APPENDIX G

ESSENTIAL FISH HABITAT ASSESSMENT

ESSENTIAL FISH HABITAT ASSESSMENT

INTRODUCTION

In support of a permit application to the U.S. Army Corps of Engineers, Los Angeles District, and consistent with the requirements of Section 305(b) (2) of the Magnuson-Stevens Fishery Conservation and Management Act, Padre Associates, Inc. has prepared the following assessment of potential impacts to Essential Fish Habitat (EFH) to address Pacific Gas and Electric Company's (PG&E) proposed installation of temporary and long-term ocean bottom seismometers (OBS) and their corresponding power and data cable (Project) in ocean waters near Montaña del Oro State Park and Diablo Canyon Power Plant (DCPP). This assessment is prepared in accordance with 50 CFR 600.920(g)(2) and addresses the managed fish and invertebrate taxa that could occur at the site.

EFH is defined as "...those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity." "Waters", as used in this definition, are defined to include "aquatic areas and their associated physical, chemical, and biological properties that are used by fish." These may include "...areas historically used by fish where appropriate; 'substrate' to include sediment, hard bottom, structures underlying the waters, and associated biological communities." "Necessary" means, "the habitat required to support a sustainable fishery and the managed species' contribution to a healthy ecosystem." EFH is described as a subset of all habitats occupied by a species (NOAA, 1998).

PROPOSED ACTION

The offshore portion of the Project is located on the seafloor located offshore of Montaña del Oro State Park and DCPP in water depths ranging from approximately 0 to 110 m (360 ft). For this assessment, the region is defined as the seafloor and marine waters within these depth ranges between Point Buchon and waters directly southwest of DCPP.

The project will include the onshore and marine activities below:

- Two temporary OBS units at a time will be placed on the seafloor for approximately two weeks. Each temporary OBS unit would record ambient sound and seafloor movement to allow assessment of background conditions. Temp 1 and Temp 2 (Figure 1) will be placed on the seafloor for two weeks, following recovery and data retrieval, the two temporary units will be moved to locations Temp 3 and Temp 4 for two additional weeks of data collection at those sites.

