grown using all three methods. Manila clams are grown using bottom bag culture. DBOC maintains 95 wooden racks for cultivation, which total approximately 5 miles when laid end-to-end (also expressed as 7 acres), within Drakes Estero. Currently, six of these racks fall outside the permit boundaries. Additional detail about DBOC's offshore facilities are described in chapter 2 of the EIS.

DBOC onshore facilities support the processing, sale, and initial stages of shellfish culture (see figure ES-3). For the most part, these facilities are located within the 1.5 acres of the original RUO, the additional 1.1 acres established with the issuance of the 2008 SUP, and 2.0 acres encompassing the well and septic areas (shown on figure ES-4). DBOC packages its shellfish on site and operates the only on-site shellfish cannery in California. DBOC facilities currently outside the authorized area include unused setting tanks and may also include portions of the oyster shell storage mounds. See chapter 2 of the EIS for additional detail related to DBOC's onshore facilities.

ISSUES AND IMPACT TOPICS

Many resources and activities have the potential to be affected by either issuing or not issuing a SUP for continued commercial shellfish operations within the Seashore. These resources were initially identified by NPS staff during internal scoping and were further refined through the public and agency scoping process. Some impact topics were considered but dismissed from further analysis because either (a) the resources do not exist in the project area or would not be impacted by the project or (b) impacts would be less than minor[3]. The tables below outline the issues and impact topics retained for further analysis (table ES-1) and those that were considered but dismissed (table ES-2), and the rationale for doing so. Impact topics retained for detailed analysis within the EIS include wetlands and other waters of the U.S., eelgrass, wildlife and wildlife habitat, special-status species - California coast Coho salmon

[2] Since the consolidation of several allotments into Lease M-438-01 in 1979, the lease language has specified that the lease area is made up of two parcels totaling approximately 1,059 acres; however, the geographic information system (GIS) data provided by CDFG in 2011 for this lease area measures 1,049 acres. For the purposes of this EIS, all area calculations are based on GIS data. Therefore, the latter measurement is used to represent existing conditions throughout this EIS.

[3] Minor impacts are generally defined as being slight but detectable, typically short-term and localized.

(*Oncorhynchus kisutch*) and central California coast steelhead (*O. mykiss*), coastal flood zones, water quality, soundscapes, wilderness, visitor experience and recreation, socioeconomic resources, and NPS operations. Dismissed topics include vegetation, special-status species – silverspot butterfly (*Speyeria zerene myrtleae*), California red-legged frog (*Rana aurora draytonii*), leatherback sea turtle (*Dermochelys coriacea*), western snowy plover (*Charadrius alexandrinus nivosus*), and California least tern (*Sternula antillarum browni*), water quantity, lightscapes, air quality, climate change and greenhouse gas emissions (carbon footprint), local food, geological resources, paleontological resources, cultural resources, and environmental justice.

TABLE ES-1. ISSUES AND IMPACT TOPICS RETAINED FOR FURTHER ANALYSIS

Issue/Impact Topic	Rationale for Retention
Wetlands and Other Waters of the U.S.	The identification of wetlands within the project area is necessary to ensure their protection in accordance with federal laws (section 404 of the Clean Water Act [CWA] and the Rivers and Harbors Act of 1899) and state laws (e.g., the California Coastal Act of 1976). NPS *Management Policies 2006* states that NPS will implement a "no net loss of wetlands" policy and will (1) provide leadership and take action to prevent the destruction, loss, or degradation of wetlands; (2) preserve and enhance the natural and beneficial values of wetlands; and (3) avoid direct and indirect support of new construction in wetlands unless there are no practicable alternatives and the proposed action includes all practicable measures to minimize harm to wetlands (NPS 2006d). Guidance related to the management of wetlands is further clarified by Director's Order 77-1: *Wetland Protection* (DO-77-1) (NPS 2002a). As defined by the U.S. Army Corps of Engineers (USACE) and the U.S. Fish and Wildlife Service (USFWS), wetland areas and other waters of the U.S. exist in the project area, both within Drakes Estero and along the shoreline where natural conditions persist. DBOC operations may have the potential to impact these wetlands through placement of materials (such as bags and trays) directly in wetlands, trampling of vegetated wetlands, and shading associated with racks, as well as people walking across mudflats, and propellers and boat hulls scraping the mud bottom. The impact topic of wetlands and other waters of the U.S. is retained for detailed analysis in this EIS.
Eelgrass	In Drakes Estero, eelgrass (*Zostera marina*) is the dominant form of submerged aquatic vegetation and is present throughout Drakes Estero in dense beds. Eelgrass beds provide important foraging and feeding ground for many aquatic organisms, they serve as the base of the food web in many coastal habitats, and they perform important environmental functions, such as trapping sediment, taking up excess nutrients, and protecting shorelines from erosion. Eelgrass beds are classified as a type of "special aquatic site," a category of "Waters of the United States" afforded additional consideration under the Clean Water Act section 404 (b)(1) guidelines developed by the Environmental Protection Agency (EPA). Special aquatic sites possess characteristics of productivity, habitat, wildlife protection, or other important and easily disrupted ecological values. These sites are recognized as significantly influencing or positively contributing to the overall environmental health or vitality of the entire ecosystem of a region. DBOC operations in Drakes Estero and the eelgrass beds interact "via changes each makes to the immediate environment like altering water flow, sediment structure, light penetration, and nutrient supply. Other environmental changes arising from mariculture come from the addition of structures (e.g., bags, racks, and lines) and disturbances of transportation and culture operations" (NAS 2009). The termination or continuation of these activities related to DBOC operations could beneficially or adversely impact eelgrass. Therefore, the impact topic of eelgrass is retained for detailed analysis in this EIS.

TABLE ES-1. ISSUES AND IMPACT TOPICS RETAINED FOR FURTHER ANALYSIS (CONTINUED)

Issue/Impact Topic	Rationale for Retention
Wildlife and Wildlife Habitat	Drakes Estero provides habitat for multiple native wildlife species, including benthic fauna (animals living on or in the submerged substrate), fish, harbor seals, and birds. Drakes Estero also includes privately owned species cultivated by DBOC, as well as nonnative invasive species such as the tunicate, *Didemnum vexillum* and the mud snail, *Batillaria attramentaria*. Commercial shellfish operations could potentially impact these species and their habitat through habitat competition, habitat improvement or degradation, noise and physical disruptions, and introduction of nonnative species. The impact topic of wildlife and wildlife habitat is retained for detailed analysis in this EIS.
Special-Status Species	The Endangered Species Act (ESA) mandates that all federal agencies consider the potential impacts of their actions on species listed as threatened or endangered in order to protect the species and preserve their habitats. Potential impacts are assessed within an "action" area, which can be larger than individual project areas, and are determined by evaluating the geographic extent of potential environmental changes (i.e., biological, chemical, and physical effects). USFWS and the U.S. National Marine Fisheries Service (NMFS) Division of the National Oceanic and Atmospheric Administration (NOAA) share responsibility for implementing the ESA. Per informal consultations with USFWS in 2010 and previous studies, seven federally listed threatened and endangered species and/or their critical habitat were identified for consideration. After further consultation with USFWS and NMFS and further review of the available and relevant scientific literature, only two species and/or their critical habitat were identified as potentially affected by activities within the project/action area. These include central California coast Coho salmon (*Oncorhynchus kisutch*) and central California coast steelhead (*O. mykiss*). The Coho salmon also is a state-listed species. Based on the location of DBOC's offshore operations relative to these fish species and/or their critical habitat, and resultant threats to those protected resources, the impact topic of special-status species is retained for detailed analysis in this EIS. For a description of the five special-status species that were considered but dismissed from further analysis, please see table ES-2 below.
Coastal Flood Zones	Pursuant to Director's Order 77-2: *Floodplain Management* (DO-77-2), the NPS must strive to preserve floodplain values and minimize hazardous floodplain conditions (NPS 2003a). Although no formal floodplain mapping has been undertaken at the planning site, a topographic survey was performed at the onshore facilities based on North American Vertical Datum of 1988 (NAVD–88). Direct observations of flooding made it necessary to survey the area for elevations, so the impact topic of coastal flood zones could be reasonably evaluated. The purpose of the survey was to verify the topographic elevations of the onshore features and correlate those elevations to elevations associated with flood events. Further, it has been observed that some buildings associated with DBOC operations have been prone to flooding during high tide and storm events. Within a 2006 California Department of Public Health (CDPH) report, it was noted that "during extreme hydrographic conditions, Estero water floods into the oyster company's plant area. Extreme high tides (over 6 feet), rainfall and winds can all combine to bring water over the Estero banks and into the DBOC plant area. This occurs once or twice a year (Kevin Lunny, pers. comm.)" (Baltan 2006). In addition, NOAA identifies regions subject to potential tsunami inundation, and Drakes Estero falls within the tsunami inundation zone (State of California Emergency Management Agency 2009). Placement of structures within the 100-year floodplain is inconsistent with NPS floodplain management policies, and the continued presence of these structures in the floodplain has the potential to impact floodplain values, DBOC facilities, and the safety of those employees living in structures within the coastal flood zone. The impact topic of coastal flood zones is retained for detailed analysis in this EIS.

TABLE ES-1. ISSUES AND IMPACT TOPICS RETAINED FOR FURTHER ANALYSIS (CONTINUED)

Issue/Impact Topic	Rationale for Retention
Water Quality	DBOC commercial shellfish operations within and adjacent to Drakes Estero have the potential to impact both surface and groundwater quality. Nonpoint sources of pollution specific to land development and the commercial shellfish operations include onshore impervious stormwater runoff, boat operation, pulse disturbances to the Estero substrate from maintaining oyster racks and placing/overturning/removing bottom bags in Drakes Estero, accidental spill of fuel/oil, and accidental spill/leaks of wastewater from underground septic tanks. In addition, water used to clean the oysters and other discharges from sources used in the cultivation process may contribute to water quality impacts. Floating debris (plastic tubing, bags, piping, etc.) associated with the commercial shellfish operation may also impact water quality. As identified during public scoping, shellfish cultivation in Drakes Estero (specifically the presence of filter-feeding organisms) may result in beneficial impacts on water quality. The impact topic of water quality is retained for detailed analysis in this EIS.
Soundscapes	In accordance with NPS *Management Policies 2006* and Director's Order 47: *Soundscape Preservation and Noise Management* (DO-47), an important part of the NPS mission is preservation of natural soundscapes within units of the national park system (NPS 2006d, 2000). Natural soundscapes "encompass all the natural sounds that occur in parks, including the physical capacity for transmitting those natural sounds and the interrelationships among park natural sounds of different frequencies and volumes. Natural sounds occur within and beyond the range of sounds that humans can perceive, and they can be transmitted through air, water, or solid materials" (NPS 2006d). As identified during public scoping, components of DBOC operations, such as motorized boats and onshore equipment, create noise that may impact park visitors and wildlife and disturb the natural soundscape of the area. The impact topic of soundscapes is retained for detailed analysis in this EIS.
Wilderness	A wilderness area is defined, in part, as "an area where the earth and its community of life are untrammeled by man, where man himself is a visitor who does not remain. . . . An area of undeveloped Federal land retaining its primeval character and influence, without permanent improvements or human habitation" (PL 88-577). Pursuant to PL 94-544 and 94-567, Congress designated the waters of Drakes Estero as potential wilderness. Drakes Estero was designated as potential wilderness rather than full wilderness due to the presence of the commercial oyster operation, a nonconforming use. Cessation of DBOC's commercial operations upon expiration of existing authorizations would allow the congressionally designated potential wilderness to be converted to congressionally designated wilderness. Conversely, should a new SUP be issued, the area would remain as congressionally designated potential wilderness for another 10 years. The impact topic of wilderness is retained for detailed analysis in this EIS.
Visitor Experience and Recreation	The NPS strives to provide opportunities for forms of enjoyment that are uniquely suited and appropriate to the natural and cultural resources found in park units. During public scoping it became evident that some visitors to the Seashore view the commercial shellfish operation as an integral part of their visit, while other visitors view the commercial operation as an adverse impact on their enjoyment of solitude and the natural setting and resources of the site, as well as their wilderness experience. For those visitors that view the commercial shellfish operation as an integral part of their visit to the Seashore, expiration of existing authorizations may reduce the satisfaction of these visitors, because they would no longer be able to purchase oysters or interact with DBOC staff. On the other hand, if a new 10-year SUP is issued to DBOC to continue its commercial shellfish operation, Seashore visitors seeking to experience the wilderness of Drakes Estero, as defined by the Wilderness Act of 1964 as, "outstanding opportunities for solitude or a primitive and unconfined type of recreation," would be adversely affected. Therefore, the impact topic of visitor experience and recreation is retained for detailed analysis in this EIS.

TABLE ES-1. ISSUES AND IMPACT TOPICS RETAINED FOR FURTHER ANALYSIS (CONTINUED)

Issue/Impact Topic	Rationale for Retention
Socioeconomic Resources	As part of the NEPA process, the NPS assesses the impacts of each alternative on socioeconomic resources. Expiration of the existing RUO and associated SUP and termination of DBOC's commercial operations could result in adverse impacts on the current staff and on DBOC, as well as on the regional economy and statewide shellfish production. The impact topic of socioeconomic resources is retained for detailed analysis in this EIS.
NPS Operations	Each of the proposed alternatives could result in changes to Seashore operations and infrastructure near and within Drakes Estero. Seashore staff and available funding are key elements to promoting and protecting natural and cultural resources within the Seashore. Issuance of a new SUP to DBOC would require improved SUP monitoring and enforcement by Seashore staff, including review of proposed changes at DBOC and coordination with other state and local agencies. The impact topic of NPS operations is retained for detailed analysis in this EIS.

TABLE ES-2. ISSUES AND IMPACT TOPICS CONSIDERED BUT DISMISSED FROM FURTHER ANALYSIS

Issue/Impact Topic	Rationale for Dismissal
Vegetation	Vegetation cover types within the Drakes Estero watershed include wetlands, coastal dune, coastal scrub, grassland, pasture, and riparian woodland. Coastal scrub and wetlands are the only vegetation types that exist within the immediate project area. Several rare plants (see appendix E of the EIS) are known to exist within these habitat types. Wetlands are discussed as a separate impact topic, because there is the potential for these resources to be impacted by the alternatives considered in this EIS. The coastal scrub vegetation cover type is present around the onshore DBOC facilities and along the main access road. The proposed alternatives would not directly impact the coastal scrub vegetation. The rare plants known to exist in the area (based on inventory data provided by the NPS) would not be impacted by the project as they are located within areas that are outside the area of direct and indirect impacts, including some of the adjacent coastal scrub areas and within vegetated intertidal (NPS 2010f). Therefore, the impact topic of vegetation is dismissed from further analysis in this EIS.
Special-status Species	As mentioned in table ES-1, seven federally listed threatened and endangered species were identified for consideration. Five of these species have been dismissed from further analysis in the EIS due to a lack of designated critical habitat in the project/action area, unconfirmed presence of the species in the project/action area, or the potential for less than minor impacts on the species and/or their critical habitat. These include Myrtle's silverspot butterfly (*Speyeria zerene myrtleae*), California red-legged frog (*Rana aurora draytonii*), leatherback sea turtle (*Dermochelys coriacea*), western snowy plover (*Charadrius alexandrinus nivosus*), and California least tern (*Sternula antillarum browni*). A brief explanation of the justification for dismissal for each species is provided below.

TABLE ES-2. ISSUES AND IMPACT TOPICS CONSIDERED BUT DISMISSED FROM FURTHER ANALYSIS (CONTINUED)

Issue/Impact Topic	Rationale for Dismissal
	Myrtle's Silverspot Butterfly (*Speyeria zerene myrtleae*). Myrtle's silverspot butterfly was federally listed as endangered in 1992 (USFWS 1992). The historic range of the butterfly in California is believed to have extended from the mouth of the Russian River in Sonoma County to Point Año Nuevo in San Mateo County (Launer et al. 1992). Typical habitat for Myrtle's silverspot butterfly and its host plant includes coastal dunes, coastal scrub, or coastal prairies that are protected from wind, at elevations from sea level to 1,000 feet, up to 3 miles inland (USFWS 1998). Plant species at the Seashore known to attract adult Myrtle's silverspot butterfly include western dog violet (*Viola adunca*), curly-leaved monardella (*Monardella undulata*), yellow sand-verbena (Abronia *latifolia*), seaside daisy (*Erigeron glaucus*), bull thistle (*Cirsium vulgare*), gum plant (*Grindelia* spp.), and mule ears (*Wyethia* spp.). Of these, the western dog violet serves as the host plant (i.e., the plant on which females lay eggs) and is the only known food plant used by butterfly larva once they emerge from eggs. Other flowering plants provide nectar sources for adult butterflies (USFWS 2009). Coastal scrub habitat surrounds the DBOC onshore facilities and entry road. Surveys conducted in 2003 verified the presence of butterfly populations within the Seashore and the butterfly has been documented on grasslands surrounding the project area (USFWS 2009). However, records do not indicate that Myrtle's silverspot butterfly exists within the project/action area. If species were present in the project area, threats such as the potential for vehicle strikes/mortality would be less than minor due to the slow speeds and low usage of the access road. California Red-legged Frog (*Rana aurora draytonii*). The California red-legged frog was listed as federally threatened in 1996 (USFWS 1996). Revised critical habitat for this species was designated in 2010 (USFWS 2010). The frog requires a variety of habitats for normal biological activity, including aquatic breeding areas, riparian habitat, and upland dispersal habitats used during migration between breeding areas. Aquatic breeding habitats include pools and backwaters within streams and creeks, ponds, marshes, springs, sag ponds, dune ponds, and lagoons. Additionally, California red-legged frogs frequently breed in artificial impoundments, such as stock ponds (USFWS 2002b). Historically, the frog has been observed at elevations ranging from sea level to 5,200 feet above sea level, but it has been extirpated (eliminated) in 70 percent of its former range. Since 1993, the U.S. Geological Survey Biological Resources Division has conducted surveys of aquatic amphibian habitat in the Seashore. The surveys have identified more than 120 California red-legged frog breeding sites within the Seashore, supporting a total adult population of several thousand frogs (NPS 2007a). Approximately two-thirds of the breeding sites are on ranch lands, with a large proportion occurring at stock ponds used by ranchers. Based on survey data, important habitat for red-legged frogs also includes streams with relatively low gradients that have late-season water flow or water retention in pools. On Point Reyes Peninsula, such creeks support relatively few of the documented occurrences of the frogs, but may serve as important connectors to other breeding and refuge habitats. Examples of Seashore streams with this habitat are found in the Drakes Estero watershed. California red-legged frogs are documented in East Schooner, Home Ranch, Limantour, Glenbrook, Muddy Hollow, and Laguna creeks (USFWS 2008). In addition, the federally designated critical habitat encompasses the landward boundary of Drakes Estero. However, recent surveys and records do not indicate that the California red-legged frog exists within the project/action area. Due to the saline conditions of Drakes Estero, it is unlikely that the project/action area would serve as habitat for the California red-legged frog. Further, if the species were found to be present in the project area, the proposed actions of the onshore operations would be less than minor due to limited actions outside the existing developed footprint.

TABLE ES-2. ISSUES AND IMPACT TOPICS CONSIDERED BUT DISMISSED FROM FURTHER ANALYSIS (CONTINUED)

Issue/Impact Topic	Rationale for Dismissal
	Leatherback Sea Turtle (*Dermochelys coriacea*). The leatherback sea turtle was listed as federally endangered in 1970 (USFWS 1970). Critical habitat was designated by NMFS in 2012 and although Drakes Estero is included in the geographic area designated as critical habitat (NMFS 2012a), further consultation with NMFS revealed that critical habitat for leatherback turtles does not extend into estuarine habitat (NMFS 2012b). As an estuary, Drakes Estero is therefore not included in the critical habitat designated for leatherback sea turtles. Leatherback sea turtle occurrences have not been recorded within the project/action area. Based on the nesting and foraging habitat requirements, it is unlikely that the turtles would use the shallow estuarine or land habitats associated with Drakes Estero. Western Snowy Plover (*Charadrius alexandrinus nivosus*). Western snowy plover was listed as federally threatened in 1993 (USFWS 1993). In 2005, the USFWS designated 12,145 acres of critical habitat for western snowy plover, including portions of Marin County. Based on federal reassessment of conservation needs proposed, updates to western snowy plover critical habitat were recommended in 2010, increasing the total acres of critical habitat to 28,261. Habitat for the plover includes beaches, dry mudflats, dry salt flats, and sandy shores. The plover nests on the ground in broad open spaces with sparse clumps of vegetation that allow protective cover for chicks. Nests also occur beside or under protective objects (Page et al. 2009). The plover's diet includes small insects, small crustaceans, and other minute vertebrates (Terres 1980). The western snowy plover uses the Point Reyes Peninsula as wintering and nesting habitat. During the 1980s, nesting took place along the entire Great Beach, on the far east end of Drakes Beach near the mouth of Drakes Estero, and at Limantour Spit. In recent years, erosion along the southern portion of Great Beach has diminished the upper beach area such that the entire beach can be washed by waves. Nesting is occurring on the northern portion of this beach, between the North Beach parking area and Kehoe Beach, which is backed by extensive dunes. Between 2001 and 2005, snowy plover nests were observed on this northern portion of Great Beach. Plovers also nest along the western edge of Abbotts Lagoon. Limantour Spit, the point at which Drakes Estero meets Drakes Bay, has historically been used as nesting habitat by plovers; however, no nests have been observed there since 2000 (Peterlein 2009). The nearest current areas of critical habitat include Limantour Spit and all the Seashore beaches lining the northwest shore of the Point Reyes Peninsula (USFWS 2011a). Despite the close proximity of critical habitat and nesting locations/habitat, there are no known records of western snowy plover observations within the project/action area, and potential impacts of proposed operations are considered negligible. California Least Tern (*Sternula antillarum browni*). The California least tern was listed as federally endangered in 1970 and state endangered in 1971 (USFWS 1985b). Least terns nest in loose colonies on relatively open beaches with no vegetation, along lagoon or estuary margins. Foraging habitat includes shallow estuaries or lagoons with abundant populations of small fish or other small prey. Terns usually dive for their prey and rest or loaf on sandy beaches and mudflats (NatureServe 2011). While no least terns are known to exist within the Seashore (including the project area), potentially suitable habitat types do exist. However, the nearest known population is located in the San Francisco Bay Area.
Water Quantity	Impacts on fresh water quantity are related to the amount of ground water DBOC uses for wastewater and potable uses. The amount of well water used by DBOC does not noticeably impact the availability of fresh water in the area and was therefore not retained as an impact topic for further analysis in the EIS.

TABLE ES-2. ISSUES AND IMPACT TOPICS CONSIDERED BUT DISMISSED FROM FURTHER ANALYSIS (CONTINUED)

Issue/Impact Topic	Rationale for Dismissal
Lightscapes	In accordance with NPS *Management Policies 2006*, the NPS strives to preserve natural ambient landscapes and other values that exist in the absence of human-caused light (NPS 2006d). There are two pole-mounted overhead lights within the project area to provide safety lighting after dark. Low levels of light also emanate from the DBOC residences. DBOC does not perform commercial shellfish operations after dark. In addition, visitor use of the area after dark is minimal. These low levels of light do not have a noticeable impact on natural resources or visitor enjoyment. Should DBOC require additional lighting in the future (if an action alternative is selected), then new lighting shall be designed to protect and preserve the night sky/darkness and minimize light pollution in Drakes Estero, as indicated by the SUP (NPS 2008b). Given the proximity of the project area to the San Francisco metropolitan area, the lightscape within the Seashore has already been degraded by the light pollution surrounding San Francisco. The impact topic of lightscapes is dismissed from further analysis in the EIS.
Air Quality	The Seashore, a Class I airshed, is located within the San Francisco Bay nonattainment areas for 8-hour ozone, 1-hour ozone, and fine particulate matter (less than 2.5 micrometers) (PM2.5) as defined by the National Ambient Air Quality Standards set forth in the Clean Air Act (EPA 2011) and further specified by the Bay Area Air Quality Management District (BAAQMD 2010). The primary air pollutant sources associated with the San Francisco Bay Area are related to urban activities (i.e., commuting). Ongoing activities within the Seashore have a minimal contribution to air pollution in the nonattainment area. Volatile organic compounds (VOCs) are a general class of compounds containing hydrogen and carbon and are a precursor to the formation of the pollutant ozone. While concentrations of VOCs in the atmosphere are not generally measured, ground-level ozone is measured and used to assess potential health effects. When combustion temperatures are extremely high, as in automobile engines, atmospheric nitrogen gas may combine with oxygen gas to form various oxides of nitrogen. Of these, nitric oxide (NO) and nitrogen dioxide (NO2) are the most significant air pollutants. This group of pollutants is generally referred to as nitrogen oxides or NOX. Nitric oxide is relatively harmless to humans but quickly converts to NO2. Nitrogen dioxide has been found to be a lung irritant and can lead to respiratory illnesses. Nitrogen oxides, along with VOCs, are also precursors to ozone formation. Emissions of VOCs and NOX react in the presence of heat and sunlight to form ozone in the atmosphere. Accordingly, ozone is regulated as a regional pollutant and is not assessed on a project-specific basis. The “de minimis” emissions limits for general conformity with federal actions (i.e., “thresholds”) for nonattainment ozone and particulate matter are presented in chapter 1, table 1-1. Because ozone is a by-product of volatile organic compounds and nitrogen oxide, threshold levels for ozone are based on threshold levels of ozone precursors: VOCs and NOx. The threshold levels for VOCs and NOx are 54 pounds/day and 10 tons/year. Threshold levels for PM2.5 also are 54 pounds/day and 10 tons/year (BAAQMD 2010). DBOC’s direct and indirect emissions contribution to nonattainment was estimated for all activities (i.e., motorboats, maintenance equipment, employee vehicles, and trucks for transporting the shellfish). The results indicate that all DBOC emissions are equal to or below 3.5 tons per year for all nonattainment pollutants (chapter 1, table 1-1). The calculated levels for DBOC emissions related to NOx are 2 to 4 pounds/day and 0.3 to 0.5 tons/year. The calculated levels for reactive organic gas (ROG) are 11 to 24 pounds/day and 1.6 to 3.5 tons/year. The calculated levels for both ozone precursors, ROG and NOx, from DBOC operations fall well below threshold levels. The levels of PM2.5 discharge from DBOC boat emissions are considered to be negligible.

TABLE ES-2. ISSUES AND IMPACT TOPICS CONSIDERED BUT DISMISSED FROM FURTHER ANALYSIS (CONTINUED)

Issue/Impact Topic	Rationale for Dismissal
	DBOC operations meet general conformity requirements because their regional emissions are well below the de minimis threshold levels established by federal and state general conformity requirements. If the no-action alternative is selected, emission levels would be well below levels calculated for DBOC operations, as all motorized activity in the water and onshore would cease with the exception of vehicles using the access road for the kayak launch and occasional administrative use of motorized boats, which would be subject to evaluation under minimum requirements and minimum tool determination processes as required by the Wilderness Act. Under the action alternatives, DBOC emissions, as estimated above, would continue at similar levels. Based on the calculated levels, the impact topic of air quality is dismissed from detailed analysis in this EIS.
Climate Change and Greenhouse Gas Emissions (Carbon Footprint)	Climate change refers to any significant change in average climatic conditions (such as mean temperature, precipitation, or wind) or variability (such as seasonality, storm frequency, etc.) lasting for an extended period (decades or longer). Recent reports by the U.S. Climate Change Science Program, the National Academy of Sciences (NAS), and the United Nations Intergovernmental Panel on Climate Change (IPCC) provide clear evidence that climate change is occurring and will accelerate in the coming decades. There is strong evidence that global climate change is being driven by human activities worldwide, primarily the burning of fossil fuels and tropical deforestation. These activities release carbon dioxide and other heat-trapping gases, commonly called "greenhouse gases," into the atmosphere (IPCC 2007a, 2007b, 2007c, 2007d). There are two aspects of climate change that must be considered in an environmental impact analysis: (1) Human impact on climate change: i.e., through actions, the potential to increase or decrease emissions of greenhouse gases that contribute to climate change, and (2) The impact of climate change on humans: i.e., how the resources that are managed are likely to change in response to changing climate conditions, and how that changes or otherwise affects management actions and the impacts of those actions on the resource. Some of the activities associated with DBOC operations result in fossil fuel consumption (e.g., motorboats within Drakes Estero, trucks associated with the transportation of shellfish, and vehicles carrying visitors to the area). Equipment used to maintain DBOC facilities, access roads, and parking areas also consume fossil fuels. However, greenhouse gas emissions associated with any of the alternatives involving issuing a new SUP would likely be negligible. Additionally, some comments submitted during public scoping suggested that the quantity of greenhouse gas emissions (the carbon footprint) associated with oyster consumption would increase if a new SUP was not issued to DBOC (the no-action alternative) because of the loss of the local food source. Some comments suggested that without DBOC, the distance oysters would be transported to meet demand in the San Francisco Bay Area would greatly increase, thus increasing the overall greenhouse gas emissions. It is not clear how the shellfish market would respond should this local source cease operations. Local demand could be met in the future by various means. Oysters could be shipped in from outside the local area, which would increase the carbon footprint associated with transporting the product. Conversely, other local commercial shellfish operations may increase their production and distribution of oysters to the local market, which would result in a carbon footprint similar to existing conditions. Oyster production in California, as a whole, appears to be increasing at a rate greater than DBOC's production. For example, as described in chapter 3 of the EIS, in 2010, DBOC produced 585,277 pounds of shucked oyster meat (6.89 million oysters), a 28 percent increase over 2009 production levels. During this same period, the California oyster market increased 43 percent. An increase in Pacific oyster production in Humboldt Bay was the primary contributor to this change (the California Pacific oyster market increased 48 percent, by weight, between 2009 and 2010) (CDFG

TABLE ES-2. ISSUES AND IMPACT TOPICS CONSIDERED BUT DISMISSED FROM FURTHER ANALYSIS (CONTINUED)

Issue/Impact Topic	Rationale for Dismissal
	2011e). Based on this information, it is likely that at least some portion of the current DBOC production could be accommodated by other operations in the state of California. Agencies are not required to engage in speculation or analyze indirect effects that are highly uncertain (CEQ 1981, Q18 [48 Fed. Reg. 18027]). Because there is no certainty regarding how the shellfish market and demand would respond to the proposed action, impacts from global carbon emissions cannot be meaningfully and/or quantifiably analyzed. While greenhouse gas emissions associated with the no-action alternative may potentially be greater due to increased transportation distances, they are also likely to be negligible in comparison to local, regional, and national greenhouse gas emissions. In addition, the effects of climate change on park resources over the 10-year planning horizon for this EIS are likely to be negligible. Issues associated with climate change's impact on the Seashore resources (rising sea temperatures, sea level rise, ocean acidification, etc.) are addressed in applicable sections of chapters 3 and 4 of the EIS. The contribution of the actions contemplated in this EIS on climate change is likely to be negligible and is dismissed from further analysis.
Local Food	DBOC grows and processes oysters and clams onsite and supplies these products to the surrounding communities. Approximately 40 percent of these products are sold to onsite customers, 40 percent is sold directly to local markets and restaurants, 18 percent is sold to Tomales Bay shellfish growers, and 2 percent is sold through a wholesale seafood distributor based in San Francisco (DBOC 2012b[ii]). DBOC imports shellfish in the form of larvae (and seed) from California Department of Fish and Game (CDFG)-certified sources in compliance with a "Long-term Permit to Import Live Aquatic Animals into California" issued by CDFG. CDFG-certified hatcheries are located in Hawaii and along the U.S. west coast. DBOC's 2006 proof of use report shows that 1 million Manila clam seeds were acquired from Kona Coast Shellfish in Hawaii. For Pacific oyster larvae and seed, CDFG generally uses hatcheries on the west coast. For instance, for 2011, DBOC holds permits to import larvae/seed from Taylor Shellfish Farms in Washington (Permit MR-L-10-029) and Whiskey Creek Shellfish Hatchery in Oregon (Permit MR-L-10-028). However, DBOC has also used seed from Coast Seafoods Company in California and Kona Coast Shellfish in Hawaii. While many people in the Bay Area enjoy these natural foods, other proteins, such as beef, poultry, or finfish, also are produced in the vicinity of DBOC. In addition, other shellfish operations, such as the Tomales Bay Oyster Company and the Hog Island Oyster Company, both of which are in Tomales Bay proximal to DBOC (approximately 15-20 driving miles), contribute to the local oyster and clam supply. Similar to DBOC, these operations offer fresh shellfish for purchase onsite and to restaurants in the region. In addition to proteins, many other types of local foods are produced in Marin County and the Bay Area including dairy products, fruits, vegetables, and products derived from these food types. In 2011, aquaculture (oysters, mussels, and clams) accounted for 7 percent of the total agricultural production in Marin County. In comparison, livestock products such as milk and wool comprised 45 percent of the county total, while livestock (the animals themselves) and miscellaneous made up 28 percent (MCDA 2012). On average, DBOC has produced 513,152 pounds of seafood annually over the last 5 years, representing approximately 58 percent of the oysters in Marin County over this period (CDFG 2011e). As described further in the "Socioeconomic Resources" section of chapter 3, DBOC's contribution to the county shellfish market declined since 2007 to approximately 50 percent, therefore, it is estimated that of the aquaculture produced in Marin County in 2011, approximately 50 percent was produced by DBOC, equivalent to approximately 3.5 percent of the overall agricultural production of the county (CDFG 2011e; MCDA 2012). Based on this information, any change in DBOC's contribution to the local food supply would likely be negligible. For these reasons, the impact topic of local food has been dismissed from further analysis in the EIS.

