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ALTERNATIVES

Photo by: Robert Campbell

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ALTERNATIVES

INTRODUCTION

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). This chapter 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 action alternatives analyzed in this document were selected based on their ability to address the purpose of and need for action and project objectives and because they allow analysis of a full and reasonable range of alternatives. As set forth in chapter 1, the purpose of and need for action in this EIS is based on the Secretary's discretionary authority under section 124 of PL 111-88. This EIS also analyzes the impacts that these alternatives could have on the human environment. "Chapter 4: Environmental Consequences" of this EIS presents the results of these analyses.

The alternatives include both broad-scale and site-specific elements. In some instances, sufficient detail is available to analyze site-specific impacts. In other cases, information is not available, or plans are insufficiently developed, to allow detailed analysis. In the latter case, a conceptual level of analysis has been conducted. Depending on the alternative selected, the level of detail available during the preparation of this EIS and the impacts identified, some specific actions may be implemented without additional evaluation under NEPA, subsequent to the completion of this EIS process. In other cases, additional design of proposed concepts and evaluation of a reasonable range of alternatives would be required.

ALTERNATIVES DEVELOPMENT

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.

The alternatives are described in detail in the following sections. A side-by-side comparison of the alternatives is presented in table 2-5 (provided at the end of this chapter). Seven alternative elements that were either technically or economically infeasible or did not meet the purpose of and need for the project were considered and dismissed from further analysis and are discussed later in this chapter.

The NPS evaluated four alternatives in this EIS:

- **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.

- **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.

- **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.

- **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.

EXISTING CONDITIONS

Development of the action alternatives is based on the scope and scale of the existing DBOC operations and facilities, as authorized by the existing RUO and 2008 SUP. In order to provide context for the alternatives considered in this EIS, this section describes DBOC operations and facilities both offshore within Drakes Estero and onshore. The term offshore is used to refer to operations and facilities in Drakes Estero, including intertidal areas such as the shoreline and mudflats. Discussion of onshore operations and facilities generally refers to those areas above mean high tide but also may include items that stretch into the intertidal area, such as the main dock.

Both onshore and offshore areas are owned by NPS as discussed in chapter 1. DBOC operates within the Seashore under authorizations issued by the NPS. This approval takes the form of the current SUP and RUO. The existing SUP was signed on April 22, 2008 and expires concurrently with the 40-year RUO on November 30, 2012. Copies of these documents can be found in appendix A. DBOC also has mariculture leases from CDFG. These are Lease M-438-01 and Lease M-438-02. The 2008 SUP references these leases for the shellfish species that NPS authorized for cultivation within Drakes Estero.

SPECIAL USE PERMIT AREA AND MARICULTURE SPECIES

The 2008 SUP authorized DBOC to generally operate within the same offshore boundaries as contained in Lease M-438-01 (1,049 acres[1]) and Lease M-438-02 (1 acre). Lease M-438-01 is split into two parcels: Parcel 1 contains 343 acres on the east side of Drakes Estero and Parcel 2 contains 706 acres on the west side of Drakes Estero. Within these offshore lease boundaries, DBOC maintains approximately 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 described later in this section (i.e., hanging culture or bottom culture). The specific numbered culture beds that make up the 142 acres of growing area are derived from maps provided by DBOC (DBOC 2010c[i]) and are shown on figure 2-1.

The lease boundaries were drawn prior to creation of the harbor seal protection areas designated in the 2008 SUP. Another concern with the original lease boundaries is that they were drawn without the aid of current technology. It should be noted that the lease boundaries were also identified in the SUP as the offshore permit area. DBOC asserts that the original mapping mistakenly excluded five of the racks in Bed 6 that were in existence at the time (DBOC 2011e[ii]). Although most correspondence has cited five racks outside of the existing lease areas, the GPS (global positioning system) data provided by DBOC (DBOC 2010e[iii]) and being used to support the development of this EIS indicates six racks outside the GIS lease boundaries as supplied to NPS by CDFG in 2011.

In May of 2010, DBOC submitted a request to the CFGC for a boundary adjustment to Lease M-438-01 to include the racks currently outside the lease boundaries and to exclude some of the lease area within the harbor seal protection areas (DBOC 2010h[iv]). The area where Bed 6 extends outside the existing boundaries of Lease M-438-01 can be seen on figure 2-1.

[1] 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 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.

Figure 2-1 also shows the areas of Drakes Estero in which boat traffic is known to take place (more detail on this aspect of operations is provided later) and the harbor seal protection areas. The onshore areas in which DBOC is authorized to operate are described in the DBOC operations and facilities section below.

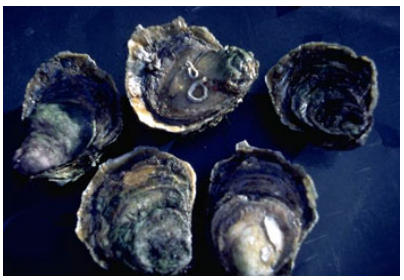
Mariculture Species

This section describes the species currently grown and/or authorized by current permits in Drakes Estero or proposed by DBOC for inclusion in a new SUP. DBOC currently grows, processes, and sells two species of shellfish: Pacific oyster and Manila clam. European flat oysters and Kumamoto oysters are currently authorized, but DBOC does not currently grow, process, or sell them. Olympia oysters and purple-hinged rock scallops are not currently grown but are proposed by DBOC for future cultivation.

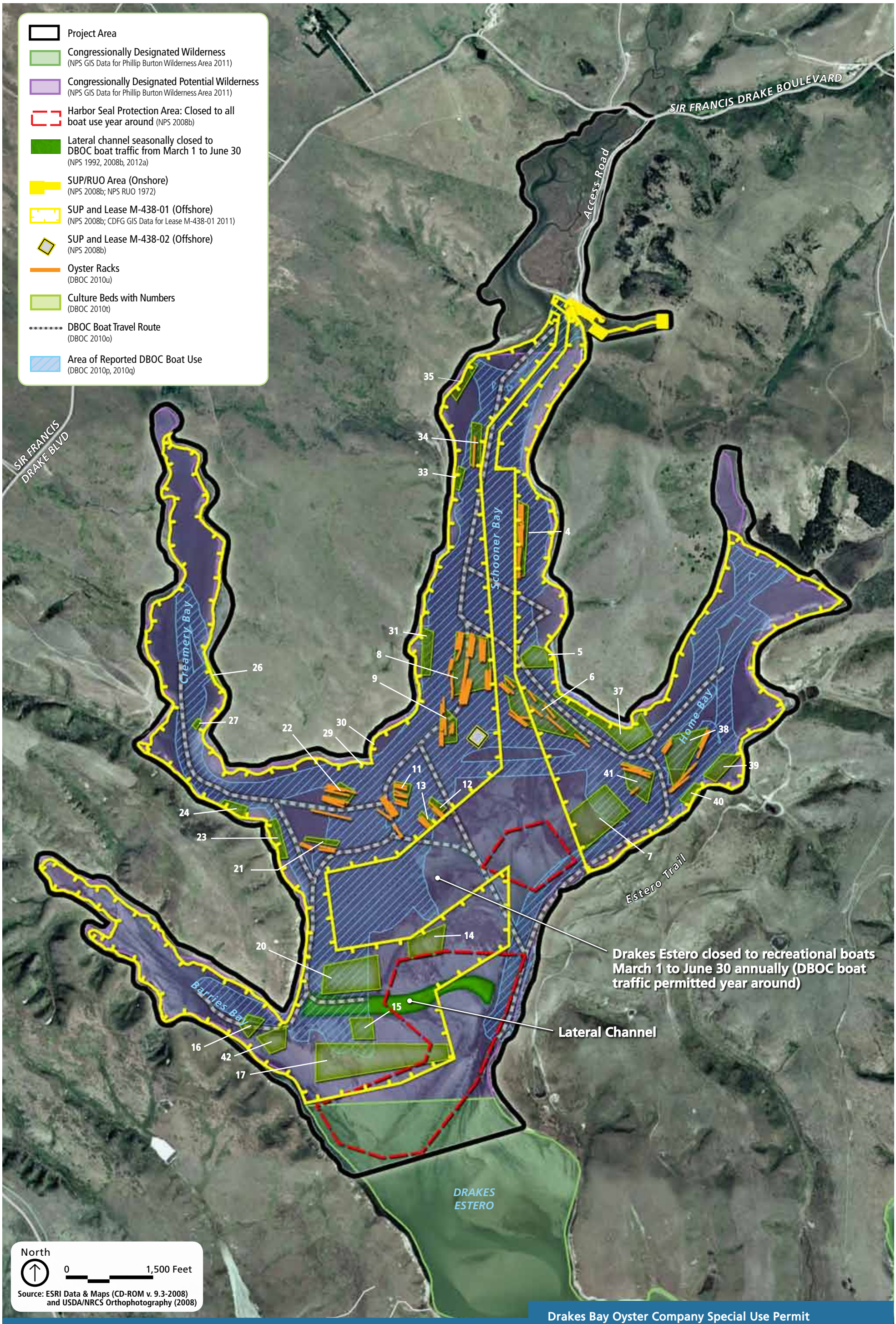
Pacific Oysters. Pacific oysters, native to Japan, are cultivated only within shellfish growing areas depicted on the map provided by DBOC (DBOC 2008b[v]) (see figure 2-1 for lease boundaries and specific culture beds). Cultivation of Pacific oysters within Drakes Estero has been authorized in some form since the 1930s, and it was one of the two oyster species (along with European flat oysters) identified by CDFG in 1979, when CDFG began to specify which individual species were authorized in each lease. According to tax records for 2007 through 2009, the average annual production of Pacific oysters by DBOC within Drakes Estero has been 454,036 pounds per year (approximately 5.34 million oysters harvested per year). Since 2009, Pacific oyster production at DBOC steadily increased to 585,277 pounds in 2010 (6.89 million oysters harvested) and 618,375 pounds in 2011 (7.28 million oysters harvested). These quantities reflect a conversion from the number of oysters harvested (as reported in official DBOC Proof of Use reports and privilege use tax records submitted to CDFG) to pounds of shucked oyster meat (CDFG 2006, 2009, 2010a). Within Drakes Estero, CDFG has used the standard of 100 Pacific oysters per gallon as the term of measurement. This conversion calculates the number of Pacific oysters divided by 100 (this represents gallons harvested). In other areas of the state, CDFG uses 140 Pacific oysters per gallon as the standard conversion (CDFG [Ramey], pers. comm., 2011d). In order to convert gallons to pounds, gallons are multiplied by a factor of 8.5 pounds per gallon (CDFG [Ramey], pers. comm., 2011d). Additional details on production levels in Drakes Estero between 1979 and 2011 are provided in table 2-1 at the end of this section.

Pacific oyster (*Crassostrea gigas*). (Photo courtesy of VHB.)

European Flat Oysters. European flat oysters, native to Europe, have been included in Lease M-438-01 since 1979 and are permitted in the 2008 SUP. DBOC does not currently cultivate this species. According to records submitted by DBOC to CDFG, DBOC has never planted or harvested European flat oysters. DBOC reported in 2008 that small numbers of this species (remnants of prior plantings by JOC) still existed within the area of Lease M-438-01 as of January 2008 (DBOC 2008b[vi]); however, in correspondence to NPS in June 2012, DBOC advised that no European oysters were produced in Drakes Estero by JOC (DBOC 2012b[vii]). According to records provided to NPS by CDFG, the only record of European flat oysters being harvested at the site is from April 1968 (CDFG 2011c). .



European flat oyster (*Ostrea edulis*). (Photo courtesy of http://genimpact.imr.no/species/european_flat_oyster.)



Drakes Bay Oyster Company Special Use Permit
Environmental Impact Statement

National Park Service
U.S. Department of the Interior

Point Reyes National Seashore

FIGURE 2-1

Existing Conditions (Offshore Operations)

Kumamoto Oysters. Kumamoto oysters, native to Japan, have not been permitted for culture in Drakes Estero since 1979. DBOC does not currently cultivate this species. According to records submitted by DBOC to CDFG, DBOC has never sold nor planted Kumamoto oysters. Small numbers of this species still existed within Lease M-438-01 as of January 2008. DBOC has advised that these are remnants of prior plantings by JOC and were removed by DBOC (DBOC 2008b[viii]). DBOC does not plan to plant Kumamoto oysters in the future, due to their slow growth and has communicated to CCC that it has removed the remnants from Drakes Estero (DBOC 2008b[ix], CDFG 2008b[x]).

Kumamoto oysters (*Crassostrea sikamea*). (Photo courtesy of http://www.chefs-resources.com is licensed.)

Olympia Oysters. Olympia oysters (*Ostreola conchaphila*), native to the California coast, have not been permitted for culture in Drakes Estero since 1979. These oysters require hard substrate on which to grow (Couch and Hassler 1989; Trimble, Ruesink, and Dumbauld 2009) and therefore are unlikely to occur naturally in the soft-bottom estuary that is Drakes Estero. The last records of Olympia oysters being harvested at this site date from 1957-1959 and 1963 (CDFG 2011c).

Olympia oysters (*Ostreola conchaphila*). (Photo courtesy of http://www.chefs-resources.com is licensed.)

Purple-hinged Rock Scallops. Lease M-438-02 was originally established by CDFG in 1979 for JOC to culture purple-hinged rock scallops, which are native to the California rocky coast. At the time this lease was issued, CDFG noted that purple-hinged rock scallops "do not occur naturally within the biota of the lease area" (CDFG 1979b). According to tax records, purple-hinged rock scallops have never been sold by DBOC. The last record of scallops being harvested at this site was from May 1994 (CDFG 2011c).

Purple-hinged rock scallops (*Crassadoma gigantea*). (Photo courtesy of L. Schroeder; http://www.bily.com/pnwsc/ web-content/Photos/Bivalves.)

Manila Clams. Manila clams, native to the Philippines, were added to Lease M-438-02 in 1993. The CDFG recommendation for use of Area 2 noted that it was a small one acre lease previously used by JOC in the experimental culture of species other than oysters (CFGC 1993[xi]).The 2004 renewal of the lease for M-438-02 maintained the requirement that "all shellfish cultivation on the lease shall be confined to racks and in trays within the area approved by the Commission" (CDFG 2004e). In December of 2009, CFGC amended the lease to allow cultivation of Manila clams within Lease M-438-01 per a request from DBOC. DBOC did not submit a request for this expansion of species cultivation to NPS, as required by section 4(b)(vi) of the 2008 SUP (NPS 2008b). NPS advised DBOC that additional information was required before NPS could determine whether to approve this modification (NPS 2009e[xii]). DBOC declined to offer any additional information in its response to the NPS (DBOC 2009c[xiii]). Manila clam cultivation in the area of Lease M-438-01 has not been authorized by NPS.

Manila clam (*Venerupis philippinarum*).(Photo courtesy of http://www.squaxin-nr.org/page/15/.)

In its 2006 proof of use report to CDFG, DBOC reported planting 1 million Manila clam seeds within Lease M-438-02 using the method "bags on bottom" (CDFG 2006). Bottom bag culture is not an authorized cultivation method for Area 2. In its 2009 and 2010 proof of use reports submitted to CDFG, DBOC reports harvest of Manila clams in Lease M-438-01 (primarily in Bed 7) (CDFG 2009a, 2010a). DBOC reported harvest of Manila clams on its privilege use tax forms beginning in February 2009 for Lease M-438-01 (see table 2-1) (CDFG 2009a). CDFG reports that the conversion factor for Manila clams is 30 clams per pound (CDFG [Ramey], pers. comm., 2011d). The average annual harvest of Manila clams since 2009 has been 420 pounds per year (see table 2-1). A total of 458 pounds (13,740 clams) were harvested in 2009, 684 pounds (20,520 clams) were harvested in 2010, and 118 pounds (3,540 clams) in 2011.

Additional background on Manila clam culture within Drakes Estero can be found in the "Shellfish Mariculture in Drakes Estero" section of chapter 1.

Production Limit. For the purposes of this EIS, the action alternatives include various levels of annual production of shellfish including 500,000 pounds, 600,000 pounds, and 850,000 pounds. Section 4(b)(i) of the 2008 SUP states that "production of all shellfish species shall be capped at the 'current production level' as determined under the California Coastal Commission Consent Order No. CCC-07-CD-04." Section 3.2.10 of CCC Consent Order No. CCC-07-CD-04, states that production of all shellfish species shall be capped at the "current production level." To establish this "current production level," CCC required that DBOC provide documentation, "including the amount harvested in the last year and any projected increases in yield for the coming year" (CCC 2007b). In its 2008 letter to the CCC on the subject of production limit, DBOC projected a maximum total production of shellfish at 850,000 pounds annually and suggested that the limit be based on that level (DBOC 2008b[xiv]). In its September 10, 2008, response, the CCC stated, "Commission staff finds that the harvest of 850,000 lbs of shellfish by DBOC would represent a substantial increase over current production levels. Commission staff does not find sufficient evidence within your January 31, 2008 letter to support an assumption that current production would be 850,000 lbs of shellfish" (CCC 2008). To date, CCC has not established a production limit for DBOC. Additional detail on the production limits proposed under each action alternative is discussed later in this chapter.

TABLE 2-1. SHELLFISH SPECIES PRODUCTION BY YEAR (1979–2011)

Year	Species Production*				
	Pacific Oyster		Manila Clam		Purple-hinged Rock Scallop
	pounds†	number of individuals‡	pounds§	number of individuals‖	pounds#
1979	329,953	3,881,800	0	0	0
1980	223,329	2,627,400	0	0	1,730
1981	353,209	4,155,400	0	0	72
1982	410,253	4,826,500	0	0	647
1983	435,022	5,117,900	0	0	664
1984	591,118	6,954,335	0	0	308
1985	590,130	6,942,710	0	0	0
1986	467,544	5,500,521	0	0	0
1987	643,195	7,567,000	0	0	0
1988	639,175	7,519,700	0	0	0
1989	543,303	6,391,800	0	0	0
1990	562,148	6,613,500	0	0	0
1991	570,010	6,706,000	0	0	0
1992	670,591	7,889,300	0	0	0
1993	661,683	7,784,500	0	0	850
1994	684,293	8,050,500	0	0	550
1995	445,706	5,243,600	0	0	0
1996	587,172	6,907,900	0	0	0
1997	476,867	5,610,200	0	0	0
1998	292,188	3,437,500	0	0	0
1999	62,875	739,700	0	0	0
2000	34,094	401,110	0	0	0
2001	131,352	1,545,320	0	0	0
2002	156,126	1,836,800	0	0	0
2003	232,186	2,731,600	0	0	0
2004**	96,754	1,138,282	0	0	0
2005**	138,958	1,634,800	0	0	0
2006	352,960	4,152,470	0	0	0
2007	466,533	5,488,620	0	0	0
2008	436,848	5,139,390	0	0	0
2009	458,726	5,396,777	458	13,740	0
2010	585,277	6,885,612	684	20,520	0
2011	618,375	7,275,000	118	3,540	0

Source: Privilege use tax records submitted to CDFG by JOC (prior to 2004) and DBOC (after 2005) (CDFG 2010b, 2011c).

Note: Although some tax records may not specify species harvested and some reports may contain errors, this document relies upon production data provided by CDFG as the source for DBOC production (CDFG 2010b, 2011c).

* Tax records indicate that these were the only species produced during the time period shown (no European flat oysters or Kumamoto oysters were reported during this time) (CDFG 2010b, 2011c).

† Pacific oyster weight calculated from total harvest and reported in pounds on tax reports submitted to CDFG by JOC (prior to 2004) and DBOC (after 2005) (CDFG 2010b, 2011c).

‡ Number of individuals is calculated based on tax reports. In Drakes Estero , CDFG based weight using conversion of 100 oysters per gallon (per Fish and Game Code Section 15406.7) and 8.5 pounds per gallon (CDFG 2011c).

§ Manila clam weight is calculated from total harvest and is reported in pounds on tax reports submitted to CDFG by JOC (prior to 2004) and DBOC (after 2005) (CDFG 2010b, 2011c).

‖ Number of individuals is calculated based on tax reports CDFG measures weight using conversion of 30 clams per pound (CDFG 2011c).

No conversion rate is available for purple-hinged rock scallops. These measurements are reported in pounds on tax reports submitted to CDFG by JOC (prior to 2004) and DBOC (after 2005) (CDFG 2010b, 2011c).

** Tax records are unavailable for 2004 and 2005. These records are based on estimates by the CDFG Marine Region Aquaculture Coordinator in a March 30, 2007 report (CDFG 2007a). POU reports for 2005 confirm production near this level; according to the 2005 POU report, DBOC estimates 153,000 lbs were produced (assuming 100 oysters per gallon and 8.5 pounds per gallon) (CDFG 2006).

DBOC OPERATIONS AND FACILITIES

The following sections describe existing DBOC operations and facilities. This includes descriptions of activities and structures relevant to DBOC commercial shellfish operations as they currently exist, categorized by offshore and onshore. As mentioned above, the term offshore is used to refer to operations and facilities in Drakes Estero, including intertidal areas such as the shoreline and mudflats. Discussion of onshore operations and facilities generally refers to those areas above mean high tide but also may include items that stretch into the intertidal area, such as the main dock. DBOC is acquiring after-the-fact authorization for some unpermitted buildings/structures as part of its efforts to comply with the SUP and coastal development regulations.

Offshore Operations and Facilities

All of DBOC's offshore commercial shellfish operations take place within the areas designated by CDFG as Lease M-438-01 (1,049 acres) and Lease M-438-02 (1 acre), with the exception of six culture racks (discussed below) that are outside the boundary of the SUP and leases. Lease M-438-01 is split into two parcels: Parcel 1 contains 343 acres on the east side of Drakes Estero and Parcel 2 contains 706 acres on the west side of Drakes Estero. Of the 1,050 acres within the leases and SUP, DBOC cultivates shellfish within approximately142 acres in Drakes Estero. These 142 acres comprise 42 numbered culture beds (see figure 2-1). This represents the total area in which shellfish may be grown; however, DBOC does not necessarily use all 142 acres at once; some beds may lie fallow. For instance, the proof of use report for 2010 reports planting a total of 26.6 acres (CDFG 2010a). The operations described below are based primarily on communication with DBOC through letters (including but not limited to CDP applications and responses to NPS requests for information) and a February 16, 2011, site visit (DBOC [Lunny], pers. comm., 2011h).

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. Culture beds, in which racks, tray, and/or bags are placed, are distributed throughout Lease M-438-01. Table 2-2 summarizes which culture types take place in which beds and figure 2-1 depicts the location of racks and culture beds.

Racks. The wooden racks are made up of bents and stringers. Based on a review of available photos, most of the racks are constructed of pressure-treated dimensional lumber. The DBOC spreadsheet indicates that the racks are supported by a total of 2,139 bents spaced at 12-foot intervals (DBOC 2010e[xv]). The bents are anchored in the bed of the Estero and provide the primary structural support for the racks. Generally, the bents consist of three 2-inch by 6-inch boards sunk into the substrate and held together by a 2-inch by 4-inch and 2-inch by 6-inch cap board. Stringers are installed over the tops of the bents and are the boards that hold the strings of oysters. Six stringer boards make up the top of the rack for the entire length of the rack. The approximate width of the racks is 12 feet. The stringers are generally 2-inch by 4-inch or 2-inch by 3-inch boards. Individual stringer boards are installed with overlap that is estimated at 25 percent.

Racks used for hanging culture are made up of bents (the vertical boards anchored in the substrate) and stringers (the horizontal boards on which oysters are strung), as seen during low tide (Photo courtesy of NPS.)

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. According to information provided by DBOC, just over half (53 percent) of the racks are currently in poor condition (DBOC 2010e[xvi]). The DBOC spreadsheet had a combined column for "need repair, inactive" (DBOC 2010e[xvii]); however, during a site visit on February 16, 2011, DBOC indicated that racks in poor condition may be used to support floating culture methods described below (DBOC [Lunny], pers. comm., 2011h). DBOC estimates that roughly half of the DBOC production originates on racks and is finished in bags on the bottom; the other half begins in floating bags and is finished in bags on the bottom (DBOC 2012b[xviii]).

In 2005, NPS advised DBOC that ACZA (ammoniacal copper zinc arsenate)-treated lumber could be used to make repairs to existing racks (NPS 2005[xix]), and DBOC worked to repair the racks previously maintained by JOC from 2005-2007 (DBOC 2012b[xx]). DBOC has not repaired any oyster racks since agreeing to Consent Order No. CCC-07-CD-04 in November 2007 and, as agreed upon in the consent order, will not make any repairs to the oyster racks until a CDP has been obtained and the NPS, CDFG, and CCC have approved all repair materials (DBOC 2009d[xxi]). DBOC estimates that just over half of the racks need repair (DBOC 2010e[xxii]). In 2008, the NPS issued the SUP for DBOC operations stating "All lumber utilized at the site will be processed in compliance with current laws and regulations regarding wood treatments" (Section 6[i], NPS 2008b). Most recently, in response to a request for emergency dock repairs, USACE has advised DBOC that "any chemically treated wood material must be coated with an impact-resistant, biologically inert substance" (USACE 2011b). Future repair of these structures is described in more detail as part of the action alternatives later in this chapter.

Hanging Culture. Wooden racks in relatively good condition support "off-bottom" culture methods such as Japanese hanging culture and the French tube culture. In Japanese hanging culture, oysters are grown on recycled left valves (shells), and these shells are strung along wires through holes punched in the recycled shell. Clumps of approximately 14 shells are separated by approximately 6 inches of polyvinylchloride (PVC) piping to allow for cluster development. These wires are completely suspended and should not make contact with the bottom of Drakes Estero. From the time oysters are initially placed on the racks, they require approximately 16 to 18 months to reach market size, depending on environmental conditions. DBOC indicated to CCC in March 2010 that it had replaced Japanese hanging culture with French tube culture (DBOC 2010f[xxiii]) (described below); however, in its November 2010 submittal to NPS, DBOC described Japanese hanging culture as one of the culture methods being used and was identified in Drakes Estero by DBOC staff during a recent site visit (DBOC 2010a[xxiv], [Lunny], pers. comm., 2011h).

Japanese hanging culture in Drakes Estero
(Photo courtesy of VHB.)

French tube culture in Drakes Estero
(Photo courtesy of VHB.)

In French tube culture, oysters are grown directly on the tubes. These tubes, known as French tubes, are roughly coated in concrete. As in Japanese hanging culture, the tubes are hung on the racks, and it takes approximately 12 months for oysters to reach market size. Both of these hanging cultures are used for growth of oyster clusters. Due to an existing shortage of rack space, DBOC currently places oysters on intertidal areas for up to nine months for shell hardening prior to processing, but they note that otherwise, the shells generally require only an additional two to three months of beach hardening (DBOC 2010a[xxv], 2012b[xxvi]).

DBOC grows single oysters and clams within bags and trays. Trays and bags can be suspended as a type of hanging culture or can be used for hanging culture using racks or Styrofoam floats, as discussed below. Hanging culture with trays and bags is generally used for the purpose of seed rearing single oysters (the process of growing larval oyster stages to maturity). Otherwise, bags are set on sandbars or shoreline intertidal areas.

Bottom Culture. Setting bags on sandbars or shoreline intertidal areas is a form of bottom culture. Bags are used both for the nursery stage of oyster growth (following initial attachment to substrate and growth in the setting tanks on shore) and for the "grow-out" stage (the stage where young mature oysters reach market size). A common bag type used is a 3-foot by 2-foot rubber mesh bag. Trays are 3 feet by 3 feet. Table 2-2 provides a breakdown of which culture types take place in which beds (bed numbers are provided on figure 2-1), along with the acreage of each bed.

According to DBOC, bags in areas with strong currents are anchored to the Estero bottom using PVC piping (DBOC did not specify the length of the PVC anchors), cinder blocks, or large (100-pound) concrete anchors (see photos below) (DBOC 2010b[xxvii], 2012b[xxviii]). Anchored lines may be left in place for subsequent planting in the same area. Bags in areas with little current are left unanchored (DBOC 2010b[xxix]).

Bottom bag culture in Drakes Estero, anchored with cinder blocks. Photo taken during low tide conditions when sand bars are exposed. (Photo courtesy of NPS.)

Tray used for culture in Drakes Estero (trays are stacked when installed in Drakes Estero). (Photo courtesy of VHB.)