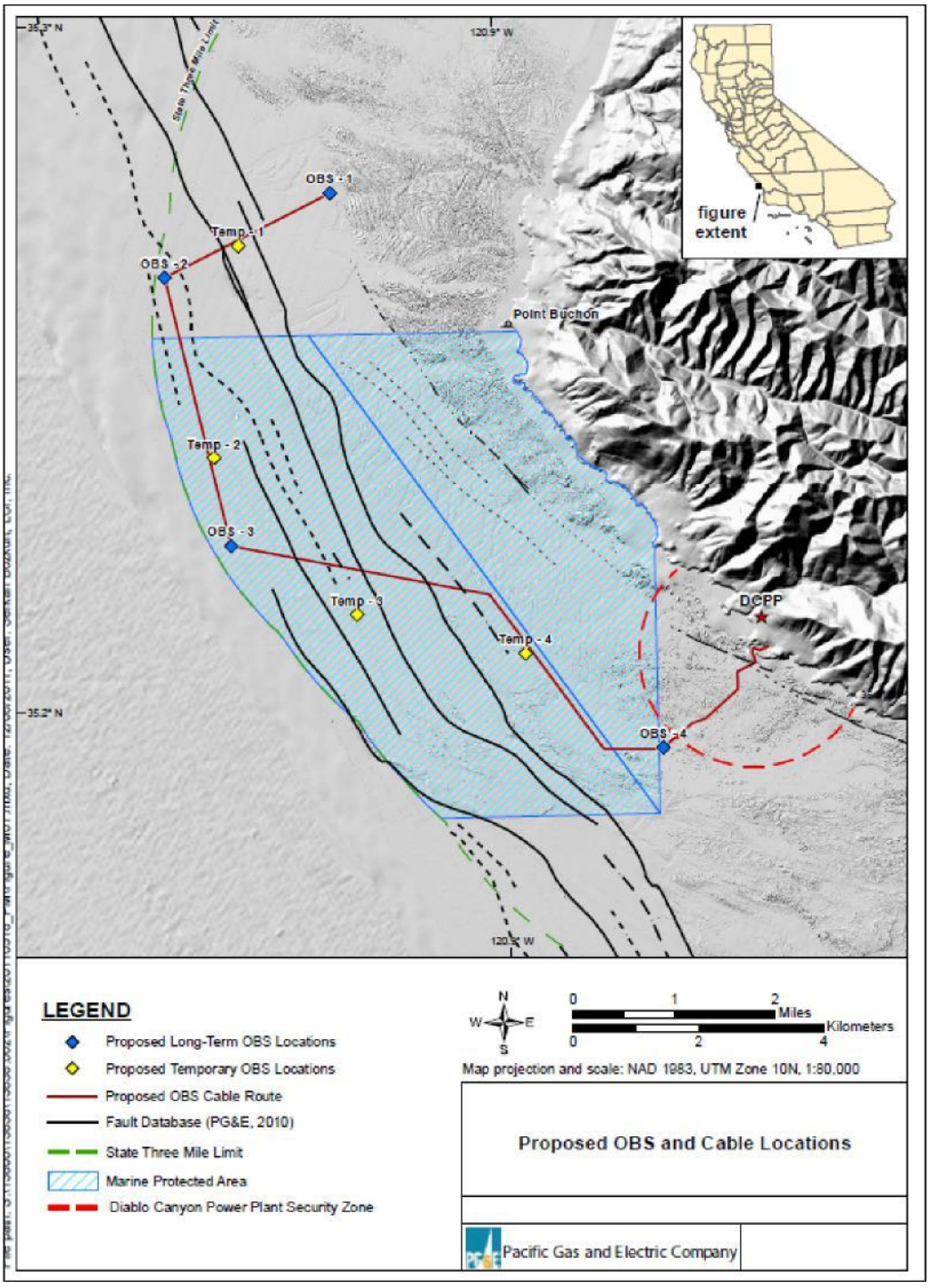


Figure 1. Site Specific Project Area Including Temporary and Long-Term OBS Locations

- There will be four long-term OBS units (Figure 1) that will be connected via cable to an onshore data recorder and power source. Each long-term OBS unit would arrive encased in and attached to the protective concrete dome, which would have three or four "lifting eyes" that will be used to hoist the units using an onboard crane, to place the units onto the seafloor. Each unit will be placed onto the seafloor individually, with its corresponding "free end" of the cable temporarily attached to a buoy, which will be removed when the cable is attached to the next unit. As each subsequent unit is placed on the seafloor, the cables will be attached. As currently proposed, installation of the Project would be over a 2-week period in the summer of 2012. The long-term OBS units would be *in situ* for up to 10 years.

- A data/power cable will connect each of the four long-term OBS units to a shore-based power supply and data recording center located onshore within an existing facilities at the DCPP. Installation of the intertidal portion of the cable would require an extension of an existing PVC conduit located on the rip-rap armor rock within the intertidal area of the DCPP intake embayment. It is anticipated that the cable would be approximately 5 cm (2 in) in diameter and wrapped in an armored polyethylene casing to minimize the potential for wear during its time on the seafloor. The cable would be approximately 18.3 km (11.4 mi) long. The cable will not be buried during installation but is expected to naturally bury itself into the sedimentary seafloor relatively soon after deployment.

- Onshore activities include extending an existing 10 cm (4 in) diameter conduit from its current location on top of the armor rock rip-rap along the east side of the DCPP intake embayment into the water where it would terminate on the sedimentary seafloor in approximately 2.4 m (7.9 ft) of water. The conduit would house the cable through the intertidal area to the data recording equipment and power source located within the existing DCPP facilities.

SEAFLOOR HABITATS AND BIOTA

Point Buchon is the prominent feature of this shoreline that consists of wave-exposed headlands alternating with semi-protected coves. Stable bedrock and variously sized boulders are the predominant substratum. Sand, as fine gravel and shell-debris, is uncommon in the intertidal areas, where it tends to be ephemeral, but becomes the predominant substrate with increasing distance and depth offshore. The nearshore intertidal and subtidal algae, invertebrates, and fishes in the area lying generally between Point Buchon to the north of DCPP and Point San Luis to the south of DCPP have been well studied and are similar to the marine biological communities found in other areas of central California.

Intertidal and Nearshore (to -30 m [-100 ft])

The shoreline of the region is characterized by a rocky headland approximately 19 km (12 mi) in lateral extent, which tends northwest to southeast and which is bounded to the north and south by extensive sand beaches. Diablo Cove to the north of DCPP intake embayment contains giant kelp (*Macrocystis pyrifera*) and bull kelp (*Nereocystis luetkeana*), both of which are included in NOAA designated Habitat Area of Particular Concern (HAPC).