TABLE ES-2. ISSUES AND IMPACT TOPICS CONSIDERED BUT DISMISSED FROM FURTHER ANALYSIS (CONTINUED)

Issue/Impact Topic	Rationale for Dismissal
Geological Resources	NPS *Management Policies 2006* directs the NPS to preserve and protect geologic resources as integral components of park natural systems (NPS 2006d). Cultivation of shellfish within Drakes Estero and the processing facilities on the land are unlikely to affect geologic processes and resources, including soils and topography. Current sediment transport processes, which may be impacted by actions proposed in this EIS, are analyzed in the water quality section of this EIS. The impact topic of geologic resources is dismissed from further analysis in the EIS.
Paleontological Resources	Paleontological resources are defined as "resources such as fossilized plants, animals, or their traces, including both organic and mineralized remains in body or trace form" (NPS 2006d). NPS *Management Policies 2006* directs the NPS to preserve and protect paleontological resources in terms of the geologic data associated with the resource to provide information about the ancient environment (NPS 2006d). Paleontological resources have been identified within the Seashore, including concretions near the project area. These resources are outside the immediate project area and therefore would not be impacted by the proposed actions. Additionally, it is unlikely that activities associated with the proposed actions would disturb any undiscovered paleontological resources, as ground disturbance is not proposed outside the development area. The impact topic of paleontological resources is dismissed from further analysis in the EIS.
Cultural Resources	The NPS categorizes cultural resources as archeological resources, cultural landscapes, ethnographic resources, historic and prehistoric structures, and museum collections (NPS 2006d). The National Historic Preservation Act (NHPA) mandates preservation programs in every federal agency and identifies the NPS as the lead historic preservation agency. NHPA requires federal agencies to identify properties eligible for listing on the National Register of Historic Places (National Register) and recognizes five property types: districts, sites, buildings, structures, and objects. Cultural landscapes are usually classified as either districts or sites, depending upon their character. While parks may contain properties or activities that are old, the NPS Cultural Resources program manages properties found eligible for the National Register. Use of this site over time by customers and park visitors is not considered a historic or cultural resource. For a discussion of site use by visitors, see the "Visitor Experience and Recreation" section of the EIS. Under section 106 of the NHPA and implementing regulations 36 CFR 800, federal agencies must take into account the effects of their undertakings on significant historic properties and afford State Historic Preservation Officer (SHPO) and the Advisory Council on Historic Preservation (ACHP) an opportunity to comment as appropriate. The agency must seek ways to avoid, minimize or mitigate any adverse effects on historic properties. Concurrent with the NEPA process, a section 106 review is being conducted to determine whether the actions proposed in this EIS would result in an adverse impact on such resources. As part of this process, the California SHPO has been consulted regarding the eligibility of DBOC facilities for listing on the National Register. On April 1, 2011, the NPS notified the SHPO (and copied ACHP) of the intent to use this EIS process to meet section 106 consultation requirements. On October 18, 2012, the ACHP confirmed that they had reviewed the documentation provided and that their involvement in the section 106 review was no longer necessary (ACHP 2012, see appendix D of EIS). In a letter dated October 29, 2012, SHPO concurred with a finding of no adverse effects, although it was noted that unanticipated discovery or change in project description may require additional consultation under 36 CFR part 800 (SHPO 2012, see appendix D of EIS). During a meeting with The Federated Indians of Graton Rancheria representative on July 14, 2011, the NPS also notified the Tribe that it planned to use this EIS process to meet section 106 consultation requirements. This was followed up by letter on August 10, 2011 (NPS 2011g). The Tribe responded in a

TABLE ES-2. ISSUES AND IMPACT TOPICS CONSIDERED BUT DISMISSED FROM FURTHER ANALYSIS (CONTINUED)

Issue/Impact Topic	Rationale for Dismissal
	letter dated August 29, 2011, noting their concurrence with the "request to use the EIS process to meet Section 106 'government to government' consultation requirements" (FIGR 2011). Subsequently, on January 9, 2012, the NPS submitted a letter to The Federated Indians of Graton Rancheria to coordinate ongoing consultation and arrange a meeting to discuss the next steps for the proposed action, as related to section 106 consultation. Consultation with the Tribe was concluded on August 13, 2012, when The Federated Indians of Graton Rancheria submitted a letter of concurrence to NPS stating, "each of the four alternatives presented in the DEIS will have 'no adverse effect' on cultural resources under the standards set forth in 36 CFR 800.8(c)(1)." See appendix D of the EIS for copies of these letters. A Determination of Eligibility (DOE) was prepared for DBOC onshore and offshore facilities (Caywood and Hagen 2011). The DOE found that while the oyster-growing operation in Drakes Estero is significantly associated with the rebirth and development of the California oyster industry, which began in the 1930s, the property is ineligible for listing in the National Register because it lacks historic integrity. The period of historic significance for the site extends from 1957, when Charles W. Johnson assumed control of the Schooner Bay plant and the state oyster allotment, to about 1965, when his company successfully adapted Japanese off-bottom growing methods to the specific conditions of Drakes Estero. DOE project personnel conducted the documentation and assessment of the oyster farm in Drakes Estero as a potential cultural landscape. Of the seven aspects of integrity (location, setting, materials, workmanship, design, feeling and association), the property retains for the most part, integrity of location, setting, and association. The processing plant and the racks in the estero are in their original locations, and the property's setting—the pastoral landscape surrounding the bay—has been little altered since the early 1930s (Caywood and Hagen 2011). With regard to integrity of materials, workmanship, and design, however, virtually all of the resources in the plant have been modified through structural additions and/or the application of modern materials. Some are in such poor condition that their structural integrity is threatened. Since the 1960s new materials and structures have been added, older structures removed or destroyed, and existing structures modified extensively. In addition, the design of the plant operation has been altered. Over the years processing systems and equipment have been removed, and the entire canning operation moved offsite due to health department concerns, then reestablished in a modern, hygienic shipping container. "Finally, the combination of alterations, including a general lack of material and design integrity, as well as the addition of modern structures, has altered the appearance of the Johnson Oyster Company operation, which in turn adversely affects the property's integrity of feeling" (Caywood and Hagen 2011). Today, the plant bears little resemblance to the facility of the early 1960s. In a letter dated April 5, 2011, the NPS submitted the DOE to the SHPO requesting concurrence with the finding that the property is ineligible for listing on the National Register. The NPS received a response from the SHPO on August 4, 2011 (see appendix D) in which the SHPO concurred with the NPS determination that none of the facilities associated with DBOC's operation are eligible for listing on the National Register (SHPO 2011).
Archeological Resources	Archeological resources are the remains of past human activity and records documenting the scientific or scholarly analysis of these remains. For over 2,000 years, humans have inhabited the Point Reyes Peninsula, employing its rich resources and modifying aspects of the landscape to meet their changing needs. Approximately 100 Coast Miwok archeological sites document a culture that was an integral part of the ecosystem (Sadin 2007). One known archeological site (CA-MRN-296) exists within the project area and is associated with the Coast Miwok whose descendents are members of The Federated Indians of Graton Rancheria, a federally recognized Tribe. The site is a contributing resource in a draft National Register of Historic Places district nomination for indigenous archeological sites within the

TABLE ES-2. ISSUES AND IMPACT TOPICS CONSIDERED BUT DISMISSED FROM FURTHER ANALYSIS (CONTINUED)

Issue/Impact Topic	Rationale for Dismissal
	Seashore. Under all proposed action alternatives, the known archeological site would be excluded from the SUP boundary. As with other sites in the Seashore, there is potential for site disturbance as a result of unauthorized access. Regular site monitoring and management, which is afforded all archeological sites in the Seashore, would be conducted to reduce potential impacts on this site. Under all alternatives, if unknown archeological resources are discovered, the Seashore's standard protocol for inadvertent discoveries would apply. The Cultural Resources Management Division would be notified immediately and work in the immediate area would cease until the discovery is evaluated by a qualified archeologist. The discovery process defined by 36 CFR 800.13, the implementing regulations for NHPA (16 U.S.C. 470), would be applied. Evaluation of the discovery's significance would include consultation as appropriate with The Federated Indians of Graton Rancheria, SHPO, and the ACHP. In the event that human remains, funerary objects, sacred objects, or objects of cultural patrimony are discovered the process defined by 43 CFR 10.4-5, the implementing regulations of the Native American Graves Protection and Repatriation Act (25 U.S.C. 3001), would be applied. NPS response to any discovery of human remains or sacred objects would include but not necessarily be limited to immediate notification of the Seashore's Superintendent and Cultural Resources Division, cessation of work in the immediate vicinity, protecting the objects of discovery, notifying and consulting with The Federated Indians of Graton Rancheria, and preparing a written plan of action. For the purposes of section 106 of the NHPA, impacts under any of the alternatives would result in a determination of no adverse effect. For all ground disturbing activities within the onshore areas of DBOC, archeological identification studies, including construction monitoring by a qualified archeologist, may be required to determine the presence of unknown or buried archeological resources. The impact topic of archeological resources is dismissed from further analysis in the EIS.
Cultural Landscapes	According to NPS-28: *Cultural Resource Management Guideline* (NPS 2002b), a cultural landscape is a reflection of human adaptation and use of natural resources and is often expressed in the way land is organized and divided, patterns of settlement, land use, systems of circulation, and the types of structures that are built. The character of a cultural landscape is defined both by physical materials, such as roads, buildings, walls, and vegetation, and by use reflecting cultural values and traditions. The oyster-growing facilities lie within but do not contribute to the significance of the Point Reyes Ranches Historic District, which was determined eligible for the National Register (Historical Research Associates, Inc. 2008). As described above under "Cultural Resources," DBOC facilities were evaluated separately for listing on the National Register. While significantly associated with the California oyster industry from 1957-65, the property is ineligible for listing in the National Register because it lacks historic integrity. For the purposes of section 106 of the NHPA, impacts under any of the alternatives would result in a determination of no adverse effect. The impact topic of cultural landscapes is considered but dismissed from further analysis in the EIS.
Historic Structures	A historic structure is defined by NPS-28 as "a constructed work, usually immovable by nature or design, consciously created to serve some human act" (NPS 2002b). As described above, a DOE was conducted to identify properties within the project area that are eligible for listing on the National Register. While the Seashore preserves over 300 historic structures, such as the Point Reyes Lighthouse, listed in the National Register, and the Point Reyes Lifeboat Station, a National Historic Landmark, none of the structures within the project area are eligible for listing on the National Register. For purposes of section 106 of the NHPA, impacts under any of the alternatives would result in a determination of no adverse effect. The impact topic of historic structures is considered but dismissed from further analysis in the EIS.

TABLE ES-2. ISSUES AND IMPACT TOPICS CONSIDERED BUT DISMISSED FROM FURTHER ANALYSIS (CONTINUED)

Issue/Impact Topic	Rationale for Dismissal
Ethnographic Resources and Sacred Sites	An ethnographic resource is defined as any "site, structure, object, landscape, or natural resource feature assigned traditional legendary, religious, subsistence, or other significance in the cultural system of a group traditionally associated with it" (NPS 2002b). The Federated Indians of Graton Rancheria are culturally affiliated with the Seashore and have expressed concern that their cultural legacy may be impacted if a new SUP is issued to DBOC (FIGR 2007). However, no traditional cultural properties have been identified within the project area. One Coast Miwok archeological site has been identified within the project area; however, the project would not affect this site, as described above under "Archeological Resources." The impact topic of ethnographic resources and sacred sites is considered but dismissed from further analysis in the EIS.
Indian Trust Resources	The federal Indian Trust is a legally enforceable obligation on the part of the United States to protect tribal lands, assets, resources, and treaty rights, and it creates a duty to carry out the mandates of federal laws with respect to Native American Tribes. Of the federally recognized Tribes pursuant to PL 103-454, 108 Stat. 4791, The Federated Indians of Graton Rancheria/Coast Miwok is the only Tribe affiliated with the Seashore. However, there are no known Indian Trust resources in the study area, and the lands composing the Seashore are not held in trust by the Secretary for the benefit of Indians. The impact topic of Indian Trust resources is considered but dismissed from further analysis in the EIS.
Museum Collections	A museum collection is an assemblage of objects, works of art, historic documents, and/or natural history specimens collected according to a rational scheme and maintained so that they can be preserved, studied, and interpreted for public benefit (NPS 2002b). The project area does not include any museum collection or objects. The impact topic of museum collections is considered but dismissed from further analysis in the EIS.
Environmental Justice	Executive Order 12898, "General Actions to Address Environmental Justice in Minority Populations and Low-income Populations," requires all federal agencies to identify and address the disproportionately high and/or adverse human health or environmental impacts of their programs and policies on minorities and low-income populations and communities (EPA 1994). The guidance provides six principles for consideration of environmental justice, which are: 1) composition of affected area and whether there are low-income populations, minority populations, or Indian tribes, 2) public health and industry data for assessment of environmental hazards, 3) recognition of interrelated cultural, social, occupational, historical, or economic factors that could amplify environmental effects, 4) encouragement of public participation and accommodations to overcome linguistic, cultural, institutional, geographic, and other barriers, 5) meaningful community representation with awareness of diverse constituencies, and 6) soliciting tribal representation. Applicable principles are discussed in the following paragraphs. The NPS notes that many of the 31 employees at DBOC individually qualify as low-income and/or minority. However, under the thresholds established by the Executive Order, the employees themselves do not constitute a low-income or minority population, other than as part of the community in which DBOC is located. Adverse impacts to DBOC employees related to the proposed alternatives are limited to socioeconomic impacts. While not appropriate as a topic for environmental justice, economic impacts of the proposed action at the Inverness CDP, Marin County, and State of California level are retained for analysis in this EIS under socioeconomic resources. Existing socioeconomic conditions and the potential impacts associated with the proposed alternatives are described in the affected environment and environmental consequences chapters (chapters 3 and 4) of the EIS. CEQ's "Environmental Justice Guidance Under the National Environmental Policy Act" provides guidance to federal agencies on how to determine the presence of low-income and minority populations within an appropriate unit of geographic analysis. The guidance defines the identification of a minority population

TABLE ES-2. ISSUES AND IMPACT TOPICS CONSIDERED BUT DISMISSED FROM FURTHER ANALYSIS (CONTINUED)

Issue/Impact Topic	Rationale for Dismissal
	where either "(a) the minority population of the affected area exceeds 50 percent or (b) the minority population percentage of the affected area is meaningfully greater than the minority population percentage in the general population or other appropriate unit of geographic analysis" (CEQ 1997). For the purposes of this EIS, the affected area (area of analysis) for environmental justice is Inverness Census Designated Place (CDP). This is consistent with the scale used to describe the socioeconomic impacts of the project on a local level. Marin County is used for comparative purposes, as it is the next-largest scale used to describe socioeconomic impacts. According to 2010 census data, the total population of Inverness is 1,304. As shown in table 3-7 in chapter 3 of the EIS, the minority population of Inverness CDP make up 7.1 percent and of the total population. Six percent of the CDP's population is of Hispanic descent. In comparison, the minority population of Marin County, which is used herein as the general population, is 20 percent, with a total population of 252,409. Marin County residents of Hispanic descent make up 15.5 percent of the county's population. It should be noted that the concept of race is different than the concept of Hispanic origin. Therefore, the U.S. Census collects separate data on Hispanic and minority populations. Specifically, Hispanic is not considered a minority population by the U.S. Census and must be considered independently from race. For example, nearly half of the Marin County residents who reported to be Hispanic in 2010 indicated that their race was "white only." The remaining 54 percent of the Hispanics within the county specified another race, stated they were of "some other race", or indicated they were of two or more races (U.S. Census Bureau 2010). Those Hispanics that reported to be "white only" are not considered minority. Similarly, 51 percent of the Hispanic population in Inverness CDP reported to be "white only" (U.S. Census Bureau 2010).As such, it is not appropriate to add the Hispanic and minority percentages together to achieve an overall minority percentage. This would result in double counting and an inflation of the actual minority population in Inverness CDP and Marin County. In accordance with CEQ regulations and thresholds, Inverness CDP does not meet the criteria of an environmental justice population based on its minority population, as the minority population is well below both the CEQ threshold of 50 percent and is not meaningfully greater than the minority population percentage in the general population. A similar analysis was used to determine whether the affected area constitutes a low-income environmental justice population. CEQ's "Environmental Justice Guidance Under the National Environmental Policy Act" specifies, "Because CEQ guidance does not provide a specific threshold to identify low-income populations, U.S Census 2010 data was compared to thresholds defined by the Metropolitan Transportation Commission (MTC) during development of their Transportation Improvement Program for the San Francisco Bay Area. The MTC established a low-income threshold of 30 percent, whereby any community whose population consists of more than 30 percent low-income residents would be considered a "community of concern" (MTC 2010). According to 2010 census data, the low-income population of Inverness CDP make up 12.8 percent and of the CDP's total population. In comparison, the low-income population of Marin County is 7.0 percent. As such, in accordance with CEQ regulations and thresholds, Inverness CDP does not meet the criteria of an environmental justice population based on its low-income population, as the population meeting the criteria for low-income is well below the regional threshold of 30 percent. As stated by DBOC, 22 employees are Hispanic or Latino and most also fall into the category of low-income (DBOC 2011[iii]). However, under the applicable thresholds and as described above, the employees themselves do not constitute a low-income or minority population.

TABLE ES-2. ISSUES AND IMPACT TOPICS CONSIDERED BUT DISMISSED FROM FURTHER ANALYSIS (CONTINUED)

Issue/Impact Topic	Rationale for Dismissal
	The second factor identified in the Executive Order does not apply here because the public health impacts from this project are remote and negligible. For example, NPS considered air quality as an impact topic in the EIS but dismissed it from further consideration when it determined that emissions from the alternatives would be below the "de minimis" thresholds for San Francisco Bay Area nonattainment areas (see the "Air Quality" section above). Pursuant to the third factor, NPS recognizes that there are some cultural, social, occupational, historical, or economic factors that may amplify environmental impacts of the project, such as current economic conditions. However, because the impacts to minority and low-income populations would be limited to DBOC employees and not surrounding minority populations, this is not a relevant factor for environmental justice consideration. However, where applicable, these factors are considered as part of the cumulative impact analysis for Socioeconomic Resources in chapter 4 of the EIS. In accordance with the fourth factor, NPS encouraged public participation throughout the NEPA process. The public scoping period was open between October 8, 2010 and November 26, 2010. The Draft EIS was made available for public review and comment beginning on September 23, 2011 and ending December 9, 2011. Both of these comment periods were extended beyond the standard 30 and 60 days, respectively, to accommodate any interested parties who may have been adversely affected by a power outage in 2010 that disrupted the NPS PEPC system, and in 2011 to consider additional comments in light of the Marine Mammal Commission's November 2011 report (MMC 2011b). Comments were accepted online, in park forms available at the public meetings, as well as by mail. NPS also held three public scoping meetings in 2010 and three public meetings in 2011 during the public review of the Draft EIS. NPS included Spanish-language interpreters at all public meetings to accommodate parties of limited-English, and the fact sheet available at the 2011 public meetings was also available in Spanish. As noted previously, because potentially disproportionate impacts to minority and low-income populations would be limited to DBOC employees, the fifth environmental justice factor identified in Executive Order 12898 is not relevant to the proposed action. However, as explained under the fourth factor, NPS provided public participation opportunities that were available to interested parties who individually qualify as low-income or minority. Sixth, NPS consulted with The Federated Indians of Graton Rancheria inviting the tribe to provide information on features of cultural or religious significance. The correspondence is provided in appendix D of the Final EIS. Based on the information provided above, the impact topic of environmental justice is considered but dismissed from further analysis in the EIS. As noted previously, impacts of the proposed action on DBOC employees is evaluated in the socioeconomic resources sections of this EIS.

ALTERNATIVES

The alternatives selected for detailed analysis are summarized below and in table ES-3. Consistent with NEPA and the stated purpose and need, this EIS explores a reasonable range of alternatives, including a no-action alternative (see, 40 CFR 1502.14). The analysis of impacts is presented in "Chapter 4: Environmental Consequences."

This EIS presents one no-action alternative, under which DBOC's operations would end after the existing authorizations for DBOC expires on November 30, 2012, and three action alternatives, under which the Secretary would exercise the discretion granted to him under section 124 to issue a new 10-year SUP to DBOC to operate in Drakes Estero for a period of 10 years through November 30, 2022. The alternatives presented in this EIS were developed taking into consideration the results of internal discussions, review of public comments, and consultation with local, state, and other federal agencies. Development of the action alternatives also was informed by the scope and scale of the existing DBOC operations and facilities, as authorized by the existing RUO and 2008 SUP. During the process of developing this EIS, DBOC comments, responses, and submittals to other agencies were reviewed. In addition, DBOC conducted a site tour with the NPS and consultants. The alternatives development process also included a review of previous documents regarding operations and development within the project area, reference materials, and the recommendations of the NAS report *Shellfish Mariculture in Drakes Estero* (2009). Additional reviews conducted specifically regarding this document have also been taken into account. Additional detail on use of these publications is included in the "Independent Reviews of the Science Used in this EIS" section of chapter 1.

ELEMENTS COMMON TO ALL ALTERNATIVES

There are a number of elements common to all alternatives, as listed below. They are as follows:

- The current NPS authorizations, which consist of the RUO and the 2008 SUP, expire on November 30, 2012.
- Subsequent to expiration of the SUP, the congressionally designated potential wilderness would be converted to congressionally designated wilderness, although the year in which this takes place would vary between the no-action (2012) and action alternatives (2022).
- NPS would continue to maintain the existing NPS facilities within the project area: the access road, a gravel parking lot, vault toilet, and an interpretive board.
- When NPS's authorizations to DBOC expire (either 2012 or 2022), DBOC would remain responsible for the removal of those buildings and structures owned by DBOC as listed in table 2-3 (i.e., the temporary office trailer, the punching shed, the temporary cannery, temporary storage, setting tanks, the three mobile homes, and the picnic facilities) and all personal property (including any improvements made to the area since 1972). The year in which these removal and restoration activities would take place would vary between the no-action (2012) and action alternatives (2022).
    - DBOC would be responsible for removing all shellfish and shellfish infrastructure including racks from within Drakes Estero as part of the closeout of the permit. There are a number of approaches to remove the racks, ranging from import of a small barge with hydraulic lift to pull the posts to deconstruction using existing barge and boats. While most of the removal

activities would be manual, mechanized boats would be required for the duration of the removal activities. It is estimated that approximately 4,700 posts (2-inch by 6-inch boards) and more than 179,000 linear feet of pressure-treated lumber will be removed and disposed of properly. Standard best management practices (BMPs) for sediment control and habitat protection, such as the use of silt curtains, would be employed during removal of the rack structures. Divers would also remove by hand any large debris that had fallen beneath the racks such as large chunks of shell or other remains of oyster strings. It is likely that the removal may take 2 to 3 months. The timing of the rack removal would occur outside of the harbor seal closure period (March 1-June 30).

- Removal of the bag infrastructure would likely occur in conjunction with harvest of the shellfish from Drakes Estero upon closeout. If conducted separately, it is estimated recovery of all anchor materials and lines could take up to 2 to 4 weeks and would require the use of boats and barges for hauling.
- DBOC would also be required to restore the affected areas to good order and condition by the end of the permit term, as specified by section 23(a) of the SUP.

- For any ground disturbing activities conducted within the onshore permit area, archeological identification studies, including construction monitoring by a qualified archeologist, would be required to determine the presence of unknown or buried archeological resources. In the event that unknown archeological resources are discovered during construction, the park's Cultural Resources Division would be notified immediately and work in the immediate area would cease until the discovery is evaluated by a qualified archeologist. The discovery process defined by 36 CFR 800.13, the implementing regulations for NHPA (16 U.S.C. 470), would be applied.
- Common to all alternatives, baseline surveys and monitoring of resources would occur to assist with identifying the extent and distribution of target resources including benthic and infaunal communities (e.g., tunicates, Manila clams, Olympia oyster, etc.), and eelgrass. These surveys and results of monitoring would provide site-specific data and further increase understanding of the natural ecological processes within Drakes Estero, thus improving the long-term management of Drakes Estero. Some of the baseline surveys and monitoring listed below would be accomplished through the hiring of two seasonal employees, as described in the NPS operations section.