Floating Culture. In addition to hanging culture, as described above, DBOC also uses a couple types of floating culture. The bottom bags mentioned above can be used for a type of floating culture where bags are anchored along long lines, but by using closed-cell Styrofoam, these bags are allowed to float during higher water levels associated with the tide (DBOC 2010b[xxx]). In other cases, racks that are in poor condition and cannot support strings are used for floating bags. Floating bags are sometimes hung between racks. In these cases, the racks serve as anchors. Other floating systems near the racks are secured by concrete anchors (DBOC 2012b[xxxi]) as pictured here.

Floating bag culture in Drakes Estero. (Photo courtesy of NPS.)

Concrete anchor (approximately 100 pounds) used for floating culture. (Photo courtesy of DBOC.)

TABLE 2-2. CULTURE TYPE BY BED NUMBER

Bed Number	Culture Type		Acreage
1	ND		ND
2	ND		ND
3	ND		ND
4	Racks		4.63
5	Bottom bags		3.59
6	Racks		12.43
7	Bottom bags	Floating bags	13.54
8	Racks		13.52
9	Racks		3.41
10	ND		ND
11	Racks		1.92
12	Racks		1.06
13	Racks		0.61
14	Bottom bags		5.30
15	Bottom bags	Floating bags	2.98
16	Bottom bags		1.88
17	Bottom bags	Floating bags	23.46
18	ND		ND
19	ND		ND
20	Bottom bags	Floating bags	11.66
21	Racks		2.45
22	Racks		2.86
23	Bottom bags		1.57
24	Bottom bags		0.68
25	ND		ND
26	Bottom bags		1.57
27	Bottom bags	Floating bags	0.30
28	ND		ND
29	Bottom bags		ND
30	Bottom bags		ND
31	Bottom bags		2.96
33	Bottom bags		0.98
34	Racks		2.75
35	Bottom bags		1.91
36	ND		ND
37	Bottom bags	Floating bags	8.15
38	Racks	Floating bags	8.24
39	Bottom bags	Floating bags	2.91
40	Bottom bags		1.59
41	Racks	Floating bags	4.90
42	Bottom bags		3.22

Source: DBOC 2010d[xxxii]

ND = no data

Other Culture Methods. JOC historically used stake culture in Drakes Estero; however, this method proved unstable during storm events and resulted in the release of large amounts of mariculture-related debris (discussed below). Due to the issues associated with this method, stake culture was phased out (replaced by bag culture) by the mid 1990s (DBOC 2012d[xxxiii]). Although JOC used stake culture in the past, DBOC is not known to use this method (DBOC 2008e[xxxiv], 2012d[xxxv]) and has not proposed to use this method; therefore, it is not addressed in this EIS.

DBOC also has experimented with other seed methods. In 2009, structures containing stacked French tubes were placed in Drakes Estero. DBOC states that this method is no longer used (DBOC 2011f[xxxvi]). According to section 4(b)(ii) of the SUP, DBOC must obtain prior approval from the NPS before any additional aquaculture cultivation infrastructure is constructed. Furthermore, construction of improvements or alterations is subject to NPS approval under section 6 of the SUP.

Shellfish Cultivation Areas. DBOC has divided the areas in which it cultivates shellfish into 42 culture beds, as described above and displayed on figure 2-1. These 42 beds total approximately 142 acres, according to GIS estimates, which are based on versions of bed locations provided by DBOC (DBOC 2010c[xxxvii]). In a separate file where the racks alone are described, DBOC estimates that there are a total of 7 acres of racks (including the six racks outside Lease M-438-01) installed in Drakes Estero (DBOC 2010e[xxxviii]). This more conservative estimate of rack acreage is used throughout the EIS instead of adding the acreages of beds above because a sum of all beds supporting rack culture would overstate the acreage which may be directly impacted by racks. For instance, Bed 8 encompasses 13 acres and includes 22 racks. Bed 8 is listed as being used for rack culture alone; however, the boundary of Bed 8 is drawn around the racks, which take up a smaller proportion (approximately 2.16 acres) of the bed.

The list of bed sizes and culture type (as shown in table 2-2) is the only source of information available by which a total acreage of bottom bag culture can be estimated. Based on this information, a maximum of 88 acres of bottom bags may be placed within Drakes Estero at any given time. The actual number varies year to year and is likely to be less than 88 acres because rack culture is also used in some of these beds and some beds are left fallow for a time. Additionally, according to DBOC proof of use reports for 2009 and 2010, DBOC planted 22 acres of bags in each year (CDFG 2009a and 2010a). The length of time a bag stays in Drakes Estero varies depending on the species being cultivated and on environmental conditions; however, it is generally between 18 and 24 months. Bags are turned by hand approximately once a month to remove accumulated sediment that can interfere with oyster growth and may ultimately result in oyster mortality. Turning the bags also reduces the likelihood of oyster shells growing together to form a cluster. Clams are better suited to being covered in sediment; therefore, clam bags are generally not flipped during grow-out (DBOC [Lunny], pers. comm., 2011h).

Mariculture-related Debris. Elements of offshore structures are subject to deterioration and damage by weather events. Deterioration and weather-related damage may result in dispersal of items such as Styrofoam floats, treated lumber displaced from racks, and PVC piping and separators throughout Drakes Estero and along the shoreline. NPS has received a number of comments from visitors claiming to have observed large amounts of mariculture-related debris in Drakes Estero. For instance, during public scoping one commenter submitted photographs to support the observation of the debris associated with mariculture activities in Drakes Estero. The CCC has also been alerted to the issue of marine debris. In letters to DBOC, the CCC expressed concern that DBOC's operation is "apparently resulting in the

release of plastic marine debris" into the environment and that such releases may constitute violations of the Coastal Act and the Consent Order (CCC 2011[xxxix], 2012a[xl], 2012b[xli]).

DBOC asserts that it makes a serious effort to maintain structures and retrieve any debris from its operation as well as debris that may be a result of shellfish operations under the previous owners and is in the process of revising its Debris Removal Plan, as required by Section 3.2.3 of Consent Order No. CCC-07-CD-04 (DBOC 2012d[xlii]). DBOC states that it employs the following practices to reduce the chances of losing culture gear into the environment:

- DBOC removes the oysters from the wires without cutting the wire. No wires are cut when harvesting strings from the racks until above the stringing shed, which is meant to serve as a proxy for the high tide mark. Using this technique, the black plastic spacers are not subject to loss into the environment.
- Beginning in 2006, DBOC began to replace the Japanese Hanging Cultch wire string culture method with "French tubes." These French tubes reduce consumables (i.e., the wire strings which can only be used for one growing season), and do not require the black spacers. Over the past five years, approximately 100,000 strings have been replaced with the French tube method, and this technique now represents the majority of the rack culture. DBOC does, however, continue to cultivate a portion of its oysters with the traditional wire string and spacer method.
- DBOC checks the oyster racks regularly to remove any loose materials so they are not lost into the environment.
- DBOC anchors all oyster bags in areas where there is potential for tidal energy to displace bags.
- DBOC anchors all floating culture in a least two places and all floating bags are attached to at least two anchored lines. (DBOC 2011i[xliii])

CCC notes that the 2008 Debris Removal Plan "has proven to be insufficient" (CCC 2012b). DBOC submitted proposed revisions to the Debris Removal Plan to CCC on February 27, 2012. As of the date of publication of this document, the CCC's inquiry into the presence of aquaculture-related marine debris in the Estero and on Point Reyes beaches is ongoing, as is the CCC's inquiry into the adequacy of DBOC's efforts to minimize marine debris.

Boat Operations. The offshore racks and bags are accessed via motorboat. During a February 16, 2011 site visit, DBOC staff advised NPS that DBOC currently operates two motorboats within Drakes Estero: one is 16 feet long with a 20-horsepower 4-stroke engine, while the other is 20 feet long with a 40-horsepower 4-stroke engine. Combined, these boats operate approximately 8 hours per day, 6 days per week, making a total of 12 round trips per day (DBOC [Lunny], pers. comm., 2011h). In its June 5, 2012 response to NPS's request for additional information, DBOC revised its description of boat use. The most noteworthy difference is that DBOC now uses three boats. DBOC did not provide a size or engine horsepower for the third boat. Otherwise, DBOC notes that the description above represents typical working conditions; however, DBOC also noted that, albeit unusual, all three boats may be in operation all day and that some weeks may require that boats be used all 7 days. DBOC also noted that on some days, no boats are in operation. DBOC must operate around variable demands, including tides, weather, day length, planting season, and high demand occasions (DBOC 2012b[xliv]). This section is meant only to describe existing boat operations and is not meant to serve as a limitation. Under the action alternatives later in this chapter, it is assumed that boat operations will continue at levels similar to these.

The photograph below shows boat tracks through algae in Drakes Estero (as photographed in 2007), which demonstrates how boats access racks off of established boat routes. Figure 2-2 provides the known area of boat use and the boat travel route provided by DBOC (see discussion below). DBOC boats are not used outside Drakes Estero (Environ 2011).

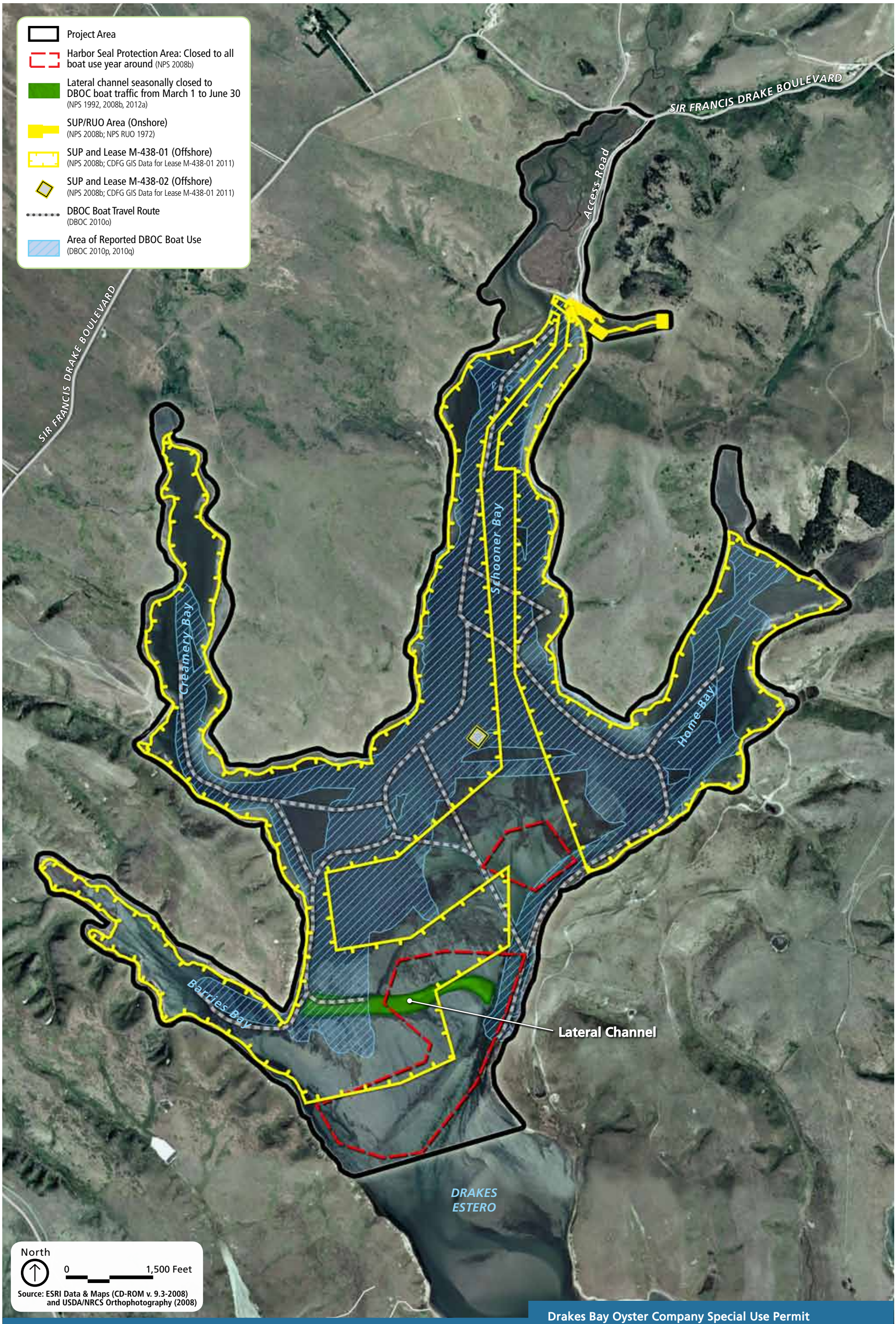
Aerial photo of Drakes Estero (2007) showing boat tracks through algae. (Photo courtesy of Robert Campbell.)

When not in use, these boats are docked at the main dock described in the section "Onshore Operations and Facilities" below. DBOC also has two nonmotorized barges (8 feet by 30 feet and 8 feet by 17 feet) that are often used to transport materials (including shellfish) within Drakes Estero. DBOC has not established permanent moorings (i.e., locations where vessels are secured to the bottom) for these barges in Drakes Estero. DBOC states that the barges are anchored in deep water or tied to the dock. Each barge has its own anchor (DBOC 2011f[xlv]). DBOC submitted the same boat travel route to NPS and CCC to describe boat use in Drakes Estero (DBOC 2008f[xlvi], 2010o[xlvii], 2010s[xlviii]). This route is displayed (with other information discussed below) on figure 2-2; however, some variation in travel routes is expected based on tides, weather, eelgrass, and harbor seal restrictions. Many of the beds are only exposed at lower tides requiring boat access at that time. DBOC has asserted a preference for avoiding eelgrass but claims that this is not always possible (DBOC [Lunny], pers. comm., 2011h). Although section 4(b)(iv) of the 2008 NPS SUP required that DBOC submit a vessel transit plan within 60 days of the signing of the SUP (the SUP was signed on April 22, 2008), DBOC has not yet done so.

In order to protect harbor seals, the 2008 SUP included a harbor seal protection protocol that restricts DBOC boat travel (and areas of operation in general). This protocol prohibits DBOC operations (including placement of bags) within the established harbor seal protection areas (see figure 2-1) and requires a number of other restrictions to minimize disturbance of harbor seals by DBOC staff and boats, including seasonal closure of the lateral channel and maintenance of a 100-yard buffer from any hauled-out harbor seal at any time. Since the publication of the DEIS, DBOC has stated that since 1992 DBOC has routinely driven its boats through the western end of the lateral channel during the seasonal closure period (DBOC 2012e[xlix]). DBOC asserts that its use of the western end of the lateral channel is not prohibited by the 2008 SUP. NPS and CCC disagree with DBOC's interpretation of this provision of the SUP (CCC 2012a[l], NPS 2012a[li]). NPS provided a letter to DBOC on January 23, 2012 to clearly state that the plain meaning of section 4(b)(vii) of the SUP is that the entirety of the lateral channel is closed during the harbor seal breeding season (March 1 to June 30) and that the 1992 protocol was not incorporated into the final signed 2008 SUP (NPS 2012a[lii]). CCC's February 1, 2012 letter to DBOC reiterates these facts and notes that this constitutes a violation of sections 5.0, 6.0, and 7.0 of the Consent Order (CCC 2012a[liii]).

In October 2010, NPS requested a vessel transit plan (including a list and description of vessels used as well as the frequency with which these vessels are used) from DBOC (NPS 2010h[liv]). In November 2010, DBOC provided boat transit information to the NPS, including the general boat route referenced above and shown on figure 2-2 along with two days of GPS tracking data (January 18, 2010 and June 7, 2010) for its boats (DBOC 2010p[lv], 2010q[lvi]). Although these data are limited, it is the only spatial data provided by to the NPS and is assumed to be representative of current DBOC boat operations. The NPS requested more comprehensive boat tracking data (NPS 2011p[lvii]); however, DBOC declined to provide additional spatial data (DBOC 2011f[lviii]). DBOC gathered this data using Garmin GPS Map 76 handheld GPS units, which are used to spatially track each boat's location and path at all times.

Figure 2-2 shows the linear boat travel route combined with a compilation of the GPS data for the two days of data provided to NPS by DBOC (DBOC 2010p[lix], 2010q[lx]). The data was provided in PDF format and at a relatively coarse resolution. In addition, the width of the boat use area is shown approximately 60 feet wide, which may represent an area greater than where boats actually travel. Additionally, because only two days of data were provided, the total area of actual use is unknown. The total area of boat use estimated by this compilation of available data is approximately 740 acres.



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U.S. Department of the Interior

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FIGURE 2-2

DBOC Boat Use

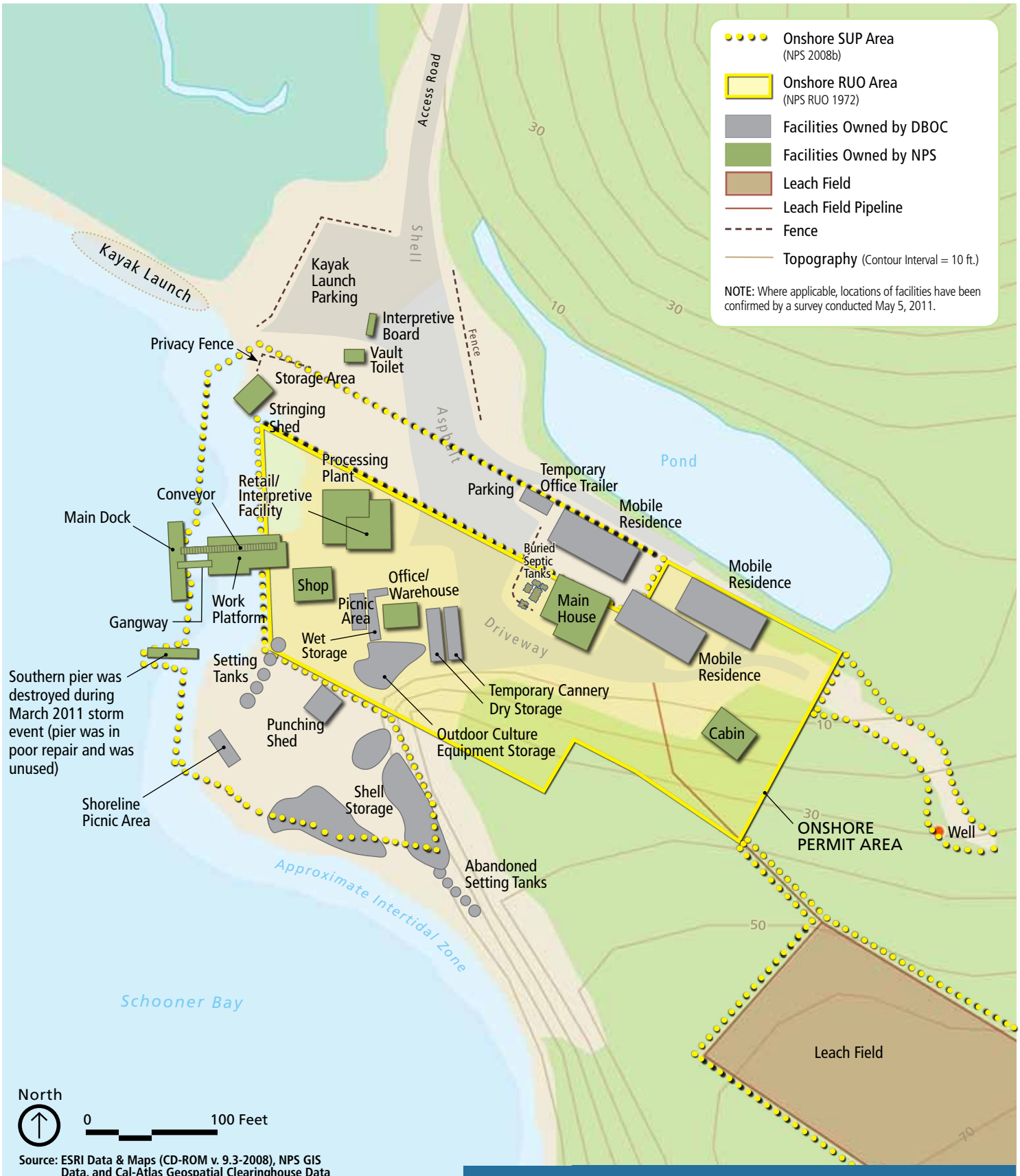
As shown on figure 2-2, some boat travel takes place outside the boundaries of the current permit area. The purpose of most of the DBOC boat travel outside the SUP boundaries is to cross between Parcel 1 and Parcel 2 of Lease M-438-01 and to directly access culture beds. DBOC is responsible for monitoring domoic acid and paralytic shellfish poisoning (PSP) biotoxins in the shellfish growing areas (CDPH 2012). Station 13 may be located outside the permit area (exact coordinates are unknown and have therefore not been compared to the permit area boundaries), and access to stations 17, 18, and 19 may be complicated by closure of the lateral channel to DBOC boat use during harbor seal pupping season. (Additional detail on water sampling is contained in the water quality section of chapter 3.)

The overlay on figure 2-2 also shows use of the lateral channel. Although the area of boat operation is a compilation of boat travel on January 18, 2010 and June 7, 2010, the June 7, 2010 did include travel in the lateral channel, which violated the harbor seal protocol included in the 2008 SUP (DBOC 2010p[lxi]). The lateral channel is the entire channel between the main channel and the west channel (NPS 2012a[lxii]). The lateral channel was defined graphically during the development of a 1992 protocol for harbor seal protection agreement to be applied to JOC operations in Drakes Estero (NPS 1992[lxiii]). Although the harbor seal protection protocol included in 2008 SUP for DBOC's operations supersedes the 1992 agreement, the definition of the lateral channel to remained the same.

Onshore Operations and Facilities

DBOC onshore facilities support the processing, sale, and initial stages of shellfish culture (figure 2-3). 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 2-4). DBOC facilities currently outside the authorized area include unused setting tanks and may also include portions of the oyster shell storage mounds. The existing onshore facilities and their approximate size, ownership, and purpose are summarized in table 2-3. Some of DBOC's existing facilities have not been approved by the NPS or have only been granted temporary approval. Specifically, NPS provided authorization for temporary structures (NPS 2005[lxiv]); however, it was assumed that these items would be temporary and would be removed as soon as they could be replaced by permanent structures.

The issuance of the 2008 SUP did not result in retroactive approval of facilities and operations that had not been previously approved by the NPS. The 2008 SUP cover page indicates that NEPA compliance for the 2008 SUP was "pending." Before the NPS could fully initiate the NEPA document contemplated by the parties in 2008, Congress enacted Section 124. This EIS is now the vehicle in which NPS is considering different operating scenarios for DBOC, as described under each alternative later in this chapter. Those items that have not previously been approved through a NEPA process are noted in table 2-3 below. DBOC is in the process of acquiring after-the-fact authorization for some unpermitted buildings/structures to comply with coastal development regulations. In order for these facilities to be approved by CCC, approval also must be given by the NPS. These unpermitted facilities, constructed without first obtaining a coastal development permit from the CCC and without approval from the NPS, are identified and evaluated within the project alternatives.



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

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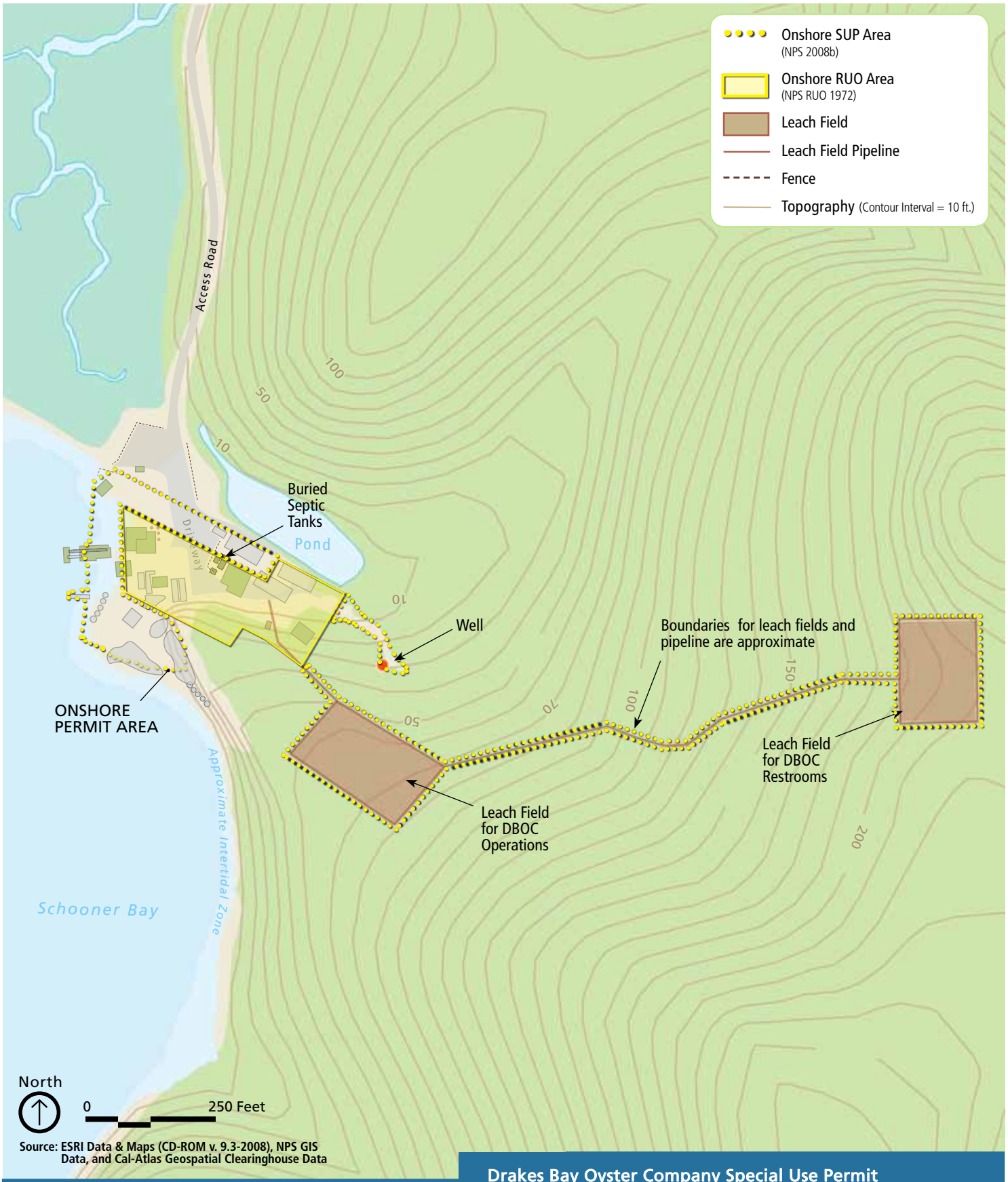
FIGURE 2-3

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 2-4

Existing Water and Septic Utilities

TABLE 2-3. SUMMARY OF EXISTING ONSHORE FACILITIES AND OWNERSHIP STATUS

Building/Structure	Approximate Size* (feet)	Ownership	Purpose
Processing Plant	40 × 48	NPS†	The rear half of this building houses the inside setting tanks and the single oyster-packing facilities. The front half houses the retail and interpretive areas.
Office/Warehouse	16 × 24	NPS†	Due to its poor condition, this structure is currently only used for storage.
Temporary Office Trailer	8 × 20	DBOC	This structure serves as a business office.
Punching Shed	20 × 20	DBOC	This shed is used for preparation of shells for Japanese hanging culture.
Temporary Cannery‡	8 × 40	DBOC	This shipping container houses the cannery facility.
Temporary Storage‡	8 × 40	DBOC	This shipping container is used for dry storage.
Setting Tanks‡ (5 units)	10.5 diameter (2 units) 8 diameter (3 units)	DBOC	These five fiberglass tanks are used for growing larvae to a size where they can be transferred to Drakes Estero.
Main Dock and Ramps§	Floating dock:12 × 60 Two ramps: 4 x 15	NPS	This is the main dock serving DBOC boats. It is composed of a floating dock connected to an onshore work platform by a gangway and a conveyor.
Work Platform§	Pier: 55 × 24	NPS	The platform is where harvested oysters are initially cleaned and sorted.
Southern Pier	6 × 24	NPS (no longer applicable)	This small pier was destroyed in a recent (March 2011) high wind event. DBOC does not plan to rebuild this pier (DBOC 2011b[lxv]).
Shop	16 × 20	NPS†	This one-story structure serves as an employee break room.
Stringing Shed	17 × 24 (with 13 × 12 appendage)	NPS	This open-air shed is used for stringing punched shells onto wires for Japanese hanging culture.
Main House	40 × 50	NPS†	This house is the operation manager's residence.
Cabin	24 × 35	NPS†	This cabin provides employee housing.
Mobile Homes (3)	24 × 60 (each)	DBOC	These structures provide employee housing.
Picnic Areas‡	12 tables	DBOC	DBOC provides casual picnic areas for visitors both in a centralized area next to the office/warehouse and along the shoreline.