A remotely operated vehicle (ROV) survey completed for a fiber optic cable project in similar water depths approximately 10 km (6 mi) to the north provides relevant regional data on the biota within the depth range and seafloor habitat types at the Project site (AMS, 2008). AMS (2008) reports that rocky habitat-associated epifauna found within these water depths include red and purple urchins (*Strongylocentrotus franciscanus* and *S. purpuratus*, respectively), brown turban snails (*Chlorostoma brunnea*), Monterey turban snails (*C. montereyi*), top snails (*Pomaulax gibberosa* and *P. undosa*), red abalone (*Haliotis rufescens*), giant gumboot chitons (*Cryptochiton stelleri*), and many smaller species of invertebrates. Invertebrate predators included the sunflower seastar (*Pycnopodia helianthoides*), the giant seastar (*Pisaster giganteus*), short-spined seastars (*Pisaster brevispinus*), rock crab (*Cancer antennarius*), Kellet's whelk (*Kelletia kelletii*), octopus (*Octopus* spp.), and a variety of smaller predatory seastars, gastropods, and crustaceans.

The common deposit feeders, scavengers, and filter feeders include bat stars (As*terina miniata*), anemones (*Anthopleura xanthogrammica*, *A. sola,* and *Epiactis prolifera*), cup corals (*Balanophyllia elegans*), sponges (*Tethya californica* and other encrusting forms), tunicates (*Styela montereyensis* and the encrusting colonial/social tunicates), tube snails (*Serpulorbis squamigerus*), and brittle stars (*Ophiothrix spiculata*). Invertebrate grazers include the nudibranchs *Phidiana hiltoni* and *Doriopsilla albopunctata*.

Deeper Water Areas (to -122 m [-400 ft])

Offshore, low to high relief rock reefs have been recorded to water depths of at least 110 m (360 ft) at and seaward of the State Three Mile Limit, but are more common in water depths shallower than 61 m (200 ft).

In water depths up to 122 m (400 ft), AMS (2008) reports that characteristic sediment-associated biota of the region included sea pens (*Stylatula* sp. and *S. elongata*, *Ptilosarcus gurneyi, Acanthoptilum* sp., and two species of *Virgularia*); brittle stars (unidentified Ophiuroids and *Ophinoneris* sp.); sea stars (*Petalaster [Luidia] foliolata*, *Rathbunaster californica*, and, in the inshore portions, *P. brevispinus*). Cerianthid and other anemones (*Pachycerianthus* sp., *Urticina piscivorus*, *Urticina* sp., and *Stomphia coccinea*, respectively), cancer crabs, including the slender crab (*C. gracilis*) and octopus (*Octopus rubescens*), were common to abundant within the sedimentary habitat in this water depth range. Sediment-associated fish species within this depth range include tonguefish (*Symphurus atricauda*);

flatfishes including sanddabs (*Citharichthys* spp.), California halibut (*Paralichthys californicus*), Dover sole (*Microstomas pacificus*), and English sole (*Plueronectes [Parophrys] vetulus*); eelpouts (*Lycodes* sp.); poachers (Agonidae); cuskeels; pink surfperch (*Zalembius rosaceus*); hagfish (*Eptatretus stouti*); and, adult and juvenile rockfish (*Sebastes* spp).

AMS (2008) reported that the rocky habitat within this depth range supported a community of epibiota characterized by gorgonian corals (*Adelogorgia phyllostera* and *Lophogorgia chilensis*), the purple coral, *Stylaster californicus (Allopora californica),* and white-plumed anemones (*Metridium farcimen senile*). Rocky substrate-associated fish species common within this depth range include adult and juvenile rockfishes (*Sebastes* spp.), lingcod (*Ophiodon elongatus*), Cabezon (*Scorpaenichthys marmoratus*), and painted greenling (*Oxylibius pictus*).

Nearshore Cable Route

A project-specific diver-biologist survey of the nearshore portion of the cable route was conducted by Tenera (2011). The survey includes both inter- and subtidal observations within that portion of the cable alignment that was within the DCPP intake embayment. Tenera (2011) indicates that the inter- and shallow subtidal habitat (to the -1.5 m [-5.0 ft]) isobath) consists of a mixture of armor rock rip-rap, concrete, and native rock. Dominant biota in this zone include limpets, barnacles, the sea lettuce alga (*Ulva* spp), bat stars (*A. miniata*), and various brown and red algal species. The seafloor habitat along the deeper subtidal segments of the nearshore portion of the proposed cable route is predominantly sedimentary, although isolated boulders and low-relief rock reefs are present. The proposed cable route does cross a boulder field and some pebble and shell hash was found near the offshore end of the survey area.