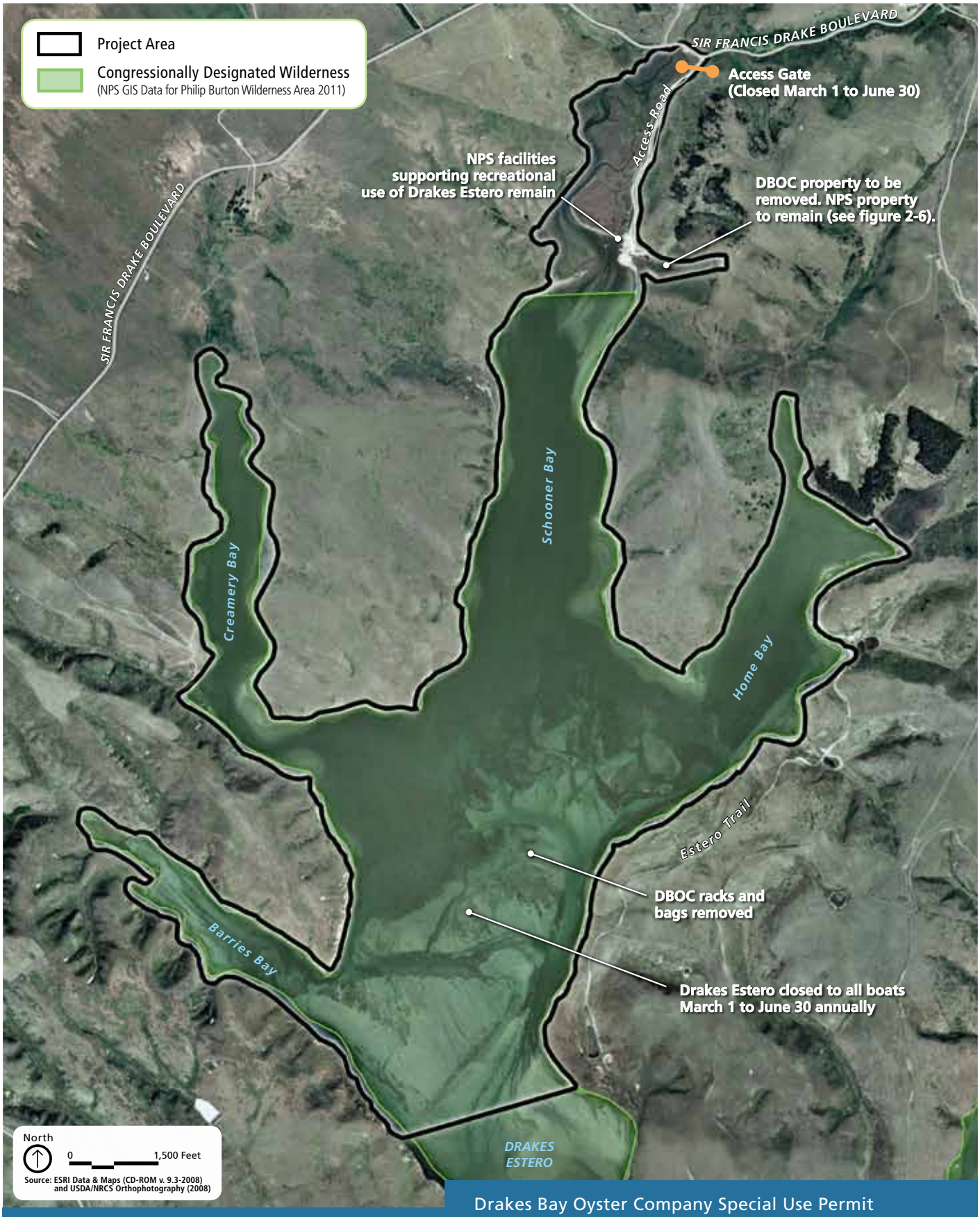
1. Benthic and infaunal communities
    a. Map and quantify the extent of non-native within Drakes Estero, specifically:
        i. Establish a species list
        ii. Identify non-native species of management priority
        iii. Identify extent of Manila clam establishment within Drakes Estero
        iv. *Didemnum vexillium*
            1. Assess overall distribution within Drakes Estero
            2. Evaluate distribution and annual cycle of *Didemnum* on hard structure and soft substrate
            3. Evaluate literature sources for effectiveness of *Didemnum* removal techniques
            4. Survey eelgrass for tunicates to determine if there may be any effects of tunicate "source" on eelgrass tunicate loads.
            5. Survey *Didemnum* density consistent with distance from rack locations.

   b. Map and quantify the extent of native species within Drakes Estero, including:
      i. Distribution of Olympia oyster in Drakes Estero
2. Eelgrass
   a. Assess eelgrass dynamics within Drakes Estero based on review of historic aerial images
   b. Document and evaluate recovery of eelgrass scars from propellers
      i. Identify rate of regrowth in relation to depth and extent of scarring
      ii. Identify species of eelgrass present in the regrowth area
3. Quantitative comparisons of Drakes Estero and Estero de Limantour
   a. Water residence time
   b. Presence/absence of non-native species

ALTERNATIVE A: NO NEW SPECIAL USE PERMIT—CONVERSION TO WILDERNESS (NO-ACTION)

Alternative A considers the expiration of the existing RUO and SUP and subsequent conversion to wilderness, consistent with PL 94-567. The existing SUP and RUO expire on November 30, 2012. Under Alternative A, the Secretary would not exercise the discretion granted to him under section 124 to issue a new 10-year SUP. Upon cessation of the nonconforming uses in Drakes Estero, the NPS would convert the area to wilderness. Specifically, under alternative A:

- At expiration of the SUP, DBOC would be required to remove certain buildings and structures, and all of its personal property and undertake steps to restore the area to good order and condition.
- All closeout procedures, including removal of structures, personal property, items related to shellfish cultivation and processing, including all racks and bags distributed within Drakes Estero, would be completed consistent with the terms of the existing RUO and SUP.



Drakes Bay Oyster Company Special Use Permit
Environmental Impact Statement

National Park Service
U.S. Department of the Interior

Point Reyes National Seashore

FIGURE ES-5

Alternative A: No New Special Use Permit – Conversion to Wilderness (No-action) (Offshore Conditions)

Source: ESRI Data & Maps (CD-ROM v. 9.3-2008), NPS GIS Data, and Cal-Atlas Geospatial Clearinghouse Data

Drakes Bay Oyster Company Special Use Permit
Environmental Impact Statement

National Park Service
U.S. Department of the Interior

Point Reyes National Seashore

FIGURE ES-6

Alternative A: No New Special Use Permit – Conversion to Wilderness (No-action) (Onshore Conditions)

ELEMENTS COMMON TO ALL ACTION ALTERNATIVES

There are a number of elements that would be common to all action alternatives. They are summarized here and restated under each alternative.

- A new SUP authorized under section 124 of PL 111-88 would be issued to DBOC for a period of 10 years. Because these alternatives include the authorization for DBOC to continue operating for 10 years, the NPS would delay conversion of congressionally designated potential wilderness to congressionally designated wilderness for 10 years. The new SUP would expire on November 30, 2022. No extensions or renewals would be issued because section 124 only authorizes one 10-year permit. The new SUP would be based on the existing SUP, would incorporate requirements as identified in this EIS, and would incorporate the area of the RUO into the SUP. In keeping with section 124's direction that the new authorizing instrument would be a SUP, a new RUO would not be issued.
- DBOC would continue to process and pack shellfish in the onshore permit area. However, the scale of DBOC onshore operations would vary by alternative, and the configuration and condition of other onshore facilities would vary by alternative.
- DBOC's ability to obtain and operate under a new SUP would also be contingent on DBOC's compliance with all applicable laws. Prior to implementation of any development activities, DBOC shall obtain all necessary permits and approvals, as described in chapter 2.
- Under all action alternatives, as a condition of permit issuance, DBOC would be required to relinquish its state water bottom lease. Relevant provisions of the existing CDFG leases would be incorporated into the SUP including repair and cleanup requirements, payment requirements, the maintenance of an escrow account as "a financial guarantee of growing structure removal and/or cleanup expense in the event the lease is abandoned or otherwise terminated", and rights of inspection (including premises, equipment and books pertaining to cultivation).This would ensure that certain provisions relating to DBOC operations that are currently incorporated into the SUP by reference remain in force. CDFG would retain authority under Fish and Game Code to regulate the stocking of aquatic organisms, brood stock acquisition, disease control, importation of aquatic organisms into the state, and the transfer of organisms between water bodies.
- NPS would exercise oversight of DBOC operations in accordance with the terms of the new permit. Section 2(b) of the 2008 SUP, establishes that DBOC is responsible for obtaining all necessary permits, approvals, or other authorizations relating to use and occupancy of the Premises.
- DBOC would be required to pay the U. S. fair market value for the use of federal property, which includes onshore and offshore areas within the permit boundaries, as mandated by section 124. If the state water bottom lease continued after November 30, 2012, DBOC would be required to make lease payments to the state in addition to making fair market value payments to the United States.
- NPS would exercise oversight of DBOC operations in accordance with the terms of the new permit. Section 2(b) of the 2008 SUP, establishes that DBOC is responsible for obtaining all necessary permits, approvals, or other authorizations relating to use and occupancy of the Premises.
- The 2008 SUP includes a number of conditions that address aquaculture operations in Drakes Estero. Pursuant to Section 124, which provides the Secretary the discretionary authority to issue a

special use permit with the same terms and conditions as the existing authorizations, the following conditions from the 2008 SUP are included as elements common to all action alternatives:

- A cap on production levels (Section 4b[i])
- No construction of additional aquaculture racks and/or cultivation infrastructure without prior approval of the NPS (Section 4b[ii])
- Avoidance of eelgrass when placing bags (Section 4b[iii])
- Submission of a boating operations plan including dedicated navigation routes chosen to minimize impacts to eelgrass beds (Section 4b[iv])
- Importation of shellfish in the form of larvae and seed certified by CDFG (Section 4b[v])
- Species of shellfish beyond those described in the existing leases may not be introduced without prior written approval of the NPS (Section 4b[vi])
- Avoid disturbance to marine mammals and marine mammal haul-out sites, including maintaining a distance of at least 100 yards from hauled out seals and conformance with the "Drakes Estero Aquaculture and Harbor Seal Protection Protocol" (Section 4b[vii])
- Follow seasonal permanent closure areas (Exhibit B)
- All lumber utilized at the site will be processed in compliance with current laws and regulations regarding wood treatments. This includes lumber utilized in assembly and repair of aquaculture racks (Section 6[i])
- Permittee will make best efforts to remove debris associated with aquaculture production operations including wood from racks, plastic spacers, unused shellfish bags, shellfish shells, and any other associated items (Section 7[b])

- Per Section 4(b)[4], specific measures incorporated into the EIS based on public, agency, and NAS comments during the NEPA process include the following:
  - Clearly delineate boat access routes for use under action alternatives
  - Delineate seasonal and permanent closure areas with GPS and visual demarcation
  - Devise and implement methods for tracking all oyster-related watercraft in the estuary using GPS technology (MMC 2011b)
  - Mark aquaculture boats for easy identification (MMC 2011b)
  - Removal of European flat oyster as a potential species for cultivation (DBOC 2012b[iv])
  - Prohibition of stake culture methods
- As with the existing authorizations, prior to expiration on November 30, 2022, the new SUP would require DBOC to remove certain buildings and facilities, any structures or improvements added to the property since 1972, and all its personal property (including shellfish and shellfish rack infrastructure) from the onshore and offshore operating areas. This includes the temporary office trailer, punching shed, temporary cannery, temporary storage, setting tanks, main dock, work platform, sediment basin, mobile homes, picnic areas, shell storage, and all other equipment.
- Any new structures developed under the authority of the new permit would be considered personal property and would be removed prior to the expiration of the permit.
- DBOC would be required to restore affected areas to "good order and condition" by the end of the permit term, as specified by section 23(a) of the SUP. NPS would oversee this work and work

[4] Per section 4(b) of the 2008 Special Use Permit, "Based upon the findings of an independent science review and/or NEPA compliance, Permitter reserves its right to modify the provisions of this Article 4. Permitter further reserves its right to incorporate new mitigation provisions based upon the findings of an independent science review."

with DBOC to establish an orderly timetable for removal and to ensure that it is completed prior to the expiration of the new SUP.

- NPS would adjust the boundaries of the permit area would be adjusted to incorporate all areas within Drakes Estero required for shellfish operations. Boundary adjustments would be made to encompass reasonable boat travel routes between culture beds and include the six racks currently located outside the permit boundaries. Boat operations would not be allowed outside of permit boundaries unless specifically authorized under the SUP.
- All ground disturbing activities would require NPS approval due to the potential for archeological resources in the area.
- NPS would exclude the harbor seal protection areas and a known archeological site from the new permit boundary. Modification of the permit area to exclude established seal protection areas from the permit boundary reduces the offshore boundary by approximately 4 acres. Removal of the onshore archeological site from the permit area reduces the permit area by approximately 0.3 acres.
- NPS would establish a production limit, consistent with SUP section 4(b)(i). The production limit would be defined as the average annual production over a rolling three year period, which would include the current year and the two previous years. An example of this rolling average is given under alternative B below. The use of this rolling average is a reasonable accommodation that allows the operator to plan and adjust production based upon results of prior year production and is within the reasonable timeline of production. The production limits proposed would be inclusive of all shellfish species harvested.
  - These production limits are based on the use of the conversion methods used by CDFG during the drafting of this document. Specifically, the weight of Pacific oysters is calculated assuming 100 oysters per gallon (per California Fish and Game Code Section 15406.7) for shucked product and 8.5 pounds per gallon. Manila clams are calculated as 30 clams per pound.
- DBOC would use and maintain structures in both offshore and onshore areas to support its operations, with variations among the alternatives. Likewise, equipment currently deployed for these activities would also be in use for all action alternatives.
- DBOC would cultivate approximately 138 acres of Drakes Estero using a combination of rack culture, floating culture, and bottom bag culture methods. Within the 138 acres of culture beds, DBOC would conduct hanging culture using the 95 existing racks in Drakes Estero and would conduct bag culture in up to 84 acres of Drakes Estero (although, as mentioned above, some of this 84 acres may be left fallow between uses).
  - Any proposal for new racks and/or changes in cultivation area would require additional review and compliance under the SUP.
- DBOC would repair/replace 50 racks in 2013 and another 25 racks in 2014. Based on assumptions described in chapter 2, the 2013 repairs would require installation of between 65,000 and 97,000 linear feet of lumber, and 1,700 and 2,500 vertical 2-inch by 6-inch posts would be installed into the estero bottom. The 2014 repairs would result in the installation of between 14,000 and 29,000 linear feet of lumber and 380 to 750 vertical posts. Following the initial wide-scale repairs, regular maintenance would take place. NPS estimates that repair and replacement would be minimal with approximately 1,000 to 2,000 linear feet of lumber installed annually with a limited number of vertical posts replaced as necessary.
- NPS and CDPH have reviewed sampling protocols, intent, and requirements. The current SUP includes language for access to the main channel. Access to that station shall be made at flat wake

speed within 1 hour of predicted high tide for the area. Flat wake speed means the minimum required speed to leave a flat wave disturbance close astern a moving vessel yet maintain steerageway, but in no case in excess of 5 statute miles per hour (36 CFR 1.4). With regard to water quality monitoring stations for pathogens, CDPH generally requires that primary sites within the permitted growing areas are sampled once per month, with greater frequency during the winter season.

- DBOC operations would be subject to the harbor seal protection protocol, which is part of the current SUP. This protocol prohibits boat travel and general operations, including placement of bags, moorings, and installation of floating racks, within the established harbor seal protection areas (see figure ES-2). Other restrictions contained in the existing protocol, including closure of the lateral channel (also shown on figure ES-2) during the harbor seal pupping season (March 1–June 30) and maintenance of a 100-yard buffer from any hauled-out harbor seal, would continue to be in effect.
- A one-time dredging event at the main dock is common to all action alternatives. The area under the main dock would be dredged by DBOC. Dredging would take place at the outset of the permit term in an area approximately 30 feet wide by 60 feet long and to a depth of approximately 3 feet.
- DBOC would replace the existing dock, work platform, and associated structures subject to NPS final review and approval due to the damage from the March 2011 storm. Rather than replacing these items in kind, DBOC has proposed to construct or install the following:
  - A new wooden floating dock (12 feet by 32 feet)
  - A new concrete work platform (approximately 55 feet by 24 feet)
  - New wooden ramps to connect the dock and work platform
  - A new conveyor
  - A washing system

ALTERNATIVE B: ISSUE NEW SPECIAL USE PERMIT—EXISTING ONSHORE FACILITIES AND INFRASTRUCTURE AND OFFSHORE OPERATIONS WOULD BE ALLOWED FOR A PERIOD OF 10 YEARS

Alternative B considers a level of use consistent with conditions that were present in fall 2010 when the NPS initiated evaluation under the EIS. The existing SUP and RUO expire on November 30, 2012. The Secretary would exercise the discretion granted to him under section 124 to issue a new 10-year SUP to DBOC, expiring November 30, 2022. Specifically, under alternative B:

- Onshore facilities and infrastructure, including previously unpermitted infrastructure, would remain until November 30, 2022. This would be generally consistent with what is currently present on the site.
- The total acreage of the SUP area, both onshore and offshore, would be approximately 1,083 acres.
- With the exception of slight reductions to Bed 17 (which currently extends into the seal protection area), consistent with DBOC's requests, all existing shellfish growing areas would be included in the SUP area and would remain.
- Mariculture activities, including boat operations, would only take place within the established SUP area.

- Shellfish production would not exceed 600,000 pounds annually (using the rolling 3-year average described later in this chapter, inclusive of all harvested species). This level of production is consistent with the 2010 DBOC harvest.
- Pacific oysters and Manila clams could be cultivated on documented shellfish growing areas within the main permit area, Area 1 (currently known as Lease M-438-01) using rack culture, floating culture or bottom bag culture methods. Purple-hinged rock scallops could only be grown in the existing 1-acre plot, Permit Area 2 (currently known as Lease M-438-02) using floating racks, floating trays, and lantern nets or similar techniques.
- DBOC would be required to pay the U. S. fair market value for the use of federal property, which includes onshore and offshore areas within the permit boundaries, as mandated by section 124.
- NPS would evaluate future requests regarding operational and infrastructure changes from DBOC for consistency with the intent of this alternative, which is to maintain existing conditions and levels of production.
- By November 30, 2022, DBOC would be required to remove certain buildings and structures and all of its personal property and to undertake steps to restore the area to good order and condition.

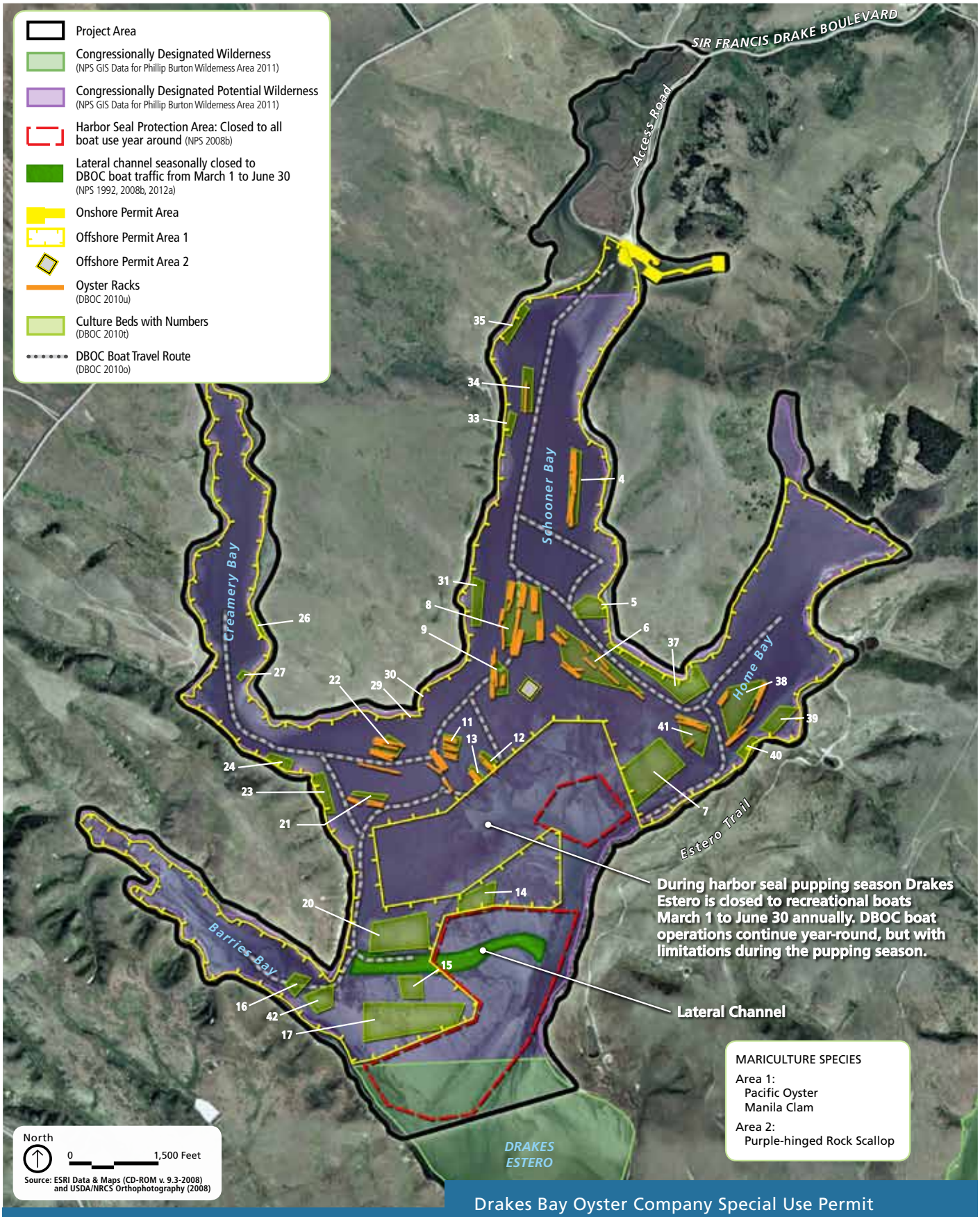


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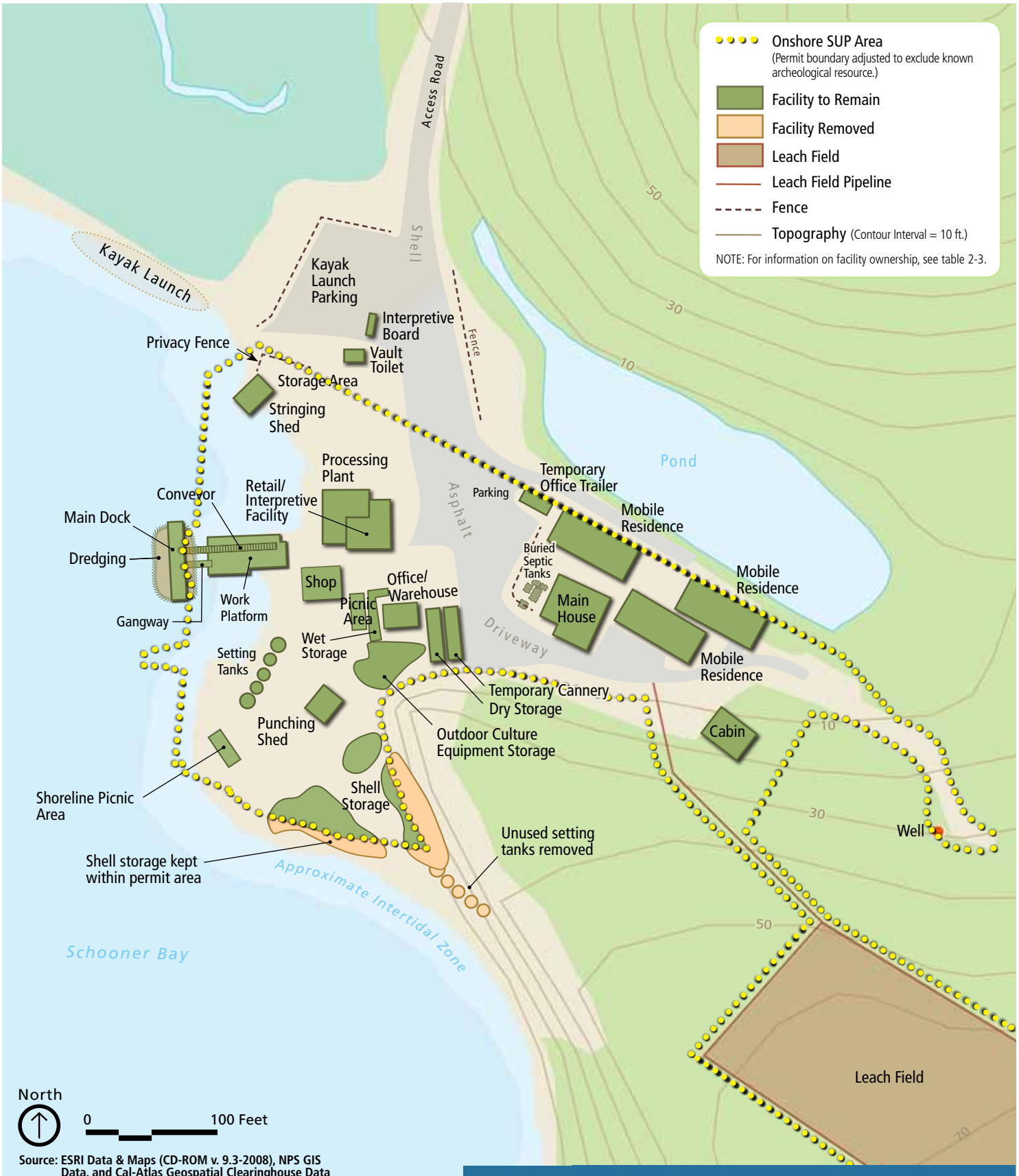
FIGURE ES-7

Alternative B: Issue New Special Use Permit – Existing Onshore Facilities and Infrastructure and Offshore Operations Would be Allowed for a Period of 10 Years (Offshore Operations)



Source: ESRI Data & Maps (CD-ROM v. 9.3-2008), NPS GIS Data, and Cal-Atlas Geospatial Clearinghouse Data

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FIGURE ES-8

Alternative B: Issue New Special Use Permit – Existing Onshore Facilities and Infrastructure and Offshore Operations Would be Allowed for a Period of 10 Years (Onshore Operations)

ALTERNATIVE C: ISSUE NEW SPECIAL USE PERMIT—ONSHORE FACILITIES AND INFRASTRUCTURE AND MOST OFFSHORE OPERATIONS PRESENT IN 2008 WOULD BE ALLOWED FOR A PERIOD OF 10 YEARS

Alternative C considers a level of use that was occurring at the time the current SUP was signed in April 2008. The existing SUP and RUO expire on November 30, 2012. Under Alternative C, the Secretary would exercise the discretion granted to him under section 124 to issue a new 10-year SUP to DBOC, expiring November 30, 2022. Specifically, under alternative C:

- In contrast to alternative B, onshore infrastructure would be slightly reduced by removing unpermitted and nonessential facilities. Infrastructure would remain until November 30, 2022.
- The total acreage of the SUP area, including both offshore and onshore areas, would be approximately 901 acres. Those acres not included in the permit area under this alternative are not currently available for production due to state water quality harvest prohibitions.
- Mariculture activities, including boat operations, would only take place within the established SUP area.
- With the exception of slight reductions to Bed 17 (which currently extends into the seal protection area), consistent with DBOC's requests, all existing shellfish growing areas would be included in the SUP area and would remain.
- Shellfish production would not exceed 500,000 pounds annually (using the rolling 3-year average described later in this chapter, inclusive of all harvested species). This represents an approximately 10 percent increase above the average annual DBOC production for the period 2007 to 2009, which was approximately 450,000 pounds per year.
- Pacific oysters could be grown on documented shellfish growing areas within the main offshore permit area, Area 1 (currently known as Lease M-438-01) using rack culture, floating culture, or bottom bag culture methods. Purple-hinged rock scallops could only be cultivated in the existing 1-acre plot, Area 2 (currently known as Lease M-438-02) using floating racks, floating trays, and lantern nets or similar techniques.
- DBOC would be required to pay the U. S. fair market value for the use of federal property, which includes onshore and offshore areas within the permit boundaries, as mandated by section 124.
- NPS would evaluate future requests for operational and infrastructure changes from DBOC taking into consideration consistency of the proposed changes with 2008 conditions and levels of production.
- By November 30, 2022, DBOC would be required to remove certain buildings and structures, and all of its personal property, and undertake steps to restore the area to good order and condition.

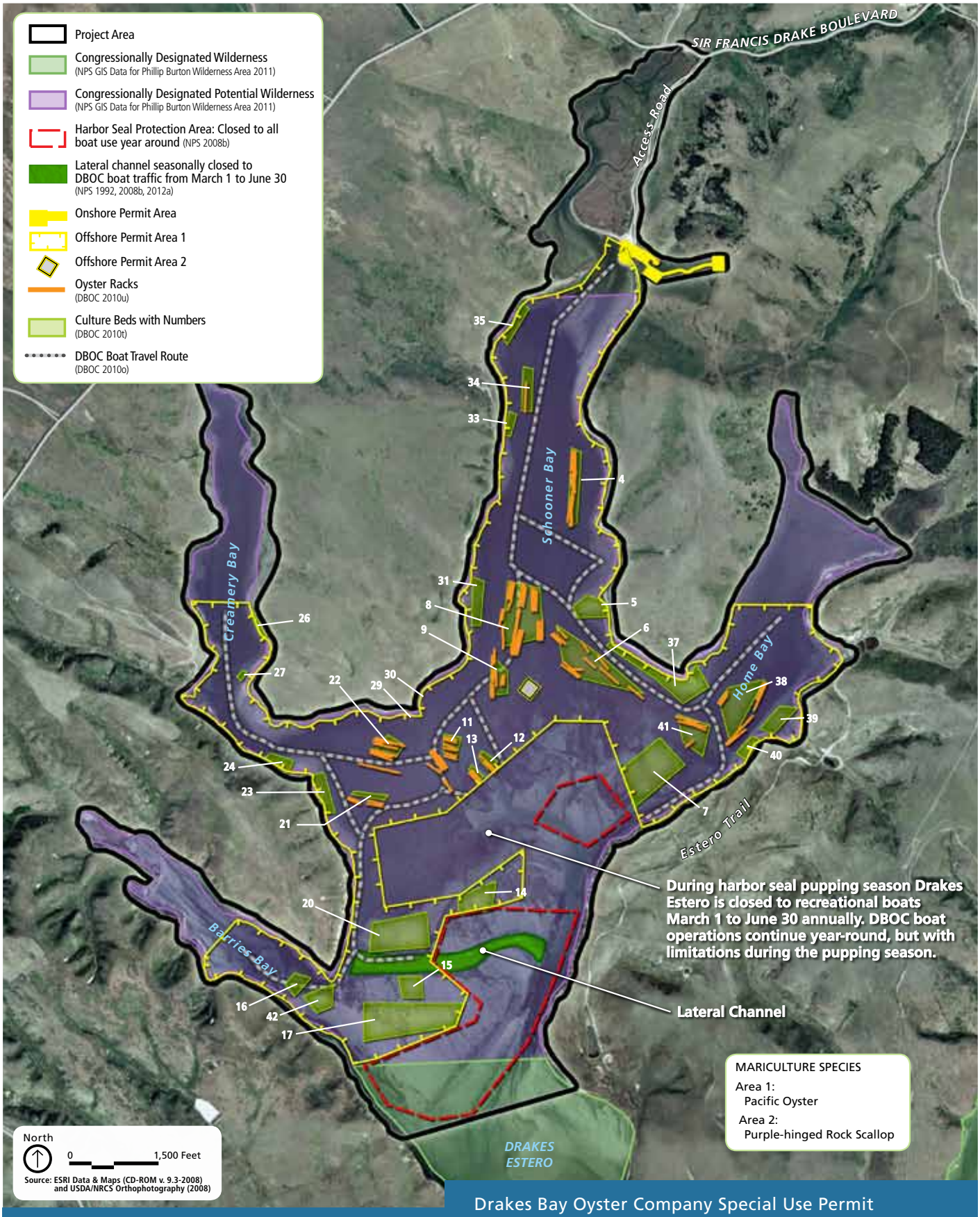

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FIGURE ES-9

Alternative C: Issue New Special Use Permit – Onshore Facilities and Infrastructure and Most Offshore Operations Present in 2008 Would be Allowed for a Period of 10 Years (Offshore Operations)

Source: ESRI Data & Maps (CD-ROM v. 9.3-2008), NPS GIS Data, and Cal-Atlas Geospatial Clearinghouse Data

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FIGURE ES-10

Alternative C: Issue New Special Use Permit – Onshore Facilities and Infrastructure and Most Offshore Operations Present in 2008 Would be Allowed for a Period of 10 Years (Onshore Operations)

ALTERNATIVE D: ISSUE NEW SPECIAL USE PERMIT—EXPANDED ONSHORE DEVELOPMENT AND OFFSHORE OPERATIONS WOULD BE ALLOWED FOR A PERIOD OF 10 YEARS

Alternative D considers expansion of operations and development of new infrastructure as requested by DBOC as part of this EIS process, as well as items requested of other agencies. The existing SUP and RUO expire on November 30, 2012. Under alternative D, the Secretary would exercise the discretion granted to him under section 124 to issue a new 10-year SUP to DBOC, expiring November 30, 2022. Specifically, under alternative D:

- Two development proposals submitted by DBOC are evaluated at the conceptual level in this EIS. Additional planning, design, environmental compliance (including NEPA), and approval would be required prior to proceeding with construction of proposed new facilities. Infrastructure would remain until November 30, 2022.
- The total acreage of the SUP area, including both offshore and onshore areas, would be approximately 1,087 acres, which incorporates the boundary adjustment requested by DBOC.
- With the exception of slight reductions to Bed 17 (which currently extends into the seal protection area), consistent with DBOC's requests, all existing shellfish growing areas would be included in the SUP area and would remain.
- Mariculture activities, including boat operations, would only take place within the established SUP area.
- Shellfish production would not exceed 850,000 pounds annually (using the rolling 3-year average described later in this chapter, inclusive of all harvested species). This production level is based on DBOC's projections of maximum production levels (submitted to CCC).
- Pacific oysters, Manila clams, Olympia oysters, and purple-hinged rock scallops could be cultivated in documented shellfish growing areas within the offshore permit area using rack culture, floating culture, or bottom bag culture methods. The 1-acre plot, currently known as Lease M-438-02, would not be maintained as a distinct shellfish growing area.
- DBOC would be required to pay the U. S. fair market value for the use of federal property, which includes onshore and offshore areas within the permit boundaries, as mandated by section 124.
- NPS would evaluate future requests from DBOC for consistency with the intent of this alternative, which is to allow for expanded operations within the scope of the conceptual proposal; approval/compliance for future development would be through a tiered planning process.
- By November 30, 2022, DBOC would be responsible for the removal of all infrastructure developed under this alternative, as well as all personal property. DBOC would be required to restore the area to good order and condition.