Note: Any new facility constructed by DBOC under a new SUP is considered personal property as defined by the SUP and removal would be the responsibility of DBOC at the expiration of the SUP.

* Sources for sizes are NPS measurements during a March 22, 2011, site visit and DBOC coastal development permit application materials (DBOC 2009b[lxvi]).

† NPS ownership is according to item purchased from JOC, itemized in the August 25, 1972, Public Voucher for Purchases and Services Other Than Personal (Requisition Number CX800032073).

‡ These structures and facilities have not been approved through a NEPA process. The NPS approved the temporary cannery and temporary storage in 2005 on the basis that their use was temporary.

§ These facilities were damaged during a high wind event in March 2011. Any replacement of these facilities that is not consistent with the existing structure in terms of footprint and materials would be considered personal property of DBOC. DBOC would have to remove such structures at the end of the permit term. Following the high wind event, DBOC sought emergency approval to construct a new concrete work platform and dock, but withdrew the application in May 2011.

Onshore DBOC facilities (photo taken before the March 2011 storm event). (Photo courtesy of Janene Caywood.)

DBOC imports shellfish from off-site growers. DBOC reports that it imports shellfish in the form of larvae (and seed) from CDFG-certified sources in compliance with a "Long-term Permit to Import Live Aquatic Animals into California" issued by the 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 imported and planted in Lease M-438-02 (CDFG 2006). These 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, it has also used seed from Coast Seafoods Company in California and Kona Coast Shellfish in Hawaii. The sources from which CDFG has authorized DBOC to import larvae and/or seed are summarized in table 2-4.

TABLE 2-4. DBOC LONG-TERM PERMITS TO IMPORT LIVE AQUATIC ANIMALS INTO CALIFORNIA

Permit Number	Date of Issuance[a]	Supplier	City	State	Source	Species
MR-L-10-029	12/07/2010	Taylor Shellfish Farms	Shelton	WA	Taylor Shellfish Farms	Pacific oyster
MR-L-10-028	12/07/2010	Whiskey Creek Shellfish	Tillamook	OR	Whiskey Creek Shellfish	Pacific oyster larvae
MR-L-08-038	09/02/2008	Coast Seafoods Company	Bellevue	WA	Quilcene Hatchery	Pacific oyster larvae and seed
MR-L-08-039	09/02/2008	Whiskey Creek Shellfish	Tillamook	OR	Whiskey Creek Shellfish	Pacific oyster larvae
MR-L-08-044	10/27/2008	Coast Seafoods Company	Kailua-Kona	HI	Coast Seafoods Company	Pacific oyster
MR-L-07-014	06/23/2007	Whiskey Creek Shellfish	Tillamook	OR	Whiskey Creek Shellfish	Pacific oyster larvae
MR-L-07-018	08/03/2007	Coast Seafoods Company	Bellevue	WA	Quilcene Hatchery	Pacific oyster larvae
MR-L-05-012	06/09/2005	Taylor Shellfish Farms	Shelton	WA	Taylor Shellfish Farms	Pacific oyster

Sources: CDFG Long-term Permits to Import Live Aquatic Animals into California.

[a] Permits are good for 1 year from date of issue.

The setting tanks located onshore provide a location for remote setting. These tanks have not been permitted by NPS or CCC. In 2005, DBOC removed JOC's setting building, as had been mandated by the Johnson Order (CCC-03-CD-12); however, during a site visit the following year, CCC staff noted that new setting tanks had been placed in this approximate location. CCC informed DBOC that the removal of this building required removal of building's contents, as well (CCC 2006[lxvii]). Remote setting is a human-controlled process by which shellfish larvae imported for DBOC commercial shellfish operations are grown on site to a stage of maturity marked by attachment to cultch material, at which point the larvae become seed. The larval stage is the immature stage of development that occurs immediately after successful reproduction and egg fertilization. In the wild, larvae are carried by currents and have a free-swimming, mobile existence. The beginning of the seed stage is marked by the end of this mobile larval phase, when larvae develop anatomical "feet" used to attach to an immobile substrate. Once attached, shellfish larvae have reached maximum development for the larval stage and seed development begins. In essence, the term "seed" refers to a developmentally young shellfish that has become sessile (immobile), with no specific definition as to size (Quayle 1988). Manila clams are imported as seed and do not require remote setting. Seeds, placed within bags or trays, can be placed directly within Drakes Estero.
While growing oyster larvae in the onshore setting tanks, DBOC withdraws water from Drakes Estero for remote setting. Single oyster setting takes place in the processing building using microcultch (ground shells; described below). The water used for setting is withdrawn from Drakes Estero, filtered, heated to 23 to 25 degrees Celsius (73 to 77 degrees Fahrenheit), and eventually discharged via underground pipes into Drakes Estero (DBOC [Lunny], pers. comm., 2011h). DBOC indicates that microalgae (Instant Algae® Shellfish Diet 1800™) is occasionally added to the water (2012b[lxviii]).

Cluster oyster setting takes place in the five outdoor setting tanks (two of these setting tanks are 10 feet in diameter and 4 feet deep and three of the tanks are 7 feet in diameter and 4 feet deep). After a four-day setting period at an elevated temperature, water from Drakes Estero is circulated through these tanks continuously at a rate of about 5 gallons per minute, with no need for added nutrients. On about day 7, the tanks are discharged directly into Drakes Estero (DBOC 2010f[lxix]).

DBOC also has a wet storage facility used for holding live shellfish. This storage includes an above-ground 5-foot by 48-foot concrete slab, plumbing, and an underground tank (DBOC 2011i[lxx], 2012b[lxxi]). The location of these items is indicated on figure 2-3 as "wet storage." DBOC provided example photos of these items, as shown below.

Concrete slab for wet storage
(Photo courtesy of DBOC)

Live shellfish holding tank
(Photo courtesy of DBOC)

DBOC stores large piles of shell onshore. Because DBOC is constantly adding to and removing shell from these piles, their boundaries are not completely stationary. The southern shell pile (on the right in the picture below) may at times spill over the permit boundary. Deposition of shell material at the site prior to DBOC occupancy has resulted in progressive fill of Drakes Estero and the marsh to the northeast of the onshore permit boundary. Placement of shell debris in the vicinity of the existing pond took place primarily between the 1950s and 1980s. Currently, shells are stored on site primarily for use in cultivation. Holes are punched in the left valves (shells) for use in Japanese hanging culture. Right valves (shells) are ground and used for microcultch, which is used for single oyster culture. According to DBOC, some of the shell has been donated and sold offsite (DBOC [Lunny], pers. comm., 2011h). French tubes are also stored on site prior to use. DBOC uses a small forklift (with a 60-horsepower engine) to move pallets of oyster shell and other cultivation materials.

Oyster shells are stockpiled on site (September 2010). Note punching shed to the left. (Photo courtesy of VHB.)

DBOC packages its shellfish on site and operates the only on-site shellfish cannery in California. Approximately 25 percent of the shellfish harvested is sold in jars (the remaining 75 percent is sold live in

the shell) (DBOC 2012b[lxxii]). Shellfish and culture equipment are cleaned by scrubbing with seawater by hand or by pressurized washers along the conveyor belt when they are brought onshore from Drakes Estero. The water used in this process is drawn from and discharged directly into Drakes Estero. Cluster Pacific oysters (particularly those grown using the Japanese hanging culture method) must be broken apart with pneumatic hammers; French tube culture clusters can generally be broken apart with a mallet.

The breaking apart of clusters and rinsing of shellfish as they are brought in from Drakes Estero takes place at the main dock, the conveyors, and the attached work platform/pier. These structures were badly damaged in a March 2011 storm event. DBOC proposed replacement of the dock following the storm (DBOC 2011b[lxxiii]). As this EIS was already in progress when the storm event occurred, the replacement of the dock, work platform, and associated ramps and conveyors are included in all action alternatives (described in more detail later in this chapter). Currently, all debris washed off these platforms returns directly to Drakes Estero.

Packing methods differ depending on the final product. Single oysters are placed by hand into containers and taken to one of the two on-site processing facilities. Because single oysters remain closed, they are processed in the back of the old processing plant as well as in the temporary cannery in the shipping container. High-quality oysters are separated for distribution to the raw half-shell market, while lower-quality oysters are separated for other single-shell distribution needs. Both are packed in mesh bags and stored in the walk-in refrigerator in the processing room.

Individual oysters are separated manually by size (oysters too small for distribution are placed back in Drakes Estero to grow further). Individual oysters are generally only suitable for shucked packing, which takes place in the cannery. Cleaned oysters are selected according to size and packed into jars with fresh well water. Cleaning and packing of Manila clams is the same as described for the single Pacific oysters. DBOC sells its shellfish and "complementary food items" on site in the retail area of the processing plant, as allowed in the RUO. Some visitors purchasing food items at the site currently consume them on site at the 12 picnic tables provided by DBOC (DBOC 2012c[lxxiv]). Picnic tables in the SUP area have not been authorized by NPS. Approximately 40 percent of DBOC income is from onsite retail sales, 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[lxxv]).

Unlined parking spaces for approximately 10 to 15 vehicles are provided in an asphalt parking lot in front of the retail facility. Some of the paving on site was conducted by DBOC prior to the signing of the 2008 SUP and without NPS or CCC approval (NPS 2006e[lxxvi], CCC 2006[lxxvii]). DBOC deliveries to local markets and restaurants are made using one of the company's two trucks: a 0.75 ton pickup truck and a 1.5-ton refrigerated box truck. Currently, Manila clams are only sold on site (DBOC [Lunny], pers. comm., 2011h).

The 2008 SUP and the 1972 RUO allow DBOC to provide interpretation of shellfish cultivation to the public in the onshore permit area. Formal tours may range from 5 people to school groups of 20. DBOC also provides informal presentations of the commercial operation and history of oyster cultivation in Drakes Estero. Tours are limited to onshore activities. Tours on the water are not allowed under existing NPS authorizations. Certain interpretive activities are subject to NPS approval and may require a separate SUP.

Five buildings on site provide staff housing with a total of 14 bedrooms in two permanent structures and three mobile homes to house staff (DBOC 2010k[lxxviii]). The two permanent structures are the main house and the cabin. The main house serves as the operation manager's residence.

ELEMENTS COMMON TO ALL ALTERNATIVES

There are a number of elements common to all alternatives. 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)

The CEQ's NEPA regulations require the alternatives chapter in an EIS to "include the alternative of no action" (40 CFR section 1502.14). The Department of the Interior's NEPA regulations, 43 CFR section 46.30, provide two interpretations for the term "no action." The first interpretation is that no action "may mean 'no change' from a current management direction or level of management intensity (e.g., if no ground-disturbance is currently underway, no action means no ground-disturbance)." The second interpretation "may mean 'no project' in cases where a new project is proposed for implementation." This EIS contains alternatives satisfying both of these interpretations. Alternative A is a "no project" alternative. Alternative B essentially represents continuation of the current level of management intensity.

The CEQ's Forty Most Asked Questions provide additional guidance to agencies in determining which no action formulation is most appropriate in a particular EIS. The CEQ explains that the proper type of no action alternative to be considered depends on the nature of the proposal being evaluated. The first situation typically involves an action such as updating a land management plan where ongoing programs initiated under existing legislation and regulations will continue, even as new plans are developed. The second type of "no action," is illustrated by situations involving federal decisions on proposals for projects. For this type of "no action" alternative, the proposed activity would not take place and the resulting environmental effects from taking no action would be compared with the effects of permitting the proposed activity or an alternative activity to go forward.

This second situation is more relevant to this EIS, which analyzes a federal decision on DBOC's proposal. DBOC has requested a new permit from NPS so that it may continue to operate after November 30, 2012. Absent federal action on DBOC's request for a new permit, the RUO and SUP would expire on November 30, 2012 and DBOC's operation would cease. This EIS therefore compares the effects of taking no action (i.e., no new permit for DBOC under Section 124) to Alternatives B, C, and D, which involve issuance of a new permit under Section 124.

Under alternative A, the SUP and RUO would expire on November 30, 2012. The Secretary would not take action to issue a permit to DBOC under section 124 of PL 111-88.

DBOC OPERATIONS AND FACILITIES

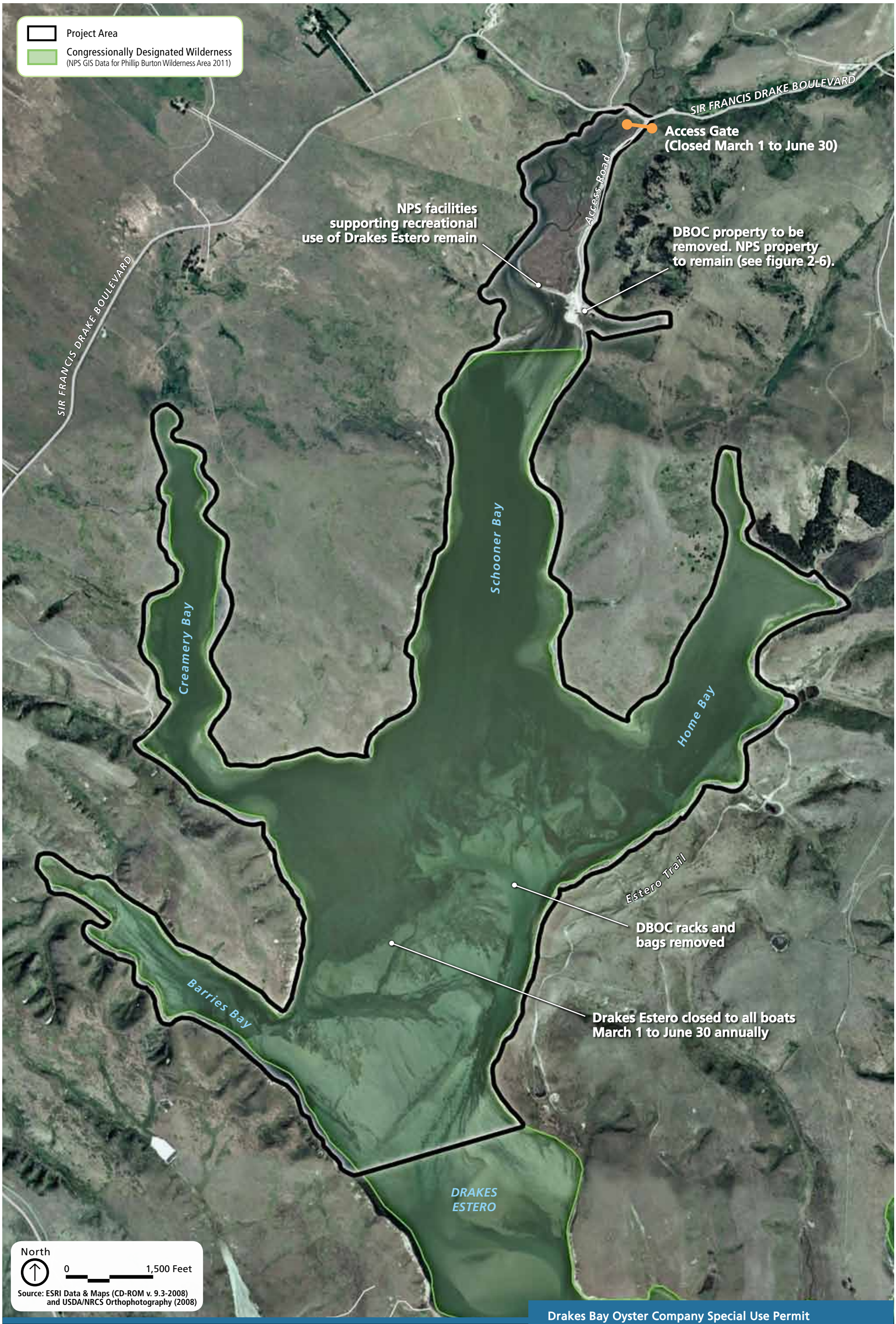
DBOC would cease to operate within the Seashore, and DBOC would remove those buildings and structures owned by DBOC as listed in table 2-3. The structures that would be removed are the temporary office trailer, one of the mobile residences, the punching shed, the picnic tables, and the setting tanks, all of which are included in the SUP area. Additionally, DBOC would remove all personal property associated with the oyster operation (including all racks, bags, and any other commercial shellfish operations-related items in Drakes Estero, as well as the shell mounds) from Drakes Estero and the adjacent uplands, and DBOC would restore the affected areas to good order and condition, as set forth in the existing SUP and RUO.

The removal of personal property within the 1.5 acre RUO area is governed by Paragraph 12 of the RUO.

Paragraph 12 states the reserver "shall remove all structures and improvements placed on the premises during the period of its reservation. Any such property not removed within 90 days after the expiration of the Vendor's reservation shall be presumed to have been abandoned and shall …become the property of the United States of America, but this shall in no way relieve the Vendor of liability for the cost of removal of such property from the reserved premises." This 90 day window is only applicable within the 1.5 acre RUO. It does not apply to the lands and waters covered by the SUP. Section 23 of the SUP requires DBOC to remove all of its personal property from the SUP area at the conclusion of the permit term, which is November 30, 2012.

Amendment 2 to the 2004 Lease M-438-01 renewal required the establishment of an escrow account for removal of commercial shellfish operation equipment from the lease area "as a financial guarantee of growing structure or other lease improvement removal and/or cleanup expense in the event that the aforementioned aquaculture lease is abandoned or otherwise terminated" (CDFG 2005a). At the time of this EIS, CDFG has indicated that the account is not up to date and is working with DBOC to establish a new agreement for this issue (CDFG 2011b[lxxix]).

Cessation of commercial mariculture activities in Drakes Estero would end all nonconforming uses that are inconsistent with wilderness designation. Upon its cessation, NPS would convert the congressionally designated potential wilderness to congressionally designated wilderness, as described below. Figures 2-5 and 2-6 show the conditions both offshore and onshore following removal of commercial shellfish activities and structures under the no-action alternative.



Drakes Bay Oyster Company Special Use Permit
Environmental Impact Statement

National Park Service
U.S. Department of the Interior

Point Reyes National Seashore

FIGURE 2-5

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 2-6

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

OTHER NPS OPERATIONS AND FACILITIES IN THE PROJECT AREA

Within the SUP area, some structures owned by NPS (all of which are outside the congressionally designated potential wilderness area) would remain on site and others would be removed. The main dock, work platform, stringing shed, and southern pier, damaged in a March 2011 storm event, would be removed. A determination of eligibility conducted for the structures within the project area concluded that the structures are not eligible for listing on the National Register due to lack of historic integrity (Caywood and Hagen 2011). In a letter dated August 4, 2011, SHPO concurred with this finding (see appendix D). Therefore, removal of these structures would not require approval from the SHPO. The remaining permanent structures consist of the processing plant, the shop, the office/warehouse, the main house, and the cabin. The NPS would evaluate these structures for removal or reuse in a future planning effort.

Outside of the SUP area, NPS would continue to maintain existing NPS facilities (the access road, a gravel parking lot, a vault toilet, and an interpretive board) for visitors. A gate would be installed at the intersection of the access road with Sir Francis Drake Boulevard to prevent all nonmotorized boat use (e.g., kayak, canoe) within Drakes Estero during harbor seal pupping season (March 1 to June 30). This would not represent a change in visitor use policy, as visitors would continue to have access to the shoreline and beach areas of Drakes Estero. The gate would provide a more efficient enforcement method to prevent nonmotorized boat use during the seasonal closure. Signs associated with the gate would inform the public as to the reasons for the closure. The gate would be standard and the installation procedures would include digging of holes for the posts, anchorage of those posts, and hanging of the gate on the posts. The gate would be tied in to a split rail fence, similar to that at the overlook just to the west along Sir Francis Drake Blvd.

Cessation of commercial shellfish operations in Drakes Estero would end all uses that are inconsistent with full wilderness designation. This would allow the NPS to convert the approximately 1,363 acres of congressionally designated potential wilderness in Drakes Estero to congressionally designated wilderness. A notice would be published in the Federal Register attesting to the fact that all nonconforming uses of the congressionally designated potential wilderness area have ceased. Conversion to congressionally designated wilderness would be effective on the date of notice publication (PL 94-567). Recreational use of Drakes Estero by nonmotorized watercraft such as canoes and kayaks would continue to be allowed from July 1 to February 28, with all of Drakes Estero closed to recreational boaters during harbor seal pupping season, March 1 to June 30. Administrative use of motorized boats within Drakes Estero would be subject to evaluation under minimum requirements and minimum tool determination processes as required by the Wilderness Act. In each case, nonmotorized alternatives would be evaluated to determine whether they meet the specific management objective

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.

Under all action alternatives, 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'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 outlined below.

Under all action alternatives, as a condition of permit issuance, DBOC would be required to relinquish its state water bottom lease. As explained in Chapter 1, tidal and subtidal lands within Drakes Estero are owned in fee by the U. S. These lands were conveyed by the State of California to the U. S. in 1965. While California retained to the people the right to fish in Drakes Estero, this right extends only to the public's right to take wild fish (CDFG 2007b[lxxx], DOI 2012a[lxxxi]). Aquaculture products are private property and so cannot be part of a public fishery. Because the State of California did not reserve authority to issue aquaculture leases in the Estero, the legal authority to determine whether DBOC may use the water bottoms in the Estero rests with the NPS, not the Fish and Game Commission. Therefore, should the Secretary issue a permit to DBOC under section 124, as a condition of receiving that permit, DBOC would be required to surrender its state water bottom lease effective November 30, 2012. DBOC would thereafter operate under the terms of the NPS permit. 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.

Under section 124, DBOC must pay the U.S. the fair market value of the federal property if a new 10-year SUP is issued to DBOC. A permit under section 124 would encompass the federally owned onshore and offshore areas used by DBOC. 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 U. S. This situation is avoided through the termination of the state water bottom lease. This new regulatory framework would be applied to DBOC operations if one of the action alternatives described in this EIS is selected by the Secretary.

Under all action alternatives, 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. Additional mitigations/permit conditions beyond those listed below may be required by other agencies in order to obtain required local, state and federal permits.

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)[2], 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[lxxxii])
- Prohibition of stake culture methods

[2] 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."

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

SPECIAL USE PERMIT AREA AND MARICULTURE SPECIES

Under all action alternatives, 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. Incorporating the racks and realistic boat travel routes within the permit boundary would assist with compliance of permit terms and enforcement. All ground disturbing activities would require NPS approval due to the potential for archeological resources in the area.

NPS also would revise the permit area boundaries to minimize impacts on Seashore resources. 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. The harbor seal protection protocol within the SUP (Exhibit B) states: "throughout the year, all of Permittee's boats, personnel, and any structures and materials owned or used by Permittee shall be prohibited from the harbor seal protection areas" (NPS 2008b). Adjusting the permit area to exclude the harbor seal protection areas is not only consistent with the protocol of the current SUP but also with the 2007 CCC Cease and Desist Consent Order compliance agreed to by DBOC (DBOC 2008a[lxxxiii]). Additionally, DBOC proposed to further reduce the area of Bed 17 to prevent impacts on harbor seals, as outlined in its proposed boundary adjustment letter to NPS on March 15, 2011 (DBOC 2011e[lxxxiv]). Establishing a permit boundary that is consistent with the harbor seal protection area would be consistent with the recommendations of the NAS and MMC, which documented the potential for commercial shellfish operation activities to impact harbor seals (NAS 2009; MMC 2011b). Overall, the size of Bed 17 would be reduced, as proposed by DBOC, where it overlaps the existing harbor seal protection area (see figure 2-1). These changes would take place under all action alternatives, and additional detail is provided under each alternative as applicable.

Mariculture Species

The species to be cultivated varies among alternatives; however, in all three action alternatives, DBOC would be permitted to grow Pacific oysters in Area 1. During development of the action alternatives,

European flat oysters had also been included in Area 1 under all action alternatives because it is included in the existing Lease M-438-01 and because it has been included in the list of species DBOC requested to grow (DBOC 2008e[lxxxv], 2012a[lxxxvi], 2012c[lxxxvii]). In the time since the Draft EIS was released to the public for review in the fall of 2011, DBOC has requested that European flat oyster be removed from consideration as a species that they may cultivate at some point in the future; therefore, this species is not considered for cultivation in the Final EIS (DBOC 2012b[lxxxviii]).

Under all alternatives, a production limit would be established, 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. CDFG is in the process of revising conversion factors; however, this EIS is based upon use of the conversion factors described here. For an example of how these conversion rates apply to a specific production limit, please see the alternative B description below.

DBOC OPERATIONS AND FACILITIES

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. Under all action alternatives, DBOC operations would be subject to all applicable laws and policies. Actions such as replacement of the main dock, work platform, and racks may require permits from agencies other than NPS. DBOC would be responsible for obtaining and complying with all appropriate permits and authorizations. Permits required may include but are not limited to the following:

- Coastal Development Permit from CCC
- San Francisco Bay Regional Water Quality Control Board CWA section 401 Certification
- USACE section 404(b) and/or section 10 permit for potential dredge and fill activities
- Marin County building permits

Offshore Operations and Facilities

Under 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 (4 acres of Bed 17 would be removed, as discussed above). As mentioned earlier, although JOC used stake culture in the past, DBOC has not use this method (DBOC 2012d[lxxxix]) and has not proposed to use this method; therefore, it is not included as a possible culture method under the action alternatives. 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). Changes to the permit boundary would incorporate the six racks currently outside the permit area. Section 6 of the 2008 SUP would continue to require that racks be maintained in a "safe and orderly manner" (section 6[f]) and "all lumber utilized at the site would be processed in compliance with current laws and regulations regarding wood treatments" (section 6[i]), including lumber used in repair of racks in Drakes Estero (NPS 2008b). During permitting for emergency dock replacement at DBOC in the spring of 2011, USACE advised that "any chemically treated wood material must be coated with an impact-resistant, biologically inert substance" as part of its special permit conditions for the Regional Permit Authorization (USACE 2011b). DBOC would be required to consult with the USACE on appropriate treatment methods to coat chemically treated wood. Any proposal for new racks and/or changes in cultivation area would require additional review and compliance under the SUP.

As described in its November 2010 submittal, 50 racks in Drakes Estero are categorized by DBOC as "Needs repair Inactive." In its June 5, 2012 letter, DBOC proposed to repair/replace 50 racks in 2013 and another 25 racks in 2014 (DBOC 2012b[xc]). It is assumed that the 50 racks in 2013 are the 50 racks categorized as "Needs repair inactive" in 2010. For the calculations related to repair/replacement as requested by DBOC, it is assumed that some percentage of the lumber is serviceable. In 2013, the 50 racks deemed "Needs repair Inactive" represent a total length of approximately 13, 608 feet covering 3.75 acres. Assuming that 50 percent to 75 percent of the materials in the inactive racks need to be replaced, the 2013 repairs would require installation of between 65,000 and 97,000 linear feet of lumber. In addition, it is anticipated that between 1,700 and 2,500 vertical 2-inch by 6-inch posts would be installed into the estero bottom. The length of these vertical posts is likely to vary based on location within Drakes Estero. No information regarding the range of lengths required is currently available.

In 2014, 25 racks would be repaired or replaced. This represents approximately half of the total racks classified as "Good Condition Active" according to the 2010 submittal. It is anticipated that the total length of racks treated in 2014 would be approximately 6,030 feet (1.66 acres). Because the racks are characterized as being in good condition, it is anticipated that between 25 percent and 50 percent of the materials would require replacement. This 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 (to approximately 75 percent of the racks), regular maintenance is proposed (DBOC 2012b[xci]). 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.

DBOC has not indicated whether or not rack repair would result in additional boat use in Drakes Estero. It is assumed that the existing shellfish planting and harvest would occur during the period when racks are under repair, and there would be a short-term increase in boat operations in Drakes Estero to support repair activities. DBOC would be required to make repairs to the racks between July 1 and February 28 to avoid harbor seal pupping season.

In addition to continuing to conduct hanging culture on the racks, DBOC would continue to conduct bottom culture and floating culture, as well. Bags would be used both for the nursery stage of oyster growth (following initial attachment to substrate and growth in the setting tanks on shore) and for the

"grow-out" stage (the stage where young mature oysters reach market size). A common bag type used is a 3-foot by 2-foot rubber mesh bag. Trays are 3 feet by 3 feet. It is assumed that the breakdown of culture type in each bed provided in table 2-2 would still apply.

Bags in areas with strong currents would continue to be anchored to the estero bottom using PVC piping (DBOC has not specified the length of the PVC anchors), cinder blocks, or large (100-pound) concrete anchors (DBOC 2010b[xcii], 2012b[xciii]). Anchored lines may be left in place for subsequent planting in the same area. Bags in areas with little current are left unanchored (DBOC 2010b[xciv]).

As mentioned above, DBOC also would continue to use various types of floating culture. The bottom bags mentioned above can be used for floating culture where bags are anchored along long lines but float during high tide due to the inclusion of closed-cell Styrofoam in the bags (DBOC 2010b[xcv]). In other cases, racks that are in poor condition and cannot support strings are used for floating bags (this is expected to happen less frequently following the rack repair described above). Floating bags are sometimes hung between racks. In these cases, the racks serve as anchors. Other floating systems near the racks would be secured by concrete anchors (DBOC 2012b[xcvi]). DBOC also noted that it plans to use floating racks (where available), floating trays, and lantern nets to raise purple-hinged rock scallops (DBOC 2012c[xcvii]).

For the purpose of assessing impacts of the alternatives, it is assumed that DBOC would typically operate the motorized boats with the barges as described under existing conditions (in the "Boat Operations" section). Although some variation in these operations may take place due to variation in conditions and demands, DBOC typically operates two or three motor boats and two unmotorized barges approximately 12 trips per day, 8 hours per day combined (DBOC [Lunny], pers. comm., 2011h, 2012b[xcviii]). Under all action alternatives, some change in travel routes would take place to assure that boats operate within the permitted area. DBOC would develop a vessel transit plan for implementation pending NPS review, which may include mooring areas and access lanes. Development of this plan would be required under the new SUP as one of the same terms and conditions in the existing SUP.

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.

According to CDPH, no active water quality stations are maintained outside of the existing permit area. Secondary stations are sampled less frequently. It is the responsibility of DBOC as the operator to sample the primary stations, while CDPH maintains the secondary stations (with access provided by DBOC boats). NPS will continue to coordinate with CDPH regarding access to stations 17, 18, and 19, during the established seasonal closure (March 1 - June 30). DBOC and CDPH shall notify the NPS of sampling events 24 hours prior to the event. CDPH shall review results with the NPS annually and any changes to the monitoring program should be proposed to the NPS for review consistent with the SUP.

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 2-1). Other restrictions contained in the existing protocol, including closure of the lateral channel (also shown on figure 2-1) 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. The lateral channel is identified on figures 2-1 and 2-2.

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 estimates that the total volume of dredged material would be 100 cubic yards (DBOC 2011d[xcix]); although straightforward calculations indicate that it would be 200 cubic yards (5,400 cubic feet).

DBOC would be required to remove all personal property at the end of the permit term, including racks, culture bags, and other commercial shellfish operations equipment from Drakes Estero. Shellfish owned by DBOC and remaining at the end of the new SUP term would also need to be removed.

Onshore Operations and Facilities

Under all action alternatives, 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. Under all action alternatives, DBOC would replace the existing dock, work platform, and associated structures subject to NPS final review and approval due to damage from the March 2011 storm event. 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 (including sediment basin approximately 55 feet by 24 feet)
- New wooden ramps to connect the dock and work platform
- A new conveyor
- A washing system

These items would be constructed in approximately the same location as the existing structures; however, DBOC proposes some changes in size and materials. An advanced washing system with a collector for sediment is proposed. DBOC proposes to install a concrete work platform with a retention curb and sediment basin to limit debris returning to Drakes Estero during shellfish washing and processing at the work platform (DBOC 2011a[c], 2011b[ci]). These structures would be considered personal property and subject to removal from the site by DBOC prior to expiration of the SUP.

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

Under alternative B, 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. Because this alternative includes the authorization for DBOC to continue operating, NPS would delay the conversion of congressionally designated potential wilderness to congressionally designated wilderness until 2022.

This alternative would allow DBOC to conduct its operations in a manner generally consistent with conditions that existed in 2010. Most processing operations would occur according to current practices and within existing structures. In order to receive the new permit, however, DBOC would be required to bring all existing operations and facilities into compliance with the terms of the SUP. In particular, DBOC would be required to provide a detailed operation and maintenance plan for currently unpermitted activities and remove any DBOC property outside the permit area, such as shell piles and abandoned setting tanks. Such a plan would be a requirement of the SUP. NPS would monitor DBOC activities to ensure compliance with permit terms. Future requests by DBOC for changes to facilities or operations would be reviewed by NPS for consistency with the intent of this alternative, which is to maintain the existing (2010) level of operations and development.

The following addresses further actions and elements of alternative B relating to SUP areas, commercial shellfish species, and DBOC operations and facilities. Refer to the sections “Elements Common to All Alternatives” and “Elements Common to All Action Alternatives” for additional detail.

SPECIAL USE PERMIT AREA AND MARICULTURE SPECIES

Under alternative B, the total acreage of the SUP area, both onshore and offshore, would be approximately 1,083 acres. The permit boundaries would incorporate all areas necessary for boat operations and cultivation, while excluding areas containing sensitive park resources (figures 2-7 and 2-8). The permitted area would incorporate most documented shellfish growing areas within Drakes Estero currently under production. Specifically, the southeast boundary of alternative B would follow the harbor seal protection area boundary. In addition, approximately 74 acres would be added in Schooner Bay to connect the existing parcels for boat travel and incorporate six racks that are not within the existing SUP area. The proposed reductions in growing area bed 17 is consistent with recommendations of the NAS as well as previous DBOC communications in 2008, 2010, and 2011 regarding lease boundary adjustments (described in more detail under the section “Elements Common to All Action Alternatives”).

Mariculture Species

Under alternative B, shellfish species cultivated within Area 1 would consist of Pacific oysters and Manila clams (previously unpermitted in Area 1). Shellfish species cultivated within Area 2 would consist of purple-hinged rock scallops (as currently permitted). The production level limits would be consistent with the production levels existing at the time the EIS was initiated (2010).

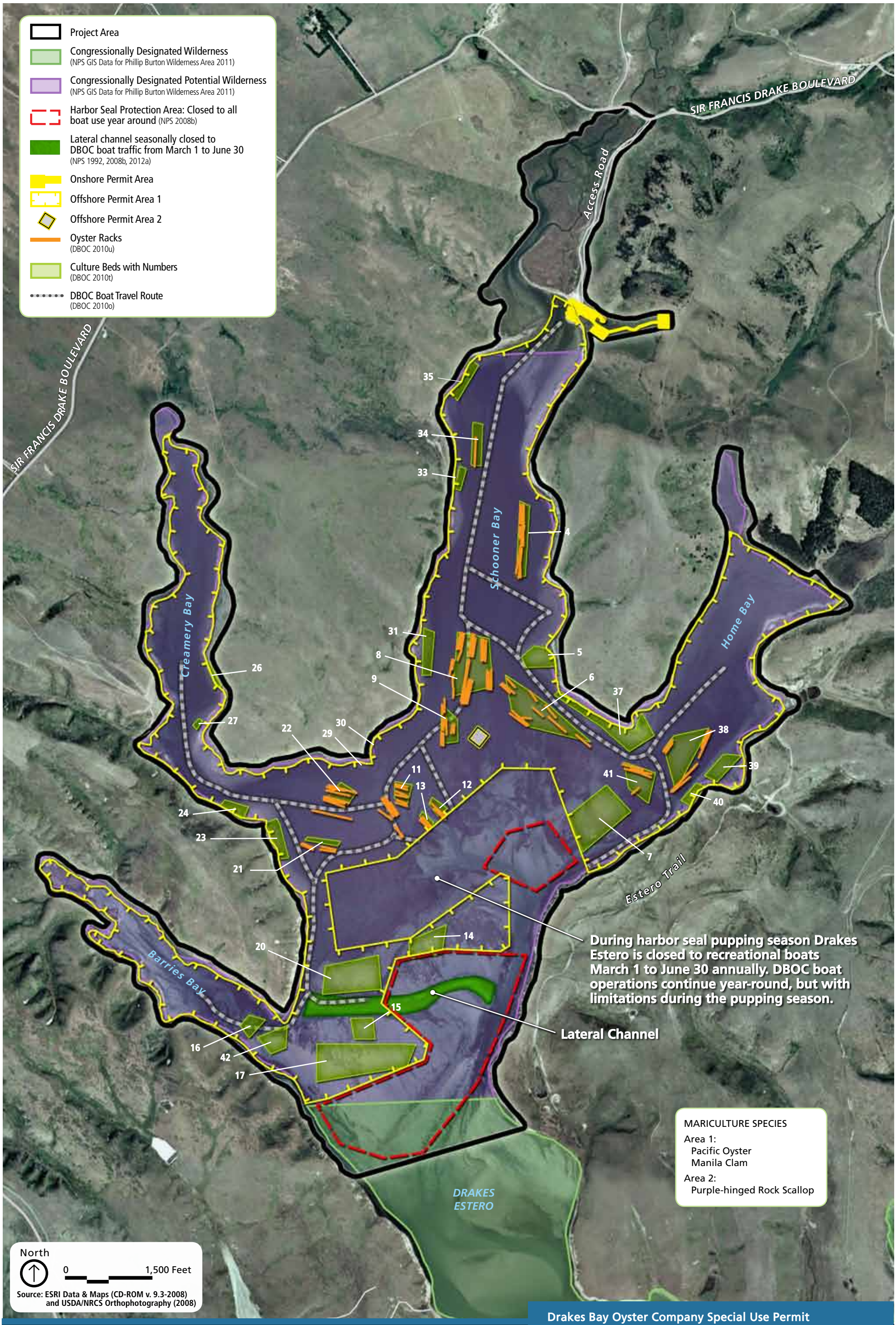


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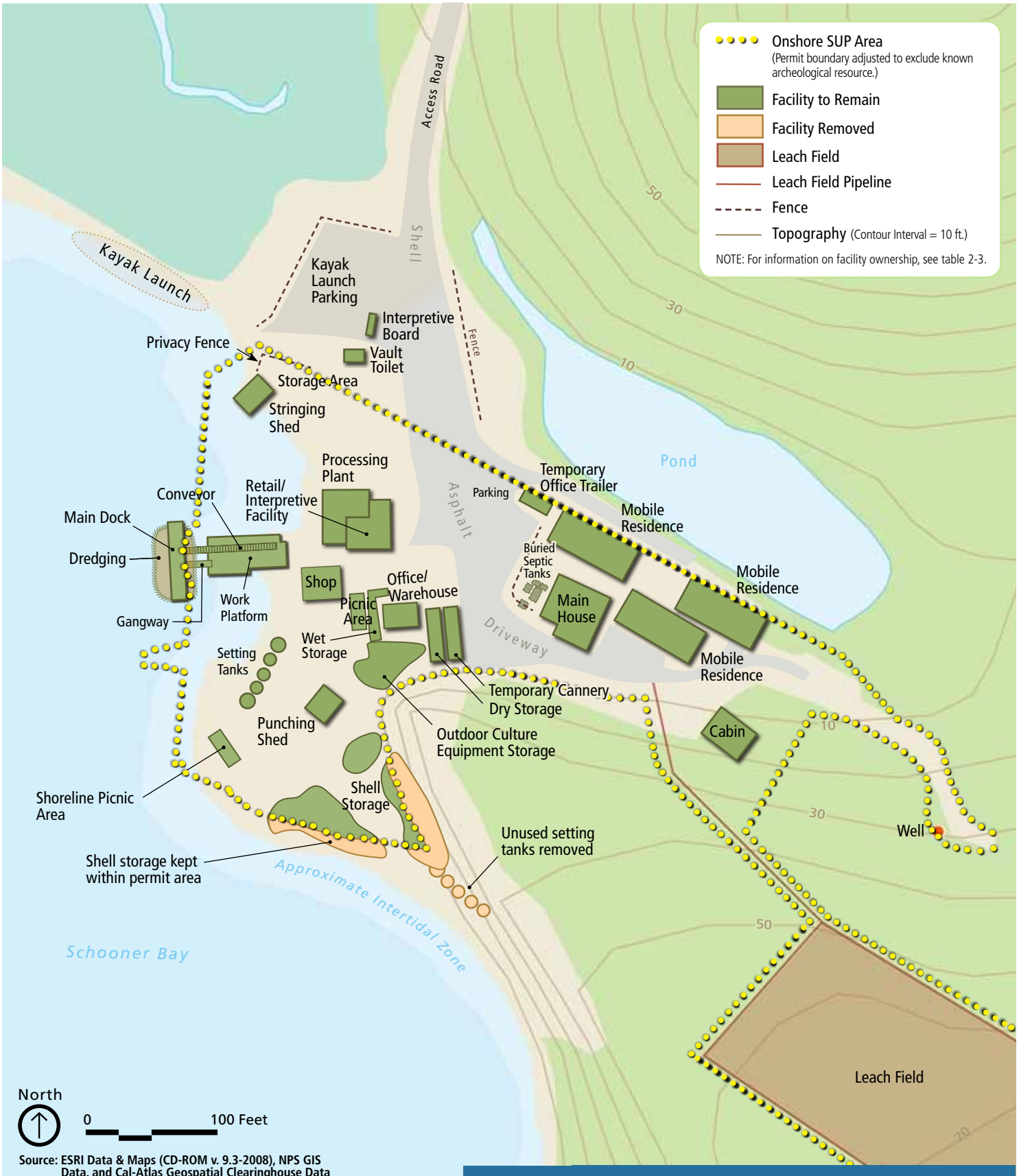
FIGURE 2-7

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 2-8

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)

In its 2010 proof of use report to CDFG, DBOC reported harvesting a total of 585,277 pounds of oysters and 684 pounds of clams (CDFG 2010a). In 2011, DBOC reported a harvest of 618,375 pounds of oysters and 118 pounds of clams. The NPS SUP would set the production limit for total shellfish produced (all species harvested) annually at 600,000 pounds. This level of production is midway between the 2010 and 2011 DBOC harvests. The SUP would define the production limit using the average annual harvest over a rolling 3-year period, which would include the current year and the two previous years. For example, production of 600,000, 700,000 and 500,000 pounds over years 1 through 3 would be in compliance with this requirement with an average harvest of 600,000 pounds; however, harvest of 600,000, 700,000 and 600,000 pounds each year for a 3-year average of 633,33 pounds would not. The use of an average is meant to allow DBOC to reasonably account for natural variability in growing conditions and to adjust annual production as necessary. The number of individuals that could be produced under this alternative would depend upon the proportion of species harvested in a given year. Assuming 100 percent oyster harvest, a limit of 600,000 pounds would equate to approximately 7,058,854 individuals[3]. If some other species (e.g., Manila clams) were harvested, the oyster harvest would need to be lowered accordingly to maintain a rolling 3-year average of 600,000 pounds of shellfish produced annually.

DBOC OPERATIONS AND FACILITIES

Offshore Operations and Facilities

Under alternative B, the boundaries of offshore permit Area 1 would be similar to the current SUP offshore boundary (see figure 2-7). Because of the need for DBOC boats to travel between the existing offshore parcels in Schooner Bay, the new SUP would eliminate the gap between these parcels, thereby resolving the concern that DBOC boats currently travel outside the permit area boundary. As with the current SUP, the new SUP would prohibit DBOC from conducting any activities within harbor seal protection areas. These areas would be excluded from the permit area. Area 1 of the offshore permit area would total approximately 1,077 acres. The 1-acre Area 2 (known under existing conditions as Lease M-438-02) would remain as a separate cultivation area for purple-hinged rock scallops.

Onshore Operations and Facilities

Under alternative B, the new SUP would incorporate a total of approximately 4.3 acres of onshore areas. The new permit boundary and list of structures associated with the SUP are shown on figure 2-8. DBOC would be required to keep shell storage within the permit boundary and picnic tables to the picnic area next to the office/warehouse. Although some items were placed without NPS approval (i.e., the cannery, dry storage, outdoor setting tanks, paving, and picnic areas), alternative B includes these structures in their present location. DBOC would be permitted to provide up to 12 picnic tables in the current locations. This would be consistent with the intent of this alternative, which is to maintain existing (2010) conditions.
.

[3] 600,000 pounds of oysters can be converted to individual oysters by multiplying 600,000 pounds by the conversion factor of 100 oysters per gallon and 8.5 pounds per gallon.

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

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. Because this alternative would authorize DBOC to operate for 10 years, NPS would delay the conversion of congressionally designated potential wilderness to congressionally designated wilderness until 2022.

The intent of this alternative is to allow DBOC to conduct most of the aspects of its operation that were occurring when the existing SUP was issued in April 2008. Onshore facilities would include previously unpermitted or temporary structures integral to ongoing operations. Offshore, Pacific oyster harvest would be authorized in Area 1 and purple-hinged rock scallops would be authorized in Area 2. Manila clams would not be authorized under alternative C. DBOC would be required to remove any DBOC property outside the permit area, including shell piles and abandoned setting tanks. DBOC would also have to remove all picnic tables from the shoreline picnic area. Future requests by DBOC for changes to facilities or operations would be reviewed by NPS for consistency with the intent of this alternative, which is to limit the scale of DBOC operations to those activities approved by NPS as of April 2008. Given the intent of this alternative, it is unlikely that additional or expanded facilities would be approved in the future.

The following addresses further actions and elements of alternative C relating to SUP areas, commercial shellfish species, and DBOC operations and facilities. Refer to the sections “Elements Common to All Alternatives” and “Elements Common to All Action Alternatives” for additional detail.

SPECIAL USE PERMIT AREA AND MARICULTURE SPECIES

Under alternative C, permit boundaries would incorporate areas necessary for boat operations and cultivation, while excluding all other areas (such as those containing sensitive park resources) from access (figures 2-9 and 2-10). The total acreage of the SUP area, including both offshore and onshore areas, would be approximately 901 acres. Approximately 74 acres would be added to the main offshore permit area (Area 1) in Schooner Bay to connect the existing parcels for boat travel and incorporate six racks identified outside of the current SUP. The permitted area would incorporate most documented shellfish growing areas within Drakes Estero currently under production. Specifically, 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 the established harbor seal haul-out areas. The proposed reductions in growing area bed 17 is consistent with recommendations of the NAS, as well as previous DBOC communications in 2008, 2010, and 2011 regarding lease boundary adjustments (described in more detail under the section “Elements Common to All Action Alternatives”).

From a water quality standpoint, the majority of Drakes Estero is considered conditionally approved, meaning that it must be monitored to ensure that water quality standards are met. The inner reaches of Creamery Bay, Barries Bay, and Home Bay, however, are unclassified and characterized as prohibited. The 2011 *Management Plan for Commercial Shellfishing in Drakes Estero, California* (CDPH 2012)

presents a map depicting the prohibited areas. Baltan 2006 states that these areas were previously removed from conditional classification because of elevated fecal coliform. CDPH conducts limited monitoring at the secondary stations, but the water quality conditions do not meet the requirements for approval. There are no growing areas within the water quality prohibited area. These areas (approximately 162 acres) would not be included in the offshore permit Area 1.

Mariculture Species

Under alternative C, Pacific oysters would be allowed for culture, production, and harvest in Area 1, as currently permitted by NPS. Similarly, cultivation of purple-hinged rock scallops would be authorized in Area 2. Although Manila clams are presently cultivated in and harvested from Area 1, a SUP granted under this alternative would not allow cultivation and harvest of Manila clams. While Manila clams were authorized for cultivation in Area 2 in 2008, the bottom bag culture method practiced by DBOC was not consistent with authorized cultivation methods. Additionally, in the 2012 NAS review of the Draft EIS, the NAS committee recommended removal of Manila clams as an approach to reduce risk of establishment by this known invasive species along the Pacific coast. Should this alternative be selected, DBOC would be required to remove all Manila clams from Drakes Estero immediately.

Under alternative C, the NPS would set the annual production limit for total shellfish produced in Drakes Estero at 500,000 pounds consistent with 2008 conditions. The production limit is defined as the average annual production over a rolling 3-year period, which would include the current year and the two previous years. The production limit is based on the average production between the years of 2007 and 2009 (see table 2-1). The average production level over this three year period was 454,188 pounds of shellfish, according to tax records submitted by DBOC to CDFG. Alternative C adds approximately 10 percent to this average to acknowledge variability in annual production and would therefore set the averaged annual production limit at 500,000 pounds. This level of production would be similar to the levels on which the 2009 NAS report on commercial shellfish operations within Drakes Estero based potential impacts. This report was based on 2008 and 2009 levels (see table 2-1 for each year's documented production levels).

DBOC OPERATIONS AND FACILITIES

Offshore Operations and Facilities

Under alternative C, two modifications would be made to the boundary of offshore permit Area 1 (figure 2-9). Because of the need for DBOC's boats to travel between the two existing offshore parcels in Schooner Bay, the new SUP would eliminate the gap between the two parcels, thereby resolving the concern that DBOC boats currently travel outside the permit area boundary. Alternative C would additionally remove those areas designated as closed to shellfish harvest ("Prohibited") by CPDH from the permit area. With these adjustments, the offshore permit Area 1 would total approximately 896 acres. The 1-acre Area 2 parcel (formerly Lease M-438-02) would remain as a separate cultivation area for purple-hinged rock scallops. Like the existing SUP, DBOC would be prohibited from conducting any activities within harbor seal protection areas, and these areas would be excluded from the permit area. Additionally, under alternative C, DBOC would be responsible for implementing harvest practices intended to minimize fragmentation and loss of *Didemnum* from oysters. This includes modification of current harvest and distribution practices to

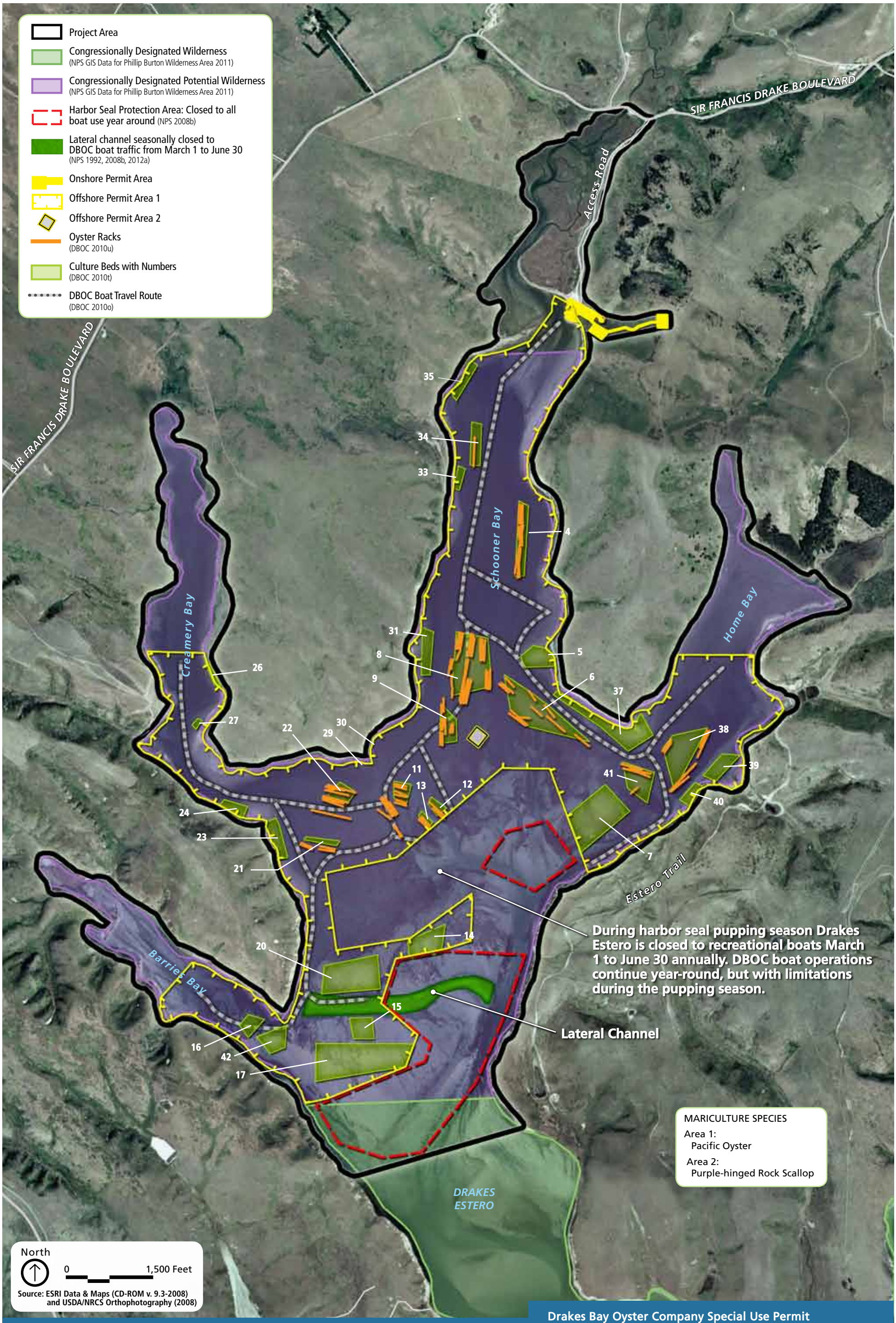

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FIGURE 2-9

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 2-10

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)

ensure that oyster strings or bags hosting *Didemnum* are managed in a way that does not distribute *Didemnum* to other areas of Drakes Estero. DBOC would be responsible for implementing practices as part of normal operations.

Onshore Operations and Facilities

Under alternative C, the new SUP would encompass an onshore area of approximately 4.3 acres. This would include the well and septic areas and the basic structures required for the commercial shellfish operation. The SUP boundary and list of structures permitted under alternative C are shown on figure 2-10. The cannery, dry storage, outdoor setting tanks, and picnic areas were installed without NPS approval. Under this alternative, the NPS would allow DBOC to retain the cannery, dry storage, and outdoor setting tanks, which are deemed essential to maintenance of a viable operation. Picnic tables would be allowed within the current RUO area in the picnic area adjacent to the office/warehouse. DBOC would remove any shell refuse piles that may be positioned partially outside the permit area and would maintain the shell storage staging area entirely within the permit boundary. Relocation of the setting tanks may also be required because of their proximity to the shoreline and original placement without approval. These alterations would be consistent with the intent of this alternative, to restore the 2008 approved SUP conditions.

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

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. Because this alternative would authorize DBOC to operate for 10 years, NPS would delay the conversion of congressionally designated potential wilderness to congressionally designated wilderness until 2022.

Alternative D presents an expanded oyster operation scenario. Under this alternative, DBOC would expand its operations and add to or modify facilities and infrastructure. DBOC submitted two conceptual drawings to NPS showing possible expansion scenarios. One of these drawings was developed in 1998 by JOC and the other is a more recent proposal prepared by DBOC.

The elements of this alternative were developed using information submitted by DBOC prior to and during the development of this EIS. Alternative D incorporates those elements of DBOC's proposal that are consistent with the purpose and need for action and the project objectives set forth in chapter 1, and that conform to NPS's jurisdiction over DBOC's operation. The following discussion explains the modifications made to DBOC's proposal based on the purpose and need of this EIS and the scope of NPS's jurisdiction over DBOC's operation.

On July 6, 2010, DBOC submitted a request to Secretary Salazar for the issuance of a new SUP upon expiration of the existing permit to allow it to "occupy and utilize the buildings and lands on the shores of Drakes Estero" (Latham & Watkins, LLP 2010). In DBOC's scoping letter, DBOC again clarified that it "is not seeking a permit from NPS to cultivate oysters in Drakes Estero" and that it only seeks a permit for onshore land and facilities subject to the 1972 RUO (DBOC 2010n[cii]). A permit limited in scope to onshore areas only is inconsistent with NPS's jurisdiction over Drakes Estero and with section 124, which requires a new permit to contain the same terms and conditions as the exiting SUP. Therefore, this alternative modifies DBOC's proposal to include offshore areas in the proposed permit.