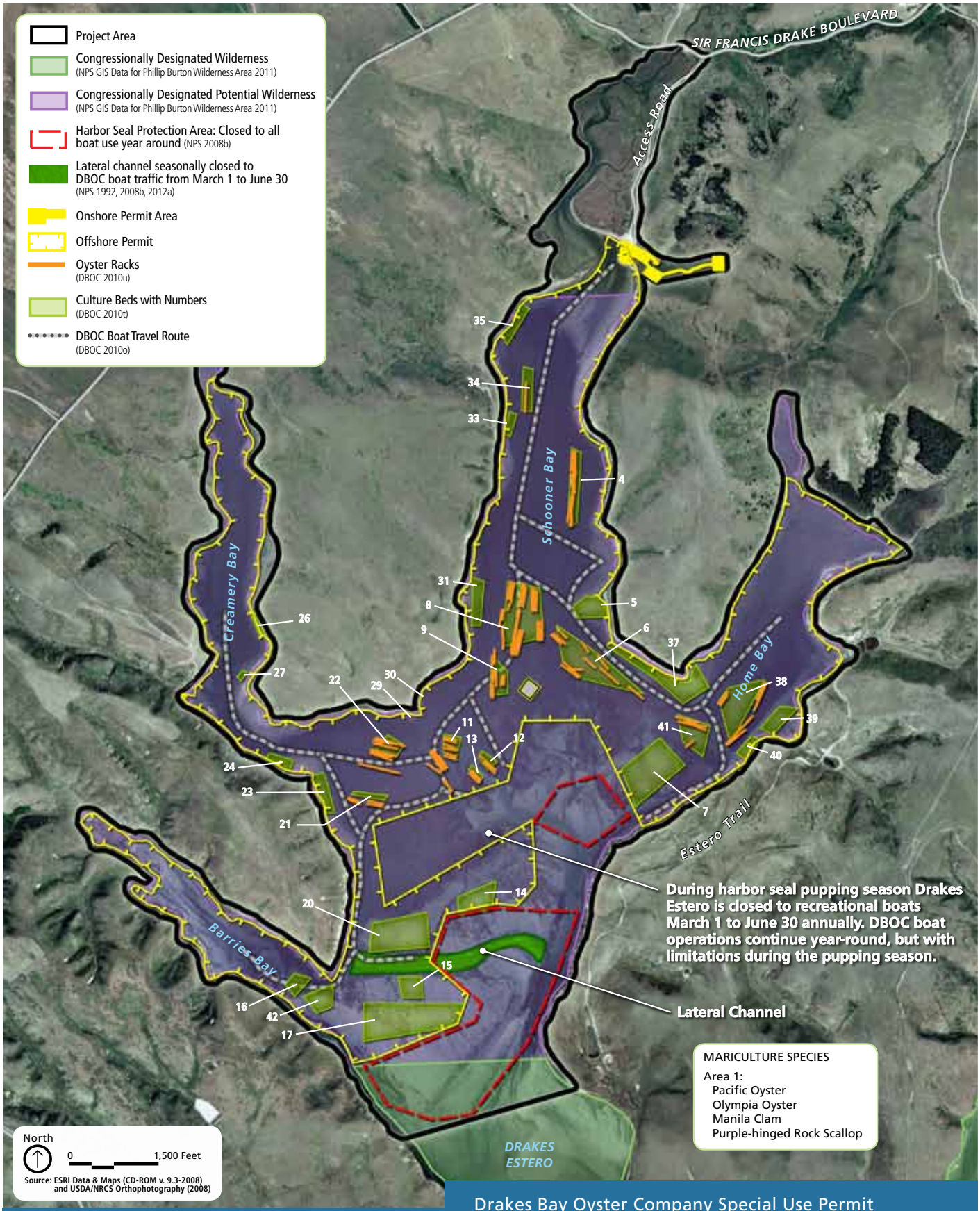

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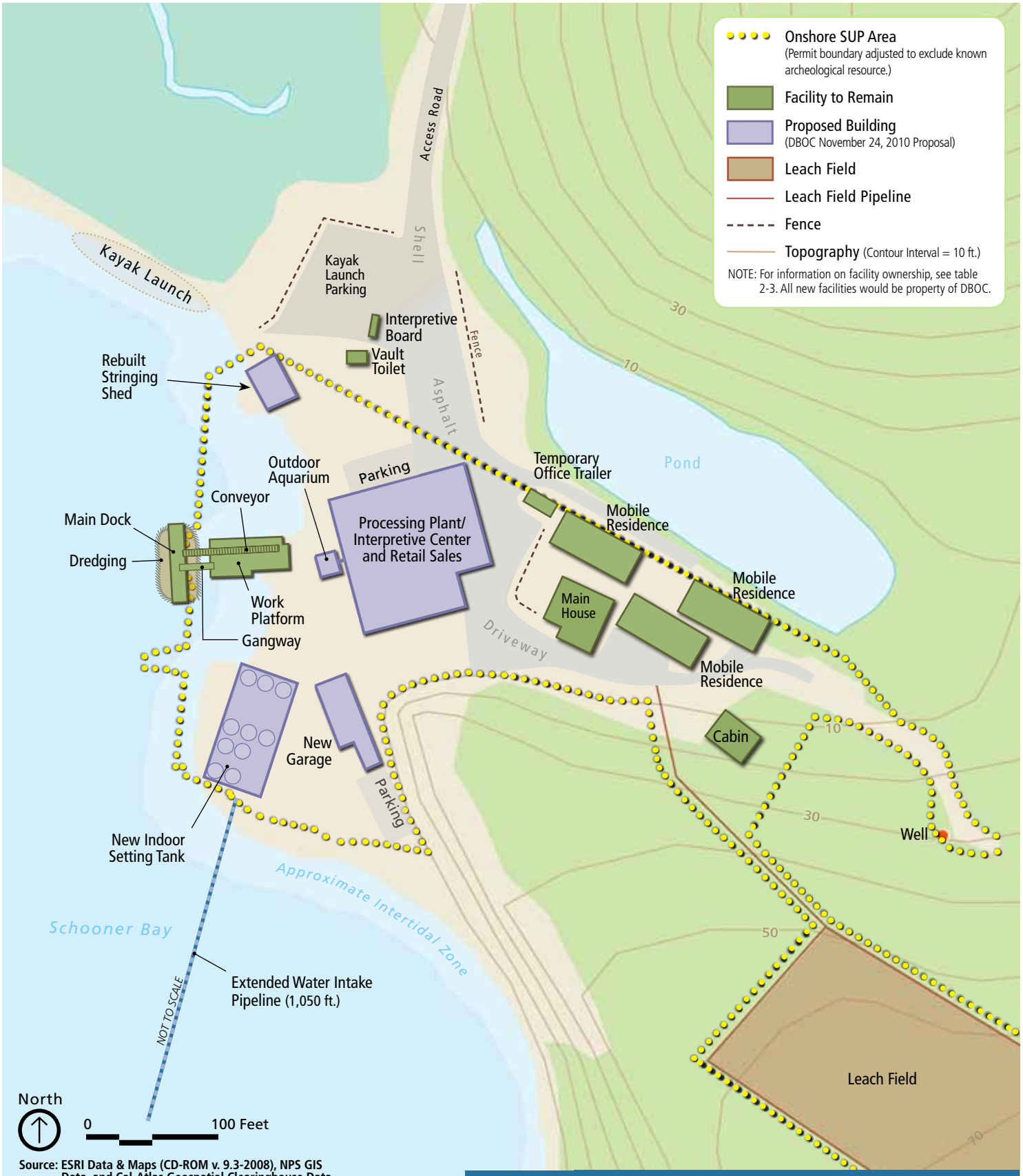
FIGURE ES-11

Alternative D: Issue New Special Use Permit – Expanded Onshore Development and Offshore Operations Would be Allowed for a Period of 10 Years (Offshore Operations)



Source: ESRI Data & Maps (CD-ROM v. 9.3-2008), NPS GIS Data, and Cal-Atlas Geospatial Clearinghouse Data

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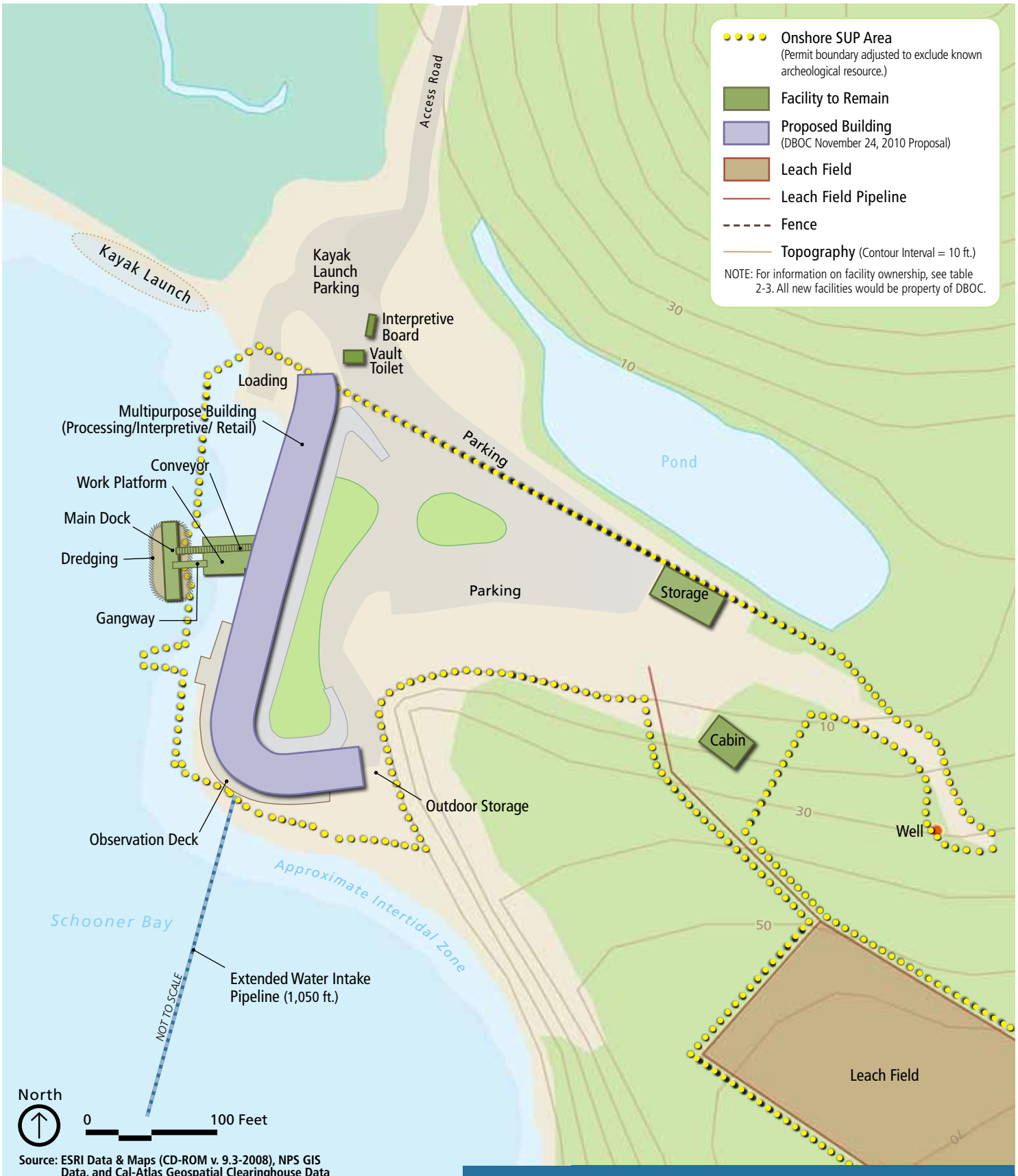
FIGURE ES-12

Alternative D: Issue New Special Use Permit – Expanded Onshore Development and Offshore Operations Would be Allowed for a Period of 10 Years (Onshore Operations – Option 1)



Source: ESRI Data & Maps (CD-ROM v. 9.3-2008), NPS GIS Data, and Cal-Atlas Geospatial Clearinghouse Data

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FIGURE ES-13

Alternative D: Issue New Special Use Permit – Expanded Onshore Development and Offshore Operations Would be Allowed for a Period of 10 Years (Onshore Operations – Option 2)

SUMMARY OF THE ALTERNATIVES

Table ES-3 provides a summary of the alternatives presented above.

TABLE ES-3. SUMMARY OF ALTERNATIVES

	Alternative A: No New Special Use Permit—Conversion to Wilderness (No-action)	Alternative B: Issue New Special Use Permit—Existing Onshore Facilities and Infrastructure and Offshore Operations Would Be Allowed for a Period of 10 Years	Alternative C: Issue New Special Use Permit—Onshore Facilities and Infrastructure and Most Offshore Operations Present in 2008 Would Be Allowed for a Period of 10 Years	Alternative D: Issue New Special Use Permit—Expanded Onshore Development and Offshore Operations Would Be Allowed for a Period of 10 Years
New SUP	Existing authorizations expire on November 30, 2012. No new SUP for DBOC operations would be issued.	A new SUP for DBOC operations would be issued, expiring on November 30, 2022.	Same as alternative B.	Same as alternative B.
Mariculture Species	N/A	Area 1 (1,077 acres): ▪ Pacific oysters ▪ Manila clams* Area 2 (1.0 acre): ▪ Purple-hinged rock scallops	Area 1 (896 acres): ▪ Pacific oysters Area 2 (1.0 acre): ▪ Purple-hinged rock scallops	Area 1 (1,082 acres): ▪ Pacific oysters ▪ Olympia oysters ▪ Manila clams ▪ Purple-hinged rock scallops Area 2 would be removed.
Acquisition of Larvae and Seed	N/A	Imported.	Imported.	Pacific oysters and Manila clams imported. Olympia oysters and purple-hinged rock scallops collected on site.
Culture Methods	N/A	▪ Japanese hanging culture ▪ French tube culture ▪ Bottom bags ▪ Floating bags ▪ Floating trays	Same as alternative B.	Same as alternative B.
Production Limits†	N/A	600,000 pounds	500,000 pounds	850,000 pounds

* Items have not previously been permitted by NPS

† PRODUCTION LIMITS ARE EXPRESSED AS A ROLLING THREE YEAR AVERAGE OVER THE CURRENT YEAR AND THE TWO PREVIOUS YEARS AND ARE INCLUSIVE OF ALL SHELLFISH SPECIES. THESE PRODUCTION LIMITS WERE DEVELOPED ASSUMING 100 INDIVIDUAL OYSTERS PER GALLON AND 8.5 POUNDS PER GALLON.

N/A = NOT APPLICABLE

TABLE ES-3. SUMMARY OF ALTERNATIVES (CONTINUED)

	Alternative A	Alternative B	Alternative C	Alternative D
Offshore Permit Boundaries	N/A	Offshore SUP boundaries would be based on existing leases, with two adjustments to Area 1: (1) The two parcels would be joined in Schooner Bay to allow boats to use the main channel and (2) areas within harbor seal protection areas would be excluded. Area 2 would be maintained for cultivation of purple-hinged rock scallops. Offshore permit area would include 1,078 acres.	Area 1 would be the same as alternative B except the southeast boundary of alternative C would follow either the harbor seal protection area boundary or the proposed DBOC shellfish growing area boundary, whichever is more protective of established harbor seal haul-out areas. Area 2 would be maintained for cultivation of purple-hinged rock scallops. Offshore permit area would include 897 acres.	Offshore SUP boundaries would be based on DBOC's proposed adjustment of the shellfish growing area boundary, with the same two adjustments noted under alternative B. Area 2 would not be maintained as a separate growing area. Offshore permit area would include 1,082 acres.
Offshore Infrastructure	All aquaculture materials, including racks, bags, and other materials would be removed from Drakes Estero as part of closeout activities. Approximately 179,000 linear feet of pressure treated lumber would be removed in addition to removal of remaining culture material.	Regular maintenance of racks, following initial repairs as proposed by DBOC (repair/replace 50 racks in 2013 and another 25 racks in 2014).	Same as Alternative B	Same as Alternative B
Vessel Transit Plan	N/A	A vessel transit plan for DBOC boat use within Drakes Estero would be developed and submitted to the NPS for approval.	Same as alternative B.	Same as alternative B.

N/A = not applicable

TABLE ES-3. SUMMARY OF ALTERNATIVES (CONTINUED)

	Alternative A	Alternative B	Alternative C	Alternative D
DBOC Boat Operations	Use of motorized boats in Drakes Estero would cease.	Three motorboats and two nonmotorized barges would be operated in Drakes Estero, approximately 12 trips per day, 8 hours a day, combined.	Same as alternative B.	Same as alternative B, except boat operations may increase due to increased production limits.
Harbor Seal Protection Protocol	N/A	The existing protocol would be included in the new SUP, including seasonal closure of lateral channel and maintenance of a 100-yard buffer from any hauled-out harbor seal at any location and time by DBOC boats and staff.	Same as alternative B.	Same as alternative B.
Onshore Permit Boundaries	N/A	Onshore SUP boundaries would be based on existing NPS authorizations, excluding a known archeological resource. Onshore permit area would total 4.3 acres, including the areas used for water and septic utilities.	Same as alternative B.	Same as alternative B.
DBOC Onshore Facilities: Staff Housing	The main house and cabin would remain as NPS property following SUP expiration. DBOC would be responsible for removing mobile homes following expiration of the SUP.	On-site housing would be provided for DBOC staff in 2 permanent houses and 3 mobile homes, providing a total of 14 bedrooms.	Same as alternative B.	The level of staff housing that would be provided under this alternative has not been determined.
DBOC Onshore Facilities: Picnic Areas	Picnic tables and associated materials are considered personal property and would be removed by DBOC upon expiration of the SUP.	A dozen picnic benches would be provided for DBOC visitors in existing areas.*	Picnic area would be provided at DBOC next to the office/ warehouse.	A picnic area with 18 tables and 12 grills may be provided within the SUP area.

* Items have not previously been permitted by NPS

N/A = not applicable

TABLE ES-3. SUMMARY OF ALTERNATIVES (CONTINUED)

	Alternative A	Alternative B	Alternative C	Alternative D
DBOC Onshore Facilities: Processing Plant	DBOC would remove private property within the building. This building is NPS property and would remain on site.	The existing single-story processing plant would continue to house shellfish processing, retail, and interpretive facilities at the existing scale.	Same as alternative B.	The existing processing plant would be removed and replaced in some form by a larger building.
DBOC Onshore Facilities: Cannery	This temporary structure was placed by DBOC and would be removed following SUP expiration.	The cannery would continue to be housed in the existing shipping container.[a]	Same as alternative B.	The temporary cannery container would be removed and this function served within the new larger processing plant.
DBOC Onshore Facilities: Setting Tanks	These structures are considered personal property. DBOC would be responsible for removal following the expiration of the SUP.	Seeding would take place in the existing tanks (indoor and outdoor[a]).	Same as alternative B.	A new seeding plant may be constructed to replace the existing facilities.
Wilderness Status	Following removal of nonconforming uses in Drakes Estero, the congressionally designated potential wilderness would be converted to congressionally designated wilderness in 2012.	A new SUP would be issued for DBOC operations until November 30, 2022. This would delay conversion of congressionally designated potential wilderness to congressionally designated wilderness for 10 years.	Same as alternative B.	Same as alternative B.
Other NPS Operations and Facilities	The existing access road, parking lot, interpretive board, and vault toilet would be maintained. The NPS also would install a gate to limit recreational access to Drakes Estero during harbor seal pupping season.	Same as alternative A, without the addition of the gate.	Same as alternative A, without the addition of the gate.	Same as alternative A, without the addition of the gate.

[a] Items have not previously been permitted by NPS

ENVIRONMENTAL CONSEQUENCES

Impacts of the alternatives were assessed in accordance with NPS Director's Order 12 and Handbook: *Conservation Planning, Environmental Impact Analysis and Decision-Making* (NPS 2001b). The summary of environmental consequences considers the actions being proposed and relevant cumulative impacts. The potential environmental consequences of the actions are addressed for wetlands and other waters of the U.S., eelgrass, wildlife and wildlife habitat (benthic fauna, fish, harbor seals, and birds), special-status species, coastal flood zones, water quality, soundscapes, wilderness, visitor experience and recreation, socioeconomic resources, and NPS operations.

For each impact topic, methods were identified to measure the change in the Seashore's resources that would occur with implementation of each of the action alternatives. Intensity definitions are derived from relevant standards based on law, policy, regulations, NPS *Management Policies 2006*, scientific literature and research, or best professional judgment. Intensity definitions may vary by impact topic; therefore, they are provided separately for each impact topic analyzed in the Final EIS. Intensity definitions are provided throughout the analysis for negligible, minor, moderate, and major adverse impacts. The CEQ regulations advise (40 CFR 1500.2), and NPS *Management Policies 2006* require, that managers minimize and avoid adverse impacts on park resources. Standard NPS NEPA practice, as reflected in the Director's Order 12 Handbook and elsewhere, thus focuses on mainly such adverse effects. Beneficial effects are discussed and analyzed, wherever present, but generally only in a qualitative manner.

The "Environmental Consequences" chapter of the Final EIS uses the best available scientific literature applicable to the region and setting to predict the expected impacts of each alternative, including the no-action alternative, using the existing condition (baseline) described in "Chapter 3: Affected Environment" as the starting point for the analysis. As noted by Bass, Herson and Bogdan, "[i]t is easy to confuse the baseline with the no-action alternative" (2001). They go on to explain "[t]he baseline is essentially a description of the affected environment at a fixed point in time, whereas the no-action alternative assumes that other things will happen to the affected environment even if the proposed action does not occur" (2001). The environmental consequences associated with each alternative, discussed according to impact topic, are summarized in table ES-4 below, and are detailed in chapter 4 of the EIS.

A main resource used in development of this EIS was the NAS report, *Shellfish Mariculture in Drakes Estero, Point Reyes National Seashore, California* (NAS 2009). The report provides an intensive review of pertinent scientific literature on this subject. Although an exhaustive review of additional references took place during the drafting on this Final EIS, there remains much overlap between the literature cited in that document and the references used to support this EIS.

A number of guiding assumptions were made to provide context for the impact analysis based on the NAS (2009) report and the descriptions of the alternatives summarized in table 2-5 above.

TABLE ES-4. SUMMARY OF ENVIRONMENTAL CONSEQUENCES

Alternative A	Alternative B	Alternative C	Alternative D
Action/Impact	Action/Impact	Action/Impact	Action/Impact
Wetlands and Other Waters of the U.S.			
Overall, alternative A would result in long-term beneficial impacts on wetlands and other waters of the U.S., in the project area. Structures, processes, and functions of the wetlands and other waters of the U.S. would not be permanently affected as a result of actions from alternative A. However, climate change over the long term may result in sea level rise and the year-round inundation of current intertidal marsh. Vegetated wetlands in Drakes Estero occupy available habitat in the upper bays, and while tidal vegetation has the ability to shift with sea level rise, there is little room for vegetation to shift landward along much of the Drakes Estero shoreline due to the steep sideslopes of the surrounding terrain. The removal of personal property would increase the potential that approximately 3.8 acres of the project area could be converted back to historical wetland habitat at the onshore facilities. The removal of approximately 7 acres of racks and up to 88 acres of bags from nonvegetated sandbars and mudflats in Drakes Estero would allow benthic organisms and eelgrass in Drakes Estero to recolonize the space previously occupied by the commercial shellfish operation infrastructure (see "Impacts on Eelgrass" and "Impacts on Wildlife and Wildlife Habitat: Benthic Fauna" sections). Additionally, erosive forces on sediments caused by tidal water flowing across and around bags would be eliminated, restoring natural hydrodynamics in up to 88 acres of sandbars and mudflats currently available for use by DBOC. The reduction of propeller-caused turbidity in the water column also would result in increased sunlight penetration and therefore increased primary production.	During the life of the 10-year permit, impacts on wetlands and other waters of the U.S. under alternative B would be short-term, minor, and adverse and long-term, moderate, and adverse. In the 138 acres of documented culture beds, bottom bags with anchors and floating lines on up to 84 acres of tidal mudflats/sandbars and 5 miles (7 acres) of racks with floating bags/trays and anchors in subaquatic habitats would continue to occupy estuarine subtidal/intertidal aquatic bed/rooted vascular (E1/2AB3), estuarine intertidal unconsolidated shore-mud (E2US3), and estuarine intertidal unconsolidated shore-cobble-gravel-sand (E2US1/2) systems. Impacts associated with these offshore structures would include intermittent disturbances to mudflats and sandbars from the placement and rotation of bags/trays, lines and anchors, DBOC staff walking across the mudflats/sandbars, and boat propellers and hulls scraping the bottom sediment. The impacts associated with these actions would be slightly greater than alternative C but less than those described under alternative D. Onshore operations may cause a minimal decrease in wetland functions and values if refuse and runoff along the shoreline is not collected and hauled off site. No wetlands or other waters of the U.S. would be permanently converted to uplands under this alternative; however, impacts would be readily apparent and would affect the structure, processes, or functions of the wetlands and other waters of the U.S. for an additional 10 years. Temporary impacts would be associated with dredging under the new dock. Dredging would occur in a 30-by 60-foot area at the dock. Approximately 1,700 to 2,500 2-inch by 6-inch posts would be installed outside harbor seal pupping season during 2013, and	During the life of the 10-year permit, impacts on wetlands and other waters of the U.S. under alternative C would be short-term, minor, and adverse and long-term, moderate, and adverse. Actions associated with the placement of bottom bags on up to 84 acres of tidal mudflats/sandbars and 7 acres of subaquatic habitat for the racks would continue to disturb estuarine subtidal/intertidal aquatic bed/rooted vascular (E1/2AB3), estuarine intertidal unconsolidated shore-mud (E2US3), and estuarine intertidal unconsolidated shore-cobble-gravel-sand (E2US1/2) systems. Racks would be replaced on a schedule of 50 racks in year 2013 and 25 racks in year 2014. The replacements would occur over a few months in each year. Floating culture would likely continue, either attached to racks or using concrete anchors adjacent to racks, but at a reduced level compared to existing operations. Therefore, impacts to wetlands and other waters of the U.S. would be slightly reduced compared to alternative B. Of the 138 acres available for use, bottom bags have been placed on a rotational basis in approximately 22 acres of mudflats/sandbars each of the past two years and could be placed in up to 84 acres in Drakes Estero. Other than the physical presence of structures in wetlands and other waters of the U.S., additional impacts would include intermittent disturbances to mudflats/sandbars from the placement and rotation of bags/trays, DBOC staff walking across the mudflats/sandbars, and boat propellers and hulls scraping the bottom sediment. As under alternative B, onshore operations may cause a minimal decrease in wetland functions and values if refuse and runoff along the shoreline is not collected and hauled off site. No wetlands or other waters of the U.S.	During the life of the 10-year permit, impacts on wetlands and other waters of the U.S. under alternative D would be short-term, minor, and adverse and long-term, moderate, and adverse. Actions associated with the placement of bottom bags on up to 84 acres of tidal mudflats/sandbars would continue under alternative D. Of the 138 acres available for use, bottom bags have been placed in approximately 22 acres of mudflats/sandbars each of the past two years and could be placed in up to 84 acres in Drakes Estero. Racks would be replaced or repaired, and the use of floating culture would continue adjacent to racks resulting in the use of concrete anchors. In addition to the physical objects placed in wetlands and other waters of the U.S., other impacts would include intermittent disturbances to mudflats/sandbars from the placement and rotation of bags/trays, DBOC staff walking across the mudflats/sandbars, and boat propellers and hulls scraping the mud bottom. Because of the potential for higher production under this alternative (approximately 40 percent greater than alternative B and 70 percent greater than alternative C), the impacts associated with these actions would likely be greater than those under alternatives B and C but are still expected to be at a moderate level. As under alternatives B and C, onshore operations may cause a minimal decrease in wetland functions and values if refuse and runoff along the shoreline is not collected and hauled off site. No wetlands or other waters of the U.S. would be permanently converted to uplands under this alternative; however, impacts would be readily apparent and would affect the structure, processes, and/or functions of the wetlands and other waters of the U.S. in the project area for an additional 10 years.