DBOC's proposal also requested specific changes in infrastructure and operations. These requests were included in DBOC's comments submitted to NPS during scoping, as part of DBOC's coordination with CCC pursuant to the California Coastal Act and the Consent Cease and Desist Order CCC-07-CD-11 (including application materials for a CDP and in requests made to CDFG regarding changes in species cultivation and lease boundaries). These items are discussed in more detail below, and appropriate citations to the source for each element of the alternative are included. NPS incorporated those project specific elements requested by DBOC that met the parameters discussed above. Alternative D includes all specific facility and operational changes proposed by DBOC (including updates to proposals as the EIS has been drafted).

This EIS analyzes infrastructure proposals at the conceptual level. If this alternative is selected, DBOC would be required to submit, for NPS review and approval, detailed design for onshore development before any construction could be authorized. Additional NEPA compliance would be required and would be the responsibility of DBOC. Future requests beyond the proposals presented here would be evaluated

for consistency with the intent of this alternative, which is expanded development and operations until expiration of the new SUP. It is likely that additional or expanded facilities would be approved under this alternative if reasonable given the 10-year term of the permit. DBOC would be responsible for obtaining all applicable permits and approvals prior to construction. Any new facilities and infrastructure constructed by DBOC would be considered DBOC's private property, which DBOC would be required to remove by November 30, 2022.

The following addresses further actions and elements of alternative D relating to SUP areas, commercial shellfish species, and DBOC operations and facilities. Refer to the sections "Elements Common to All Alternatives" and "Elements Common to All Action Alternatives" for additional detail.

SPECIAL USE PERMIT AREA AND MARICULTURE SPECIES

Under alternative D, permit boundaries would incorporate areas necessary for boat operations and cultivation, while excluding areas containing sensitive park resources, such as archeological sites and harbor seal haul-out areas, from access (figures 2-11, 2-12, and 2-13). 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. The boundaries for offshore Area 1 of the permit would be generally based on the DBOC proposal to CDFG for lease boundary revisions (DBOC 2011e[ciii]). Approximately 74 acres would be added to the permit area (Area 1) in Schooner Bay to connect the existing parcels for boat travel and incorporate six racks identified outside of the current SUP. The permitted area would incorporate most documented shellfish growing areas within Drakes Estero currently under production. The southeast boundary of alternative D would follow the harbor seal protection area protocol and the proposed DBOC shellfish growing area boundary. The proposed reductions in growing area bed 17 is consistent with recommendations of the 2009 NAS report, as well as previous DBOC communications in 2008, 2010, and 2011 regarding lease boundary adjustments (described in more detail under the section "Elements Common to All Action Alternatives").

Mariculture Species

Under alternative D, culture, production, and harvest of Pacific oysters, Olympia oysters, purple-hinged rock scallops, and Manila clams would be permitted in Area 1, as requested by DBOC (DBOC 2010g[civ], 2011c[cv]). DBOC currently cultivates Pacific oysters and Manila clams in Area 1, although the latter are being grown without NPS approval. This alternative would result in after-the-fact approval of Manila clam cultivation in Area 1. Because all four species would be grown in Area 1, there would be no need to maintain Area 2 as a separate area under this alternative.

DBOC has also indicated that there would be no changes in production methods associated with this alternative (DBOC 2010g[cvi]). However, DBOC separately stated that it has been studying purple-hinged rock scallops and recognizes the challenges in producing scallop seed and rearing scallops. Hatchery techniques are less established for scallops than for oysters. Scallops take approximately 4 years to reach market size (approximately 1 pound). DBOC indicated that this is a long-term project that would require significant research, training, and investment (DBOC 2011c[cvii]). If scallop cultivation requires techniques that differ materially from those described under the elements common to all action alternatives, these new methods would be subject to review by NPS.

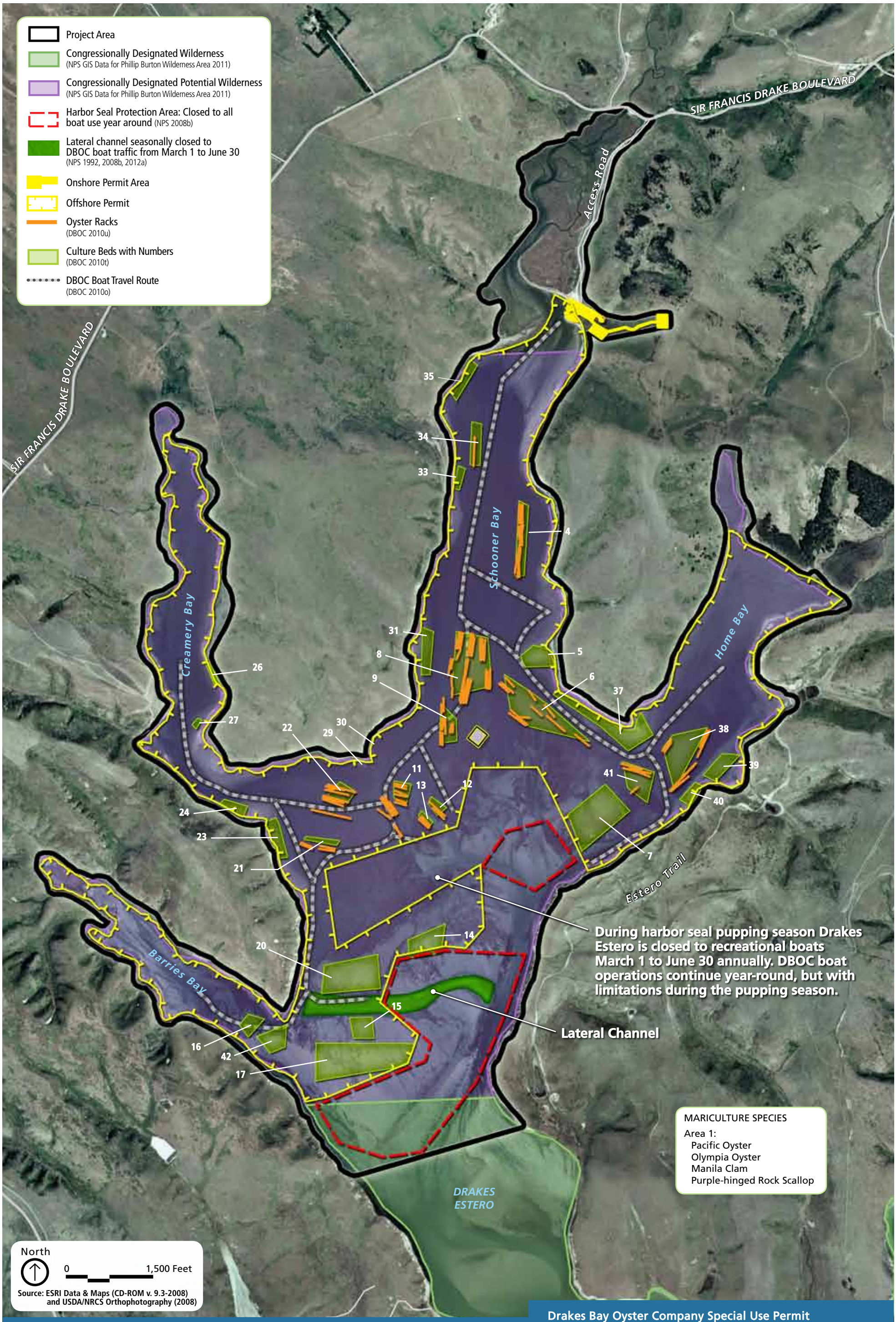

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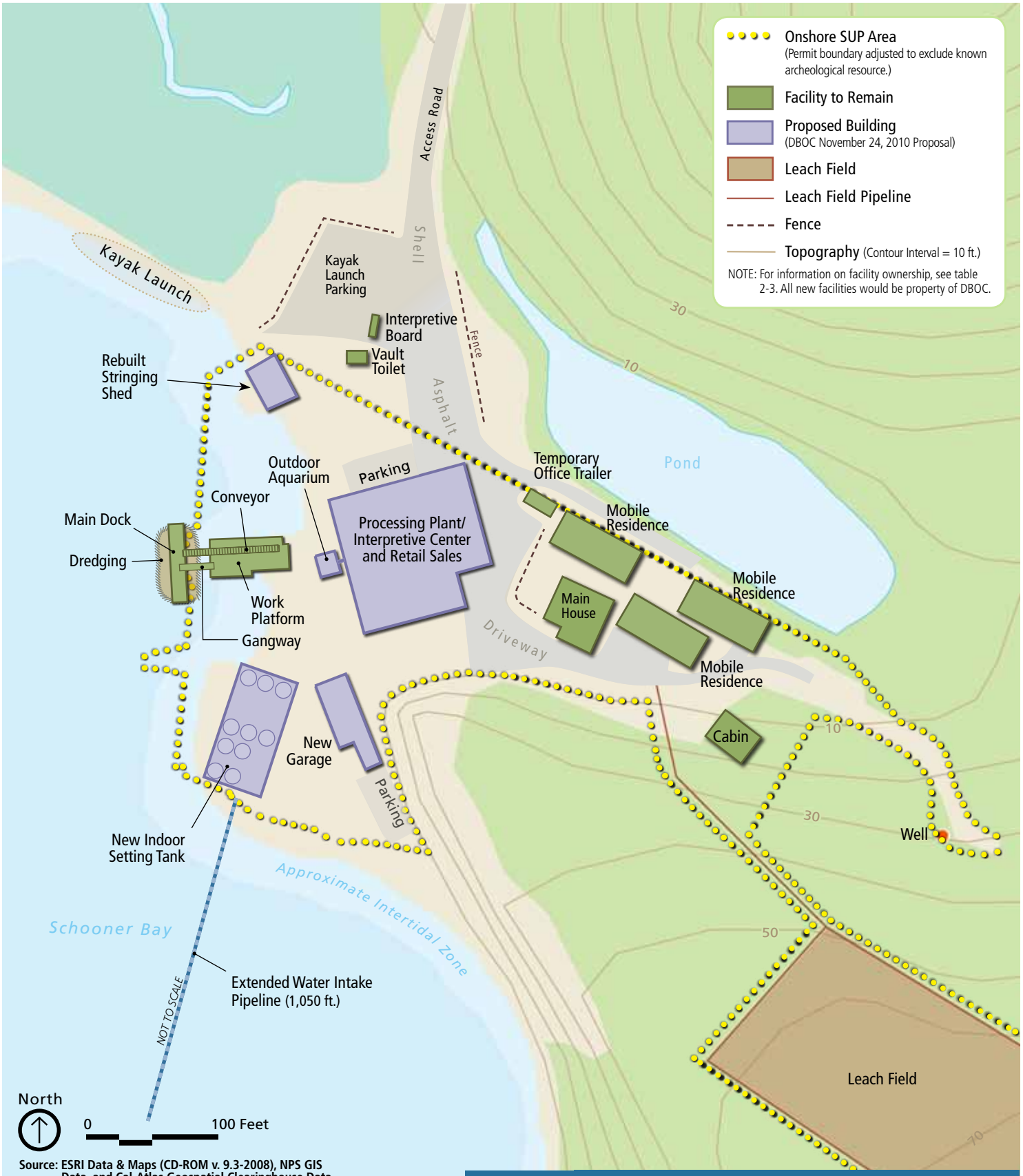
FIGURE 2-11

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

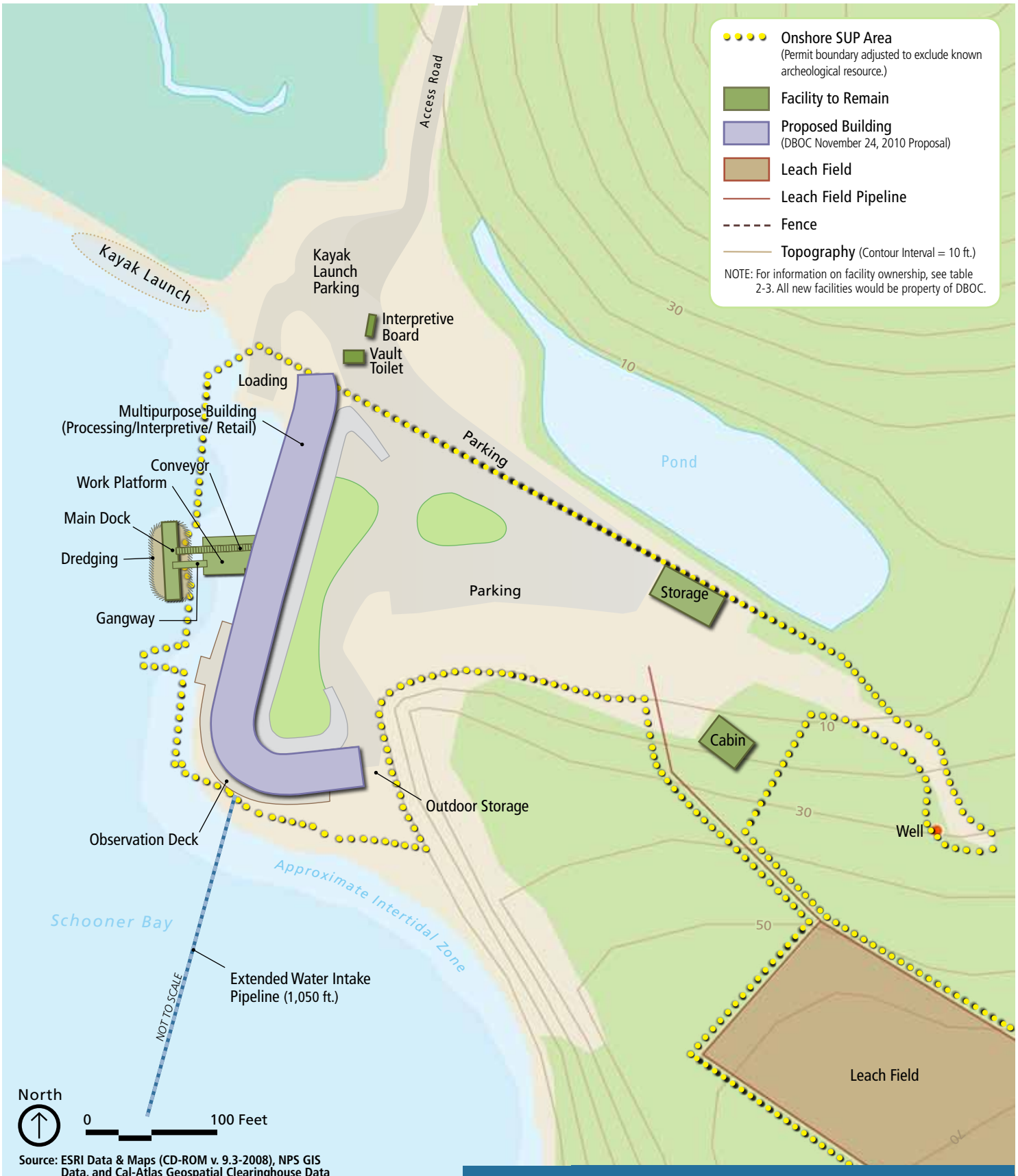
Drakes Bay Oyster Company Special Use Permit Environmental Impact Statement

National Park Service
U.S. Department of the Interior

Point Reyes National Seashore

FIGURE 2-12

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

Drakes Bay Oyster Company Special Use Permit Environmental Impact Statement

National Park Service
U.S. Department of the Interior

Point Reyes National Seashore

FIGURE 2-13

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)

DBOC also has requested permission to collect native Olympia oyster and purple-hinged rock scallop larvae within Drakes Estero for private commercial purposes. The intent is to collect free-swimming larvae to cultivate the same genetic types as are normally found in Drakes Estero and to reduce reliance on outside sources. No detailed information was provided on the proposed collection techniques. Though such collection is considered and analyzed as part of this alternative, it may not ultimately be authorized. NPS regulations (36 CFR 2.1 and 2.3), NPS *Management Policies 2006*, and the MLPA prohibit this sort of collection.

Under alternative D, production levels would be consistent with the production levels requested by DBOC to CCC in 2008. During the initial efforts to address the 2007 CCC Cease and Desist Consent Order regarding production limits, DBOC suggested a production limit of 850,000 pounds. This limit was based on the 2006 and 2007 planting records. According to DBOC, "if all environmental conditions are conducive and mortality rates are low, as much as 850,000 pounds could be harvested in a single year" (DBOC 2008b[cviii]). Under alternative D, shellfish production would not exceed 850,000 pounds annually (when averaged over the past three years, inclusive of all harvested species). This level of production would be approximately 40 percent greater than the 2010 annual DBOC production and is approximately 85 percent greater than the level of production that occurred between 2007 and 2009.

DBOC OPERATIONS AND FACILITIES

Offshore Operations and Facilities

Under alternative D, the offshore permit boundaries would be based on DBOC's proposed adjustments to Lease M-438-01 (DBOC 2011e[cix]), but with some adjustments (see figure 2-11). Because of the need for DBOC's boats to travel between the two offshore parcels in Schooner Bay, the new SUP would eliminate the gap between the two parcels, thereby resolving the concern that DBOC boats currently travel outside the permit area boundary. This change would add 74 acres to the existing permit area. As with the current SUP, the new SUP would prohibit DBOC from conducting any activities within harbor seal protection areas. These areas would be excluded from the permit area. This would result in the offshore permit area totaling approximately 1,082 acres. Because of the increased production limit, there is the potential for DBOC to increase the acreage of commercial shellfish culture taking place in Drakes Estero at one time (fewer culture beds may lie fallow). If DBOC is able to increase efficiency of operations (for example, a harvest trip with more staff could double the product in the same amount of time), there would be no change in the level of operations. Therefore, an increase in boat use may not be necessary (DBOC 2012b[cx]); however, due to the uncertainty of future operations, it is assumed that just as no increase in boat traffic is possible, more frequent boat trips may also be possible. Commercial shellfish activities would remain limited to the 138 acres designated on figure 2-11.

Onshore Operations and Facilities

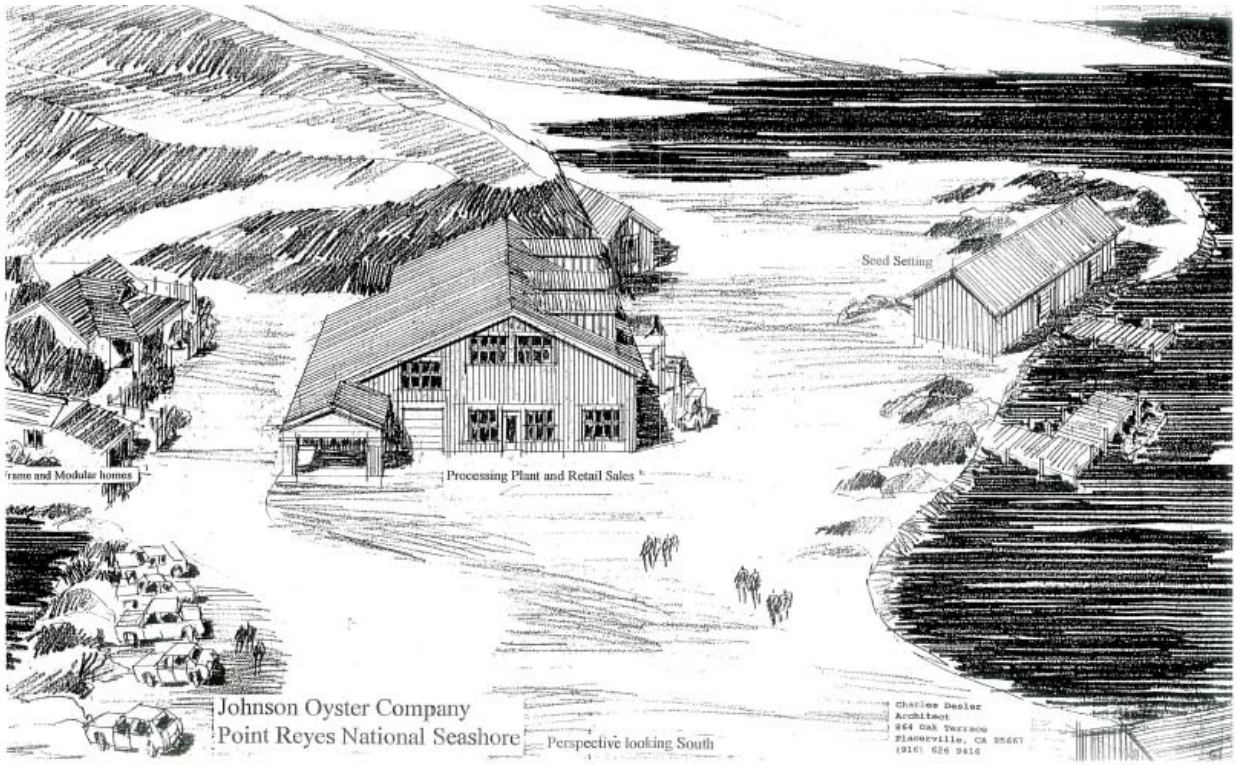
Because the permit applicant has suggested two conceptual designs that are developed to differing degrees, this alternative presents each option at a conceptual level. As described under "Elements Common to All Action Alternatives" any new construction would be considered DBOC's personal property, which DBOC would have to demolish and remove prior to the expiration of the SUP. DBOC proposals would be subject to revision by NPS to address functionality, safety, economic feasibility (given that the new permit is

limited to a 10-year term), and impacts on park resources and visitor experience. Because both options involve construction of new buildings, the plans would be subject to additional environmental review, including an evaluation of flood zones and alternate locations to avoid fill of wetlands.

During the development of this EIS, DBOC submitted two concepts for expanded onshore development of the site. Option 1 is summarized on figure 2-12 and is based on a development proposal by JOC submitted by DBOC during public scoping (DBOC 2010n[cxi]), Additional detail was supplied by DBOC's recent applications to CCC for a CDP (DBOC 2010f[cxii], 2012a[cxiii]). Under this option, the temporary office trailer, the three mobile homes, the main house, the cabin, and the dock would remain in their existing configuration (see table 2-3 for detail on size and ownership). The stringing shed would be rebuilt. A new indoor setting tank (approximately 6,400 square feet) would be built in the approximate location of the existing outdoor setting tanks.

The existing processing plant would be demolished to make way for a new two-story processing and interpretive center (approximately 7,600 square feet). An outdoor aquarium would be attached to this structure. A new garage and employee parking area also would be constructed south of the new processing and interpretive center. The two shipping containers serving as the cannery and dry storage would be removed.

NPS analyzed this development scenario in an EA and FONSI in 1998 (NPS 1998a, 1998b). Only the new septic facilities identified in the project were constructed. As noted above, in 2003 the NPS revoked approval for the construction and replacement of all facilities that had not yet been completed (NPS 2003c[cxiv]).



Perspective (looking south) of the concept evaluated in 1998 and proposed, in part, by DBOC. (Image courtesy of Dresler, as submitted by JOC.)

Option 2 is summarized on figure 2-13 and is based on a subsequent DBOC proposal to NPS (DBOC 2011g[cxv]). Under Option 2, almost all existing facilities would be removed. Only three structures would remain in their existing configuration. The dock would be replaced as described under "Elements Common to All Action Alternatives." The cabin would be retained as the DBOC manager's residence, and one mobile home would be retained as storage. All other structures would be demolished to make room for a new multipurpose building (approximately 2,625 square feet). This building would serve both processing and interpretive purposes. Initial plans have included an oyster bar; however, section 18 of the RUO specifies that a restaurant would not be allowed on site without prior written approval of the Director of NPS.

Under both options, a new 1,050-foot water intake (composed of two 4-inch high density polyethylene, fusion welded pipes, side by side) would be installed into Drakes Estero to supply water for the oyster processing activities. The pipes would be anchored using two concrete anchors every 100 feet. The anchors would be buried by hand on each side of the pipelines (DBOC 2012b[cxvi]).

As noted by DBOC, the concept drawings do not show any staff housing except a manager's residence (the cabin). DBOC has stated that it may seek to incorporate additional staff housing during subsequent design development (DBOC 2011g[cxvii]). The conceptual analysis provided in this EIS applies only to on-site development contained in the design proposal that DBOC has submitted. If DBOC provides revised design concepts that include additional housing, additional NEPA review would be required.

Under both scenarios for expanded development, DBOC would provide expanded facilities for interpretation, cultivation, and processing. Parking also would be improved, although details of this improvement would be refined during the future design stages of development. DBOC requested 12 picnic tables and 12 grills from NPS (DBOC 2012c[cxviii] and 2012f[cxix], respectively). Separately, DBOC requested 18 picnic tables as well as 12 grills in a letter to CCC in February 2012 (DBOC 2012a[cxx]). Under this alternative, DBOC would be allowed up to 18 picnic tables and 12 grills within the permit area. Visitors would be provided with increased opportunities to experience the stages of shellfish processing in the improved new interpretive facility and retail shop. While the interpretive facilities may increase in size and opportunity to view the commercial shellfish operation, NPS does not expect DBOC to expand the scope of the interpretive services. Expanded services would require an additional SUP. Finally, both conceptual design options include the removal of the shipping containers currently in use as the cannery and dry storage.

As a mitigation measure unique to this alternative, during additional design phases of the new onshore development under alternative D, NPS would work with DBOC to ensure that onshore sound-generating equipment would be housed within new buildings constructed or otherwise enclosed to the extent practicable.

Artist's rendering of the Option 2 facility, looking into Schooner Bay (submitted by DBOC with Option 2 site plan). (Image courtesy of Ecological Design Collaborative, as submitted by DBOC [(DBOC 2011g[cxxi]].)

ALTERNATIVE ELEMENTS CONSIDERED BUT DISMISSED

The CEQ has defined reasonable alternatives as those that meet the project objectives to a large degree, are economically and technically feasible, and meet the purpose of and need for the proposed action. Alternatives that cannot be implemented or that do not resolve the need for action nor fulfill the stated purpose (to a large degree) should be eliminated from further analysis. The Director's Order 12 Handbook further states that options that are unreasonably expensive, that do not meet park mandates, that are inconsistent with park statements of purpose and significance or management objectives, or that have severe environmental consequences may also be unreasonable alternatives to consider, although none of these factors automatically render them so (NPS 2001b). The following alternative elements were considered but dismissed from in-depth analysis.

OPEN SHELLFISH OPERATIONS TO COMPETITIVE BID

During the scoping phase of the project, the NPS received public comments suggesting that commercial shellfish operations within Drakes Estero be opened to competitive bid as is generally done for concession operations. Congress has authorized the NPS to issue, subject to certain considerations and then only pursuant to certain conditions, a SUP for the operations of DBOC within Drakes Estero at the Seashore (PL 111-88 section 124, 123 Stat. 2904 [2009]). As that statutory authorization is limited to only one specific entity, DBOC, the SUP cannot be made subject to competition.

Also, section 124 precludes NPS from requiring DBOC to seek a concession contract, another mechanism designed to foster competition. Public comments correctly note that concession contracts may not be awarded in most circumstances without a competitive selection process. Concession contracts may only be awarded for certain types of commercial operations, which do not include commercial shellfish operations at Drakes Estero. Concession contracts are limited to visitor services; i.e., to public

accommodations, facilities, and services that are necessary and appropriate for public use and enjoyment of the unit of the national park system in which they are located (16 U.S.C. 5951[b], 5952; 36 CFR 51.3 [definition of "visitor service"]).

The primary focus of DBOC is the commercial operation for 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. As such, these are not visitor services and consequently are not eligible for a concession contract.

This alternative element was dismissed from further analysis because (1) it is not eligible to be implemented as a concession contract and (2) section 124 specifically identifies DBOC as the recipient of the SUP should one be issued.

RELOCATE DBOC

During public scoping, commenters suggested that NPS could relocate DBOC operations outside the Seashore boundaries or elsewhere within the Seashore. Mandating the relocation of DBOC is not within the authority granted to NPS by Congress in section 124. Section 124 states specifically that the Secretary is authorized to issue a SUP with the same terms and conditions as the existing authorizations (RUO and SUP) and geographically identifies these authorizations as linked to Drakes Estero. Neither section 124 nor any other statutory provision provides NPS with authority to direct a private company like DBOC to relocate its business to any particular area outside the Seashore.

Moreover, lands outside the Seashore are not subject to NPS management authority. NPS also does not have the authority to compel CFGC to issue a state water bottom lease for aquaculture on state-owned submerged lands outside the Seashore. Thus, it is not reasonable or feasible for NPS to evaluate alternatives that would require the identification of management protocols for lands and waters outside the Seashore's boundaries. The appropriate range of alternatives for this EIS consists of alternatives that relate to the Secretary's authority under section 124, which is the authority to issue a 10-year permit to DBOC at its current location in Drakes Estero.

This alternative element was dismissed from further analysis because it is beyond the scope of authority under section 124 of PL 111-88 granted to the Secretary.

ALTER SPECIAL USE PERMIT TERM

During the scoping process, it was suggested that a new SUP be issued for a period of more or less than 10 years. Section 124 states that the Secretary is authorized to issue an SUP with the same terms and conditions as the existing authorizations for a period of 10 years from November 30, 2012. Prior to the enactment of section 124, NPS advised DBOC that the 1976 Point Reyes Wilderness Act and its legislative history prohibited the NPS from issuing a permit to DBOC for operations after November 30, 2012 (see discussion in chapter 1 of this document). Section 124 is the only authority that allows NPS to issue a permit to DBOC to operate after November 30, 2012, and it clearly mandates that the permit term be 10 years. Therefore, the term of the new SUP being evaluated is for 10 years; any other length of time was considered but dismissed from in-depth analysis.

This alternative element was dismissed from further analysis because it is not consistent with section 124 of PL 111-88; thus, it does not meet the purpose of and need for action.

ISSUE A RENEWABLE SPECIAL USE PERMIT

A number of comments received during review of the draft EIS express the view that a provision in the existing SUP/RUO allows the NPS to issue a "renewable" SUP to DBOC. The provision most often cited by commenters as allowing for a renewable Special Use Permit is Paragraph 11 of the RUO. The response to Concern Statement 36942 addresses the NPS's authority under Paragraph 11 of the RUO. The NPS may only issue SUPs for temporary residential occupancy after a RUO expires, and these permits are limited to a term of two years. (See DO 53 Reference Manual, Appendix. 14.) This narrow exception does not allow for a "renewable" SUP for commercial operations like that conducted by DBOC.

The NPS may also not issue a "renewable" Special Use Permit under Section 124. This is because Section 124 expressly limits the Secretary's discretion to issuing a single permit of one 10-year term. This alternative element was dismissed from further analysis because it does not meet the purpose and need for the project and is inconsistent with the authority granted to the Secretary by section 124 of PL 111-88.

CLOSE DBOC DURING A CONTROLLED STUDY

Another alternative suggested during public scoping was to cease DBOC operations for 10 years to evaluate ecosystem response prior to consideration of a new SUP. As stated in section 124, the Secretary is authorized to issue an SUP for a period of 10 years starting from November 30, 2012. Ceasing operations for 10 years to conduct studies before determining whether to issue an SUP is beyond the time frame outlined in section 124, and as such, is inconsistent with the authority granted to the NPS.
This alternative element was dismissed from further analysis because it does not meet the purpose of and need for the project and is inconsistent with the authority granted to the Secretary by section 124 of PL 111-88.

INCORPORATE PHASE OUT REQUIREMENTS IN NEW SUP

During alternatives development, the planning team considered incorporating phase out requirements into the new SUP. This option would include a time frame for shellfish operations to cease at a point earlier than the full 10 years to ensure that decommissioning and removal of the facilities would be complete by November 30, 2022. Such requirements were dismissed for the following reasons: (1) The NPS recognizes the need to consult with DBOC on the most effective way to phase out operations as the termination date of the new SUP approaches; and (2) Phase out plans may also differ among alternatives, and they may differ based on the amounts and/or locations of particular species being cultivated as the permit draws to a close.

Should a new permit be issued to DBOC, the permit would allow the NPS to address phase out issues with DBOC through the annual meeting process and through NPS authority to ensure DBOC's compliance with all permit terms, including the requirement that DBOC remove certain buildings and facilities and all personal property, such as DBOC-owned shellfish and shellfish infrastructure, from the premises on or before November 30, 2022.

In addition, section 124 authorizes a 10-year permit under the existing terms and conditions. Adding detailed phase out requirements that would require DBOC's operation to wind down years before the 10-year term would not be consistent with section 124. This alternative is being dismissed because it is not feasible for NPS to outline detailed phase out requirements at this time and because the addition of detailed phase out requirements is not consistent with section 124.

COMPREHENSIVE RESTORATION OF THE DEVELOPED ONSHORE AREA

A number of commenters suggested that NPS should evaluate an alternative that would provide for comprehensive restoration of the natural environment following the expiration of DBOC authorizations. Specific suggestions included restoration of natural hydrology through removal of the progressive fill that has been associated with commercial shellfish operations at this site for the last 77 years. This would also include restoration of wetland areas originally at this site. Other suggestions included the removal of nonnative shell debris to enhance and allow interpretation of cultural resources. While site restoration would be consistent with applicable laws, NPS policy, and Seashore management objectives, as well as with the general intent of NPS to restore the area following the termination of nonconforming commercial uses, it is outside the stated purpose of the proposed project, which is to evaluate whether the Secretary should exercise the discretion granted under section 124 to issue a 10-year permit to DBOC. Plans for comprehensive site restoration would be developed in the future as part of a separate NEPA action. This EIS considers restoration of the developed onshore area as a reasonably foreseeable future action instead of an element of the action alternatives. The impacts of natural resource restoration at the developed onshore area are discussed in the cumulative impact sections of this EIS.

This alternative element was dismissed from further analysis because it is beyond the scope of this EIS.

MITIGATION

As discussed in the Elements Common to All Action Alternatives section earlier in the chapter, a number of conditions that serve to reduce the intensity of potential impacts on particular resources were included in the 2008 SUP and would be carried forward into a new 10-year SUP. Additional mitigation measures have also been incorporated related to the boating operations plan, removal of European flat oyster and prohibition of stake culture methods in all action alternatives, cultivation of manila clams under alternative C, and housing onshore sound-generating equipment within any new buildings constructed under alternative D. Under alternative C, DBOC would be responsible for implementing harvest practices intended to minimize fragmentation and loss of *Didemnum* from oysters. This includes modification of current harvest and distribution practices to ensure that oyster strings or bags hosting *Didemnum* are managed in a way that does not distribute *Didemnum* to other areas of Drakes Estero. DBOC would be responsible for implementing practices as part of normal operations.

Other measures were suggested during the review of the draft EIS, but were not incorporated into the final EIS due to the uncertain nature of their technical, operational or economic feasibility. Examples of these suggestions include: use of electric boat motors or paddleboats, use of desiccation and mild acid dips to limit the spread of noxious species, changing culture techniques, and increasing the buffer distance that mariculture workers would be required to maintain from harbor seals. However, if further investigation

into these potential mitigation measures indicates they are feasible, additional mitigation measures may be included as permit conditions in the future.

In addition, 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.

ADAPTIVE MANAGEMENT

Adaptive management is used to improve managers' understanding of ecological systems to better achieve management objectives and suggest changes in action to improve progress towards desired outcomes. It is a continuing iterative process where a problem is first assessed, potential management actions are designed and implemented, and those actions and resource responses are monitored over time. That data is then evaluated and actions are adjusted if necessary to better achieve desired management outcomes (Williams, Szaro, and Shapiro 2009).

In this situation, these sorts of adjustments would not meet the intended purpose of the action alternatives. Adjusting the operation of the oyster farm based on the results of monitoring would likely eliminate the certainty needed by DBOC to manage its business. Therefore, this EIS does not describe an adaptive approach to managing Drakes Estero should a new 10-year SUP be issued to DBOC. However, additional baseline surveys and monitoring are proposed to further increase understanding of the natural ecological processes within Drakes Estero, as described under "Elements Common to All Action Alternatives".

CONSISTENCY WITH SECTIONS 101(B) AND 102(1) OF THE NATIONAL ENVIRONMENTAL POLICY ACT

The NPS requirements for implementing NEPA include an analysis of how each alternative meets or achieves the purposes of NEPA, as stated in sections 101(b) and 102(1). CEQ regulations (40 CFR 1500.2) state that federal agencies shall, to the fullest extent possible, interpret and administer the policies, regulations, and public laws of the U. S. in accordance with the policies set forth in the act (sections 101[b] and 102[1]). This section describes how each of the alternatives under consideration in this EIS meets or achieves these policies.

1. Fulfill the responsibilities of each generation as trustee of the environment for succeeding generations.

   All of the alternatives under consideration in this EIS are consistent with this policy, although to varying degrees. The Seashore was established to preserve the diminishing seashore of the U.S. that remains undeveloped. Within the project area, the waters of Drakes Estero are designated by Congress as potential wilderness, while the onshore areas of the commercial shellfish operation are designated as a special use zone. Alternative A would allow the NPS to fulfill its responsibilities to restore natural processes starting in 2012, upon expiration of the current permit. At that time, some existing structures would be removed and uses would be limited to those that are consistent with activities permitted in wilderness. In addition, the existing congressionally designated potential wilderness in Drakes Estero

would be converted to congressionally designated wilderness in 2012. Alternatives B, C, and D would delay the restoration of the area and conversion to wilderness for 10 years. The additional 10 years of commercial shellfish operations within Drakes Estero would continue to have impacts to Seashore resources such as the risk for establishment (i.e., naturalization) and spread of nonnative species, such as *Didemnum*.

2. Assure for all Americans safe, healthful, productive, and esthetically and culturally pleasing surroundings.

   All of the alternatives under consideration in this EIS are consistent with this policy, although to varying degrees. Under all alternatives, NPS would continue to meet its obligation to ensure safe, healthful, and productive surroundings for Seashore visitors and staff. Alternative A could enhance the esthetics of the area by removing existing offshore structures and converting the area to congressionally designated wilderness in 2012. Visitors to the Seashore who wish to enjoy solitude and an unconfined, primitive form of recreation may view this alternative as more esthetically and culturally pleasing. For those visitors who wish to view an active commercial shellfish operation and enjoy the opportunity to consume fresh oysters within the Seashore, Alternative A would not be as esthetically or culturally pleasing.

   Under alternatives B, C, and D, restoration of the area to natural conditions and conversion to congressionally designated wilderness would be delayed by 10 years. During this 10 year period, the area would continue to be characterized by the presence of commercial shellfish equipment, racks, bags, and mariculture-related noises such as motorboat engines and pneumatic drills. The natural setting may also be altered due to the risks associated with invasive species and shellfish-borne diseases.

   In terms of productivity, alternatives B, C and D would allow for the continued production of shellfish for 10 years, which could be considered a productive use of Drakes Estero. These alternatives would result in contributions to California's overall shellfish production. Under alternative A, all commercial oyster production would cease, although some other productive uses of Drakes Estero, such as kayaking and recreational clamming would continue. Restoration of natural processes and conversion of the congressionally designated potential wilderness to congressionally designated wilderness in 2012 would also be considered a productive use under alternative A.

3. Attain the widest range of beneficial uses of the environment without degradation, risk of health or safety, or other undesirable and unintended consequences.

   Alternative A would provide a wilderness experience to those visitors seeking solitude and an unconfined, primitive form of recreation within the congressionally designed wilderness in Drakes Estero starting in 2012. Alternative A would provide this beneficial use of the environment without degradation, risk of health or safety, or other undesirable and unintended consequences.

   Alternatives B, C, and D would also offer beneficial uses to those visitors who wish to visit an active commercial shellfish operation at the Seashore. These alternatives would also result in the

continued production of local shellfish, which would be considered a beneficial use. Alternatives B, C, and D could, however, result in undesirable and unintended consequences, such as providing a hard substrate that allows invasive species establishment and presence of refuse in Drakes Estero.

4. Preserve important historic, cultural, and natural aspects of our national heritage and maintain, wherever possible, an environment that supports diversity and variety of individual choice.

   None of the alternatives are expected to result in impacts on cultural or historic resources. No impacts to known archeological resources are anticipated and potential impacts to as yet undiscovered subsurface archeological resources would be avoided, minimized, or mitigated. Any ground-disturbing activities within the onshore areas of the SUP would take place in coordination with the California SHPO and the Federated Indians of Graton Rancheria, and would require a site monitor.

   A study and assessment of potential historical significance (a DOE) was conducted for the structures currently used by DBOC, both in Drakes Estero and onshore. Due to the level of alteration these structures have undergone over time, the assessment concluded that none maintain historic integrity and are therefore not eligible for listing on the National Register. The SHPO has reviewed the DOE and concurs that the structures are not eligible for listing on the National Register (see appendix D). Therefore, none of the alternatives would have adverse effects on historic structures.

   All alternatives would support diversity and variety of individual choice but to varying degrees. Alternative A would allow those visitors seeking solitude and an unconfined, primitive form of recreation an opportunity to enjoy a marine wilderness. However, because all commercial shellfish operations would cease, alternative A would not provide as much diversity and individual choice for those visitors wishing to visit an active commercial shellfish operation and consume fresh oysters within the Seashore. Similarly, while alternatives B, C, and D would provide the opportunity for those choosing to view a commercial shellfish operation and enjoy fresh oysters, these alternatives would diminish the opportunity for those seeking solitude and an unconfined, primitive form of recreation.

5. Achieve a balance between population and resource use that will permit high standards of living and a wide sharing of life’s amenities.

   All alternatives considered in this EIS would be consistent with this policy but to varying degrees. The Seashore is highly valued for its natural setting, especially due to its proximity to the highly developed and densely populated San Francisco Bay Area. The enabling legislation established the Seashore “to save and preserve, for purposes of public recreation, benefit, and inspiration, a portion of the diminishing seashore of the United States that remains undeveloped” (PL 87-657). Public open spaces are an important amenity and highly valued within the local area and the Bay Area. Alternative A would improve the natural setting and open space of the Seashore by removing commercial shellfish operations within Drakes Estero and converting congressionally designated potential wilderness to congressionally designated wilderness.

Economic contributions to the local economy attributed to the more than two million visitors to the Seashore annually would likely continue under all alternatives. Alternatives B, C, and D would also provide an increased economic contribution to the local and state economy by providing jobs and food production, therefore contributing to the standard of living and sharing of amenities in the area.

6. Enhance the quality of renewable resources and approach the maximum attainable recycling of depletable resources.

   Alternative A would best enhance the quality of renewable resources and maximum attainable recycling of depletable resources. Natural resources associated with the natural conditions and processes in Drakes Estero would be further protected by the conversion of congressionally designated potential wilderness to congressionally designated wilderness. Alternative A would reduce on-site energy consumption from existing conditions, as commercial shellfish operations that use energy, such as motor boats, pneumatic drills, shellfish processing, and residential facilities, would cease. Alternatives B, C, and D would result in increased on-site energy consumption compared to alternative A due to the continuation or increase in commercial shellfish operations. Alternative D would potentially result in the highest contribution to energy use due to increased oyster production and proposed new facilities. In addition, the shellfish cultivated by DBOC under alternatives B, C, and D are not a natural resource within Drakes Estero. Seed for nonnative Pacific oysters and Manila clams (only permitted under alternatives B and D) are imported from outside California. The use of outside resources does not result in enhancement of renewable resources or maximum recycling of depletable resources.

ENVIRONMENTALLY PREFERABLE ALTERNATIVE

The NPS is required to identify the environmentally preferable alternative in its NEPA documents for public review and comment. Guidance from CEQ states that the environmentally preferable alternative is "the alternative that causes the least damage to the biological and physical environment; it also means the alternative which best protects, preserves, and enhances historic, cultural, and natural resources" (CEQ 1981).

Alternative A is identified as the environmentally preferable alternative because it has the most potential to protect the biological, physical, and cultural environment in and around Drakes Estero. This is based on the following considerations:

- Subsequent to expiration of the SUP, the congressionally designated potential wilderness would be converted to congressionally designated wilderness, as directed by Congress and NPS policies, providing a marine wilderness experience to the public.
- Eelgrass beds in Drakes Estero would benefit from removal of shading by oyster racks and damage by motorboat propellers. These special aquatic ecosystems, functioning as native habitat, nursery grounds, and food for numerous species of fish, waterfowl, and other marine species, would not be disrupted on a daily basis under alternative A.

- Control of the invasive tunicate *Didemnum* would be more manageable under alternative A. Already present within Drakes Estero, this invasive species most often attaches to hard substrates, including hanging culture and racks. Alternative A would remove more than 7 acres of artificial hard (preferred substrate) structures currently used as habitat by the *Didemnum* thereby making management more feasible. Alternatives B, C, and D would allow the oyster substrate to persist or increase for another 10 years, enabling continued expansion of this invasive species.
- Removal of cultivated nonnative species under alternative A would best protect the natural ecosystem of Drakes Estero. Alternatives B, C, and D would allow cultivation of nonnative species to take place in Drakes Estero for another 10 years, which would provide additional time during which these species may become naturalized in this ecosystem. Manila clams, which would be permitted under alternatives B and D, are now documented outside of culture bags, and their age structure indicates recent naturalization (Grosholz 2011b). Ongoing cultivation of Manila clams for a period of 10 years would likely result in expansion of this nonnative species.
- Alternative A would eliminate the daily use and operation of motorboats on Drakes Estero, thereby reducing the potential for disturbance to the resident and migratory wildlife species that depend on its resources.
- Wetland functions and values would be restored through natural processes under alternative A. Fringe wetland habitat and eelgrass beds are susceptible to impacts from continued wave action (such as that caused by boat wakes) and placement of fill material. Alternative A would eliminate from Drakes Estero the daily motorboat traffic and the oyster growing bags, allowing these natural habitats to reestablish. Placement of culture bags and the use of motorboats by DBOC would persist or increase for another 10 years under alternatives B, C, and D.

Atmospheric and underwater noise associated with boat motors, oyster tumblers, pneumatic drills, and daily customer traffic would be removed under alternative A, thus restoring a more natural soundscape within Drakes Estero. These noise generators and associated disturbance would persist and in some cases perhaps increase for another 10 years under alternatives B, C, and D.

SUMMARY OF THE ALTERNATIVES

Table 2-5 provides a summary of the alternatives presented above.

TABLE 2-5. 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 2-5. 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 2-5. 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

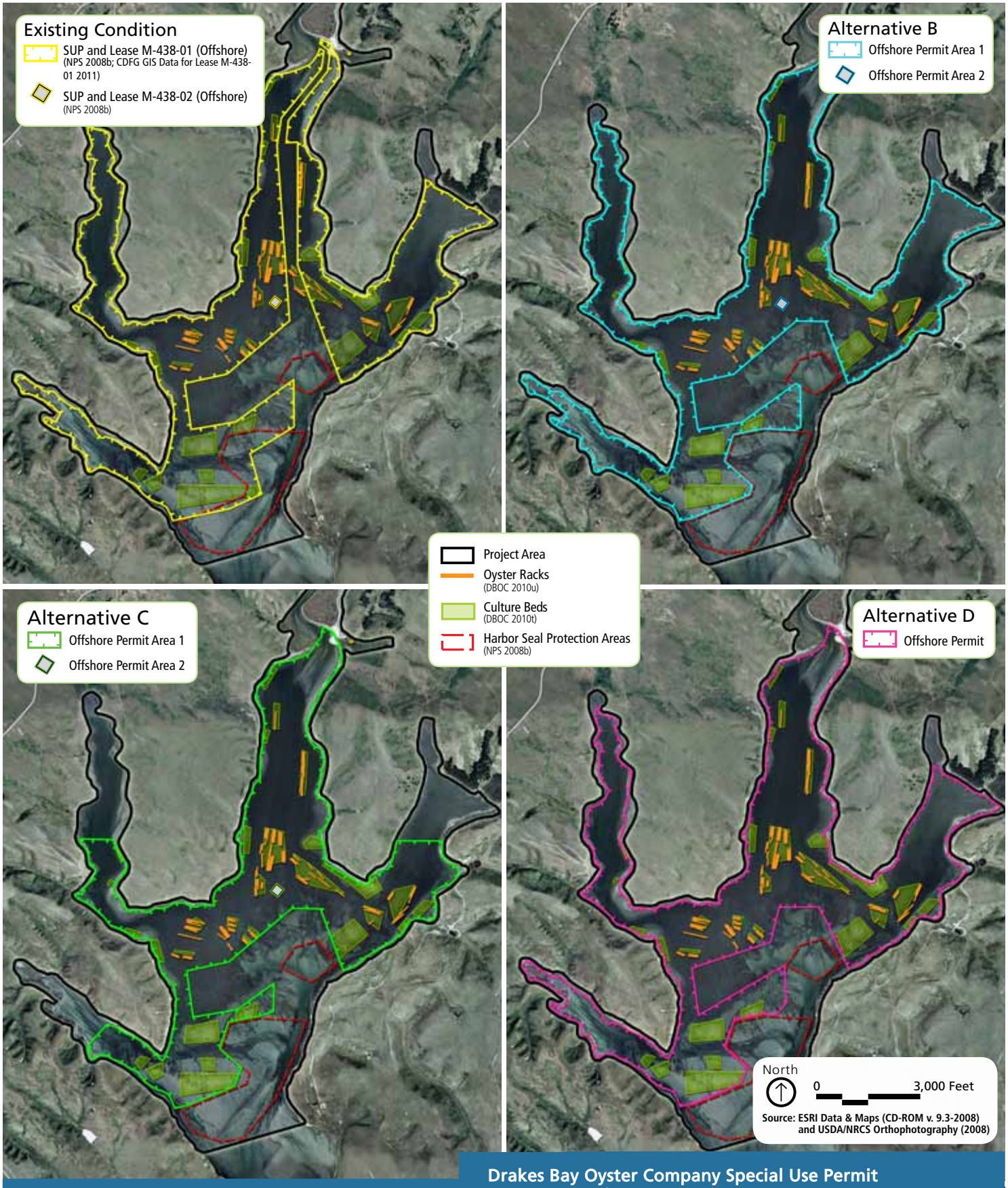
TABLE 2-5. SUMMARY OF ALTERNATIVES (CONTINUED)

	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.*	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*).	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.

* Items have not previously been permitted by NPS

COMPARISON OF SPECIAL USE PERMIT BOUNDARIES

Figure 2-14 shows side-by-side comparisons of the overall SUP boundaries as they currently exist and as they would exist under each action alternative. The SUP boundaries are shown at the scale of Drakes Estero because it is the offshore boundaries that change between alternatives. The onshore boundaries remain the same for each action alternative. Under alternative A, no SUP would be issued; therefore, there are no SUP boundaries to display for alternative A.



Drakes Bay Oyster Company Special Use Permit Environmental Impact Statement

National Park Service
U.S. Department of the Interior

Point Reyes National Seashore

FIGURE 2-14

Comparison of Offshore Permit Areas

SUMMARY OF ENVIRONMENTAL CONSEQUENCES

Table 2-6 provides a summary of the environmental consequences related to each alternative. A more detailed explanation of the impacts is presented in “Chapter 4: Environmental Consequences.”

TABLE 2-6. 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. The removal of racks, including approximately 4,700 posts (2-inch by 6-inch boards), and the removal of bags from up to	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 approximately 380 to 750 posts would be	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. would be permanently converted to uplands	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. Temporary impacts include dredging under the

TABLE 2-6. SUMMARY OF ENVIRONMENTAL CONSEQUENCES (CONTINUED)

Alternative A	Alternative B	Alternative C	Alternative D
Action/Impact	Action/Impact	Action/Impact	Action/Impact
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.	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). NWP 48, described under "Laws and Policies" in	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. USACE has provided written notification to DBOC	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 work in navigable waters of the United States necessary for commercial shellfish aquaculture

TABLE 2-6. SUMMARY OF ENVIRONMENTAL CONSEQUENCES (CONTINUED)

Alternative A	Alternative B	Alternative C	Alternative D
Action/Impact	Action/Impact	Action/Impact	Action/Impact
	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).	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).	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).

TABLE 2-6. SUMMARY OF ENVIRONMENTAL CONSEQUENCES (CONTINUED)

Alternative A	Alternative B	Alternative C	Alternative D
Action/Impact	Action/Impact	Action/Impact	Action/Impact
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 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	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 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	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 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	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 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

TABLE 2-6. SUMMARY OF ENVIRONMENTAL CONSEQUENCES (CONTINUED)

Alternative A	Alternative B	Alternative C	Alternative D
Action/Impact	Action/Impact	Action/Impact	Action/Impact
concern) under the Groundfish Plan; and (3) native species and natural processes encouraged by NPS *Management Policies 2006*.	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 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*.	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 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*.	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 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*.

TABLE 2-6. SUMMARY OF ENVIRONMENTAL CONSEQUENCES (CONTINUED)

Alternative A	Alternative B	Alternative C	Alternative D
Action/Impact	Action/Impact	Action/Impact	Action/Impact
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 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	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 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	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 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	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 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

TABLE 2-6. SUMMARY OF ENVIRONMENTAL CONSEQUENCES (CONTINUED)

Alternative A	Alternative B	Alternative C	Alternative D
Action/Impact	Action/Impact	Action/Impact	Action/Impact
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.	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 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	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 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.	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 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.

TABLE 2-6. SUMMARY OF ENVIRONMENTAL CONSEQUENCES (CONTINUED)

Alternative A	Alternative B	Alternative C	Alternative D
Action/Impact	Action/Impact	Action/Impact	Action/Impact
	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.		
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 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	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 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	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 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.	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 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.

TABLE 2-6. SUMMARY OF ENVIRONMENTAL CONSEQUENCES (CONTINUED)

Alternative A	Alternative B	Alternative C	Alternative D
Action/Impact	Action/Impact	Action/Impact	Action/Impact
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.	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 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.	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 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.	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 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,	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	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	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

TABLE 2-6. SUMMARY OF ENVIRONMENTAL CONSEQUENCES (CONTINUED)

Alternative A	Alternative B	Alternative C	Alternative D
Action/Impact	Action/Impact	Action/Impact	Action/Impact
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 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.	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 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	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 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	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 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

TABLE 2-6. SUMMARY OF ENVIRONMENTAL CONSEQUENCES (CONTINUED)

Alternative A	Alternative B	Alternative C	Alternative D
Action/Impact	Action/Impact	Action/Impact	Action/Impact
	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.	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.	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.
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	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	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	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

TABLE 2-6. SUMMARY OF ENVIRONMENTAL CONSEQUENCES (CONTINUED)

Alternative A	Alternative B	Alternative C	Alternative D
Action/Impact	Action/Impact	Action/Impact	Action/Impact
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 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	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 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	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 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	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 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

TABLE 2-6. SUMMARY OF ENVIRONMENTAL CONSEQUENCES (CONTINUED)

Alternative A	Alternative B	Alternative C	Alternative D
Action/Impact	Action/Impact	Action/Impact	Action/Impact
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 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.	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 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.	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 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.	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. 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.

TABLE 2-6. SUMMARY OF ENVIRONMENTAL CONSEQUENCES (CONTINUED)

Alternative A	Alternative B	Alternative C	Alternative D
Action/Impact	Action/Impact	Action/Impact	Action/Impact
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 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.	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 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	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 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	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 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

TABLE 2-6. SUMMARY OF ENVIRONMENTAL CONSEQUENCES (CONTINUED)

Alternative A	Alternative B	Alternative C	Alternative D
Action/Impact	Action/Impact	Action/Impact	Action/Impact
	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 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.	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, 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.	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 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	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	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	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

TABLE 2-6. 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 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.	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. 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.	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. 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.	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 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.