TABLE ES-4. SUMMARY OF ENVIRONMENTAL CONSEQUENCES (CONTINUED)

Alternative A	Alternative B	Alternative C	Alternative D
Action/Impact	Action/Impact	Action/Impact	Action/Impact
The removal of racks, including approximately 4,700 posts (2-inch by 6-inch boards), and the removal of bags from up to 88 acres of mud flats would result in short-term minor adverse impacts on wetlands and other waters of the U.S. because of temporary bottom disturbances. Standard BMPs would be used during the removal of racks to minimize sediment disturbances and water turbidity. The increase in turbidity would be highly localized and would occur over a two to three month period. Governmental permit authorization from the USACE would not likely be required. The cumulative impact would be long-term and beneficial, and alternative A would contribute an appreciable beneficial increment to the cumulative impact. With respect to wetlands and other waters of the U.S., alternative A would be consistent with relevant law and policy. The natural recovery of wetlands would be consistent with NPS *Management Policies 2006* and DO-77-1, which sets a goal of a "net gain" of wetlands (NPS 2006d, 2002a). USACE would be consulted to determine whether the removal of commercial shellfish infrastructure would require permitting.	approximately 380 to 750 posts would be installed outside the harbor seal pupping season in 2014. Dredging and rack installation and repair would adversely impact the silted bottom of Drakes Estero. The post installation and rack repair would be conducted over a few months in each year, and impacts from dredging and post installation and rack repair would be expected to last one week (from disturbance) due to a localized increase in suspended sediments. The cumulative impact would be long-term, moderate, and adverse, and alternative B would contribute an appreciable adverse increment to the cumulative impact. Prior to undertaking any new or replacement activities under this alternative, DBOC would be responsible for obtaining all applicable permits, and complying with all permit conditions. By obtaining state and federal permits and complying with their conditions, DBOC would ensure that alternative B is consistent with relevant law and policy related to management of wetlands and other waters of the U.S. DBOC's commercial shellfish operations and any dredge or fill activities in the waters of the U.S. (including Drakes Estero and the pond behind the mobile homes) are subject to permitting by USACE, San Francisco Bay Regional Water Quality Control Board, CCC, and NMFS. DBOC has received written confirmation that shellfish operations fall within USACE jurisdiction and a permit application is required to ensure that DBOC activities comply with USACE regulations. The letter goes on to note that, if an individual permit is required, DBOC will need to "demonstrate to the USACE that any proposed fill is necessary because there are no practicable alternatives, as outlined in the EPA's section 404(b)(l) Guidelines" (USACE 2010).	would be permanently converted to uplands under this alternative; however, impacts would be readily apparent and would affect the structure, processes, and/or functions of the wetlands and other waters of the U.S. in the project area for an additional 10 years. Temporary impacts would be associated with dredging under the new dock in a 30- by 60-foot area where the old dock is located and the installation/replacement of new rack infrastructure, including between 1,700 and 2,500 2-inch by 6-inch posts in 2012 and 380 to 750 posts in 2014. These actions would adversely impact the silted bottom of Drakes Estero due to a localized increase in sedimentation during the period of construction. The cumulative impact would be long-term, moderate, and adverse, and alternative C would contribute an appreciable adverse increment to the cumulative impact. Prior to undertaking any new or replacement activities under this alternative, DBOC would be responsible for obtaining all applicable permits and complying with all permit conditions. By obtaining the relevant state and federal permits and complying with their conditions, DBOC would ensure that alternative C is consistent with relevant law and policy related to the management of wetlands and other waters of the U.S. DBOC's commercial shellfish operations and any dredge or fill activities in the waters of the U.S. (including Drakes Estero and the pond behind the mobile homes) are subject to permitting by USACE, San Francisco Bay Regional Water Quality Control Board, CCC, and NMFS. For the reasons described under alternative B, dredging the area around the dock and installation of a new dock would not qualify for the NWP 48, and would require a separate USACE permit.	Temporary impacts include dredging under the new dock (in a 30-by 60-foot area) at the onshore facilities and the installation/replacement of new rack infrastructure including between 1,700 and 2,500 2-inch by 6-inch posts in 2013 and 380 to 750 posts in 2014. DBOC would also place a new 1,050-foot water collection pipeline along the bottom of Drakes Estero using concrete anchors. The construction of a new processing facility would occur on existing uplands. These actions are expected to result in minimal short-term, adverse impacts due to an increase in local turbidity levels. The cumulative impact would be long-term, moderate, and adverse, and alternative D would contribute an appreciable adverse increment to the overall cumulative impact. Prior to undertaking any new or replacement activities under this alternative, DBOC would be responsible for obtaining all applicable permits and complying with all permit conditions. By obtaining relevant state and federal permits and complying with their conditions, DBOC would ensure that alternative D is consistent with relevant law and policy related to management of wetlands and other waters of the U.S. DBOC's commercial shellfish operations and any dredge or fill activities in the waters of the U.S. (including Drakes Estero and the pond behind the mobile homes) are subject to permitting by USACE, San Francisco Bay Regional Water Quality Control Board, CCC, and NMFS. Installation of the intake pipe, installation of a new dock, and dredging the area around the dock would require USACE permit authorization. NWP 48 (Commercial Shellfish Aquaculture Activities) was issued on February 21, 2012 with modifications. This permit authorizes "discharges of dredged or fill material in waters of the United States or structures or

TABLE ES-4. SUMMARY OF ENVIRONMENTAL CONSEQUENCES (CONTINUED)

Alternative A	Alternative B	Alternative C	Alternative D
Action/Impact	Action/Impact	Action/Impact	Action/Impact
	NWP 48, described under "Laws and Policies" in this section, authorizes "discharges of dredged or fill material in waters of the U.S. or structures or work in navigable waters of the U.S. necessary for commercial shellfish aquaculture operations in authorized areas" (33CFR 330[B][48]), provided notification is submitted to the USACE and includes a compensatory mitigation plan, habitat assessment, and assessment of impacts to eelgrass. Dredging the area around the dock and installing a new dock would not qualify for the NWP 48, and would require a separate USACE permit. Lastly, any future actions would be reviewed by NPS under DO-77-1; however, minor water-dependent actions (such as the installation of the new dock) are likely to be excepted from a statement of findings (per section 4.2.1 of NPS Procedural Manual 77-1; NPS 2002a).	USACE has provided written notification to DBOC that the commercial shellfish activities in waters of the U.S. are regulated by USACE and has advised DBOC to submit an application to ensure that its activities comply with USACE regulations. The letter goes on to note that, if an individual permit is required, DBOC will need to "demonstrate to the Corps that any proposed fill is necessary because there are no practicable alternatives, as outlined in the U.S. Environmental Protection Agency's Section 404(b)(l) Guidelines" (USACE 2010). Lastly, any future actions would be reviewed by the NPS under DO-77-1; however, minor water-dependent actions (such as the installation of the new dock) are likely to be excepted from a statement of findings (per section 4.2.1 of NPS Procedural Manual 77-1; NPS 2002a).	work in navigable waters of the United States necessary for commercial shellfish aquaculture operations in authorized areas" (33CFR 330[B][48]). Dredging the area around the dock and installing a new dock would not qualify for NWP 48, and would require a separate USACE permit. USACE has provided written notification to DBOC that the activities are within USACE jurisdiction and has advised DBOC to submit a permit application to ensure that DBOC activities comply with USACE regulations. The letter goes on to note that, if an individual permit is required, DBOC will need to "demonstrate to the Corps that any proposed fill is necessary because there are no practicable alternatives, as outlined in the U.S. Environmental Protection Agency' Section 404(b)(l) Guidelines" (USACE 2010). Lastly, any future actions would be reviewed by the NPS under DO-77-1; however, minor water-dependent actions (such as the installation of the new dock and placement of the water intake line) are likely to be excepted from a statement of findings (per section 4.2.1 of NPS Procedural Manual 77-1; NPS 2002a).
Eelgrass			
Overall, alternative A would result in long-term beneficial impacts on eelgrass habitat due to the termination of DBOC operations in Drakes Estero, the removal of scarring with discontinued use of motorboats in Drakes Estero, and the removal of structures that currently inhibit eelgrass abundance and serve as potential points of colonization and added substrate for the expansion of invasive species (e.g., tunicates) and macroalgae. There may be some highly localized adverse impacts on eelgrass associated with the removal of the commercially grown	Overall, alternative B would result in long-term moderate adverse impacts on eelgrass in Drakes Estero due to the operation of DBOC boats for another 10 years and the continued presence of commercial shellfish infrastructure in Drakes Estero. DBOC activities in Drakes Estero under alternative B would allow the continuation of actions associated with commercial shellfish operations that could result in damage to eelgrass habitat, such as propeller scarring (estimated at 8.5 miles based on 2010 aerial photography), potential boat wake erosion, and potential	Overall, alternative C would result in long-term moderate adverse impacts on eelgrass in Drakes Estero due to the operation of DBOC boats for an additional 10 years and the continued presence of shellfish infrastructure in Drakes Estero. DBOC activities in Drakes Estero under alternative C would allow the continuation of actions associated with commercial shellfish operations that could result in damage to eelgrass habitat, such as propeller scarring (estimated at 8.5 miles based on 2010 aerial photography), boat wake erosion, and temporary increases in turbidity from	Overall, alternative D would result in long-term moderate adverse impacts on eelgrass in Drakes Estero due to an additional 10 years of DBOC operations. DBOC activities in Drakes Estero under alternative D would allow the continuation of and potential increase in actions associated with commercial shellfish operations that result in damage to eelgrass habitat, such as propeller scarring (estimated at 8.5 miles based on 2010 aerial photography), boat wake erosion, and temporary increases in turbidity from sediment resuspension. It is anticipated that due to the

TABLE ES-4. SUMMARY OF ENVIRONMENTAL CONSEQUENCES (CONTINUED)

Alternative A	Alternative B	Alternative C	Alternative D
Action/Impact	Action/Impact	Action/Impact	Action/Impact
shellfish because they provide some benefits associated with nutrient cycling and water filtration; however, the overall long-term impacts of alternative A on eelgrass would be beneficial. Alternative A also would result in short-term minor adverse impacts on eelgrass because removing infrastructure related to commercial shellfish operations would result in localized, slightly detectable increases in sedimentation that would last two to three months, reducing the amount of sunlight available for photosynthesis during that time. BMPs would be used to reduce turbidity effects from temporary resuspension of sediment during removal activities, and the overall impact would result in limited change to eelgrass meadows or natural processes. The cumulative impact would be long-term and beneficial, and alternative A would contribute an appreciable beneficial increment to the overall cumulative impact. With respect to eelgrass, alternative A is consistent with relevant law and policy because it would preserve and enhance (1) a special aquatic site, a category of waters of the U.S. afforded additional consideration under the CWA; (2) essential fish habitat (habitat of particular concern) under the Groundfish Plan; and (3) native species and natural processes encouraged by NPS *Management Policies 2006*.	temporary increases in turbidity from sediment resuspension given the area of boat operations in Drakes Estero. It is anticipated that the amount of scarring under alternative B would remain similar to that observed in the 2010 aerial photographs. Maintenance of offshore infrastructure would continue to preclude eelgrass colonization underneath the beds and approximately 7 acres of racks. Further, the continuation of DBOC activities and the presence of structures would increase the potential for colonization and expansion of nonnative species (e.g., colonial tunicates) and macroalgae, the latter of which can compete with seagrasses for important resources like light. These effects would have a long-term moderate adverse impact on eelgrass, which would be readily apparent and would affect eelgrass meadows and natural processes (such as eelgrass colonization and regeneration) through the continued effects of boat disturbance, shellfish infrastructure, and nonnative species. Rack repair and replacement would result in short-term minor adverse impacts on eelgrass because these activities would result in localized, slightly detectable increases in sedimentation, reducing the amount of sunlight available for photosynthesis. Mitigation for impacts to eelgrass would be required pursuant to California policy. Beneficial ecosystem effects typically attributed to bivalves, such as nutrient cycling and water clarity, would continue. These beneficial impacts would be expected to be localized around shellfish operation sites. In general, impacts would be clearly detectable and could appreciably affect individuals or groups of species, communities, or natural processes. The NAS concluded that commercial shellfish operations in Drakes Estero result in impacts on eelgrass from the presence of racks and from boat propeller scars, but that these impacts are somewhat offset	sediment resuspension given the area of boat operations in Drakes Estero. It is anticipated that because the level of boat use would remain similar to existing conditions, the amount of scarring under alternative C would remain similar to that observed in the 2010 aerial photographs. Maintenance of offshore infrastructure would continue to preclude eelgrass colonization underneath the beds and approximately 7 acres of racks. Further, the continuation of DBOC activities would increase the potential for colonization and expansion of nonnative species (e.g., colonial tunicates) and macroalgae, as described above. However, DBOC would be responsible for modifying current harvest and distribution practices to minimize potential for *Didemnum* to spread to other areas in the Estero through fragmentation. Rack repair and replacement would result in short-term minor adverse impacts on eelgrass because these activities would result in localized, slightly detectable increases in sedimentation, reducing the amount of sunlight available for photosynthesis. Beneficial ecosystem effects typically attributed to bivalves, such as nutrient cycling and water clarity, would continue. These beneficial impacts would be expected to be localized around structures in Drakes Estero associated with commercial shellfish operations. In general, impacts would be readily apparent and would affect eelgrass meadows or natural processes through the continued effects of boat disturbance, shellfish infrastructure, and nonnative species. The NAS concluded that shellfish operations in Drakes Estero result in impacts on eelgrass from the presence of racks and from boat propeller scars, but that these impacts are somewhat offset by the "rapid regeneration capacity" for eelgrass and "that	likely increase in boat traffic and area of vessel operations that the potential for scarring may be increased from the levels observed in the 2010 aerial photography. Maintenance of offshore infrastructure would continue to preclude eelgrass colonization underneath the beds and racks. Further, the continuation of DBOC activities would increase the potential for colonization and expansion of nonnative species (e.g., colonial tunicates) and macroalgae, as described above. These adverse impacts would be of greater magnitude than those associated with alternatives B and C due to the likely increase in boat traffic in Drakes Estero associated with the increased level of production (approximately 40 percent greater than alternative B and 70 percent greater than alternative C), and the increased use of bags and racks in shellfish operations, but are still expected to be of a moderate intensity. Impacts would be readily apparent and would affect eelgrass meadows or natural processes (such as eelgrass colonization and regeneration). Rack repair and replacement would result in short-term minor adverse impacts on eelgrass because these activities would result in localized, slightly detectable increases in sedimentation, reducing the amount of sunlight available for photosynthesis. Beneficial ecosystem effects typically attributed to bivalves, such as nutrient cycling and water clarity, would continue. These beneficial impacts would be expected to be localized around shellfish operation-related structures. The cumulative impact would be long-term, moderate, and adverse, and alternative D would contribute an appreciable adverse increment to the overall cumulative impact. With respect to eelgrass, alternative D would not further the goals set forth in existing law and policy because it would allow ongoing adverse

TABLE ES-4. SUMMARY OF ENVIRONMENTAL CONSEQUENCES (CONTINUED)

Alternative A	Alternative B	Alternative C	Alternative D
Action/Impact	Action/Impact	Action/Impact	Action/Impact
	by the "rapid regeneration capacity" for eelgrass and that "eelgrass productivity can be locally enhanced by the cultured oysters through a reduction in turbidity and fertilization via nutrient regeneration" (NAS 2009). Although there are some highly localized beneficial impacts on eelgrass associated with commercial shellfish operations, the overall impact of alternative B on eelgrass would be moderate and adverse. The cumulative impact would be long-term, moderate, and adverse, and alternative B would contribute an appreciable adverse increment to the overall cumulative impact. With respect to eelgrass, alternative B would not further the goals set forth in existing law and policy because it would allow ongoing adverse impacts on (1) a special aquatic site, a category of waters of the U.S. afforded additional consideration under the CWA; (2) essential fish habitat (habitat of particular concern) under the Groundfish Plan; and (3) native species and natural processes (including native species management) under NPS *Management Policies 2006*.	eelgrass productivity can be locally enhanced by the cultured oysters through a reduction in turbidity and fertilization via nutrient regeneration" (NAS 2009). Although there would be some highly localized beneficial impacts on eelgrass associated with shellfish operations, the impact of alternative C on eelgrass would be moderate and adverse. The cumulative impact would be long-term, moderate, and adverse, and alternative C would contribute an appreciable adverse increment to the cumulative impact. With respect to eelgrass, alternative C would not further the goals set forth in existing law and policy because it would allow ongoing adverse impacts on (1) a special aquatic site, a category of waters of the U.S. afforded additional consideration under the CWA; (2) essential fish habitat (habitat of particular concern) under the Groundfish Plan; and (3) native species and natural processes (including native species management) under NPS *Management Policies 2006*.	impacts on (1) a special aquatic site, a category of waters of the U.S. afforded additional consideration under the CWA; (2) essential fish habitat (habitat of particular concern) under the Groundfish Plan; and (3) native species and natural processes (including native species management) under NPS *Management Policies 2006*.
Wildlife and Wildlife Habitat: Benthic Fauna			
Overall, alternative A would result in long-term beneficial impacts on native benthic fauna because the termination of DBOC operations and associated shellfish operations in Drakes Estero would remove shellfish operations from Drakes Estero and, therefore, reduce the risk for the spread of nonnative and invasive species in the future. Alternative A would result in the removal of structures related to shellfish operations in Drakes Estero. Some sediment re-suspension would be anticipated during the removal of the 7 acres of racks; however, any sedimentation resulting from	Overall, alternative B would result in long-term moderate adverse impacts on native benthic fauna for an additional 10 years due to the continuation of DBOC operations and associated human activities in Drakes Estero, as well as the potential for such activities to introduce and/or facilitate the colonization of nonnative and invasive species. Specifically, the cultivation of nonnative species in Drakes Estero for an additional 10 years at production levels of 600,000 pounds of shellfish annually would result in the continued addition and subsequent harvest	Overall, alternative C would result in long-term moderate adverse impacts on benthic fauna due to an additional 10 years of commercial shellfish operations and associated human activities in Drakes Estero and the potential for such activities to introduce nonnative species and to facilitate the colonization and expansion of invasive species. Although Manila clams would no longer be cultivated under this alternative, the cultivation of Pacific oyster in Drakes Estero would have readily apparent effects on the communities of natural benthic organisms, including increasing the risk of	Overall, alternative D would result in long-term moderate adverse impacts on native benthic fauna due to an additional 10 years of DBOC operations and associated human activities in Drakes Estero. This would increase the potential for shellfish operations to introduce nonnative species to Drakes Estero and facilitate the colonization and expansion of invasive species. Specifically, the increase in shellfish production levels to 850,000 pounds shucked weight (approximately 10 million individual organisms harvested annually) represents a marked

TABLE ES-4. SUMMARY OF ENVIRONMENTAL CONSEQUENCES (CONTINUED)

Alternative A	Alternative B	Alternative C	Alternative D
Action/Impact	Action/Impact	Action/Impact	Action/Impact
this activity would be short-lived and would be reduced to the extent practicable using BMPs, making the impact undetectable in the benthic community and therefore negligible. Although artificial habitat for certain benthic species would be removed when DBOC's offshore infrastructure is removed, alternative natural habitats (e.g., eelgrass beds) would be expected to replace these structures. Further, the removal of structures under alternative A would remove substrates that support invasive tunicates and other fouling species. Native benthic species would benefit from the removal of offshore infrastructure, particularly from the approximately 88 acres of mudflats and sandbars where bottom bags can be placed (22 acres have been planted with bottom bags each of the past two years). Native benthic species are adapted to the soft-bottom habitat and eelgrass that would likely replace the structures related to shellfish operations once they are removed. The cumulative impact would be beneficial, and alternative A would contribute an appreciable beneficial increment to the beneficial cumulative impact. Alternative A would be consistent with the guidance set forth in NPS *Management Policies 2006* for the maintenance and restoration of natural native ecosystems, including the eradication of nonnative species where these species interfere with natural processes and habitat (NPS 2006d). Alternative A would also be consistent with Executive Order 13112 regarding invasive species management. Finally, alternative A would be consistent with the California MLPA, regarding protection of marine life and habitats, marine ecosystems, and marine natural heritage, and improvements to recreational, educational, and study opportunities provided by marine ecosystems subject to minimal human disturbance.	of approximately 7.06 million individual shellfish from Drakes Estero on an annual basis. Based on DBOC proof-of-use reports, the acreage of sandbars and mudflats occupied at this level of production would be 50 percent greater than that reported for 2008 in the 2009 NAS report. The effects on the natural benthic community from this would be readily apparent, including the continued use by nonnative species of resources that would otherwise be available to native species of bivalves and other benthic organisms, the introduction of molluscan diseases, and other harmful nonnative species being imported unintentionally (such as the invasive tunicate *Didemnum*). The use of both bottom bags and racks has been implicated in detectable changes in benthic communities. The continued maintenance and use of DBOC offshore infrastructure would result in a slight decrease in the abundance of certain benthic invertebrate species where the racks are currently located, while the continuation of bag cultivation in Drakes Estero would maintain artificial structured habitat for some benthic invertebrates. Rack repair and replacement would result in short-term negligible adverse impacts to benthic fauna, because the effects from these activities would not be detectable or measurable. Activities such as continued maintenance and harvesting would allow for incidental mortality to continue, as described above, which would have an adverse impact on native bivalves. Further, the continued use of offshore infrastructure would maintain the potential for *Didemnum* expansion, and associated shellfish operations (such as continued infrastructure maintenance, vessel traffic, and harvesting) would pose a risk for further dispersal of this nonnative invasive tunicate via colonial fragments. The potential for increase in overall coverage of *Didemnum* would	introduction of molluscan diseases and expansion of other nonnative species (such as the invasive tunicate *Didemnum*). As discussed under alternative B, DBOC's use of diploid stock rather than sterile triploid stock increases the risk of naturalization by cultivated species (NAS 2004), although the potential risk under alternative C would be incrementally less than under alternative B. DBOC would be responsible for modifying current harvest and distribution practices to minimize potential for *Didemnum* to spread to other areas in Drakes Estero through fragmentation. The use of both bottom bags and racks has contributed to detectable changes in benthic communities. Because shellfish production limits would be less under alternative C compared to alternatives B and D, the level of impact on benthic fauna would be incrementally less; however, the impacts would still be readily apparent and would affect benthic populations, natural processes, and/or habitat in the project area. Activities related to rack repair and/or replacement would be temporary in nature and subject to BMP requirements; therefore, impacts on benthic fauna from rack repair and/or replacement would be negligible (i.e., not detectable or measurable). Cumulative impacts would be long term, moderate, and adverse, and alternative C would contribute an appreciable adverse increment to the overall cumulative impact. The continued introduction and maintenance of nonnative species in Drakes Estero would not be consistent with NPS *Management Policies 2006* in that it would not further the goal of the policies, which, in this case, would be to minimize the impacts of human activities on native benthic fauna populations. All species that could be cultivated are nonnative with the exception of the	increase over alternatives B and C (approximately 40 percent greater than alternative B and 70 percent greater than alternative C); therefore, it is assumed alternative D would result in the greatest level of impact on native benthic fauna among all alternatives. The cultivation of nonnative species in Drakes Estero would be readily apparent and would affect populations, natural processes, and/or the habitat of natural benthic organisms, including increasing the risk of introduction of molluscan diseases and expansion of other nonnative species (such as the invasive tunicate *Didemnum*). While certain species introduced under alternative D are native to the region (i.e., purple-hinged rock scallops and Olympia oysters), they are not abundant in Drakes Estero in adult form. The use of both bottom bags and racks has contributed to detectable changes in benthic communities. These impacts would continue to be readily apparent, affecting benthic populations, natural processes, and/or habitat in the project area. Activities related to rack repair and/or replacement would be temporary in nature and subject to BMP requirements; therefore, impacts on benthic fauna from rack repair and/or replacement would be negligible. Cumulative impacts would be long term, moderate, and adverse, and alternative D would contribute an appreciable adverse increment to the overall cumulative impact. The continued introduction and maintenance of nonnative species in Drakes Estero would not be consistent with NPS *Management Policies 2006* in that it would not further the goal of these policies, which, in this case, would be to minimize the impacts of human activities on native benthic fauna populations. The species that could be cultivated are nonnative with the exception of the purple-hinged rock scallop, which is native to the

TABLE ES-4. SUMMARY OF ENVIRONMENTAL CONSEQUENCES (CONTINUED)

Alternative A	Alternative B	Alternative C	Alternative D
Action/Impact	Action/Impact	Action/Impact	Action/Impact
	have an adverse impact on species diversity. Lastly, the nonnative Manila clam and Pacific oyster would continue to be produced under this alternative, increasing their chance for naturalization (NAS 2004, 2009; Grosholz 2011b). DBOC's use of diploid stock rather than sterile triploid stock further increases the risk of naturalization by cultivated species (NAS 2004). These impacts would be readily apparent on the populations, natural processes, and/or habitat of benthic organisms in the project area. The cumulative impact would be long term, moderate, and adverse, and alternative B would contribute an appreciable adverse increment to the overall cumulative impact. The continued introduction and maintenance of nonnative species in Drakes Estero would not be consistent with NPS *Management Policies 2006* in that it would not further the goal of policies, which, in this case, would be to minimize the impacts of human activities on native benthic fauna populations. The shellfish species that could be cultivated under this alternative are nonnative, with the exception of the purple-hinged rock scallop, which is native to the rocky California coast but is not likely to be found in abundance in Drakes Estero due to the low availability of hard substrate for attachment. Further, alternative B would not be consistent with Executive Order 13112 regarding invasive species management.	purple-hinged rock scallop, which is native to the rocky California coast but is not likely to be found in abundance in Drakes Estero due to the low availability of hard substrate for attachment. Further, alternative C would not be consistent with Executive Order 13112 regarding invasive species management.	rocky California coast but is not likely to be found in abundance in Drakes Estero, and the Olympia oyster, which also prefers a hard substrate and is not abundant in adult form in Drakes Estero. Additionally, DBOC's proposal to collect native shellfish larvae in Drakes Estero would not be consistent with the NPS mission, per *Management Policies 2006* (NPS 2006d) or regulations. Further, alternative D would not be consistent with Executive Order 13112 regarding invasive species management.
Wildlife and Wildlife Habitat: Fish			
Overall, alternative A would result in long-term beneficial impacts on fish due to the restoration of natural fish habitat, including the restoration of natural eelgrass beds that serve as essential fish habitat for a variety of Pacific groundfish identified	Overall, alternative B would result in long-term minor adverse impacts on fish because, as discussed above, impacts on fish would be slightly detectable and would only affect a small segment of the population, their natural	Overall, alternative C would result in long-term minor adverse impacts on fish because, although the natural species composition would remain altered due to the presence of nonnatural structured habitat, impacts would be relatively	Overall, alternative D would result in long-term minor adverse impacts on fish because, although the natural species composition would remain altered due to the presence of nonnatural structured habitat, impacts would be relatively

TABLE ES-4. SUMMARY OF ENVIRONMENTAL CONSEQUENCES (CONTINUED)

Alternative A	Alternative B	Alternative C	Alternative D
Action/Impact	Action/Impact	Action/Impact	Action/Impact
in the Groundfish Plan (PFMC 2008). Alternative A would result in a more natural species composition and spatial distribution of fish in the project area, which would likely result in minor adverse impacts on fish due to slightly detectable decreases in the abundance of structure-oriented fish species and their prey. Alternative A would also result in short-term minor adverse impacts on fish species because the disruption of fish during rack removal from Drakes Estero would be slightly detectable and would affect only a small portion of the population and/or habitat in the project area. Combined with the removal of a source of marine debris, changes resulting from this alternative would return the Drakes Estero ecosystem to a more natural state for the overall fish community. The cumulative impact for alternative A would be beneficial and would contribute a noticeable beneficial increment to the overall cumulative impact. Alternative A would be consistent with the guidance set forth in NPS *Management Policies 2006* for the maintenance and restoration of natural native ecosystems, including the restoration of native fish communities (NPS 2006d). Additionally, this alternative would be consistent with the goals set forth in the Magnuson-Stevens Fishery Conservation and Management Act because the essential fish habitat (habitat of particular concern) designated in the Pacific Fishery Management Council's Groundfish Plan would be maintained and improved.	processes, and/or their habitat within the project area. While the natural species composition would remain altered due to the presence of nonnatural structured habitat, these alterations would be relatively localized and confined to the 7 acres of racks and would not affect the overall structure of any natural community. Additionally, eelgrass habitat fragmentation caused by 8.5 miles of DBOC motorboat propeller scars and 7 acres of oyster racks would have the potential to create a nonnatural spatial redistribution of fish that could locally influence the functionality of the fish habitat. The continued maintenance of shellfish racks would continue to displace approximately 7 acres of eelgrass habitat, which is essential fish habitat for Pacific groundfish identified in the Groundfish Plan (PFMC 2008). Shellfish rack repair and replacement would have the potential to degrade fish habitat by affecting water quality, but impacts would be short term due to a slightly detectable disruption of fish near racks. Assuming that fish would have a limited exposure to commercial shellfish operation debris pollution, adverse impacts on fish from the ingestion of small fragments or entrapment in PVC debris would be slightly detectable and would affect only a small segment of the population or their natural processes and/or habitat in the project area. The cumulative impact would be long term and beneficial, and alternative B would contribute a noticeable adverse increment to the overall beneficial cumulative impact. With regard to fish, the continued operation of DBOC for 10 additional years would not be consistent with relevant law and policy. The continued maintenance of a nonnatural community in Drakes Estero would not further the goal of NPS *Management Policies 2006* to	localized and confined to the 7 acres of racks and would not affect the overall structure of any natural community. Eelgrass habitat fragmentation caused by 8.5 miles of DBOC motorboat propeller scars and 7 acres of oyster racks would have the potential to create a nonnatural spatial redistribution of fish that could locally influence the functionality of the fish habitat. The maintenance of shellfish racks would continue to displace approximately 7 acres of eelgrass habitat, which is identified as essential fish habitat for Pacific groundfish in the Groundfish Plan (PFMC 2008). The wide-scale repair and maintenance of shellfish racks would continue to have the potential to degrade water quality and affect the fish community, but impacts would be short term, minor, and adverse due to a slightly detectable disruption of fish near racks. Assuming that fish would have a limited exposure to commercial shellfish operation debris pollution, adverse impacts on fish from the ingestion of small fragments or entrapment in PVC debris would be slightly detectable and would affect only a small segment of the fish population or their natural processes and/or habitat in the project area. The cumulative impact would be long term and beneficial, and alternative C would contribute a noticeable adverse increment to the overall beneficial cumulative impact. With regard to fish, the continued operation of DBOC for 10 additional years would not be consistent with relevant law and policy. The continued maintenance of a nonnatural community in Drakes Estero would not further the goal of NPS *Management Policies 2006* to preserve and restore natural communities and ecosystems. The perpetuation of nonnatural habitat would continue to attract fish communities that would not naturally be found in Drakes	localized and confined to the 7 acres of racks and would not affect the overall structure of any natural community. Eelgrass habitat fragmentation caused by 8.5 miles of DBOC motorboat propeller scars and 7 acres of oyster racks would have the potential to create a nonnatural spatial redistribution of fish that could locally influence the functionality of the fish habitat. The maintenance of shellfish racks would continue to displace approximately 7 acres of eelgrass habitat, which is essential fish habitat for Pacific groundfish in the Groundfish Plan (PFMC 2008). The wide-scale repair and maintenance of shellfish racks would continue to have the potential to degrade water quality and affect the fish community, but impacts would be short term, minor, and adverse due to a slightly detectable disruption of fish near racks. Assuming that fish would have a limited exposure to commercial shellfish operation debris pollution, adverse impacts on fish from the ingestion of small fragments or entrapment in PVC debris would be slightly detectable and would affect only a small segment of the fish population or their natural processes and/or habitat in the project area. The cumulative impact would be long term and beneficial, and alternative D would contribute a noticeable adverse increment to the beneficial cumulative impact. With regard to fish, the continued operation of DBOC for 10 additional years would not be consistent with relevant law and policy. The continued maintenance of a nonnatural community in Drakes Estero would not further the goal of NPS *Management Policies 2006* to preserve and restore natural communities and ecosystems. The perpetuation of nonnatural habitat would continue to attract fish communities that would not naturally be found in Drakes