TABLE 2-6. SUMMARY OF ENVIRONMENTAL CONSEQUENCES (CONTINUED)

Alternative A	Alternative B	Alternative C	Alternative D
Action/Impact	Action/Impact	Action/Impact	Action/Impact
			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.
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	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	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	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

TABLE 2-6. SUMMARY OF ENVIRONMENTAL CONSEQUENCES (CONTINUED)

Alternative A	Alternative B	Alternative C	Alternative D
Action/Impact	Action/Impact	Action/Impact	Action/Impact
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."	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. 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."	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 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."	column from increased turbidity, resulting in short-term minor adverse impacts on water quality. 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	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	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	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

TABLE 2-6. SUMMARY OF ENVIRONMENTAL CONSEQUENCES (CONTINUED)

Alternative A	Alternative B	Alternative C	Alternative D
Action/Impact	Action/Impact	Action/Impact	Action/Impact
to be difficult at a distance of less than 16 feet. 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.	interfered with more than 10 percent of the time. 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	16 feet, and the natural soundscape is interfered 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	16 feet, and the natural soundscape is interfered 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

TABLE 2-6. SUMMARY OF ENVIRONMENTAL CONSEQUENCES (CONTINUED)

Alternative A	Alternative B	Alternative C	Alternative D
Action/Impact	Action/Impact	Action/Impact	Action/Impact
	a detriment to wilderness values, as described in more detail under "Impacts on Wilderness."	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 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."
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 Alternative A would also result in short-term minor	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 2-6. SUMMARY OF ENVIRONMENTAL CONSEQUENCES (CONTINUED)

Alternative A	Alternative B	Alternative C	Alternative D
Action/Impact	Action/Impact	Action/Impact	Action/Impact
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 2-6. 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 25 racks in 2014, followed by regular	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 natural environment. Visitors to the Seashore who	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 Seashore who are interested in experiencing an

TABLE 2-6. SUMMARY OF ENVIRONMENTAL CONSEQUENCES (CONTINUED)

Alternative A	Alternative B	Alternative C	Alternative D
Action/Impact	Action/Impact	Action/Impact	Action/Impact
	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.	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.	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 not be consistent with the values for which Drakes

TABLE 2-6. SUMMARY OF ENVIRONMENTAL CONSEQUENCES (CONTINUED)

Alternative A	Alternative B	Alternative C	Alternative D
Action/Impact	Action/Impact	Action/Impact	Action/Impact
			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 levels through local spending (approximately $85	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-site housing move to another community and/or

TABLE 2-6. SUMMARY OF ENVIRONMENTAL CONSEQUENCES (CONTINUED)

Alternative A	Alternative B	Alternative C	Alternative D
Action/Impact	Action/Impact	Action/Impact	Action/Impact
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.			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 effectiveness of the closure and further protect harbor seal pupping habitat. Two new part-time	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. These impacts would be slightly detectable but would not hinder the overall ability of NPS to	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 slightly detectable but would not hinder the overall ability of NPS to provide services, manage	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 position to oversee additional planning and compliance associated with the proposed onshore

TABLE 2-6. SUMMARY OF ENVIRONMENTAL CONSEQUENCES (CONTINUED)

Alternative A	Alternative B	Alternative C	Alternative D
Action/Impact	Action/Impact	Action/Impact	Action/Impact
(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.	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.	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.	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.

ENDNOTES

i. DBOC 2010c, Attachment 10c to the letter from Drakes Bay Oyster Company to Point Reyes National Seashore on November 15, 2010 regarding culture beds (November 2007). This attachment is a map depicting the beds within Drakes Estero as of November 2007. The map notes 147 acres of cultivation; however, the measurement contained within this document (142 acres) is based on GIS measurements of a digitized version of this map.

ii. DBOC 2011e, Letter from Drakes Bay Oyster Company to Point Reyes National Seashore on March 15, 2011, regarding Lease M-438-01 lease line.

> "The California Department of Fish and Game (CDFG) informed Drakes Bay Oyster Company (DBOC) that the original Drakes Estero lease boundary lines were drawn on the kitchen table of Charlie Johnson's home. The intent, at the time, was to create a lease area that included all of the existing shellfish beds. The crude mapping method used, without benefit of current, modern-day technology, not surprisingly turned out to be inaccurate and resulted in an error. Many years later, CDFG realized that the rudimentarily-drawn lease lines errantly crossed Bed 6."

iii. DBOC 2010e, Attachment 12c to the letter from Drakes Bay Oyster Company to Point Reyes National Seashore on November 15, 2010, regarding oyster rack GPS data. This attachment is a spreadsheet listing rack condition, length, and GPS location.

iv. DBOC 2010h, Letter from Drakes Bay Oyster Company to California Department of Fish and Game on May 10, 2010, regarding Lease M-438-01—boundary revision.

> "Drakes Bay Oyster Company (DBOC) requests that the revised lease boundary lines be approved so that the historic oyster racks can remain in use as they have for roughly 50 years and the lease line can be moved away from the seal haul out area along the main channel."

v. DBOC 2008b, Letter from Drakes Bay Oyster Company to California Coastal Commission on January 31, 2008, regarding CCC-07-CD-04 Drakes Bay Oyster Company (section 3.2.10 of Consent Order).

> "Presently, and since Drakes Bay Oyster Company has been in contract with the California Department of Fish and Game under lease numbers M438-01 and M438-02, oyster have only been grown in the 'cultivation area' as defined in provision 3.2.11. No oysters will be grown outside of this cultivation area. The oysters currently being cultivated in Drakes Estero are Pacific oysters (*Crassostrea gigas*)."

vi. DBOC 2008b, Letter from Drakes Bay Oyster Company to California Coastal Commission on January 31, 2008 regarding CCC-07-CD-04 Drakes Bay Oyster Company (section 3.2.10 of Consent Order).

> "Small numbers of European flat oysters (*Ostrea edulis*) and Kumamoto oysters (*Crassostrea sikamea*), which were planted by the Johnson's Oyster Company prior to 2005, still exist within the cultivated area."

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

> "At the time of the referenced DBOC letter to the CCC, DBOC was under the belief that the Johnson's grew European flat oysters in Drakes Estero. Later, DBOC was informed by members of the Johnson family, and by CDFG, that no European flat oysters were produced in Drakes Estero."

viii. DBOC 2008b, Letter from Drakes Bay Oyster Company to California Coastal Commission on January 31, 2008 regarding CCC-07-CD-04 Drakes Bay Oyster Company (section 3.2.10 of Consent Order).

> "Small numbers of European flat oysters (*Ostrea edulis*) and Kumamoto oysters (*Crassostrea sikamea*), which were planted by the Johnson's Oyster Company prior to 2005, still exist within the cultivated area."

ix. DBOC 2008b, Letter from Drakes Bay Oyster Company to California Coastal Commission on January 31, 2008, regarding CCC-07-CD-04 Drakes Bay Oyster Company (section 3.2.10 of Consent Order).

> "No oyster species other than the Pacific oyster and the European flat oyster will be planted in Drakes Estero by the Drakes Bay Oyster Company without prior approval from the California Department of Fish and Game, the California Fish and Game Commission and the California Coastal Commission. Kumamoto oysters are slow growing, and require approximately double the amount of time that the Pacific oyster takes to reach maturity. Most of the Kumamoto oysters that exist in Drakes Estero are now reaching maturity. Drakes Bay oyster Company will remove all of these Kumamoto oysters from Drakes Estero by August, 2008."

x. CDFG 2008b, Letter from Senior Fish Pathologist, California Department of Fish and Game to Drakes Bay Oyster Company on November 14, regarding Removal of Kumamoto oysters from Home Bay, Drakes Estero.

> "On October 14, 2008, California Department of Fish and Game (DFG) staff oversaw the removal of Kumamoto oysters from Home Bay, Drakes Estero. DFG staff included myself and Tom Moore, Marine Aquaculture Coordinator·. The oysters were contained in ~1 M^2 plastic mesh growout bags laying on the mud flat Drakes Bay Oyster Company (DBOC) stall located the bags containing Kumamoto oysters on Bed 39 at Home Bay. DBOC and DFG staff searched for and removed all bags of Kumamoto oysters present. The bags were confined to a region approximately 10M in diameter. We removed exactly 20 bags, each with approximately 300 oysters per bag. The bags were transported by boat to the DBOC headquarters where they were transferred to land. All oysters were disposed of on land."

xi. CFGC 1993, Minutes from the October 7, 1993, meeting for the amendment to Lease No. M-438-02, regarding addition of Manila clams (*Tapes japonica*) to the list of species for mariculture purposes.

> Department Recommendation
>
> "Lease M-438-02 is a small, one-acre lease which has been previously used by Johnson Oyster Company in the experimental culture of species other than oysters. Johnson Oyster Company would now like to investigate if conditions in Drakes Estero are suitable for the culture of Manila clams.
>
> "The Department does not have any concerns about this request and recommends approval."

xii. NPS 2009e, Letter from Point Reyes National Seashore Superintendent, to Drakes Bay Oyster Company, December 22, 2009, regarding cultivation of Manila clams, site development request, and additional information on Manila clams.

> "At this time, we would like to request additional information on Manila clam production. Please provide a proposal that includes location and size of growing area, approximate number of bags and clams, seed origin, history of production, and other details on the production of Manila clams. With this information we will use our standard process to meet our environmental compliance responsibilities."

xiii. DBOC 2009c, Letter from Drakes Bay Oyster Company to Point Reyes National Seashore on December 29, 2009, regarding clerical error correction and Manila clam cultivation in CDFG Lease M-438-01.

> "As the cultivation of clams on lease M-438-0 1 has been authorized since 1993, no further approvals from NPS to cultivate clams are necessary. Please direct any questions you may have about this to the FGC."

xiv. DBOC 2008b, Letter from Drakes Bay Oyster Company to California Coastal Commission on January 31, 2008, regarding CCC-07-CD-04 Drakes Bay Oyster Company (Section 3.2.10 of Consent Order)— Maximum annual production limit.

> "Based on the planting records, it is expected that the total shellfish harvest from Drakes Estero be around 770,000 Lbs. If all environmental conditions are conducive, and mortality rates are low, as much as 850,000 Lbs could be harvested in a single year, based on the recent years' plantings. For the purposes of this consent order, the production limit should be set at 'approximately 850,000 Lbs' as 'current production'."

xv. DBOC 2010e, Attachment 12c to the letter from Drakes Bay Oyster Company to Point Reyes National Seashore on November 15, 2010, regarding oyster rack GPS data. This attachment is a spreadsheet listing rack condition, length, and GPS location.

xvi. DBOC 2010e, Attachment 12c to the letter from Drakes Bay Oyster Company to Point Reyes National Seashore on November 15, 2010, regarding oyster rack GPS data. This attachment is a spreadsheet listing rack condition, length, and GPS location.

xvii. DBOC 2010e, Attachment 12c to the letter from Drakes Bay Oyster Company to Point Reyes National Seashore on November 15, regarding maps of racks (oyster rack GPS information). This attachment is a spreadsheet listing rack condition, length, and GPS location.

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

> "Roughly half of the DBOC production originates on racks and is finished in bags on the bottom. The other half begins in floating bags and is finished in bags on the bottom."

xix. NPS 2005, Email from Point Reyes National Seashore Superintendent to Kevin Lunny on August 17, 2005, regarding Oyster Farm.

> "We approved the use of the treated lumber with ACZA for repairs to existing racks."

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

> "DBOC continued to make significant rack repairs from 2005-2007, until the CCC---working closely with the NPS---abruptly prohibited DBOC from making any rack repairs."

xxi. DBOC 2009d, Letter from Drakes Bay Oyster Company to California Coastal Commission on October 2,2009, regarding Consent Cease & Desist Order No. CCC-07-CD-11 Enforcement letter dated September 16, 2009.

> "DBOC has not repaired any oyster racks since the Consent CDO was agreed upon. As agreed in the order, DBOC will not make any repairs to the oyster racks until a CDP has been obtained and the NPS, CDFG and CCC have approved all repair materials. DBOC will provide complete material submittals to each of these agencies, and receive approval, prior to use."

xxii. DBOC 2010e, Attachment 12c to the letter from Drakes Bay Oyster Company to Point Reyes National Seashore on November 15, 2010, regarding oyster rack GPS data. This attachment is a spreadsheet listing rack condition, length, and GPS location.

xxiii. DBOC 2010f, Letter from Drakes Bay Oyster Company to California Coastal Commission on March 16, 2010, regarding Coastal Development Permit Application No: 2-06-003—response to CCC letter dated March 9, 2010.

> "French tubes replace the Japanese hanging cultch method and can be used on all racks."

xxiv. DBOC 2010a, Attachment 10a to the letter from Drakes Bay Oyster Company to Point Reyes National Seashore on November 15, 2010, regarding oyster production/rack culture/cluster oysters. "Practice Protocols – Japanese Hanging Cultch Method," including list of items associated with this type of culture.

xxv. DBOC 2010a, Attachment 10a to the letter from Drakes Bay Oyster Company to Point Reyes National Seashore on November 15, 2010, regarding oyster production/rack culture/cluster oysters. "Practice Protocols – French Tube (oyster stick) Culture," including list of items associated with this type of culture.

> "Tubes are hung on racks for approximately 12 months."

xxvi. 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.

> "The time the oysters are kept on the beaches varies – up to about 9 months, turned about every month or two. … Only about 2 months of beach hardening is necessary, but because of current limited rack space, oysters are removed much sooner to allow for new seed."

xxvii. DBOC 2010b, Attachment 10b to the letter from Drakes Bay Oyster Company to Point Reyes National Seashore on November 15, 2010, regarding oyster production (oyster production bottom bags). Diagrams of bottom bags were shown on this attachment.

> "In high-flow, more aggressive current areas, bottom bags are attached to long lines (refer to diagrams and specifications 1 and 2, below)."

xxviii. 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 occasionally uses cinder blocks as anchors as well as the PVC pipe anchors. DBOC also uses larger concrete anchors."

xxix. DBOC 2010b, Attachment 10b to the letter from Drakes Bay Oyster Company to Point Reyes National Seashore on November 15, 2010, regarding oyster production/bottom bags. Diagrams of bottom bags were shown on this attachment.

> "In low current flow areas, where there is no risk of bag displacement, single bags are placed directly on the substrate, without the use of long lines."

xxx. DBOC 2010b, Attachment 10b to the letter from Drakes Bay Oyster Company to Point Reyes National Seashore on November 15, 2010, regarding oyster production (oyster production bottom bags).

> "Floating bottom bag culture (see diagrams and specifications 2 & 3, below), typically used for smaller seed, can rest on the substrate at low tide and float off the bottom at high tide."

xxxi. 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 occasionally uses cinder blocks as anchors as well as the PVC pipe anchors. DBOC also uses larger concrete anchors."

xxxii. DBOC 2010d, Attachment 10d to the letter from Drakes Bay Oyster Company to Point Reyes National Seashore on November 15, regarding oyster production (harvest area). This attachment contains a list of harvest areas (otherwise referred to in the document as culture beds) and the type of culture that takes place in each bed.

xxxiii. DBOC 2012d, Letter (with attachment) from Drakes Bay Oyster Company to the California Coastal Commission on February 27, regarding CCC Letters regarding marine debris.

> "The spacers, and then, the coffee can lids, continued to be lost during storm events. Due to the extensive loss of plastic into the environment, CDFG required JOC to stop stake culture in Drakes Estero. By the mid 1990s all stake culture had ceased and had been replaced by bag culture."

xxxiv. DBOC 2008e, Letter from Drakes Bay Oyster Company to California Coastal Commission on January 30, regarding CCC-07-CD-04 Drakes Bay Oyster Company (section 3.2.7 of Consent Order)—Pacific Oysters and European Flat Oysters.

> "Only the traditional Japanese Hanging Culture, Rack and Bag Culture, Bottom Bag Culture, Floating Bag Culture (seed rearing) and Floating Tray Culture (seed rearing) are currently used in Drakes Estero. Drakes Bay Oyster Company has introduced no new shellfish culturing methods. New culturing methods will not be used in Drakes Estero without prior approval from the California Department of Fish and Game, the California Fish and Game Commission and the California Coastal Commission."

xxxv. DBOC 2012d, Letter (with attachment) from Drakes Bay Oyster Company to the California Coastal Commission on February 27, regarding CCC Letters regarding marine debris.

> "They gloss over the persistence of coffee can lids used by the previous operator, JOC, to stabilize stake culture (see appendix). … As these coffee can lids have not been used in Drakes Estero by JOC for nearly 20 years, this further demonstrates that the plastic marine debris can, and has persisted for a long period of time in Drakes Estero."

xxxvi. DBOC 2011f, Letter (with attachments) from Drakes Bay Oyster Company to Point Reyes National Seashore on March 4, 2011, regarding supplemental scoping information.

> "The photos show 'cubes' of 'French tubes,' also known as 'oyster sticks.' This was a step once used by DBOC in the French tube oyster culture. In the past, DBOC set larvae on the tubes in the outdoor setting tanks and then let the microscopic spat begin to grow on the tubes in the cubes on Bed 7 for a few weeks before hanging the tubes on the racks. DBOC has found this step to be unnecessary, and therefore this step is no longer used. Currently, DBOC brings the tubes directly to the racks following the setting process."

xxxvii. DBOC 2010c, Attachment 10c to the letter from Drakes Bay Oyster Company to Point Reyes National Seashore on November 15, regarding oyster production (November 2007 map).This attachment contains a map of each harvest area.

xxxviii. DBOC 2010e, Attachment 12c to the letter from Drakes Bay Oyster Company to Point Reyes National Seashore on November 15, 2010, regarding oyster rack GPS data. This attachment contains a table of GPS data points and measurements of the DBOC racks in Drakes Estero.

xxxix CCC 2011, Letter from California Coastal Commission to Drakes Bay Oyster Company on September 29, 2011, regarding Compliance with the Coastal Act and with Consent Cease and Desist Order CCC-07-CD-11 (Drakes Bay Oyster Company).

> "The issue has been raised to the Commission that there is a substantial amount of marine debris in Drakes Estero and on Point Reyes beaches, and that a large portion of this marine debris comprises plastic spacers and other materials used in Drakes Bay Oyster Company's (DBOC) aquaculture operation. … It is not clear to Commission staff at this time what aspect of the DBOC operation is apparently resulting in the release of plastic marine debris. If the marine debris now being found in and near Drakes Estero is coming from abandoned areas or equipment that has not been addressed consistent with the Debris Removal Plan and Order, we would welcome a discussion with you about updating or modifying the Debris Removal Plan to address this issue. If, however, the plastic debris is being released due to improper storage of active-use (non-abandoned) aquaculture equipment at the DBOC facility or some other operational oversight, the dispersion of these new materials throughout the Point Reyes coastal area would constitute new unpermitted development and may require a different set of solutions. In either case, as I'm sure you will agree, the continued presence and release of plastic marine debris poses a hazard to the marine environmental and natural resources of Drakes Estero and needs to be aggressively and comprehensively addressed in the immediate future."

xl. CCC 2012a, Letter from California Coastal Commission to Drakes Bay Oyster Company on February 1, regarding Compliance with the Coastal Act and with Consent Cease and Desist Order CCC-07-CD-11 (Drakes Bay Oyster Company).

> "Marine debris, especially plastics, and the use of motorized vessels near sensitive harbor seal areas pose serious threats to marine habitats and wildlife, and we are therefore concerned about these issues at Drakes Estero."

xli. CCC 2012b, Letter from California Coastal Commission to Drakes Bay Oyster Company on July 30, 2012, regarding Compliance with the Coastal Act and with Consent Cease and Desist Order CCC-07-CD-11 (Drakes Bay Oyster Company).

> "Marine debris, especially plastics, poses a serious threat to marine habitats and wildlife. Commission staff has been informed that there is a substantial amount of marine debris in Drakes Estero and on Point Reyes beaches, and that a large portion of the debris consists of materials used in aquaculture operations, such as plastic spacers, small-mesh bags, and polystyrene flotation blocks. Sections 3.2.2 and 3.2.3 of the Order require removal of abandoned equipment, and the reported presence of marine debris is suggestive of possible violations of these Sections, as well as a general problem that should be addressed to avoid such threats to marine habitats and wildlife. In addition, Section 3.2 .3 of the Order required submission of a Debris Removal Plan."

xlii. DBOC 2012d, Letter (with attachment) from Drakes Bay Oyster Company to the California Coastal Commission on February 27, 2012, regarding CCC Letters regarding marine debris.

> "DBOC has agreed to re-write section 3.2.3 of the consent order to include a marine debris removal recordkeeping component."

xliii. DBOC 2011i, Letter (with attachments) 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

> "In 2005, DBOC took over the shellfish farm in Drakes Estero. Fully aware of the legacy plastic debris problems, DBOC made several changes in farm practices to further reduce the chances of losing culture gear into the environment, including:

> 1. Immediately implementing a policy that no wires would be cut when harvesting strings from the racks until above the high tide line (above the stringing shed). DBOC removes the oysters from the wires without cutting the wire. Using this technique, the black plastic spacers are not subject to loss into the environment.
>
> 2. Beginning in 2006, DBOC began to replace the Japanese Hanging Cultch wire string culture method with "French tubes". These French tubes reduce consumables (i.e., the wire strings which can only be used for one growing season), and do not require the black spacers. It should be noted that DBOC, EAC, or NPCA have never found a fugitive French tube anywhere in Drakes Estero. Over the past five years, approximately 100,000 strings have been replaced with the French tube method, and this technique now represents the majority of the rack culture. DBOC will, however, continue to cultivate a portion of its oysters with the traditional wire string and spacer method. The description of this historic culture method during DBOC's interpretive on-farm tours is of great interest to the visiting public.
>
> 3. DBOC checks the oyster racks regularly to remove any loose materials so they are not lost into the environment.
>
> 4. DBOC anchors all oyster bags in areas where there is potential for tidal energy to displace bags.
>
> 5. DBOC initiated a program whereby all floating culture is anchored in a least two places and all floating bags are attached to at least two anchored lines (a DBOC "redundancy program")."

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

> "The description of boat operations in the NAS report and the conversations between DBOC staff and VHB/NPS staff generally describes the current boat use in Drakes Estero. … DBOC began with three boats in operation at one time, then reduced to two boats, and currently uses three boats again. Albeit unusual, all boats can be in the Estero all day. Sometimes, boat use is required 7 days a week. On other days, no boats enter the estero at all. As a working farm, DBOC must work around tides, weather, day length, planting season, high demand occasions, etc. The oyster farm has always operated with these variable demands and will continue to in the future."

xlv. DBOC 2011f, Letter (with attachments) from Drakes Bay Oyster Company to Point Reyes National Seashore on March 4, 2011, regarding supplemental scoping information.

> "Currently, there are no permanent moorings in Drakes Estero. Each barge has its own anchor for occasional use. DBOC rules are to anchor barges in deep water."

xlvi. DBOC 2008f, Letter from Drakes Bay Oyster Company to California Coastal Commission on February 11, regarding CCC-07-CD-04 Drakes Bay Oyster Company—Boat Transit.

> "As it is required for Drakes Bay Oyster Company to access Drakes Estero during low tides, regular boat traffic will be limited to the routes identified on attached map during low tides while eelgrass is present in Drakes Estero. These routes are necessary for the required minimum access to accomplish water quality and marine biotoxin monitoring for Drakes Estero. Individual growing areas will not be accessed during low tide unless it is necessary for planting, managing or harvesting."

xlvii. DBOC 2010o, Attachment 1a to the letter from Drakes Bay Oyster Company to Point Reyes National Seashore on November 15, regarding boat transit map. This attachment is a PDF map with a broad-scale hand-drawn map of boat routes in Drakes Estero.

xlviii. DBOC 2010s, Letter from Drakes Bay Oyster Company to Point Reyes National Seashore Natural Resource Manager on November 15, 2010, regarding vessel transit plan.

> " As it is required for Drakes Bay Oyster Company to access Drakes Estero during low tides, regular boat traffic will be limited to the routes identified on attached map during low tides while eelgrass is present in Drakes Estero. These routes are necessary for the required minimum access to accomplish water quality and marine biotoxin monitoring for Drakes Estero. Individual growing areas will not be accessed during low tide unless it is necessary for planting, managing or harvesting."

xlix. DBOC 2012e, Letter from Drakes Bay Oyster Company to the California Coastal Commission on March 5, 2012, regarding March 5, 2012 Meeting.

> "We then explained to you that oyster boats have operated in the western end of the lateral channel during pupping season since the seal protection protocols were established in 1992 by NPS, NOAA, CDFG, CDPH and Johnson Oyster Company (including the years following the 2008 NPS special use permit)."

l. CCC 2012a, Letter from California Coastal Commission to Drakes Bay Oyster Company on February 1, 2012, regarding Compliance with the Coastal Act and with Consent Cease and Desist Order CCC-07-CD-11 (Drakes Bay Oyster Company).

> Concerning the issue of motorized vessels in the lateral' channel during the restricted period, at our January 4 meeting, your attorney, Mr. Walton, argued that the language of the SUP stating that "the 'Main Channel' and 'Lateral Channel' of Drakes Estero will be closed to boat traffic" during certain periods actually meant that only the intersection of those channels would be so closed. We pointed out that this interpretation is at odds with the plain language of the prohibition. In support of your interpretation, Mr. Walton argued that the 1992 protocol only prohibited passage through that intersection and that it was not superseded by the SUP, so it is still binding. In fact, he argued that the SUP was intended to extend the prohibitions contained in the 1992 protocol. However, nothing in the SUP so indicates. To the contrary, the SUP contains an integration clause (provision 32 on page 14) that states that the SUP itself, with its exhibits, "constitutes the entire agreement between Permitter and Permittee with respect to the subject matter of this Permit and supersedes all prior offers, negotiations, oral and written." Thus, the SUP clearly did supersede the 1992 protocol, and Mr. Walton's claim that you were abiding by the terms of the 1992 protocol and that there have always been motorized boats in the lateral channel year-round 1 is not only irrelevant to whether this is a violation of the SUP and the Consent Order, but an admission of a longer violation. We have discussed this matter with the National Park Service (NPS), and NPS has confirmed that a) they agree with our reading of the SUP (i.e., boat traffic is indeed prohibited in the entire lateral channel between March 1 and June 30); and b) the 1992 protocol has been superseded by the SUP and was in no way memorialized or authorized as part of the SUP.

li. NPS 2012a, Letter from Point Reyes National Seashore Superintendent to Drakes Bay Oyster Company on January 23, 2012,regarding L7917 (Special Use Permit – MISC-8530-6000-8002).

> "The plain meaning of this provision is that the entirety of the Lateral Channel is closed during the harbor seal breeding season (March 1-June 30). The SUP references the Lateral Channel, Main Channel and West Channel. The Lateral Channel is the entire channel between the Main Channel and West Channel. The eastern portion of the Lateral Channel is within the permanent harbor seal protection area and is thus closed to boat use all year. The west portion of the Lateral Channel (outside of the harbor seal protection area) is subject to the seasonal closure (March 1-June 30).
>
> During the negotiations for the current SUP, DBOC introduced a 1992 protocol for consideration, but it was not incorporated into the final signed SUP. As explained above, Section 4(b)(vii) and

> Exhibit C are the operative provisions of the SUP specific to harbor seals. Boat use of any portion of the Lateral Channel during the seasonal closure period is not allowed under the SUP."

lii. NPS 2012a, Letter from Point Reyes National Seashore Superintendent to Drakes Bay Oyster Company on January 23, 2012,regarding L7917 (Special Use Permit – MISC-8530-6000-8002).

> "The plain meaning of this provision is that the entirety of the Lateral Channel is closed during the harbor seal breeding season (March 1-June 30). The SUP references the Lateral Channel, Main Channel and West Channel. The Lateral Channel is the entire channel between the Main Channel and West Channel. The eastern portion of the Lateral Channel is within the permanent harbor seal protection area and is thus closed to boat use all year. The west portion of the Lateral Channel (outside of the harbor seal protection area) is subject to the seasonal closure (March 1-June 30).
>
> During the negotiations for the current SUP, DBOC introduced a 1992 protocol for consideration, but it was not incorporated into the final signed SUP. As explained above, Section 4(b)(vii) and Exhibit C are the operative provisions of the SUP specific to harbor seals. Boat use of any portion of the Lateral Channel during the seasonal closure period is not allowed under the SUP."

liii. CCC 2012a, Letter from California Coastal Commission to Drakes Bay Oyster Company on February 1, 2012, regarding Compliance with the Coastal Act and with Consent Cease and Desist Order CCC-07-CD-11 (Drakes Bay Oyster Company).

> Operation of boat traffic in the lateral channel year-round, therefore, is inconsistent with, first, the 1992 protocol, and, later, the April22, 2008 NPS Special Use Permit (SUP) issued to Drakes Bay Oyster Company (DBOC), which superseded this protocol, and is therefore a violation of the Consent Order reached between you and the Commission. As provided for in the Order (including sections 5.0, 6.0, and 7.0), and as discussed in our meeting of January 4, 2012, the Order incorporates by reference the requirements of other legal requirements, and includes a commitment by DBOC to comply with all applicable laws and regulations, and permits issued to DBOC, specifically including the SUP.

liv. NPS 2010h, Letter from Point Reyes National Seashore Chief of Natural Resource Management to Drakes Bay Oyster Company on October 6, 2010, regarding Information request.

> 1. Vessel Transit Plan , with list, description of vessels used and frequency

lv. DBOC 2010p, Attachment 1b to the letter from Drakes Bay Oyster Company to Point Reyes National Seashore on November 15, 2010, regarding GPS tracking data from June 7, 2010. This attachment contained a PDF map at a broad scale of GPS boat tracking data from June 7, 2010.

lvi. DBOC 2010q, Attachment 1c to the letter from Drakes Bay Oyster Company to Point Reyes National Seashore on November 15, regarding GPS tracking data from January 18, 2010. This attachment contained a PDF map at a broad scale of GPS boat tracking data from January 18, 2010.

lvii. NPS 2011p, Email from Point Reyes National Seashore Hydrologist to Drakes Bay Oyster Company on February 25, regarding Follow up on Feb 16 Meeting.