TABLE ES-4. SUMMARY OF ENVIRONMENTAL CONSEQUENCES (CONTINUED)

Alternative A	Alternative B	Alternative C	Alternative D
Action/Impact	Action/Impact	Action/Impact	Action/Impact
	preserve and restore natural communities and ecosystems. The perpetuation of nonnatural habitat would continue to attract fish communities that would not naturally be found in Drakes Estero. Additionally, this alternative would not be consistent with the goals set forth in the Magnuson-Stevens Fishery Conservation and Management Act because damage to eelgrass, which is designated as essential fish habitat (habitat of particular concern) in the Pacific Fishery Management Council's Groundfish Management Plan, would continue.	Estero. Additionally, this alternative would not be consistent with the goals set forth in the Magnuson-Stevens Fishery Conservation and Management Act because damage to eelgrass, which is designated as essential fish habitat (habitat of particular concern) in the Pacific Fishery Management Council's Groundfish Management Plan, would continue.	Estero. Additionally, this alternative would not be consistent with the goals set forth in the Magnuson-Stevens Fishery Conservation and Management Act because damage to eelgrass, which is designated as essential fish habitat (habitat of particular concern) within the Pacific Fishery Management Council's Groundfish Management Plan, would continue.
Wildlife and Wildlife Habitat: Harbor Seals			
Overall, alternative A would result in long-term beneficial impacts on harbor seals due to the termination of DBOC operations and associated human activities in Drakes Estero. Disturbance to harbor seals would be limited to recreational kayakers (outside of the harbor seal pupping season), hikers on the adjacent landscape and shoreline, and aircraft. Further, the termination of shellfish operations in Drakes Estero could benefit the distribution and abundance of the native harbor seal population, and could result in expansion of available habitat for harbor seals. Alternative A could also result in short-term minor adverse impacts associated with rack removal, which would be localized and slightly detectable but would not affect the overall structure of the natural community (i.e., would affect only a small segment of the harbor seal population, natural processes, or habitat in the project area). These activities would be conducted outside the harbor seal pupping season to minimize adverse impacts. The cumulative impact would be long term and beneficial, including the removal of marine debris from Drakes Estero, and alternative	Overall, alternative B would result in long-term moderate adverse impacts on harbor seals due to the continuation of commercial shellfish operations in Drakes Estero year-round for another 10 years, and the associated use of motorboats and bottom bag cultivation on sandbars and mudflats adjacent to the designated harbor seal protection areas. This would result in continued human presence and potential disturbance of harbor seals throughout the year. Although the mandatory buffer of 100 yards from hauled-out harbor seals (year-round) and other restrictions during the harbor seal pupping season would be retained as part of the new SUP issued to DBOC, alternative B would result in moderate adverse impacts on harbor seals due to the potential for displacement and continued disturbances that are known to be correlated with harbor seal behavior. These impacts would be readily apparent and would affect populations, natural processes, and/or habitat of harbor seals in the project area. Impacts related to rack repair and replacement activities in 2013 and 2014 would be slightly detectable and therefore short term, minor, and adverse. The potential for the continued introduction of marine debris into the	Overall, alternative C would result in long-term moderate adverse impacts on harbor seals due to the continuation of commercial shellfish operations in Drakes Estero year-round for another 10 years, and the associated use of motorboats and bottom bag cultivation on sandbars and mudflats adjacent to the designated harbor seal protection areas. This would result in continued human presence and potential disturbance of harbor seals throughout the year. Although the mandatory buffer of 100 yards from hauled-out harbor seals (year-round) and other restrictions during the harbor seal pupping season would be retained in the new SUP issued to DBOC, alternative C would result in moderate adverse impacts on harbor seals due to the potential for displacement and continued disturbances that are known to be correlated with harbor seal behavior. These impacts would be readily apparent and would affect populations, natural processes, and/or habitat of harbor seals in the project area. Impacts related to rack repair and replacement activities in 2013 and 2014 would be slightly detectable and therefore short term, minor, and adverse. The potential for the continued introduction of debris from the	Overall, alternative D would result in long-term moderate adverse impacts on harbor seals due to the continuation of commercial shellfish operations in Drakes Estero year-round for another 10 years, and the associated use of motorboats and bottom bag cultivation on mudflats adjacent to the designated harbor seal protection areas. This would result in continued human presence and potential disturbance of harbor seals throughout the year. Although the mandatory buffer of 100 yards from hauled-out harbor seals (year-round) and other restrictions during the harbor seal pupping season would be retained in the new SUP issued to DBOC, alternative D would result in moderate adverse impacts on harbor seals due to the potential for displacement and continued disturbances that are known to be correlated with harbor seal behavior. These impacts would be readily apparent and would affect populations, natural processes, and/or habitat of harbor seals in the project area. Impacts related to rack repair and replacement activities in 2013 and 2014 would be slightly detectable and therefore short term, minor, and adverse. The potential for the continued introduction of debris from the commercial

TABLE ES-4. SUMMARY OF ENVIRONMENTAL CONSEQUENCES (CONTINUED)

Alternative A	Alternative B	Alternative C	Alternative D
Action/Impact	Action/Impact	Action/Impact	Action/Impact
A would contribute an appreciable beneficial increment to the overall cumulative impact. With respect to harbor seals, alternative A would be consistent with NPS policy because the removal of DBOC operations from Drakes Estero would remove an unnatural stimulus that is correlated with changes in harbor seal behavior. Similarly, the decrease in potential disturbance of this species would be consistent with MMPA (16 USC 1361 et seq., 1401–1407, 1538, 4107) by avoiding any potential take (as described above) of marine mammals and by maintaining the health and stability of the marine ecosystem.	environment would have adverse impacts on harbor seals due to the potential for ingestion. The cumulative impact would be long term, moderate, and adverse, and alternative B would contribute an appreciable adverse increment to the overall cumulative impact. With respect to harbor seals, alternative B would not further the goals of relevant law and policy because continued DBOC operations in Drakes Estero would maintain an unnatural stimulus that has the potential to affect harbor seal behavior. NPS *Management Policies 2006* specifies that NPS managers should strive to preserve and restore "behaviors of native plant and animal populations and the communities and ecosystems in which they occur" (NPS 2006d). Additionally, the continued disturbance to this species would be subject to regulation by the MMPA (16 USC 1361 et seq., 1401–1407, 1538, 4107). The MMPA prohibits, with certain exceptions, the take of marine mammals in U.S. waters and by U.S. citizens, and the importation of marine mammals and marine mammal products into the United States. Under the MMPA, "take" is defined as "harass, hunt, capture, kill or collect, or attempt to harass, hunt, capture, kill or collect." "Harassment" is defined as "any act of pursuit, torment, or annoyance which has the potential to injure a marine mammal in the wild, or has the potential to disturb a marine mammal in the wild by causing disruption of behavioral patterns, including, but not limited to, migration, breathing, nursing, breeding, feeding, or sheltering." Under the MMPA, if an activity is defined as harassment under the above criteria, a specific permit called an Incidental Harassment Authorization may be required.	commercial shellfish operation into the environment would have adverse impacts on harbor seals due to the potential for ingestion. The cumulative impact would be long term, moderate, and adverse, and alternative C would contribute an appreciable adverse increment to the overall cumulative impact. With respect to harbor seals, alternative C would not further the goals of relevant law and policy because continued DBOC operations in Drakes Estero would maintain an unnatural stimulus that is negatively correlated with harbor seal use of haul-out sites. NPS *Management Policies 2006* specify that NPS managers should strive to preserve and restore "behaviors of native plant and animal populations and the communities and ecosystems in which they occur" (NPS 2006d). Additionally, the continued disturbance to this species would be subject to regulation by the MMPA (16 USC 1361 et seq., 1401–1407, 1538, 4107). The MMPA prohibits, with certain exceptions, the take of marine mammals in U.S. waters and by U.S. citizens, and the importation of marine mammals and marine mammal products into the United States. Under the MMPA, "take" is defined as "harass, hunt, capture, kill or collect, or attempt to harass, hunt, capture, kill or collect." "Harassment" is defined as "any act of pursuit, torment, or annoyance which has the potential to injure a marine mammal in the wild, or has the potential to disturb a marine mammal in the wild by causing disruption of behavioral patterns, including, but not limited to, migration, breathing, nursing, breeding, feeding, or sheltering." Under the MMPA, if an activity is defined as harassment under the above criteria, a specific permit called an Incidental Harassment Authorization may be required.	shellfish operation into the environment would have adverse impacts on harbor seals due to the potential for ingestion. The adverse impacts associated with alternative D would be of greater magnitude than those associated with alternatives B and C due to the likely increase in boat traffic in Drakes Estero associated with increased production levels (approximately 40 percent greater than alternative B and 70 percent greater than alternative C); however, these impacts are still expected to be moderate in intensity. The cumulative impact would be long term, moderate, and adverse, and alternative D would contribute an appreciable adverse increment to the overall cumulative impact. With respect to harbor seals, alternative D would not further the goals of relevant law and policy because continued DBOC operations in Drakes Estero would maintain an unnatural stimulus that has the potential to affect harbor seal behavior. NPS *Management Policies 2006* specify that NPS managers should strive to preserve and restore "behaviors of native plant and animal populations and the communities and ecosystems in which they occur" (NPS 2006d). Additionally, the continued disturbance to this species would be subject to regulation by the MMPA (16 USC 1361 et seq., 1401–1407, 1538, 4107). The MMPA prohibits, with certain exceptions, the take of marine mammals in U.S. waters and by U.S. citizens, and the importation of marine mammals and marine mammal products into the United States. Under the MMPA, "take" is defined as "harass, hunt, capture, kill or collect, or attempt to harass, hunt, capture, kill or collect." "Harassment" is defined as "any act of pursuit, torment, or annoyance which has the potential to injure a marine mammal in the wild, or has the potential to disturb a marine mammal in the wild

TABLE ES-4. SUMMARY OF ENVIRONMENTAL CONSEQUENCES (CONTINUED)

Alternative A	Alternative B	Alternative C	Alternative D
Action/Impact	Action/Impact	Action/Impact	Action/Impact
			by causing disruption of behavioral patterns, including, but not limited to, migration, breathing, nursing, breeding, feeding, or sheltering." Under the MMPA, if an activity is defined as harassment under the above criteria, a specific permit called an Incidental Harassment Authorization may be required.
Wildlife and Wildlife Habitat: Birds			
Overall, alternative A would result in long-term beneficial impacts on birds due to the removal of the commercial shellfish operation in Drakes Estero and its associated human activities. The removal of DBOC motorboats and related activities would minimize the disruption of biological activities such as foraging and resting for various types of birds that use Drakes Estero. Intertidal areas previously used by DBOC for the bottom bag cultivation in commercial operations would result in up to 88 additional acres of foraging, roosting, and resting habitat for resident and migratory birds. This increase in bird habitat would have greater importance for spring migrating birds, like the Pacific black brant, and natural processes would be enhanced due to the closure of Drakes Estero to all recreational boat access during the seal pupping season (March 1 – June 30). Alternative A may result in adverse impacts on birds from rack removal, due to the removal of food sources and resting habitat associated with the racks. However, these adverse impacts would be expected to be short term and minor because they would affect a small segment of bird populations, their natural processes, and habitat in the project area. Further, the removal of shellfish racks would eliminate unnatural habitat features and restore natural bird habitats in Drakes Estero. Under this alternative, birds would benefit from the removal of all racks and bags, thereby eliminating the	Alternative B would result in long-term moderate adverse impacts on birds and bird habitat due to the continuation of commercial shellfish operations and the associated human activities in Drakes Estero for an additional 10 years. As described above, the impacts of alternative B on birds would result in readily apparent effects on bird populations, natural processes, and habitat within the project area. Because of Drakes Estero's importance to regional shorebird and Pacific black brant conservation, the failure to protect these species from disturbances related to shellfish operations, especially during spring migration, could result in long-term adverse impacts. Shellfish racks would remain as artificial features in Drakes Estero, and could continue to provide food sources and resting structure for some bird species. Assuming that birds would have a limited exposure to commercial shellfish operation-related debris pollution, adverse impacts on birds from the ingestion of small debris fragments would be minimal because the impacts would be slightly detectable and would affect only a small segment of the populations, their natural processes, or habitat in the project area. The continued use of motorboats and other noise-producing equipment, as well as the continued maintenance of shellfish growing structures in Drakes Estero, would continue to disrupt biological activities of birds, such as foraging and resting behavior, potentially leading to a reduction	Alternative C would result in long-term moderate adverse impacts on birds and bird habitat due to the continuation of commercial shellfish operations and associated human activities in Drakes Estero for an additional 10 years. The impacts of alternative C on birds would result in readily apparent effects on bird populations, natural processes, and habitat in the project area. Because of Drakes Estero's importance to regional shorebird and Pacific black brant conservation, the failure to protect these species from disturbances related to shellfish operations, especially during spring migration, could result in long-term adverse impacts. Shellfish racks would remain as artificial features in Drakes Estero and could continue to provide food sources and resting structure for some bird species. Assuming that birds would have a limited exposure to commercial shellfish operation-related debris pollution, adverse impacts on birds from the ingestion of small debris fragments would be minor because the impacts would be slightly detectable and would affect only a small segment of the populations, their natural processes, or habitat in the project area. The continued use of motorboats and other noise-producing equipment, as well as the continued maintenance of shellfish growing structures, in Drakes Estero would continue to disrupt biological activities of birds, such as foraging and resting behavior, potentially leading to a reduction in fitness and reproductive	Alternative D would result in long-term moderate adverse impacts on birds and bird habitat due to the continuation of commercial shellfish operations and the associated human activities in Drakes Estero for an additional 10 years. The adverse impacts could be incrementally greater under this alternative than under alternatives B and C due to the potential for increased motorboat activities. Because of Drakes Estero's importance to regional shorebird and Pacific black brant conservation, the failure to protect these species from disturbances related to shellfish operations, especially during spring migration, could result in long-term adverse impacts. Shellfish racks would remain as artificial features in Drakes Estero, and could continue to provide food sources and resting structure for some bird species. Assuming that birds would have a limited exposure to commercial shellfish operation-related debris pollution, adverse impacts on birds from the ingestion of small debris fragments would be minor because the impacts would be slightly detectable and would affect only a small segment of the populations, their natural processes, or habitat in the project area. The continued use of motorboats and other noise-producing equipment, as well as the continued maintenance of shellfish growing structures, in Drakes Estero would continue to disrupt biological activities of birds, such as foraging and resting behavior, potentially leading to a reduction in

TABLE ES-4. SUMMARY OF ENVIRONMENTAL CONSEQUENCES (CONTINUED)

Alternative A	Alternative B	Alternative C	Alternative D
Action/Impact	Action/Impact	Action/Impact	Action/Impact
potential for ingestion of debris from the commercial shellfish operation. Cumulative impacts would be long term and beneficial, and alternative A would contribute an appreciable beneficial increment to the overall cumulative impacts. Alternative A would be consistent with the goals set forth in both NPS *Management Policies 2006* and the MBTA. NPS *Management Policies 2006* specifies that NPS managers should strive to preserve and restore "behaviors of native plant and animal populations and the communities and ecosystems in which they occur" and "participate in local and regional scientific and planning efforts, identify ranges of populations of native plants and animals, and develop cooperative strategies for maintaining or restoring these populations in the parks" (NPS 2006d). The MBTA (16 USC 703–712, as amended) makes it illegal for people to "take" migratory birds, or their eggs, feathers, or nests. Additionally, alternative A would be consistent with Executive Order 13186 and the NPS MOU with USFWS, which directs agencies to avoid or minimize, to the extent practicable, adverse impacts on migratory bird resources when conducting agency actions (NPS and USFWS 2010). As described in Hickey et al. (2003) and other bird conservation plans, because of restrictions on human activity (including kayaking and shellfish operations during the March 1 – June 30 seal pupping closure) and further alteration of tidal habitat, alternative A would be expected to support the recommended habitat goal of increasing the extent and quality of tidal flats for shorebirds (Hickey el al. 2003). Alternative A would also be expected to support the primary	in fitness and reproductive success. Noise disturbance from DBOC operations would also alter other biological activities of birds using Drakes Estero, such as predator avoidance. This would include additional short-term minor adverse impacts on birds associated with shellfish rack repairs outside the harbor seal pupping season in 2013 and 2014. The cumulative impact would be long term, moderate, and adverse, and alternative B would contribute an appreciable adverse increment to the overall impact. With respect to birds, alternative B would not be consistent with the goals set forth in the NPS *Management Policies 2006*, which specifies that NPS managers should strive to preserve and restore "behaviors of native plant and animal populations and the communities and ecosystems in which they occur" and "participate in local and regional scientific and planning efforts, identify ranges of populations of native plants and animals, and develop cooperative strategies for maintaining or restoring these populations in the parks" (NPS 2006d). Alternative B would not be consistent with NPS policies to preserve and restore natural abundances, dynamics, distributions, habitats, and behaviors of native bird populations, and to participate in regional protection. Specifically, NPS would not be meeting its responsibilities to the Pacific Flyway Management Plan for Brant or the Southern Pacific Shorebird Conservation Plan. Alternative B would not be consistent with the NPS commitment to Executive Order 13186 which directs agencies to avoid or minimize, to the extent practicable, adverse impacts on migratory bird resources when conducting agency actions. Further, alternative B would also not be consistent with the NPS MOU with USFWS, according to which the NPS must incorporate bird conservation	success. Noise disturbance from DBOC operations would also alter other biological activities of birds using Drakes Estero, such as predator avoidance. This would include additional short-term minor adverse impacts on birds associated with shellfish rack repairs outside the harbor seal pupping season in 2013 and 2014. The cumulative impact would be long term, moderate, and adverse, and alternative C would contribute an appreciable adverse increment to the cumulative impact. With respect to birds, alternative C would not be consistent with the goals set forth in the NPS *Management Policies 2006*, which specifies that NPS managers should strive to preserve and restore "behaviors of native plant and animal populations and the communities and ecosystems in which they occur" and "participate in local and regional scientific and planning efforts, identify ranges of populations of native plants and animals, and develop cooperative strategies for maintaining or restoring these populations in the parks" (NPS 2006d). Alternative C would not be consistent with NPS policies to preserve and restore natural abundances, dynamics, distributions, habitats, and behaviors of native bird populations, and to participate in regional protection. Specifically, NPS would not be meeting its responsibilities to the Pacific Flyway Management Plan for Brant or the Southern Pacific Shorebird Conservation Plan. Alternative C would not be consistent with the NPS commitment to Executive Order 13186, which directs agencies to avoid or minimize, to the extent practicable, adverse impacts on migratory bird resources when conducting agency actions. Further, alternative C would also not be consistent with the NPS MOU with USFWS, according to which the NPS must incorporate bird conservation	fitness and reproductive success. Noise disturbance from DBOC operations would also alter other biological activities of birds using Drakes Estero, such as predator avoidance. This would include additional short-term minor adverse impacts on birds associated with shellfish rack repairs outside the harbor seal pupping season in 2013 and 2014. The impacts of alternative D on birds would result in readily apparent effects on bird populations, natural processes, and habitat within the project area. The cumulative impact would be long-term moderate adverse, and alternative D would contribute an appreciable adverse increment to the overall impact. With respect to birds, alternative D would not be consistent with the goals set forth in the NPS *Management Policies 2006*, which specifies that NPS managers should strive to preserve and restore "behaviors of native plant and animal populations and the communities and ecosystems in which they occur" and "participate in local and regional scientific and planning efforts, identify ranges of populations of native plants and animals, and develop cooperative strategies for maintaining or restoring these populations in the parks" (NPS 2006d). Alternative D would not be consistent with NPS policies to preserve and restore natural abundances, dynamics, distributions, habitats, and behaviors of native bird populations, and to participate in regional protection. Specifically, NPS would not be meeting its responsibilities to the Pacific Flyway Management Plan for Brant or the Southern Pacific Shorebird Conservation Plan. Alternative D would not be consistent with the NPS commitment to Executive Order 13186, which directs agencies to avoid or minimize, to the extent practicable, adverse impacts on migratory bird resources when conducting agency actions.

TABLE ES-4. SUMMARY OF ENVIRONMENTAL CONSEQUENCES (CONTINUED)

Alternative A	Alternative B	Alternative C	Alternative D
Action/Impact	Action/Impact	Action/Impact	Action/Impact
regional conservation goal of the U.S. Shorebird Conservation Plan to maintain the quality and quantity of habitat at local levels in order to support birds that breed, winter in, and migrate through each region (Brown et al. 2001). As such, the removal of DBOC shellfish operations would be expected to positively influence birds and bird habitat by supporting conservation strategies outlined in bird conservation plans.	measures into agency actions and planning processes. Actions under alternative B would be consistent with the MBTA (16 USC 703–712, as amended), which makes it illegal to "take" migratory birds or their eggs, feathers, or nests. As described in Hickey et al. (2003) and other bird conservation plans, because of allowing human activity (including kayaking and shellfish operations) and continuing alteration of tidal habitat, alternative B would not be expected to support the recommended habitat goal of increasing the extent and quality of tidal flats for shorebirds (Hickey el al. 2003). Alternative B would not be expected to support the primary regional conservation goal of the U.S. Shorebird Conservation Plan to maintain the quality and quantity of habitat at local levels in order to support birds that breed, winter in, and migrate through each region (Brown et al. 2001). As such, DBOC shellfish operations under alternative B would be expected to adversely affect birds and bird habitat by not adhering to conservation strategies outlined in bird conservation plans.	measures into agency actions and planning processes. Actions under alternative C would be consistent with the MBTA (16 USC 703–712, as amended), which makes it illegal to "take" migratory birds or their eggs, feathers, or nests. As described in Hickey et al. (2003) and other bird conservation plans, because of allowing human activity (including kayaking and shellfish operations) and continued alteration of tidal habitat, alternative C would not be expected to support the recommended habitat goal of increasing the extent and quality of tidal flats for shorebirds (Hickey el al. 2003). Alternative C would not be expected to support the primary regional conservation goal of the U.S. Shorebird Conservation Plan to maintain the quality and quantity of habitat at local levels in order to support birds that breed, winter in, and migrate through each region (Brown et al. 2001). As such, DBOC shellfish operations under alternative C would be expected to adversely affect birds and bird habitat by not adhering to conservation strategies outlined in bird conservation plans.	Further, alternative D would also not be consistent with the NPS MOU with USFWS, according to which the NPS must incorporate bird conservation measures into agency actions and planning processes. Actions under alternative D are consistent with the MBTA (16 U.S.C. 703–712, as amended), which makes it illegal to "take" migratory birds or their eggs, feathers, or nests. As described in Hickey et al. (2003) and other bird conservation plans, by allowing human activity (including kayaking and shellfish operations) and continued alteration of tidal habitat, alternative D would not be expected to support the recommended habitat goal of increasing the extent and quality of tidal flats for shorebirds (Hickey el al. 2003). Alternative D would not be expected to support the primary regional conservation goal of the U.S. Shorebird Conservation Plan to maintain the quality and quantity of habitat at local levels in order to support birds that breed, winter in, and migrate through each region (Brown et al. 2001). As such, DBOC shellfish operations under alternative D would be expected to adversely affect birds and bird habitat by not adhering to conservation strategies outlined in bird conservation plans.
Special-Status Species			
Overall, alternative A would result in a long-term beneficial impact on central California Coho salmon critical habitat and the central California steelhead. Alternative A could also result in short-term minor adverse impacts on these federally protected resources during the removal of DBOC facilities and personal property because these activities could disturb individuals or cause temporary sedimentation in designated critical habitat. The short-term impacts related to removal	Overall, alternative B would result in continued long-term minor adverse impacts on central California Coho salmon critical habitat and the central California steelhead for an additional 10 years because impacts from ongoing DBOC operations would be slightly detectable and localized, and could disrupt a small proportion of the individuals and/or designated critical habitat in the project area. Damage to eelgrass habitat and changes in water quality have the potential to	Overall, alternative C would result in continued long-term minor adverse impacts on central California Coho salmon critical habitat and the central California steelhead for an additional 10 years because impacts from ongoing DBOC operations would be slightly detectable and localized, and could disrupt individuals and/or designated critical habitat within the project area. Damage to eelgrass habitat and changes in water quality have the potential to cause localized and	Overall, alternative D would result in long-term minor adverse impacts on designated central California Coho salmon critical habitat and the central California steelhead for an additional 10 years because impacts from ongoing DBOC operations would be slightly detectable and localized (affecting a small proportion of the designated Coho salmon critical habitat and steelhead within the project area). Damage to eelgrass habitat and reduction in water quality

TABLE ES-4. SUMMARY OF ENVIRONMENTAL CONSEQUENCES (CONTINUED)

Alternative A	Alternative B	Alternative C	Alternative D
Action/Impact	Action/Impact	Action/Impact	Action/Impact
would be highly localized and would last for a period of two to three months. The cumulative impact would be long term and beneficial, and alternative A would contribute a noticeable beneficial increment to the overall cumulative impact. For central California Coho salmon critical habitat and the central California steelhead, alternative A would be consistent with relevant law and policy. Alternative A would forward the goal set forth in NPS *Management Policies 2006*, which states that the NPS will "survey for, protect, and strive to recover all species native to national park service units that are listed under the Endangered Species Act" (NPS 2006d). Alternative A would also fulfill the federal mandate set forth by the ESA to conserve listed species and to ensure that the proposed actions do not jeopardize the continued existence of the listed species.	cause localized and slightly detectable adverse impacts on Coho salmon critical habitat by reducing the quality of some required habitat elements, such as food and cover requirements. The displacement of eelgrass from propeller scars and oyster racks, as well as the nonnatural changes to habitat condition from oyster racks, could cause a nonnatural redistribution of steelhead prey species that would be expected to have slightly detectable adverse impacts on the natural foraging behavior and habitat of central California steelhead. Alternative B would also result in short-term minor adverse impacts because activities associated with the repair and replacement of racks in 2013 and 2014 could cause localized sedimentation for a few months each year (outside of the seal pupping season) that would cause slightly detectable impacts to federally listed individuals or populations and critical habitat within the project area. The extent of these impacts on water quality would be minimized by using standard sediment control BMPs and an approved coated lumber, which would further decrease the impacts to federally listed individuals, populations, and critical habitat. Assuming that commercial shellfish operation-related debris pollution would be limited in Drakes Estero, adverse impacts to central California Coho salmon critical habitat and the central California steelhead from this debris would not affect the overall structure of any natural community. Cumulative impacts would be long term and beneficial, and alternative B would contribute a noticeable adverse increment to the overall cumulative impact. For central California Coho salmon critical habitat and the central California steelhead, alternative B would be consistent with relevant law and policy. However, alternative B would not fulfill the goals	slightly detectable adverse impacts to Coho salmon critical habitat by reducing the quality of some required habitat elements, such as food and cover requirements. The displacement of eelgrass from propeller scars and oyster racks, as well as the nonnatural changes to habitat condition from oyster racks, could cause a nonnatural redistribution of steelhead prey species that would be expected to have slightly detectable adverse impacts on the natural foraging behavior and habitat of central California steelhead. Alternative C would also result in short-term minor adverse impacts because activities associated with the repair and replacement of racks in 2013 and 2014 could cause localized sedimentation for a period of two to three months per year that would be slightly detectable within the project area. The extent of these impacts on water quality would be minimized by using standard sediment control BMPs and an approved coated lumber, which would further decrease the impacts to federally listed individuals, populations, and critical habitat. Assuming that commercial shellfish operation-related debris pollution is limited in Drakes Estero, adverse impacts to central California Coho salmon critical habitat and the central California steelhead from this debris would not affect the overall structure of any natural community. Cumulative impacts would be long term and beneficial, and alternative C would contribute a noticeable adverse increment to the overall cumulative impact. For central California Coho salmon critical habitat and the central California steelhead, alternative C would be consistent with relevant law and policy. However, alternative C would not fulfill the goals articulated in NPS *Management Policies 2006* as well as alternative A would. NPS *Management Policies 2006* states that the NPS will "survey for,	have the potential to cause localized and slightly detectable adverse impacts to Coho salmon critical habitat by reducing the quality of some required habitat elements. The displacement of eelgrass from propeller scars and oyster racks, as well as the nonnatural changes to habitat condition from oyster racks, could cause a nonnatural redistribution of steelhead prey species that would be expected to have slightly detectable adverse impacts on the natural foraging behavior and habitat of central California steelhead. Alternative D would also result in short-term minor adverse impacts because activities associated with the repair and replacement of racks could cause localized sedimentation for a few months each year during 2013 and 2014 (outside of the seal pupping season) that would be slightly detectable within the project area. The extent of these impacts on water quality would be minimized by using standard sediment control BMPs and an approved coated lumber, which would further decrease the impacts to federally listed individuals, populations, and critical habitat. Assuming that commercial shellfish operation debris pollution would be limited in Drakes Estero, adverse impacts to central California Coho salmon critical habitat and the central California steelhead from commercial shellfish operation debris would not affect the overall structure of any natural community. The cumulative impact would be long term and beneficial, and alternative D would contribute a noticeable adverse increment to the overall cumulative impact. For central California Coho salmon critical habitat and the central California steelhead, alternative D would be consistent with relevant law and policy. However, alternative D would not fulfill the goals articulated in NPS *Management Policies 2006* as well as alternative A would. NPS *Management*