> The following are a list of items that were requested by VHB during their visit.
>
> ...
>
> 5. All GPS boat transit data, as specific as possible (mentioned weekly GPS data downloads and potential GPS data for routes organized by rack/bed number)

lviii. DBOC 2011f, Letter (with attachments) from Drakes Bay Oyster Company to Point Reyes National Seashore Natural Resource Manager on March 4, 2011, regarding supplemental scoping information

> "DBOC did not plan to make the GPS records available to the public or the NPS unless it was necessary to prove the whereabouts of a DBOC boat. These data were not designed for any other use. DBOC has already provided you with maps showing GPS tracks of boat usage in Drakes Estero on November 15th, 2010 (Attachments 1b and 1c). How is more detailed GPS data to be used by the EIS process? If DBOC is to submit private, detailed GPS records, the records must be treated securely by VHB. DBOC is concerned about the safety of the data due to the fact that certain PRNS staff---directly involved with the challenged allegations of harm to harbor seals, reports, and other public claims of environmental harm caused by DBOC---is involved in this EIS process."

lix. DBOC 2010p, Attachment 1b to the letter from Drakes Bay Oyster Company to Point Reyes National Seashore on November 15, 2010, regarding GPS tracking data from June 7, 2010. This attachment contained a PDF map at a broad scale of GPS boat tracking data from June 7, 2010.

lx. DBOC 2010q, Attachment 1c to the letter from Drakes Bay Oyster Company to Point Reyes National Seashore on November 15, regarding GPS tracking data from January 18, 2010. This attachment contained a PDF map at a broad scale of GPS boat tracking data from January 18, 2010.

lxi. DBOC 2010p, Attachment 1b to the letter from Drakes Bay Oyster Company to Point Reyes National Seashore on November 15, 2010, regarding GPS tracking data from June 7, 2010. This attachment contained a PDF map at a broad scale of GPS boat tracking data from June 7, 2010.

lxii. NPS 2012a, Letter from Point Reyes National Seashore Superintendent to Drakes Bay Oyster Company on January 23, regarding L7917 (Special Use Permit – MISC-8530-6000-8002).

> "The SUP references the Lateral Channel, Main Channel and West Channel. The Lateral Channel is the entire channel between the Main Channel and West Channel."

lxiii. NPS 1992, Letter from Point Reyes National Seashore to California Department of Fish and Game on April 28.

> Attachment includes a graphic showing the area defined as the lateral channel.

lxiv. NPS 2005, Email from Point Reyes National Seashore Superintendent to Kevin Lunny on August 17, regarding Oyster Farm.

> "As you recall, the NPS does not have an issue with the temporary structures except that the State of California Food and Agriculture Branch must approve the potential use of these facilities and the septic issues must be resolved with Marin County."

lxv. DBOC 2011b, Letter from Drakes Bay Oyster Company to permitting agencies on March 25, 2011 regarding Emergency Repair Permit Applications for Damages Caused by the March 19 & 20, 2011 Wind Storm.

> "South Pier: Remove and properly dispose of remaining portions of the pier. DBOC does not plan to replace the South Pier."

lxvi. DBOC 2009b, Letter from Drakes Bay Oyster Company to California Coastal Commission on October 5, 2009 regarding Coastal Development Permit Application No: 2-06-003—Additional documentation in response to request by California Coastal Commission in letter dated June 10, 2009.

> "42. Replace existing 12' X 60' floating dock at the end of the oyster washing dock.
> 49. Installation of one 8-foot by 40-foot storage container.
> 54. Installation of a temporary 8-foot by 40-foot container for oyster shucking and packing."

lxvii. CCC 2006, Letter from California Coastal Commission to Drakes Bay Oyster Company on March 21, regarding Ongoing violation of Cease and Desist Order No. CCC-03-CD-12 and violation of the Coastal Act; deadline for completion of CDP Application No. 2-06-003.

> "Staff also observed five partially buried and plumbed oyster culture tanks located in the area labeled "M: Seed setting area" on the 2004 building location exhibit. These tanks were not present in this location during staff's March 15,2005 site visit (see attached photo), and were presumably removed as required under the Order when all of the Area M buildings and their contents were removed. During last month's site visit, you stated that you simply put the tanks back near where they used to be inside the buildings that were removed. The removal requirements of the Order, however, include not just the buildings that were slated for removal, but their contents as well. The relocation, partial burial, and plumbing of these tanks in this location therefore constitute new unpermitted development and are in violation of the Order's removal requirements."

lxviii. 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 add nutrients during the setting process and does not plan to. DBOC does occasionally add microalgae to the water used inside the single oyster setting system during times that DBOC is recirculating water. The algae provide some food for the juvenile oysters (attachment 3.h.1)"
>
> Attachment 3.h.1 shows a sample label of the label of Instant Algae® Marine Microalgae Concentrates Shellfish Diet 1800™.

lxix. DBOC 2010f, Letter from Drakes Bay Oyster Company to California Coastal Commission on March 16, 2010, regarding Coastal Development Permit Application No: 2-06-003 – Response to CCC letter dated March 9, 2010.

> "4. Two of the five setting tanks are 10' in diameter and 4' deep and three of the tanks at 7' in diameter and 4' deep.
>
> 5. One of the pumps is always running to provide water to the hatchery and setting systems. During nonworking hours, the one horsepower pump provides enough flow. While employees are washing oysters, the five horsepower pump provides enough flow for the hatchery and the washing. The pumps never operate simultaneously. They are actually wired and controlled so that only one pump can operate at any one time.
>
> 6. The outdoor setting tanks are filled and remain full for about 4 days during the setting period. After 4 days, to feed the juvenile oysters and cool the water slowly, raw seawater flows through tanks at about 5 GPM for the next 3 days."

lxx. DBOC 2011i, Correspondence ID 52043, Letter (with attachments) from Drakes Bay Oyster Company to Point Reyes National Seashore Superintendent on December 9, regarding Drakes Bay Oyster Company's comments on National Park Service Draft Environmental Impact Statement for Special Use Permit.

> The Executive Summary Comments and Suggested Revisions included in this correspondence state: "This exhibit (as well as others) does not include the existing wet storage facility. Currently, DBOC has an above ground concrete structure, plumbing and underground tank that is omitted from the NPD exhibit in the DEIS. This existing system is vital to the operations of the oyster farm. The wet storage facility should be shown on the site drawings and allowed to continue. Restricting the use of this facility would be detrimental to DBOC."

lxxi. 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.

> "Also attached are photos of the 5' wide x 48' concrete slab (3.a.2, 3.a.3), the associated plumbing (3.a.4) and an example of one of the live holding tanks used by DBOC (3.a.5)."

lxxii. 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 25% of DBOC product is sold in jars and 75% is sold live in the shell."

lxxiii. DBOC 2011b, Letter from Drakes Bay Oyster Company to permitting agencies on March 25, regarding Emergency Repair Permit Applications for Damages Caused by the March 19 & 20, 2011 Wind Storm.

- Floating Dock: Remove and dispose of final portions of the destroyed 12' x 60' dock, Replace floating dock with dock of similar materials and exact dimensions, The new floating dock will be anchored to the end of the new work platform, Because the new dock will be anchored to the new platform, no new pilings will be necessary to replace pilings lost during the wind storm.

- Work Platform: As the existing wood platform is damaged beyond repair, a total replacement is required.

lxxiv. DBOC 2012c, Letter from Drakes Bay Oyster Company to Superintendent, Point Reyes National Seashore on May 7, regarding Coastal Development Permit Application No: 2-06-003.

> "47. Replacement of six picnic tables and six additional picnic tables"

lxxv. 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."

lxxvi. NPS 2006e, Letter from Point Reyes National Seashore Superintendent to Kevin Lunny on February 23, 2006.

> "The major paving project in front of the planned future retail area, pathway, and fencing were all improvements made since our last visit that were not authorized by the Park Service."

lxxvii. CCC 2006, Letter from California Coastal Commission to Drakes Bay Oyster Company on March 21, regarding Ongoing violation of Cease and Desist Order No. CCC-03-CD-12 and violation of the Coastal Act; deadline for completion of CDP Application No. 2-06-003.

> "Staff visited the property on February 17, 2006, at which time staff observed this unpermitted development as well as other new unpermitted development including fencing and a wedge of fill topped with freshly paved asphalt located between the two unpermitted storage containers and the retail building."

lxxviii. DBOC 2010k, Letter from Drakes Bay Oyster Company to Point Reyes National Seashore on November 15, 2010, regarding housing.

> "DBOC provides five homes with a total of 14 bedrooms for its employees; and in some cases, their families."

lxxix. CDFG 2011b, Email from Associate Marine Biologist, California Department of Fish and Game Aquaculture and Bay Management Project, to Point Reyes National Seashore, on May 26, 2011, regarding Escrow account for DBOC.

> "Turns out the account was never transferred to DBOC when the lease was transferred. The bank indicated that they spoke to the Johnson's about the necessary documentation needed to transfer the account to DBOC, but it was never followed through. ... I will work with DBOC to establish a new agreement and discuss what the estimated clean-up costs are currently and how much should be set-aside in the escrow account."

lxxx. CDFG 2007b, Letter from Director, California Department of Fish and Game to Superintendent Point Reyes National Seashore, May 15, 2007, regarding Drakes Bay Oyster Company lease status.

> "Consistent with article 1, section 25 of the California Constitution, this conveyance carried a reservation of the right to fish in the waters overlying these lands. Although the right to fish extends to both commercial and sports fishing, it does not extend to aquaculture operations. Regardless if its purpose is commercial or recreational, *fishing* involves the take of public trust resources and is therefore distinct from aquaculture, which is an agricultural activity involving the cultivation and harvest of private property."

lxxxi. DOI 2012a, Letter (with attachments) from Field Solicitor to California Fish and Game Commission Executive Director on May 21, 2012.

> "The issue of the State of California's authority to issue aquaculture leases for the water bottoms in Drakes Estero has been addressed by the Department of Fish and Game's Office of General Counsel, by the Executive Officer of the State Lands Commission, and by the Attorney General's Office. All three have reached the same conclusion: that the "right to fish" under the public trust doctrine does not extend to aquaculture or to the leasing of water bottoms in Drakes Estero."

lxxxii. 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."

lxxxiii. DBOC 2008a, Letter from Drakes Bay Oyster Company to California Coastal Commission on January 30, 2008, regarding CCC-07-CD-04 Drakes Bay Oyster Company (section 3.2.6 of Consent Order).

> "Section 3.2.6 - HARBOR SEAL PROTECTION AREAS. The Consent Cease and Desist Order temporarily limits the use of growing areas to that which was actively growing oysters when the California Department of Public Health staff, using a GPS, identified those areas except Bed 17. Bed 17 is shown in its entirety rather than only the actively used portion. See Exhibit 7a for individual bed locations. As you will see in exhibit 7b the 2007 -2008 Annual Sanitary Survey. The Approved Area Bed 17 is shown in white. This depicts the entire 25.46 acres of fully approved shellfish growing waters. The Consent Order Seal Protection Area bisected this Approved Area Bed 17. No oysters were being grown prior to the Consent Order or are being grown in the portion of Bed l7 that now falls within the Seal Protection Area. Therefore, no oysters either need or needed to be removed. In reference to oysters being grown in Approved Area Bed 17, outside of the Seal Protection Area; we utilize the entire area as shown."

lxxxiv. DBOC 2011e, Letter from Drakes Bay Oyster Company to Point Reyes National Seashore on March 15, 2011, regarding Lease M-438-01 lease line.

> "The area to be removed is the area nearest the main channel where harbor seals haul out. The edge of the lease, therefore, will be more than 500' away from the main channel haul outs. This distance exceeds the minimum setbacks of both the Marine Mammal Act and the more restrictive

> 1992 multi-agency Drakes Estero Harbor Seal Protection Protocols. Lastly, these new setbacks will alleviate the need for the temporary seal protection areas which were added as a precautionary measure by the California Coastal Commission."

lxxxv. DBOC 2008e, Letter from Drakes Bay Oyster Company to California Coastal Commission on January 30, 2008, regarding CCC-07-CD-04 Drakes Bay Oyster Company (section 3.2.7 of Consent Order)—Pacific Oysters and European Flat Oysters.

> "No oyster species other than the Pacific oyster and the European Flat oyster will be planted in Drakes Estero by the Drakes Bay Oyster Company without prior approval from the California Department of Fish and Game, the California Fish and Game Commission and the California Coastal Commission."

lxxxvi. DBOC 2012a, Letter from Drakes Bay Oyster Company (with attachments) to the California Coastal Commission on February 17, 2012, regarding CDP Application Number 2-06-003.

> "18. Continue Pacific and European oyster culture using hanging cluster method, both on "strings" and on "French Tubes" on racks located throughout DFG lease area number M-438-01 within Drakes Estero.
>
> 19. Continue Pacific and European oyster culture using anchored bottom bags within intertidal areas throughout DFG lease area number M-438-01 within Drakes Estero
>
> 20. Continue Pacific and European oyster culture using un-anchored bottom bags within intertidal areas throughout DFG lease area number M-438-01 within Drakes Estero
>
> 21. Continue Pacific and European oyster culture using anchored floating bags within intertidal areas throughout Department of Fish and Game lease area number M-438-01 within Drakes Estero"

lxxxvii. DBOC 2012c, Letter from Drakes Bay Oyster Company to Superintendent, Point Reyes National Seashore on May 7, 2012, regarding Coastal Development Permit Application No: 2-06-003.

> "12. Continue Pacific and European oyster culture using hanging cluster method, both on "strings" and on "French Tubes" on racks located throughout DFG lease area number M-438-01 within Drakes Estero.
>
> 13. Continue Pacific and European oyster culture using anchored bottom bags within intertidal areas throughout DFG lease area number M-438-01 within Drakes Estero
>
> 14. Continue Pacific and European oyster culture using un-anchored bottom bags within intertidal areas throughout DFG lease area number M-438-01 within Drakes Estero
>
> 15. Continue Pacific and European oyster culture using anchored floating bags within intertidal areas throughout Department of Fish and Game lease area number M-438-01 within Drakes Estero"

lxxxviii. 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."

lxxxix. DBOC 2012d, Letter (with attachment) from Drakes Bay Oyster Company to the California Coastal Commission on February 27, regarding CCC Letters regarding marine debris.

> "They gloss over the persistence of coffee can lids used by the previous operator, JOC, to stabilize stake culture (see appendix). … As these coffee can lids have not been used in Drakes Estero by JOC for nearly 20 years, this further demonstrates that the plastic marine debris can, and has persisted for a long period of time in Drakes Estero."

xc. 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.

> "Moving forward, DBOC plans to make repairs to approximately 50 racks during 2013, 25 racks during 2014 and regular maintenance to all racks each year following."

xci. 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.

> "Moving forward, DBOC plans to make repairs to approximately 50 racks during 2013, 25 racks during 2014 and regular maintenance to all racks each year following."

xcii. DBOC 2010b, Attachment 10b to the letter from Drakes Bay Oyster Company to Point Reyes National Seashore on November 15, 2010, regarding oyster production (oyster production bottom bags). Diagrams of bottom bags were shown on this attachment.

> "In high-flow, more aggressive current areas, bottom bags are attached to long lines (refer to diagrams and specifications 1 and 2, below)."

xciii. 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 occasionally uses cinder blocks as anchors as well as the PVC pipe anchors. DBOC also uses larger concrete anchors."

xciv. DBOC 2010b, Attachment 10b to the letter from Drakes Bay Oyster Company to Point Reyes National Seashore on November 15, 2010, regarding oyster production/bottom bags. Diagrams of bottom bags were shown on this attachment.

> "In low current flow areas, where there is no risk of bag displacement, single bags are placed directly on the substrate, without the use of long lines."

xcv. DBOC 2010b, Attachment 10b to the letter from Drakes Bay Oyster Company to Point Reyes National Seashore on November 15, 2010, regarding oyster production (oyster production bottom bags).

> "Floating bottom bag culture (see diagrams and specifications 2 & 3, below), typically used for smaller seed, can rest on the substrate at low tide and float off the bottom at high tide."

xcvi. 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 occasionally uses cinder blocks as anchors as well as the PVC pipe anchors. DBOC also uses larger concrete anchors."

xcvii. DBOC 2012c, Letter from Drakes Bay Oyster Company to Superintendent, Point Reyes National Seashore on May 7, regarding Coastal Development Permit Application No: 2-06-003.

> "Purple hinged rock scallops have traditionally been raised in Drakes Estero using floating racks, floating trays and lantern nets. DBOC plans to continue to culture these native scallops using similar techniques."

xcviii. 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.

> "The description of boat operations in the NAS report and the conversations between DBOC staff and VHB/NPS staff generally describes the current boat use in Drakes Estero."

xcix. DBOC 2011d, Letter from Drakes Bay Oyster Company to Point Reyes National Seashore on March 5, 2011, regarding boat parking and floating dock area dredging.

> "The area of shell debris removal is approximately 60' x 30'. The depth of the dredging in this area will vary from 0'0" to approximately 3'0" near the pier. The approximate total volume of dredged material is approximately 100 cubic yards."

c. DBOC 2011a, Letter from Drakes Bay Oyster Company to permitting agencies on April 4, 2011, regarding Drakes Bay Oyster Farm Emergency Repair Project Description. This packet of information distributed among agencies, including the NPS (specific agencies are unspecified), describes DBOC's proposal for site repairs required following March 2011 high wind event damage.

ci. DBOC 2011b, Letter from Drakes Bay Oyster Company to permitting agencies on March 25, 2011, regarding Emergency Repair Permit Applications for Damages Caused by the March 19 & 20, 2011 Wind Storm. This packet of information distributed among agencies, including the NPS (specific agencies are unspecified), describes DBOC's proposal for site repairs required following March 2011 high wind event damage.

cii. DBOC 2010n, Letter from Drakes Bay Oyster Company to Point Reyes National Seashore Superintendent on November 24, regarding Drakes Bay Oyster Company comments on National Park Service scoping letter for Special Use Permit Environmental Impact Statement.

> "As explained in the July 6, 2010 letter requesting the SUP, the CDFG has been leasing the bottomlands in Drakes Estero for shellfish cultivation since the early 1930's. As required by the California Constitution, the California Legislature retained fishing rights in the tidelands, as well as mineral rights, when it otherwise transferred ownership of the tidelands to the United States in 1965. The State's right to issue leases for shellfish cultivation in these waters is a property right long managed through leases authorized by the State Legislature and the California Fish and Game Commission. In 2004, DBOC's two leases were renewed for 25 years, through 2029. Therefore, DBOC is not seeking a permit from the NPS to cultivate oysters in Drakes Estero. Instead, DBOC is seeking a SUP consistent with the terms found in Article 11 of the RUO, which states: 'Upon expiration of the reserved term, a special use permit may be issued for the continued occupancy of the property for the herein described purposes, provided however, that such permit will run concurrently with and will terminate upon the expiration of the state water bottom allotments assigned to the vendor. Any permit for continued use will be issued in accordance with National Park Service regulations in effect at the time the reservation expires.'"

ciii. DBOC 2011e, Letter from Drakes Bay Oyster Company to Point Reyes National Seashore on March 15, 2011, regarding Lease M-438-01 lease line. Attachments to this letter show the revised lease boundaries proposed by DBOC.

civ. DBOC 2010g, Letter from Drakes Bay Oyster Company to California Department of Fish and Game on April 27, 2010, regarding Lease M-428-01.

> "Drakes Bay Oyster Company (DBOC) requests that the following native species be added to the list of approved species for cultivation on lease No. M-438-01:
>
> 1. Olympia oyster (Ostrea conchaphila) Olympia oysters are indigenous to Drakes Estero and currently exist in Drakes Estero.
>
> 2. Purple Hinged Rock Scallops (*Hinnites multirugosus*). Purple Hinged Rock Scallops are indigenous to Drakes Estero and currently exist in Drakes Estero. Purple Hinged Rock Scallops are already an approved cultured species in Drakes Estero on lease No. M-438-02 which is located within M-438-01.
>
> Currently, Pacific oysters (*C. gigas*), European Flat oysters (*Ostrea edulis*) and Manila clams (*Venerupis phippinarum*) are approved for cultivation on M-438-01. The net effect of this request will be to add two native species of bivalve shellfish to lease M-438-01."
>
> And letter from Drakes Bay Oyster Company to Point Reyes National Seashore on March 4, 2011, regarding new cultured species request. "On January 26, 2011 Point Reyes National Seashore requested additional scoping information about the native Olympia oysters and the native Purple Hinged Rock Scallops. DBOC has been given a deadline of March 4, 2011 to provide all additional scoping information. This letter will provide additional information regarding native shellfish culture in Drakes Estero."

cv. DBOC 2011c, Letter from Drakes Bay Oyster Company to Point Reyes National Seashore Scientist on March 4, 2011, regarding new cultured species request.

> "DBOC has hoped to add native species to its State water bottom lease for several years. There are a number of reasons that have contributed to our desire to add these natives." This letter goes on to give detailed background on Olympia oysters and purple-hinged rock scallops.

cvi. DBOC 2010g, Letter from Drakes Bay Oyster Company to California Department of Fish and Game on April 27, 2010, regarding Lease M-428-01.

> "Drakes Bay Oyster Company (DBOC) requests that the following native species be added to the list of approved species for cultivation on lease No. M-438-01:
>
> 1. Olympia oyster (*Ostrea conchaphila*) Olympia oysters are indigenous to Drakes Estero and currently exist in Drakes Estero. 2. Purple Hinged Rock Scallops (*Hinnites multirugosus*). Purple Hinged Rock Scallops are indigenous to Drakes Estero and currently exist in Drakes Estero. Purple Hinged Rock Scallops are already an approved cultured species in Drakes Estero on lease No. M-438-02 which is located within M-438-01. Currently, Pacific oysters (*C. gigas*), European Flat oysters (*Ostrea edulis*) and Manila clams (*Venerupis phippinarum*) are approved for cultivation on M-438-01. The net effect of this request will be to add two native species of bivalve shellfish to lease M-438-01. No new culture methods will be required to grow these additional shellfish species and all seed stock will be certified by CDFG before planting."

cvii. DBOC 2011c, Letter from Drakes Bay Oyster Company to Point Reyes National Seashore on March 4, 2011, regarding new cultured species request.

> "Similar to the native oysters, DBOC has been planning for years to re-establish the native scallop production in Drakes Estero. DBOC has been studying this species and recognizes the challenges in producing scallop seed and rearing scallops. Hatchery techniques are less established for scallops than

> they are for oysters. Currently, DBOC is working with Sea Grant on a Purple Hinged Rock Scallop hatchery techniques grant (attachment g). This grant proposal is in draft form and is confidential. If approved, DBOC plans to participate in this three to four year project that will ultimately provide the necessary training for DBOC staff to perform all hatchery operations on-farm. This species takes approximately four years to reach market size (approximately 1 pound). This is a long term project that will require significant research, training and investment. DBOC is looking forward to getting started."

cviii. DBOC 2008b, Letter from Drakes Bay Oyster Company to California Coastal Commission on January 31, 2008, regarding CCC-07-CD-04 Drakes Bay Oyster Company (Section 3.2.10 of Consent Order).

> "If all environmental conditions are conducive, and mortality rates are low, as much as 850,000 Lbs could be harvested in a single year, based on the recent years' plantings. "

cix. DBOC 2011e, Letter from Drakes Bay Oyster Company to Point Reyes National Seashore Resource Manager March 15, 2011, regarding Lease No. M-438-01 lease line adjustment. Attachment contained a map displaying proposed revisions overlaid on existing boundaries.

cx. 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.

> "NPS also asked if boat use may change with differing levels of production. DBOC has answered this question before. Other credible, competent, experienced scientists and business people have also provided comments about this fundamental error in the dEIS that resulted in a list of unnecessary restrictions. Again, the answer (contrary to the assertions made in the dEIS) is that higher production levels may not require more boat trips. For example, a planting trip with more staff and double the amount of seed on a single boat trip could be accomplished in the same time frame. A harvest trip with more staff could harvest double the product in the same time. With additional staff aboard, a crew could maintain twice the product in the same amount of time. Any need for management changes should be considered and determined by an adaptive management team – one that includes CDFG, NOAA and DBOC. Realistically, the variations in production contemplated in the dEIS "action alternatives" would likely have very little effect on boat use."

cxi. DBOC 2010n, Letter from Drakes Bay Oyster Company to Point Reyes National Seashore on November 24, 2010, regarding Drakes Bay Oyster Company comments on National Park Service scoping letter for Special Use Permit Environmental Impact Statement. This letter and its attachments were used as the basis for detail upon which this development concept is based.

cxii. DBOC 2010f, Letter from Drakes Bay Oyster Company to California Coastal Commission on March 16, 2010, regarding Coastal Development Permit Application No: 2-06-003—response to CCC letter dated March 9, 2010. Items listed in this most recent submittal regarding DBOC's Coastal Development Permit were used to construct this alternative.

cxiii. DBOC 2012a, Letter from Drakes Bay Oyster Company (with attachments) to the California Coastal Commission on February 17, regarding CDP Application Number 2-06-003.

cxiv. NPS 2003c, Letter from Point Reyes National Seashore Superintendent to Johnson Oyster Company on September 17.

> "Regarding any new facilities that were authorized by the completion of the Johnson Oyster Replacement and Rehabilitation Environmental Assessment in 1998, the NPS revokes any authority for construction and replacement activities."

cxv. DBOC 2011g, Letter (with attachments) from Drakes Bay Oyster Company to Point Reyes National Seashore on March 5, 2011, regarding alternate building design. Attachments to this letter provide the detail upon which this development concept is based.

cxvi. 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.

> "The seawater intake will be comprised of 2 – 4" black, high density polyethylene, fusion welded pipes, side by side. Two pipes will be used so that bio-fouling inside the pipes can be controlled. Only one pipe will be used at a time. The other pipe will be plugged while not in use. During the time of non-use, the fouling organisms in the idle pipeline will die, thereby allowing for full flow while pipe is in use. The intake will be screened using ¼" mesh screen with 16 square feet of surface area. The flow rate through the intake screen is .005 feet per second (attachment 3.m.1). The pipes will be installed side by side on the Estero bottom. The pipes will be anchored using two concrete anchors (attachment 3.f.1) every 100 feet. The anchors will be buried by hand on each side of the pipelines. The pipes will be fastened securely to the anchors with 3/8" stainless steel cable. The pipes will remain full of water at all times. The intake screen will be located approximately 2' above the bottom of the Estero and will be marked with a buoy secured with a concrete anchor. The intake screen will be maintained approximately two times per year. DBOC previously provided a map showing the proposed location of the seawater intake lines to CCC and NPS. A copy is attached to this letter for your convenience (attachment 3.m.2)."

cxvii. DBOC 2011g, Letter (with attachments) from Drakes Bay Oyster Company to Point Reyes National Seashore on March 5, 2011, regarding alternate building design.

> "The concept drawings do not show any worker housing except a manager's residence. Worker housing may be incorporated into the design in the future."

cxviii. DBOC 2012c, Letter from Drakes Bay Oyster Company to Superintendent, Point Reyes National Seashore on May 7, regarding Coastal Development Permit Application No: 2-06-003.

> "47. Replacement of six picnic tables and six additional picnic tables "

cxix. DBOC 2012f, Letter (with attachments) from Drakes Bay Oyster Company to Special Park Uses Coordinator, Point Reyes National Seashore on February 17, regarding Cooking Grills.

> "DBOC requests authorization in the CDP to provide twelve cooking grills for use by the visiting public. … DBOC requests that it be allowed to use the same make and model grill that the NPS currently offers for public use at other locations within PRNS. The units are manufactured by Kay Park Recreation Corp, model 1635G (specifications attached)."

cxx. DBOC 2012a, Letter from Drakes Bay Oyster Company (with attachments) to the California Coastal Commission on February 17, 2012, regarding CDP Application Number 2-06-003.

> "Install six additional picnic tables (for a total of 18 tables to serve the visiting public)"

cxx. DBOC 2011g, Letter (with attachments) from Drakes Bay Oyster Company to Point Reyes National Seashore on March 5, 2011, regarding alternate building design. The displayed concept was attached to this letter.