TABLE ES-4. SUMMARY OF ENVIRONMENTAL CONSEQUENCES (CONTINUED)

Alternative A	Alternative B	Alternative C	Alternative D
Action/Impact	Action/Impact	Action/Impact	Action/Impact
	articulated in NPS *Management Policies 2006* as well as alternative A would. NPS *Management Policies 2006* states that the NPS will "survey for, protect, and strive to recover all species native to national park service units that are listed under the Endangered Species Act" (NPS 2006d). USFWS and NMFS are given the authority under the ESA to determine whether or not actions jeopardize the continued existence of listed species. NPS would complete consultation with USFWS and/or NMFS to ensure that the action would not jeopardize the species' continued existence or result in destruction or adverse modification of critical habitat.	protect, and strive to recover all species native to national park service units that are listed under the Endangered Species Act" (NPS 2006d). USFWS and NMFS are given the authority under the ESA to determine whether or not actions jeopardize the continued existence of listed species. NPS would complete consultation with USFWS and/or NMFS to ensure that the action would not jeopardize the species' continued existence or result in destruction or adverse modification of critical habitat.	*Policies 2006* states that the NPS will "survey for, protect, and strive to recover all species native to national park service units that are listed under the Endangered Species Act" (NPS 2006d). USFWS and NMFS are given the authority under the ESA to determine whether or not actions jeopardize the continued existence of listed species. NPS would complete consultation with USFWS and/or NMFS to ensure that the action would not jeopardize the species' continued existence or result in destruction or adverse modification of critical habitat.
Coastal Flood Zones			
Overall, alternative A would result in long-term beneficial impacts on the coastal flood zone due to an increase in the flood storage capacity of the onshore area and the removal of structures and materials that have the potential to become dislodged and spread into habitat buffer areas, such as tidal vegetated wetlands and shorelines, during a flood event. The cumulative impact would be long term and beneficial, and alternative A would contribute a noticeable beneficial increment to the cumulative impacts. With respect to coastal flood zones, alternative A would be consistent with relevant law and policy. The removal of structures and residences in the flood zone would fulfill the goals set forth by Executive Order 11988, "Floodplain Management" and the subsequent NPS DO 77-2 and *Procedural Manual 77-2: Floodplain Management*, which are intended to properly conserve, manage, and protect flood zones on NPS lands to protect human health and the environment and prevent damage to property in the event of a flood event.	Overall, alternative B would result in long-term minor adverse impacts on the coastal flood zone within the project area for an additional 10 years because continued DBOC operations would take place within the flood zone and would result in continued potential for flood damage to property and/or environmental contamination at the project site. However, these activities, and the associated infrastructure would have a minimal impact on the ability of the coastal flood zone to absorb and store floodwater or storm surge, and would not increase the potential for flood damage. Offshore structures and materials could be damaged and/or dislodged during a flood event, potentially causing damage to resources within Drakes Estero. Onshore, it is anticipated that the punching shed, shop, processing plant, and stringing shed would be inundated during a 100-year flood event, potentially causing damage to the structures and contents as well as causing local contamination. Shell piles would reduce flood storage capacity in the area, whereas proposed dredging in the vicinity of the dock would offset these impacts to some extent.	Overall, alternative C would result in long-term minor adverse impacts on the coastal flood zone within the project area for an additional 10 years because continued DBOC operations would take place within the flood zone and would result in continued potential for flood damage to property and/or environmental contamination at the project site. However, these activities and the associated infrastructure would have a minimal impact on the ability of the coastal flood zone to absorb and store floodwater or storm surge, and would not increase the potential for flood damage. Offshore structures and materials could be damaged and/or dislodged during a flood event, potentially causing damage to resources within Drakes Estero. At the onshore facility, it is anticipated that the punching shed, shop, processing plant, and stringing shed would be inundated during a 100-year flood event, potentially causing damage to the structures and contents as well as causing local contamination. Shell piles would reduce flood storage capacity in the area, whereas proposed dredging in the vicinity of the dock would offset these impacts to some extent.	Overall, alternative D would result in long-term minor to moderate adverse impacts on the coastal flood zone due to continued shellfish operations. Structures would remain within the flood zone, which could result in an increased potential for flood damage to property or environmental contamination at the project site. Alternative D impacts on the ability of the coastal flood zone to absorb and store floodwaters or storm surges would be readily apparent. The additional infrastructure proposed under this alternative at the onshore facilities could result in the increased potential for flood damage within the project area compared to other alternatives. However, this could be mitigated by following guidelines set forth in NPS Procedural Manual 77-2, complying with Marin County building codes and FEMA recommendations for structures in the flood zone, and implementing architectural design elements specific to minimizing flood damage. Compared to alternatives B and C, alternative D would result in a slight increase of flood zone impacts from the offshore facilities due to additional racks and bottom bags to accommodate the higher shellfish

TABLE ES-4. SUMMARY OF ENVIRONMENTAL CONSEQUENCES (CONTINUED)

Alternative A	Alternative B	Alternative C	Alternative D
Action/Impact	Action/Impact	Action/Impact	Action/Impact
	Wastewater collection tanks would also be inundated during a 100-year flood event, potentially causing untreated wastewater to enter Drakes Estero. The cumulative impact would be long term, minor, and adverse, and alternative B would contribute an appreciable adverse increment to the overall cumulative impact. NPS guidelines require that new actions within the flood zone comply with *Procedural Manual 77-2: Floodplain Management*. This alternative would allow the continued use of nonconforming structures and the replacement of storm damaged structures (dock and washing station) in the coastal flood zone. However, existing structures are grandfathered, and do not have to comply with Procedural Manual 77-2 guidelines. No new structures would be constructed under alternative B. As such, this alternative would comply with existing NPS guidelines and procedures.	Wastewater collection tanks would also be inundated during a 100-year flood event, potentially causing untreated wastewater to enter Drakes Estero. The cumulative impact would be long term, minor, and adverse, and alternative C would contribute an appreciable adverse increment to the cumulative impact. NPS guidelines require that new actions within the flood zone comply with NPS *Procedural Manual 77-2: Floodplain Management*. This alternative would allow the continued use of nonconforming structures and the replacement of storm damaged structures (dock and washing station) in the coastal flood zone. However, existing structures are grandfathered, and do not have to comply with Procedural Manual 77-2 guidelines. No new structures would be constructed under alternative C. As such, this alternative would comply with existing NPS guidelines and procedures.	production level. The construction of new facilities may take place in the flood zone if alternative site locations outside the flood zone but within the SUP area were determined to be infeasible through a subsequent planning process. If located within the flood zone, the new facility would result in continued potential for flood damage to property and/or environmental contamination at the project site. Wastewater collection systems would remain as described in alternatives B and C, and flood zone impacts from other structures (punching shed, stringing shed, dock, washing station, and mobile homes) would be the same as those under alternatives B and C. An increase in production would likely result in additional shell being added to the shell piles located within the flood zone, resulting in a reduction of flood storage capacity. The cumulative impact would be long term minor to moderate, and adverse, and alternative D would contribute an appreciable adverse increment to the cumulative impact. Alternative D would include new onshore development, which is a Class I Action as specified in the NPS *Procedural Manual 77-2: Floodplain Management*. As such, the new structure would require a SOF if alternative site locations outside the coastal flood zone, but within the SUP area, were determined to be infeasible. The SOF process would ensure that the structure is properly designed and constructed in a way that minimizes impacts to the flood zone. However, any remaining structures are grandfathered, and do not have to comply with these guidelines.

TABLE ES-4. SUMMARY OF ENVIRONMENTAL CONSEQUENCES (CONTINUED)

Alternative A	Alternative B	Alternative C	Alternative D
Action/Impact	Action/Impact	Action/Impact	Action/Impact
Water Quality			
Drakes Estero is not a highly turbid coastal embayment (NAS 2009), and based on west coast research (Dumbauld, Ruesink, and Rumrill 2009), the beneficial biochemical effects typically attributed to bivalves, such as nutrient cycling and water clarity, are expected to be highly localized in Drakes Estero. This is because the nutrient dynamics in these systems are driven by coastal upwelling and a strong tidal cycle rather than by bioprocesses from shellfish. However, bivalves remove particulates in the water column that may influence eelgrass productivity near beds and racks (see discussion under alternative B). Overall, alternative A would result in long-term beneficial impacts on water quality as a result of reduced non-point-source runoff and the elimination of future disturbances to the Drakes Estero bottom from boats and offshore structures. No releases of toxic levels of copper from wood preservatives would be expected under this alternative. The removal of the racks and bags would cause a short-term minor adverse impact on water quality due to the sediment disturbances from personnel removing the offshore structures. These adverse impacts would be temporary and localized. The cumulative impact would be long term and beneficial, and alternative A would contribute a noticeable beneficial increment to the cumulative impact. With regard to water quality, alternative A would satisfy the goals and objectives of NPS *Management Policies 2006* (NPS 2006d) and	Overall, this alternative would result in short-term minor adverse as well as long-term minor adverse impacts on water quality for another 10 years. Alternative B would include activities causing intermittent disturbances to water quality that would result in recurring but not long-lasting effects on water quality. These temporary, localized impacts on water quality would be slightly detectable (affecting areas adjacent to culture beds) and would not alter natural water quality conditions in the project area. Cultivated shellfish as filter feeders would remain in Drakes Estero under this alternative, offering localized long-term beneficial impacts on water quality by removing suspended solids, nutrients, and phytoplankton from the water column. Sediment disturbances from offshore shellfish operations (bags/trays, boats, wading DBOC employees) would be locally temporary (pulsing) and would dissipate after each tide cycle, resulting in short-term minor adverse impacts on water quality. Dredging around the floating dock would be expected to create temporary disturbances to the water column from increased turbidity that would be mitigated by a floating silt screen. This alternative would include the replacement of between 1,700 and 2,500 posts in 2013 and between 380 and 750 posts in 2014 which also result in short-term adverse impacts on water quality as the sediment is disturbed. The use of pressure treated lumber to repair existing offshore racks and to construct a new dock is not expected to introduce wood preservatives containing copper into the water because it is assumed that mitigating conditions such as the use of sealants	Overall, alternative C would result in short-term minor adverse as well as long-term minor adverse impacts on water quality for another 10 years. Alternative C would include activities causing intermittent disturbances to water quality that would result in recurring but not long-lasting effects on water quality. These temporary, localized impacts on water quality would be slightly detectable (affecting areas adjacent to culture beds) but would not alter natural water quality conditions in the project area. Alternative C would have recurring but not long-lasting effects on water quality. Cultivated shellfish would remain in Drakes Estero for another 10 years under this alternative, offering localized beneficial water filtering functions from the removal of suspended solids, nutrients, and phytoplankton from the water column. Impacts on water quality would include those described under alternative B. In particular, sediment disturbances from offshore shellfish operations (bags/trays, boats, wading DBOC employees) would be locally temporary (pulsing) and would dissipate after each tide cycle, resulting in short-term minor adverse impacts on water quality. This alternative would include the replacement of between 1,700 and 2,500 posts in year 2013 and between 380 and 750 posts in 2014, which would also result in short-term adverse impacts on water quality due to sediment disturbance. The use of pressure-treated lumber to repair existing offshore racks and to construct a new dock is not expected to introduce wood preservatives containing copper into the water because it is assumed that mitigating conditions such as the use of sealants	Overall, alternative D would have short-term minor adverse as well long-term minor adverse impacts on water quality for 10 more years due to offshore and onshore activities associated with commercial shellfish operations in Drakes Estero. Alternative D would not be expected to exceed water quality standards, have long-lasting effects on water quality or impede the goals and objectives of NPS policies on water quality. These temporary, localized impacts on water quality would be slightly detectable (affecting areas adjacent to culture beds) and would not alter natural water quality conditions in the project area. Alternative D would have the highest population of cultivated shellfish occupying Drakes Estero. As a result, the localized water quality benefits from filter feeding bivalves would be greater compared to the other alternatives. The impacts associated with alternative D would be similar to those described under alternatives B and C. However, this alternative may cause slightly higher rates of sediment disturbance in Drakes Estero compared to alternatives B and C due to more frequent boat trips and bag/tray management. The use of pressure-treated lumber to repair existing offshore racks and to construct a new dock is not expected to introduce wood preservatives containing copper into the water because it is assumed that mitigating conditions such as the use of sealants would be employed as part of regulatory permit conditions. Dredging around the floating dock would be expected to create temporary disturbances to the water column from increased turbidity, resulting in short-term minor adverse impacts on water quality.

TABLE ES-4. SUMMARY OF ENVIRONMENTAL CONSEQUENCES (CONTINUED)

Alternative A	Alternative B	Alternative C	Alternative D
Action/Impact	Action/Impact	Action/Impact	Action/Impact
would be consistent with the purpose of the CWA, which is to "restore and maintain the chemical, physical, and biological integrity of the nation's waters."	would be employed as part of regulatory permit conditions. The point-source discharges (washing station and setting tanks) under this alternative would continue, but no new point-source outputs would be introduced. Point-source discharges would include water from the washing station after sediments and fouling organisms are filtered from the sediment basin resulting in beneficial impacts; no chemical contaminants would be discharged into Drakes Estero under this alternative. The amount of non-point-source pollution from runoff associated with the onshore facilities is currently very small (less than 3 acres of impervious surface in a watershed of several square miles). The cumulative impact would be long term, minor, and adverse, and alternative B would contribute a noticeable adverse increment to the cumulative impact. With regard to water quality, alternative B would satisfy the goals and objectives of NPS *Management Policies 2006* (NPS 2006d) and would be consistent with the purpose of the CWA, which is to "restore and maintain the chemical, physical, and biological integrity of the nation's waters."	would be employed as part of regulatory permit conditions. Dredging around the floating dock would be expected to create temporary disturbances to the water column from increased turbidity, resulting in short-term adverse impacts on water quality. Standard BMPs would be employed during dredging such as the use of a floating silt screen. Point-source discharges would include discharging water from the washing station after marine sediments and fouling organisms are filtered and removed from the new sediment basin; no chemical contaminants would be discharged into Drakes Estero under this alternative. The amount of non-point source pollution from runoff at the onshore facility is currently very small (less than 3 acres of impervious surface in a watershed of several square miles). The cumulative impact would be long term, minor, and adverse, and alternative C would contribute a noticeable adverse increment to the overall cumulative impacts. With regard to water quality, alternative C would satisfy the goals and objectives of NPS *Management Policies 2006* (NPS 2006d) and would be consistent with the purpose of the CWA, which is to "restore and maintain the chemical, physical, and biological integrity of the nation's waters."	Standard BMPs, such as the use of a floating silt screen, would be employed during dredging. Onshore discharge into Drakes Estero of pumped water serving the washing station and setting tanks would be filtered using the new sediment basin, resulting in beneficial impacts on water quality. In addition, onshore sediment may enter waters due to the construction of new facilities, although this action could be mitigated through a site-specific construction plan and the use of standard BMPs. Alternative D also would result in short-term minor adverse impacts on water quality during the construction of new DBOC facilities because impacts would include temporary (lasting less than a year), localized impacts that would not have long-lasting effects on water quality. The cumulative impact would be long term, minor, and adverse, and alternative D would contribute a noticeable adverse increment to the cumulative impact. With regard to water quality, alternative D would satisfy the goals and objectives of NPS *Management Policies 2006* (NPS 2006d) and would be consistent with the purpose of the CWA, which is to "restore and maintain the chemical, physical, and biological integrity of the nation's waters."
Soundscapes			
Alternative A would result in long-term beneficial impacts due to the elimination of human-caused noise levels associated with the commercial shellfish operation. The noise associated with the use of heavy machinery and motorized boats to remove DBOC structures and property would be at a level that would cause vocal communication to be difficult at a distance of less than 16 feet.	Overall, alternative B would result in long-term major adverse impacts on the natural soundscape from continued DBOC operations because human-caused noise would be at a level (greater than 41 dBA) that requires elevated vocal effort for communication between people separated by 16 feet, and the natural soundscape would be interfered with more than 10 percent of the time.	Overall, issuance of a 10-year SUP under alternative C would result in long-term major adverse impacts on soundscapes for the additional 10 years of operations, because human-caused noise would be at a level (greater than 41 dBA) that requires elevated vocal effort for communication between people separated by 16 feet, and the natural soundscape is interfered	Overall, issuance of a 10-year SUP under alternative D would result in long-term major adverse impacts on soundscapes for the additional 10 years of operations, because human-caused noise would be at a level (greater than 41 dBA) that requires elevated vocal effort for communication between people separated by 16 feet, and the natural soundscape is interfered

TABLE ES-4. SUMMARY OF ENVIRONMENTAL CONSEQUENCES (CONTINUED)

Alternative A	Alternative B	Alternative C	Alternative D
Action/Impact	Action/Impact	Action/Impact	Action/Impact
However, this impact would interfere with the natural soundscape for less than 5 percent of one year; therefore, alternative A would result in short-term minor adverse impacts on soundscapes. The cumulative impact would be long-term and beneficial, and alternative A would contribute an appreciable beneficial increment to the cumulative impact. With regard to soundscapes, alternative A would further the goals for soundscape management as set forth in relevant law and policy. NPS *Management Policies 2006* and *Director's Order 47: Soundscape Preservation and Noise Management* direct NPS managers to preserve and restore the natural soundscape, where possible.	Additionally, the soundscape would be impacted temporarily by demolition and reconstruction of the dock facilities as well as the repair and replacement of racks in Drakes Estero. The noise associated with the use of heavy machinery and motorized boats to demolish and reconstruct the dock facilities and replace and repair the racks would be at a level that would cause vocal communication to be difficult at a distance of less than 16 feet. However, the impacts associated with these activities would interfere with the natural soundscape for less than 10 percent of each year; therefore, alternative B would result in short-term minor to moderate adverse impacts on soundscapes. The cumulative impact would be long term, major, and adverse, and alternative B would contribute an appreciable adverse increment to the cumulative impact. With regard to soundscapes, alternative B would not further the goals for soundscape management as set forth in relevant law and policy. For instance, NPS *Management Policies 2006* (NPS 2006d) directs park managers to take steps to restore and maintain natural soundscapes, whereas alternative B would include continued impacts on the natural soundscape from DBOC activities. This aspect of Alternative B would also be inconsistent with 36 CFR 2.12 because it would allow DBOC to continue to use several mechanical tools that emit noise far in excess of 60 dBA at 50 feet. In addition to DBOC trucks and processing station equipment, DBOC would continue to operate its motorboats in potential wilderness, where motorboats are not allowed (except for rare use by NPS for administration of the wilderness in accordance with a minimum requirements analysis). Contributions of human-caused noise to the natural soundscape are also a detriment to wilderness values, as described in more detail under "Impacts on Wilderness."	with more than 10 percent of the 10-year permit. Additionally, the soundscape would be impacted temporarily by demolition and reconstruction of the dock facilities as well as the repair and replacement of the racks in Drakes Estero. The noise associated with the use of heavy machinery and motorized boats to demolish and reconstruct the dock facilities and replace and repair the racks would be at a level that would cause vocal communication to be difficult at a distance of less than 16 feet. However, the impacts associated with these activities would interfere with the natural soundscape for less than 10 percent of each year; therefore, alternative C would result in short-term minor to moderate adverse impacts on soundscapes. The cumulative impact would be long term, major, and adverse, and alternative C would contribute an appreciable adverse increment to the cumulative impact. With regard to soundscapes, alternative C would not further the goals for soundscape management as set forth in relevant law and policy. For instance, NPS *Management Policies 2006* (NPS 2006d) directs park managers to take steps to restore and maintain natural soundscapes, whereas alternative C would include continued impacts on the natural soundscape from DBOC activities. This aspect of alternative C would also be inconsistent with 36 CFR 2.12 because it would allow DBOC to continue to use several mechanical tools that emit noise substantially in excess of 60 dBA at 50 feet. In addition to the DBOC trucks, pneumatic drill, and oyster tumbler operating onshore, DBOC would continue to operate its motorboats in potential wilderness, where motorboats are not allowed (except for those used occasionally by NPS for administration of the wilderness in accordance with a minimum requirements analysis).	with more than 10 percent of the time. Additionally, the soundscape would be impacted temporarily by demolition and reconstruction of onshore facilities as well as the repair and replacement of racks in Drakes Estero. Alternative D would also result in short-term major adverse impacts on the natural soundscape due to the use of heavy machinery during development of additional onshore facilities because human-caused noise would be at a level (greater than 41 dBA) that requires elevated vocal effort for communication between people separated by 16 feet, and the natural soundscape would be interfered with more than 10 percent of the year during which onshore construction would take place. The cumulative impact would be long term, major, and adverse, and alternative D would contribute an appreciable adverse increment to the cumulative impact. With regard to soundscapes, alternative D would not further the goals for soundscape management as set forth in relevant law and policy. For instance, NPS *Management Policies 2006* (NPS 2006d) directs park managers to take steps to restore and maintain natural soundscapes, whereas alternative D would include continued impacts on the natural soundscape from DBOC activities. This aspect of alternative D would also be inconsistent with 36 CFR 2.12 because it would allow DBOC to continue to use several mechanical tools that emit noise substantially in excess of 60 dBA at 50 feet. In addition to the DBOC trucks, pneumatic drill, and oyster tumbler operating onshore, DBOC would continue to operate its motorboats in potential wilderness, where motorboats are not allowed (except for those used occasionally by NPS for administration of the wilderness in accordance with a minimum requirements analysis).

TABLE ES-4. SUMMARY OF ENVIRONMENTAL CONSEQUENCES (CONTINUED)

Alternative A	Alternative B	Alternative C	Alternative D
Action/Impact	Action/Impact	Action/Impact	Action/Impact
		Contributions of human-caused noise to the natural soundscape are also a detriment to wilderness values, as described in more detail under "Impacts on Wilderness."	Contributions of human-caused noise to the natural soundscape are also a detriment to wilderness values, as described in more detail under "Impacts on Wilderness."
Wilderness			
Overall, alternative A would result in long-term beneficial impacts on wilderness because the cessation of DBOC operations and removal of DBOC facilities would result in a readily apparent, widespread enhancement of wilderness character. The enhancement of wilderness character would be due to the removal of a commercial shellfish operation that detracts from wilderness character, including: ▪ removal of nonnative shellfish cultivation (approximately 585,000 pounds in 2010); this equates to approximately 6 million oysters ▪ removal of human-made infrastructure associated with commercial shellfish operations, including 5 miles (7 acres) of racks and up to 88 acres of bottom bags in up to 142 acres of Drakes Estero ▪ discontinuation of motorboat operations, including use of 2-3 motorboats intermittently 8 hours per day, 6 days per week, covering approximately 740 acres of Drakes Estero; and discontinuation of ongoing eelgrass impacts similar to the 8.5 miles of linear propeller scarring as documented in the "Impacts on Eelgrass" section ▪ discontinuation of noise sources associated with commercial operation affecting wilderness	Overall, alternative B would result in long-term major adverse impacts on wilderness for an additional 10 years because it would result in a readily apparent, widespread, adverse impact on wilderness character and would prevent the conversion of Drakes Estero from congressionally designated potential wilderness to congressionally designated wilderness. The elements of DBOC's commercial shellfish operation that detract from wilderness character include ▪ continued cultivation of nonnative shellfish (up to 600,000 pounds per year, otherwise expressed as approximately 7.06 million oysters annually) ▪ continued maintenance of human-made infrastructure associated with commercial shellfish operations, including 5 miles of racks and up to 84 acres of bottom bags in up to 138 acres of Drakes Estero ▪ continued operation of 2-3 motorboats intermittently 8 hours per day, 6 days per week, covering approximately 740 acres of Drakes Estero; ongoing eelgrass impacts similar to the 8.5 miles of linear propeller scarring documented in "Impacts on Eelgrass" ▪ continued generation of noise sources associated with commercial shellfish operations affecting wilderness (emanating from both inside and outside wilderness)	Overall, alternative C would result in long-term major adverse impacts on wilderness for an additional 10 years because it would result in a readily apparent, widespread, adverse impact on wilderness character and would prevent the conversion of Drakes Estero from congressionally designated potential wilderness to congressionally designated wilderness. The elements of DBOC's commercial shellfish operation that detract from wilderness character include ▪ continued cultivation of nonnative shellfish (up to 500,000 pounds per year, otherwise expressed as approximately 5.88 million oysters annually) ▪ continued maintenance of human-made infrastructure associated with commercial shellfish operations, including 7 miles of racks and up to 84 acres of bottom bags in up to 138 acres of Drakes Estero ▪ continued operation of 2-3 motorboats intermittently 8 hours per day, 6 days per week, covering approximately 740 acres of Drakes Estero; ongoing eelgrass impacts similar to the 8.5 miles of linear propeller scarring documented in "Impacts on Eelgrass" ▪ continued generation of noise sources associated with commercial shellfish operations affecting wilderness (emanating from both inside and outside wilderness)	Overall, alternative D would result in long-term major adverse impacts on wilderness for an additional 10 years because it would result in a readily apparent, widespread, adverse impact on wilderness character and would prevent the conversion of Drakes Estero from congressionally designated potential wilderness to congressionally designated wilderness. The elements of DBOC's commercial shellfish operation that detract from wilderness character include ▪ continued cultivation of nonnative shellfish (up to 850,000 pounds per year, otherwise expressed as approximately 10 million oysters annually) ▪ continued maintenance of human-made infrastructure associated with commercial shellfish operations, including 7 miles of racks and up to 84 acres of bottom bags in up to 138 acres of Drakes Estero ▪ continued operation of 2-3 motorboats intermittently 8 hours per day, 6 days per week, covering approximately 740 acres of Drakes Estero; ongoing eelgrass impacts similar to the 8.5 miles of linear propeller scarring documented in "Impacts on Eelgrass" ▪ continued generation of noise sources associated with commercial shellfish operations affecting wilderness (emanating from both inside and outside wilderness)

TABLE ES-4. SUMMARY OF ENVIRONMENTAL CONSEQUENCES (CONTINUED)

Alternative A	Alternative B	Alternative C	Alternative D
Action/Impact	Action/Impact	Action/Impact	Action/Impact
Alternative A would also result in short-term minor adverse impacts on wilderness because activities related to the removal of racks would detract from offering outstanding opportunities for solitude in highly localized areas of the congressionally designated wilderness in Drakes Estero. The cumulative impact would be long term and beneficial, and alternative A would contribute an appreciable beneficial increment to the cumulative impact. Alternative A would enable NPS to fulfill its obligations under the acts designating wilderness in the Seashore (PL 94-544 and PL 94-567) and NPS *Management Policies 2006* to actively seek to remove from potential wilderness the temporary, nonconforming conditions that preclude wilderness designation (NPS 2006d).	The cumulative impact would be long term, major, and adverse, and alternative B would contribute an appreciable adverse increment to the cumulative impact. Alternative B would prevent NPS from fulfilling its obligations under the acts designating wilderness in the Seashore (PL 94-544 and PL 94-567) and NPS *Management Policies 2006* to actively seek to remove from potential wilderness the temporary, nonconforming conditions that preclude wilderness designation. However, section 124 of PL 111-88 allows the Secretary to issue a permit to DBOC notwithstanding any other law, including the 1976 wilderness legislation. During the term of the new permit, NPS would continue to manage Drakes Estero in accordance with the Wilderness Act and complementary NPS policy to the extent possible. However, motorboats and in-water infrastructure are necessary to support the shellfish operation. The use of motorboats six days per week, the presence of infrastructure related to the existing commercial shellfish operations, and the presence of a commercial enterprise in Drakes Estero would substantially detract from the wilderness characteristics of Drakes Estero for an additional 10 years.	The cumulative impact would be long term, major, and adverse, and alternative C would contribute an appreciable adverse increment to the cumulative impact. Alternative C would prevent NPS from fulfilling its obligations under the acts designating wilderness in Point Reyes National Seashore (PL 94-544 and PL 94-567) and NPS *Management Policies 2006* to actively seek to remove from potential wilderness the temporary, nonconforming conditions that preclude wilderness designation (NPS 2006d). However, section 124 of PL 111-88 allows the Secretary to issue a permit to DBOC notwithstanding any other law, including the 1976 wilderness legislation. During the term of the new permit, NPS would continue to manage Drakes Estero in accordance with the Wilderness Act and complementary NPS policy to the extent possible. However, motorboats and in-water infrastructure are necessary to support the shellfish operation. The use of motorboats six days per week, the presence of infrastructure related to commercial shellfish operations, and the presence of a commercial enterprise in Drakes Estero would substantially detract from the wilderness characteristics of Drakes Estero for an additional 10 years.	The cumulative impact on wilderness would be long term, major, and adverse, and alternative D would contribute an appreciable adverse increment to the cumulative impacts. Alternative D would prevent NPS from fulfilling its obligations under the acts designating wilderness in Point Reyes National Seashore (PL 94-544 and PL 94-567) and NPS *Management Policies 2006* to actively seek to remove from potential wilderness the temporary, nonconforming conditions that preclude wilderness designation (NPS 2006d). However, section 124 of PL 111-88 allows the Secretary to issue a permit to DBOC notwithstanding any other law, including the 1976 wilderness legislation. During the term of the new permit, NPS would continue to manage Drakes Estero in accordance with the Wilderness Act and complementary NPS policy to the extent possible. However, motorboats and in-water infrastructure are necessary to support the shellfish operation. The use of motorboats six days per week, the presence of infrastructure related to commercial shellfish operations, and the presence of a commercial enterprise in Drakes Estero would substantially detract from the wilderness characteristics of Drakes Estero for an additional 10 years. Collection of larvae is considered and analyzed as part of this alternative; however, DBOC's proposal to collect native shellfish larvae in Drakes Estero would not be consistent with the NPS mission, per *Management Policies 2006* (NPS 2006d), or regulations.
Visitor Experience and Recreation			
Overall, alternative A would result in a long-term beneficial or long-term minor adverse impact on visitor experience and recreation, depending on the interests of the visitor. From the perspective of	Overall, alternative B would result in short-term minor adverse impacts as well as long-term minor adverse or long-term beneficial impacts on visitor experience and recreation in the project area for	Overall, alternative C would result in short-term minor adverse and long-term minor adverse or long-term beneficial impact on visitor experience and recreation in the project area for an additional	As described above, alternative D would result in short-term moderate adverse as well as long-term minor adverse or long-term beneficial impacts on visitor experience and recreation in the project

TABLE ES-4. SUMMARY OF ENVIRONMENTAL CONSEQUENCES (CONTINUED)

Alternative A	Alternative B	Alternative C	Alternative D
Action/Impact	Action/Impact	Action/Impact	Action/Impact
visitors seeking a natural park experience in Drakes Estero, alternative A would be beneficial because it would increase these opportunities. Alternative A would maintain visitor access to Drakes Estero, limiting access to recreational boaters only during the annual seal pupping season (March 1 to June 30). As described above, those looking to experience an active commercial shellfish operation would be adversely impacted by alternative A because they would no longer have this opportunity in the Seashore. The latter group of visitors composes up to 2.5 percent of the total visitors to the Seashore. Therefore, at a Seashore-wide scale, the adverse impacts associated with this alternative would affect a small portion of Seashore visitors. The cumulative impact would be long term and beneficial or long term, minor, and adverse, and alternative A would contribute an appreciable beneficial or noticeable adverse increment to the overall cumulative impacts. With respect to visitor experience and recreation, alternative A would be consistent with relevant law and policy because the removal of DBOC would not represent the loss of a visitor service. Visitor services are defined by law as public accommodations, facilities, and services that are necessary and appropriate for public use and enjoyment of the Seashore (36 CFR 51.3).	an additional 10 years, depending on the interests of the visitor. Impacts from continued commercial shellfish operations in Drakes Estero (the primary resource area) would be detectable and would affect a small portion of visitors to the Seashore. In particular, from the perspective of those seeking a natural park experience in Drakes Estero, including those interested in experiencing solitude and a primitive, unconfined type of recreation, the impacts would somewhat inhibit visitor enjoyment of marine wilderness resources. Visual and sound disturbances associated with commercial shellfish operations would continue in the project area and would be particularly adverse for visitors looking to enjoy solitude and a primitive or unconfined type of recreation in wilderness. Onshore and offshore structures and associated debris related to shellfish operations could detract from the views of Drakes Estero, especially during low tide when offshore equipment such as racks and bags are visible. Motorized boats also would continue to operate in Drakes Estero, and DBOC staff would continue to operate radios to listen to music while working, both of which would detract from the natural soundscapes of the Seashore. The smell of motorized boats and routine shellfish processing operations would also detract from the natural environment. Visitors to the Seashore who are interested in experiencing an active commercial shellfish operation would consider alternative B to have a beneficial impact because DBOC would continue to offer experiences such as educational tours and services and fresh oysters to visitors. The cumulative impact would be long term, minor, and adverse or long-term and beneficial, and alternative B would contribute a noticeable adverse or appreciable beneficial increment to the cumulative impact. In the short term, the repair and replacement of 50 racks in 2013 and another	10 years, depending on the interests of the particular visitor. Continued commercial shellfish operations in Drakes Estero (the primary resource area) would be detectable at the Seashore scale and would affect a small portion of visitors to the Seashore. Specifically, from the perspective of those seeking a natural park experience in Drakes Estero, including those looking to experience solitude and a primitive, unconfined type of recreation, the impacts would somewhat inhibit visitor enjoyment of the resources for which the Seashore was established. DBOC operations would be generally unchanged under alternative C for an additional 10 years despite some modifications proposed to the existing facilities and production levels. The visitor experience and recreational opportunities at the site would be similar to current conditions, except that the existing, unpermitted picnic area, located adjacent to the retail area and away from the shoreline, would be removed and would be replaced by NPS with another picnic area nearby. Visual and sound disturbances associated with commercial shellfish operations would be apparent in the project area, although the associated impacts would be mostly limited to those visitors looking to enjoy a natural park experience in Drakes Estero. Onshore and offshore structures and associated debris related to shellfish operations could detract from the views of Drakes Estero, especially during low tide when offshore equipment such as racks and bags are visible. This debris also would continue to wash up on surrounding shorelines and beaches. In addition, motorized boats would continue to operate in Drakes Estero, and DBOC staff would continue to operate radios to listen to music, both of which would detract from the natural soundscapes of the Seashore. The smell of motorized boats and routine shellfish processing operations also would detract from the	area for an additional 10 years, depending on the interests of the particular visitor. Continued commercial shellfish operations in Drakes Estero (the primary resource area) would be detectable at the Seashore scale and would affect a small portion of visitors to the Seashore. In particular, from the perspective of those seeking a natural park experience, the impacts would somewhat inhibit visitor enjoyment of marine wilderness resources. Similar to alternatives B and C, visual and sound disturbances associated with commercial shellfish operations could be readily apparent in the project area, and this impact would be particularly adverse for visitors seeking a natural park experience in Drakes Estero. Visual and sound disturbances associated with commercial shellfish operations would continue in the project area, and would be particularly adverse for visitors looking to enjoy solitude and a primitive or unconfined type of recreation in wilderness. Onshore and offshore structures and associated debris related to shellfish operations could detract from the views of Drakes Estero, especially during low tide when offshore equipment such as racks and bags are visible. Motorized boats also would continue to operate in Drakes Estero, and DBOC staff would continue to use radios to listen to music, both of which would detract from the natural soundscapes of the Seashore. The smell of motorized boats and routine shellfish processing operations also would detract from the natural environment. These adverse impacts would be greater than under alternatives B and C due to the increased production limits (approximately 40 percent greater than alternative B and 70 percent greater than alternative C), which would likely increase motorized boat activity and the quantity of bags and other items associated with shellfish operations in Drakes Estero. Visitors to the

TABLE ES-4. SUMMARY OF ENVIRONMENTAL CONSEQUENCES (CONTINUED)

Alternative A	Alternative B	Alternative C	Alternative D
Action/Impact	Action/Impact	Action/Impact	Action/Impact
	25 racks in 2014, followed by regular maintenance, would temporarily increase disruptions to the visitor experience in Drakes Estero, both for visitors to the Seashore and DBOC visitors. With respect to visitor experience and recreation, this alternative would not further the goals of relevant law and policy. Visitor services must be consistent, to the highest practicable degree, with the preservation and conservation of the resources and values of the Seashore (16 USC 5951[b]; 16 USC 5952; 36 CFR 51.3 [definition of "visitor service"]). The primary focus of DBOC is the commercial operation for the sale of shellfish to restaurants and the wholesale shellfish market outside the Seashore. These are not commercial services being offered to the visiting public to further the public's use and enjoyment of the Seashore. Therefore, DBOC's operations would not be consistent with the values for which Drakes Estero was congressionally designated as wilderness.	natural environment. Visitors to the Seashore who are interested in experiencing an active commercial shellfish operation would consider alternative C to have a beneficial impact because DBOC would continue to offer visitor experiences such as educational tours and services and fresh oysters. The cumulative impact would be long term, minor, and adverse or long-term and beneficial, and alternative C would contribute a noticeable adverse or appreciable beneficial increment to the cumulative impact. In the short term, the repair and replacement of 50 racks in 2013 and another 25 racks in 2014, followed by regular maintenance, would temporarily increase disruptions to the visitor experience in Drakes Estero, both for visitors to the Seashore and DBOC visitors. With respect to visitor experience and recreation, alternative C would not further the goals of relevant law and policy. Visitor services must be consistent, to the highest practicable degree, with the preservation and conservation of the resources and values of the Seashore (16 USC 5951[b]; 16 USC 5952; 36 CFR 51.3 [definition of "visitor service"]). The primary focus of DBOC is the commercial operation for the sale of shellfish to restaurants and the wholesale shellfish market outside the Seashore. These are not commercial services being offered to the visiting public to further the public's use and enjoyment of the Seashore. Therefore, DBOC's operations would not be consistent with the values for which Drakes Estero was congressionally designated as wilderness.	Seashore who are interested in experiencing an active shellfish operation may consider alternative D to have a greater beneficial impact on visitor experience and recreation than the other alternatives because under this alterative the new facilities would enhance interpretation and educational opportunities at DBOC. However, in the short term, construction activities associated with alternative D could result in adverse impacts on visitor experience and recreation in Drakes Estero for both types of visitors. In particular, such activities could further disturb soundscapes and views in Drakes Estero and could temporarily limit interpretive and educational experiences at DBOC. In addition, the repair and replacement of 50 racks in 2013 and another 25 racks in 2014, followed by regular maintenance, also would temporarily increase disruptions to the visitor experience in Drakes Estero, both for visitors to the Seashore and DBOC visitors. The cumulative impact on visitor experience and recreation would be long term, minor, and adverse or long term and beneficial, and alternative D would contribute a noticeable adverse and appreciable beneficial increment to the cumulative impact. With respect to visitor experience and recreation, alternative D would not further the goals of relevant law and policy. Visitor services must be consistent, to the highest practicable degree, with the preservation and conservation of the resources and values of the Seashore (16 USC 5951[b]; 16 USC 5952; 36 CFR 51.3 [definition of "visitor service"]. The primary focus of DBOC is the commercial operation for the sale of shellfish to restaurants and the wholesale shellfish market outside the Seashore. These are not commercial services being offered to the visiting public to further the public's use and enjoyment of the Seashore. Therefore, DBOC's operations would

TABLE ES-4. SUMMARY OF ENVIRONMENTAL CONSEQUENCES (CONTINUED)

Alternative A	Alternative B	Alternative C	Alternative D
Action/Impact	Action/Impact	Action/Impact	Action/Impact
			not be consistent with the values for which Drakes Estero was congressionally designated as wilderness.
Socioeconomic Resources			
Overall, alternative A would result in long-term minor adverse impacts on local and regional socioeconomic resources. DBOC staff and their families would experience a direct adverse impact under alternative A due to the loss of jobs and housing. However, from a regional socioeconomic perspective, these impacts would be minimal and would not affect the overall regional economy. Based on employment, payroll, and revenue, DBOC accounts for 0.006 percent of the total value added in Marin County. DBOC staff composes 0.01 percent of the Marin County population and 2.1 percent of the Inverness population (U.S. Census Bureau 2010). Jobs lost in connection with the closure of DBOC make up only a small percentage of the total labor force for Marin and Sonoma counties and Inverness CDP, and even with the added job loss, assuming these jobs are not replaced by expanded shellfish operations elsewhere, unemployment rates in Marin County and Inverness CDP would be well below statewide averages of 12.4 percent (U.S. Department of Labor 2011). In addition, the relocated households encompass a small percentage of the total households in the surrounding communities (less than 0.01 percent of the housing in Marin County and 0.5 percent of the homes in Inverness CDP) (U.S. Census Bureau 2010). Therefore, even if all former staff relocates to another community and/or county, the impact on the regional economy would be minimal. Additionally, it is assumed that the Seashore, as a whole, would continue to contribute to the regional economy at current	Overall, alternative B would result in long-term beneficial impacts on local, regional, and statewide socioeconomic resources due to the continued operation of a commercial shellfish facility in Drakes Estero for another 10 years. DBOC would continue to provide employment and housing to DBOC staff and their families. DBOC's contribution to the regional economy would not change substantially from current levels, and DBOC would continue to provide a local food source for the region for an additional 10 years in quantities similar to current distribution. Additionally, it is assumed that visitor spending at the Seashore would continue at current levels. The cumulative impact on both the local and regional economy and statewide shellfish production would be long term and beneficial, and alternative B would contribute a noticeable beneficial increment to the cumulative impact.	Overall, alternative C would result in long-term beneficial impacts on local, regional, and statewide socioeconomic resources due to the continued operation of a commercial shellfish facility in Drakes Estero for another 10 years. DBOC would continue to provide employment and housing to DBOC staff and their families. DBOC's contribution to the regional economy would not change substantially, and DBOC would provide a local food source for the region for an additional 10 years in quantities similar to current distribution. Additionally, it is assumed that visitor spending at the Seashore would continue at current levels. The cumulative impact on both the local and regional economy and statewide shellfish production would be long term and beneficial, and alternative C would contribute a noticeable beneficial increment to the cumulative impact.	Overall, alternative D would result in long-term beneficial impacts on local and regional socioeconomic resources. Option 1 of alternative D would not change the availability of housing for DBOC staff and their families. In contrast, Option 2 of alternative D, which would include the elimination of four on-site housing units, would have an adverse direct impact on DBOC staff and the families that live on site. Under both options, DBOC would maintain its contributions to the regional economy in a manner similar to current conditions for an additional 10 years, with some exceptions; however, due to expanded opportunities for product diversification, these contributions could be slightly increased. The potential for increased shellfish production under alternative D could result in an increase in DBOC staff, providing additional jobs for local workers. Although the new facilities at DBOC could minimally increase visitation to the commercial shellfish operation, it is assumed that visitor spending associated with the Seashore as a whole would continue at current levels. The relocated households proposed under Option 2 represent a very small percentage of the total households in the surrounding communities (less than 0.01 percent of the housing in Marin County and 0.4 percent of the homes in Inverness CDP) (U.S. Census Bureau 2005-2009). Therefore, even if all DBOC staff who currently reside in on-

TABLE ES-4. SUMMARY OF ENVIRONMENTAL CONSEQUENCES (CONTINUED)

Alternative A	Alternative B	Alternative C	Alternative D
Action/Impact	Action/Impact	Action/Impact	Action/Impact
levels through local spending (approximately $85 million in 2010) and by supporting jobs (resulted in $12 million in added value to the region in 2010) (NPS 2011d). The cumulative impact on the local and regional economy would be long term, minor, and adverse, and alternative A would contribute a noticeable adverse increment to the cumulative impact. Alternative A could result in long-term major adverse impacts on California's shellfish market because DBOC produces 16 to 35 percent of the oysters harvested in California and 13 to 33 percent of the total shellfish grown in the state. The cessation of commercial shellfish operations in Drakes Estero would be readily apparent and could substantially influence the production of shellfish in California. The cumulative impact on the California shellfish market would be long term, minor, and adverse, and alternative A would contribute a noticeable adverse increment to the cumulative impact.			site housing move to another community and/or county, the impact on the local and regional economy would be minimal. Additionally, some short-term jobs would be created once new onshore facilities are approved by the NPS and developed by DBOC. The cumulative impact on the regional economy would be long term and beneficial, and alternative D would contribute a noticeable beneficial increment to the cumulative impact. Both Option 1 and Option 2 of alternative D would result in long-term beneficial impacts on shellfish production in California because DBOC would continue to contribute to the statewide shellfish market for an additional 10 years. Additionally, the increased production limits proposed under this alternative would allow DBOC to cultivate more diverse and larger quantities of shellfish, including the purple-hinged rock scallop and the Olympia oyster, which are not currently produced at DBOC. These increased production limits could result in DBOC increasing its contribution to the California shellfish market. The cumulative impact on statewide shellfish production would be long term and beneficial, and alternative D would contribute a noticeable beneficial increment to the cumulative impact.
NPS Operations			
Overall, alternative A would result in long-term minor adverse impacts on NPS operations because impacts would be slightly detectable but would not hinder the overall ability of the NPS to provide services, manage resources, or operate the Seashore. While existing NPS staff would be required for monitoring and enforcement during the Drakes Estero boat closure period, the installation of an access gate would increase	Overall, alternative B would result in long-term minor adverse impacts on NPS operations because this alternative would require the establishment of one FTE position to manage and oversee all aspects of the SUP. In addition, two half-time (seasonal) positions would conduct monitoring and management of invasive species and other resources of concern in the Drakes Estero portion of the Phillip Burton Wilderness.	Overall, alternative C would result in a long-term minor adverse impact on NPS operations because this alternative would require the establishment of one FTE position to manage and oversee all aspects of the SUP and two part-time (seasonal) staff who would assess, monitor, and manage invasive species and other resources of concern in the Drakes Estero portion of the Phillip Burton Wilderness. These impacts would be	Overall, alternative D would result in long-term minor adverse impacts on NPS operations because this alternative would require the establishment of one dedicated FTE position to coordinate Seashore oversight and enforcement of all aspects of the SUP. The NPS would oversee and enforce all aspects of the operation in the permit area. Construction on new onshore facilities also would require one 2-year planning

TABLE ES-4. SUMMARY OF ENVIRONMENTAL CONSEQUENCES (CONTINUED)

Alternative A	Alternative B	Alternative C	Alternative D
Action/Impact	Action/Impact	Action/Impact	Action/Impact
effectiveness of the closure and further protect harbor seal pupping habitat. Two new part-time (seasonal) positions also would be required to assess and monitor invasive species and other resources of concern in the Drakes Estero portion of the Phillip Burton Wilderness. These efforts would not hinder the overall ability of NPS to provide services, manage resources, or operate the Seashore. The cumulative impact would be long term, minor, and adverse, and alternative A would contribute a noticeable adverse increment to the overall cumulative impact.	These impacts would be slightly detectable but would not hinder the overall ability of NPS to provide services, manage resources, or operate the Seashore. The cumulative impact would be long term, minor, and adverse, and alternative B would contribute a noticeable adverse increment to the overall cumulative impact.	slightly detectable but would not hinder the overall ability of NPS to provide services, manage resources, or operate the Seashore. The cumulative impact would be long term, minor, and adverse, and alternative C would contribute a noticeable adverse increment to the overall cumulative impact.	position to oversee additional planning and compliance associated with the proposed onshore development evaluated at the conceptual level in alternative D. The staff increase under alternative D also would include two half-time FTEs who would conduct assessment, monitoring, and management of invasive species and other resources of concern in the Drakes Estero portion of the Phillip Burton Wilderness. These impacts would be slightly detectable but would not hinder the overall ability of NPS to provide services, manage resources, or operate the Seashore. The cumulative impact on NPS operations would be long term, minor, and adverse, and alternative D would contribute a noticeable adverse increment to the cumulative impact.

CONSULTATION AND COORDINATION

A combination of activities, including public scoping, formal public meetings, internal workshops, and agency briefings, has helped to guide NPS in developing the EIS.

SCOPING PROCESS AND PUBLIC PARTICIPATION

Scoping is a process that allows the agency to discuss the proposed action with stakeholders, interested and affected parties, and the public, as well as internally with agency personnel. To determine the scope of issues to be analyzed in depth in this EIS, internal meetings were conducted with Seashore staff, three public scoping meetings were held at different locations in the vicinity of the Seashore during the public scoping period, and relevant agency consultations were initiated.

Internal Scoping

An internal scoping meeting was held in September 2010 to initiate the EIS process and to define the initial scope of the EIS. Attendees included Seashore officials, DOI Solicitor's Office, representatives from NPS Pacific West Region, NPS Environmental Quality Division (EQD), and their contractors. Following the public and agency scoping period described below, the interdisciplinary planning team considered public comments for use in the development and refinement of project purpose and need, issues, impact topics, alternatives, and impact analysis for the EIS.

Public Scoping and Outreach

The public scoping period was open for a total of 50 days between October 8, 2010, and November 26, 2010. An NPS press release was published by Bay Area news outlets on October 5, 2010, announcing the dates, times, and places of the public scoping meetings. On October 8, 2010, NPS sent a scoping letter to more than 500 interested individuals and organizations notifying them of the opportunity to comment, and the NPS Planning, Environment, and Public Comment (PEPC) web-site was activated as a vehicle for the public to submit comments. The Federal Register published a Notice of Intent (NOI) to prepare an EIS on October 22, 2010 (NPS 2010d). The public comment period officially closed on November 26, 2010. More than 4,000 comment letters were submitted to NPS during the public comment period. On January 31, 2011, NPS posted the Public Comment Analysis Report and all public correspondence on-line at http://www.nps.gov/pore/parkmgmt/planning_dboc_sup_scoping_comments.htm. Comments received during the public scoping process helped to inform the range of alternatives, as well as the impact topics to be addressed by the EIS. "Chapter 5: Consultation and Coordination" of this EIS provides more details about the public scoping activities, which were an integral part of the planning process for this EIS.

In April 2008, in conjunction with the SUP, DBOC and NPS agreed to a statement of principles (appendix C of the EIS) that outlined procedures to be followed in the event that a NEPA document need to be prepared for proposed activities associated with the remaining four-year term of the RUO. The statement of principles was executed prior to the enactment of section 124 and prior to the Secretary's decision to use the NEPA process to inform the decision on the possible issuance of a permit under section 124. NPS and DBOC have agreed to apply the statement of principles to this EIS to the extent that

it is applicable. In keeping with the statement of principles, NPS met with DBOC prior to the scoping process to discuss DBOC's interest in obtaining a permit under section 124 and to inform DBOC that NPS is initiating an EIS process and would be covering the cost for this new process. As indicated by the statement of principles, DBOC was to prepare a "description of their operations for NEPA evaluation" and that NPS would consider this description in developing the purpose and need for the NEPA document and alternatives to be considered. DBOC submitted scoping comments and other information regarding its operation during the initial scoping period and in subsequent requests through March 15, 2011. NPS fully considered DBOC's interests in developing the range of alternatives and impact topics that are addressed in this EIS.

The Draft EIS was made available for public review and comment beginning on September 23, 2011 and ending December 9, 2011. The document was made available for review electronically on the NPS PEPC web-site (www.parkplanning.gov/PORE) and in hard copy at park headquarters, local libraries, and at the public meetings. Hard copies or CDs also could be obtained by contacting the Seashore Superintendent. Three public meetings were held on October 18, 2011 (Point Reyes Station), October 19, 2011 (San Francisco), and October 20, 2011 (Mill Valley). During the 2011 public meetings, several informational posters were displayed to depict the project area, project purpose/need/objectives, the alternatives under consideration, and the resources potentially impacted by the alternatives. Attendees provided written comments during the meeting or had their comments transcribed onto flipcharts. Upon conclusion of the public comment period, all of the comments received at the meetings, entered directly into PEPC, provided via mail, or provided in person at the Seashore headquarters were entered and analyzed in PEPC. During the comment period, 52,473 pieces of correspondence were received, of which 50,040 were form letters (based on 24 distinct master form letters). A summary of public comments received and associated NPS responses are included in appendix F of the EIS.

Agency Scoping and Consultation

In addition to collecting comments from the public, NPS also initiated scoping with relevant agencies. Letters were sent out to notify the agencies of the intent to begin preparation of the EIS and to solicit agency comments and suggestions regarding the proposed project and its potential environmental effects on resources under their respective jurisdictions (appendix D). The agencies were asked to identify issues that should be analyzed in the EIS, determine the appropriate scope of the environmental analysis, identify potential management actions to be taken should the project commence, and determine whether agency permits or approvals would be required. Agency consultation is ongoing under the following laws and policies:

- Section 7 of the Endangered Species Act
- Magnuson-Stevens Act (essential fish habitat)
- Marine Mammal Protection Act
- Coastal Zone Management Act
- Section 106 of the National Historic Preservation Act
- Clean Water Act
- Rivers and Harbors Act
- Clean Air Act

- State Clearinghouse
- Tribal Consultation

Four agencies have entered into an agreement with NPS to be cooperating agencies in the development of the EIS: CDFG, USACE, NMFS, and the U.S. Environmental Protection Agency (EPA). Each of these cooperating agencies has special technical expertise related to the issues under consideration in the EIS. The cooperating agencies; tribal government; and several other federal, state, and local agencies were notified of the Draft EIS availability (see the complete "List of Recipients" in chapter 5 of the EIS).

In accordance with NEPA and section 309 of the Clean Air Act, the EPA reviewed the Draft EIS. In their response letter dated December 7, 2011, EPA rated the Draft EIS as "Lack of Objections (LO)." Formal comments on the Draft EIS also were received from NMFS (letter dated November 17, 2011, with clarification on December 9, 2011), USACE (letter dated December 8, 2011), CDFG (letter dated December 20, 2011), USCG (letter dated December 7, 2011), and CCC (letter dated December 12, 2011). Additional detail on agency scoping and consultation is included in chapter 5 of the EIS.

ENDNOTES

i. DBOC 2011f, Letter from Drakes Bay Oyster Company to Point Reyes National Seashore, March 4, 2011, regarding supplemental scoping information.

> "Sales agreement between DBOC and JOC (including information on lease holding interests). Attached, please find a copy of the asset purchase agreement between Johnson Oyster Company and the Lunny Family (Attachment 1-A)."

ii. DBOC 2012b, Letter (with attachments) from Drakes Bay Oyster Company to Superintendent, Point Reyes National Seashore on June 5, regarding DBOC responses to the National Park Service's April 2012 questions.

> "Approximately 40% of DBOC income is from onsite retail sales, 40% is sold directly to local market and restaurants – all delivered by DBOC directly, 18% is sold to Tomales Bay shellfish growers, and 2% is sold through a wholesale seafood distributor based in San Francisco."

iii. DBOC 2011i, Correspondence ID 52043, Letter from Drakes Bay Oyster Company to Point Reyes National Seashore Superintendent on December 9, 2011 regarding Drakes Bay Oyster Company's comments on National Park Service Draft Environmental Impact Statement for Special Use Permit. Attachment: Comments on Drakes Bay Oyster Company Special Use Permit Environmental Impact Statement Point Reyes National Seashore, prepared by ENVIRON International Corporation.

> "All 22 workers at DBOC, who would lose their jobs if DBOC operates were cease, are of Hispanic or Latino ethnicity, and most also fall into the category of low-income."

iv. DBOC 2012b, Letter (with attachments) from Drakes Bay Oyster Company to Superintendent, Point Reyes National Seashore on June 5, regarding DBOC responses to the National Park Service's April 2012 questions.

> "DBOC does not grow European flat oysters and does not plan to grow this species in the future."

CONTENTS

FIGURES

TABLES

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ACRONYMS AND ABBREVIATIONS

ACHP	Advisory Council on Historic Preservation
ACZA	ammoniacal copper zinc arsenate
ANSI	American National Standards Institute
BAAQMD	Bay Area Quality Management District
BMP	best management practices
CARB	California Air Resources Board
CCA	chromate copper arsenate
CCC	California Coastal Commission
CCCBR	Central California Coast Biosphere Reserve
CDFG	California Department of Fish and Game
CDPH	California Department of Public Health
CDO	Cease and Desist Order
CDP	Census Designated Place
CEQ	Council on Environmental Quality
CFGC	California Fish and Game Commission
CFR	Code of Federal Regulations
CNPS	California Native Plant Society
CSLC	California State Lands Commission
CWA	Clean Water Act
CZMA	Coastal Zone Management Act
dBA	A-weighted decibel scale
DBOC	Drakes Bay Oyster Company
DO	Director’s Order
DOE	Determination of Eligibility
DOI	U.S. Department of the Interior
EA	environmental assessment
EIS	environmental impact statement
EPA	U.S. Environmental Protection Agency
EQD	Environmental Quality Division (NPS)
ESA	Endangered Species Act
FEMA	Federal Emergency Management Agency
FHWA	Federal Highway Administration

FIGR	The Federated Indians of Graton Rancheria
FONSI	finding of no significant impact
FTA	Federal Transit Administration
FTE	full-time equivalent
GIS	geographic information system
GMP	general management plan
GPS	global positioning system
Harbor District	Humboldt Bay Harbor, Recreation, and Conservation District
IBA	Important Bird Area
IPCC	Intergovernmental Panel on Climate Change
ISO	International Organization for Standardization
JOC	Johnson Oyster Company
MBTA	Migratory Bird Treaty Act
MCDA	Marin County Department of Agriculture, Weights, and Measures
MIG	The Minnesota IMPLAN Group, Inc.
MLPA	Marine Life Protection Act
MMC	Marine Mammal Commission
MMPA	Marine Mammal Protection Act
MOU	memorandum of understanding
MPA	Marine Protected Area
MSX	multinucleated sphere unknown
MTC	Metropolitan Transportation Commission
NAS	National Academy of Sciences, National Research Council
National Register	National Register of Historic Places
NAVD–88	North American Vertical Datum of 1988
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NMFS	National Marine Fisheries Service (NOAA)
NOAA	National Oceanic and Atmospheric Administration
NOI	Notice of Intent
NOx	nitrogen oxides
NPCA	National Parks Conservation Association
NPS	National Park Service
NRC	National Research Council
NWP	Nationwide Permit
NWPS	National Wilderness Preservation System
OB	Oyster Bar
OCRM	Office of Ocean and Coastal Resource Management (NOAA)

Pb	lead
PCSGA	Pacific Coast Shellfish Growers Association
PEIR	Programmatic Environmental Impact Report
PEPC	Planning, Environment, and Public Comment web-site (NPS)
PFMC	Pacific Fishery Management Council
PL	Public Law
$PM_{2.5}$	particulate matter less than 2.5 micrometers
PRNSA	Point Reyes National Seashore Association
PSP	paralytic shellfish poison
PVC	polyvinylchloride
ROD	record of decision
ROG	reactive organic gas
RUO	reservation of use and occupancy
Seashore	Point Reyes National Seashore
Secretary	Secretary of the Interior
section 124	Section 124 of Public Law 111-88 of the Department of the Interior, Environment, and Related Agencies Appropriations Act of 2010
SHPO	State Historic Preservation Officer
SOF	Statement of Findings
Solicitor's Office	U.S. Department of the Interior Solicitor's Office
SSC	special species of concern
SUP	special use permit
UEF	Upper Estero Far
USACE	U.S. Army Corps of Engineers
U.S.C.	U.S. Code
USDA	U.S. Department of Agriculture
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
VHB	Vanasse Hangen Brustlin, Inc.
VOCs	volatile organic compounds
Volpe	John A. Volpe National Transportation Systems Center

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