Characteristic biota observed within the boulder field included bat stars and sea cucumbers (*Parastichopus parvimensis*), the ornate tube worm (*Diopatra ornata)*, moon snails (*Euspira lewisii*), and a tube anemone (*Pachycerianthus fimbriatus).* Figure 2 depicts nearshore seafloor features and the locations of kelp beds within Zone 2, Zone 3, and Zone 5. Hard-structures such as boulders can be designated rocky reef habitat, a HAPC.

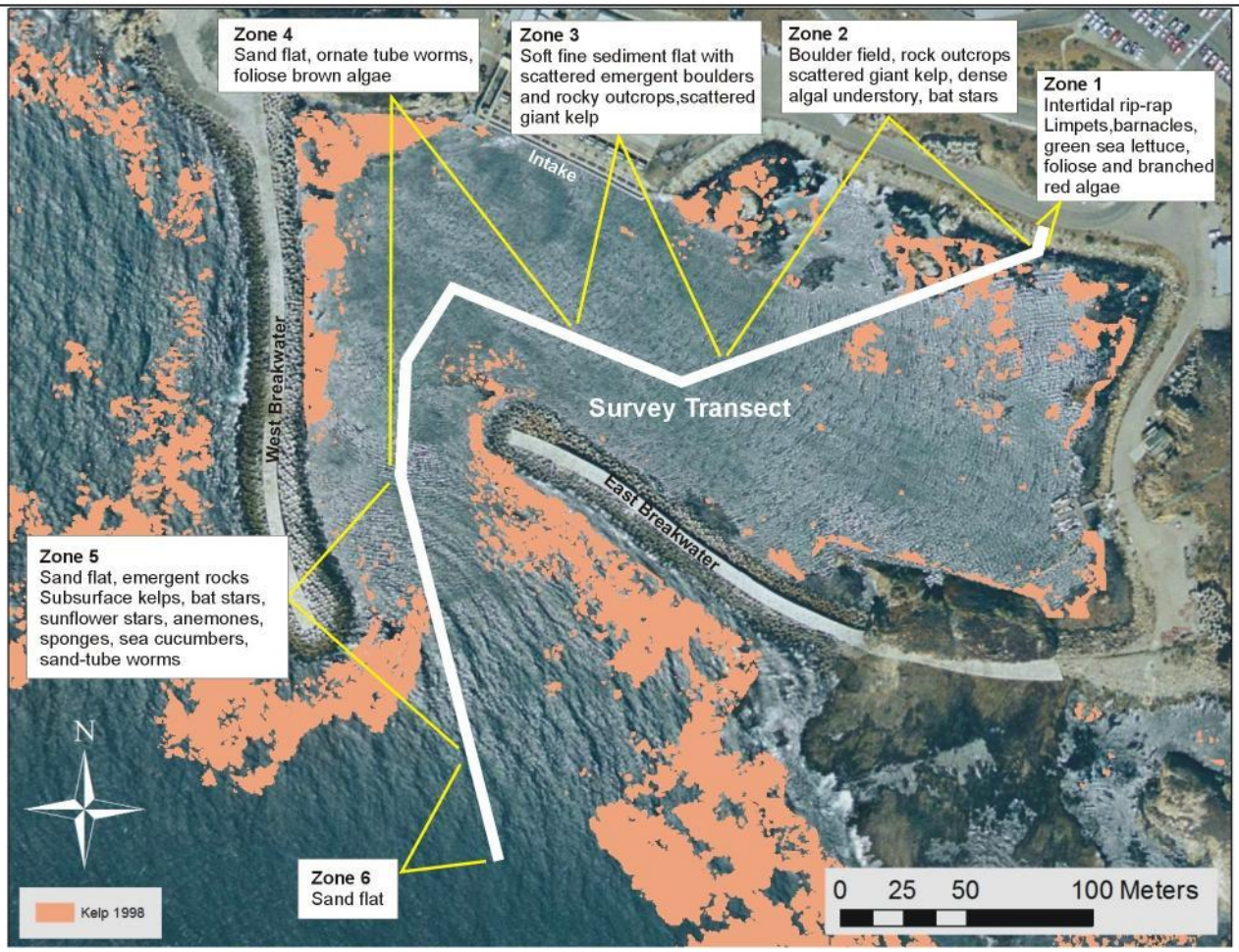


Figure 2 Intertidal and Seafloor Habitats within Nearshore Cable Route

Offshore Cable Route and OBS Locations

Greene (2011) provided a characterization of the deeper water seafloor habitats, including that found at each of the proposed OBS locations, based on the interpretation of previously collected multibeam side sonar data within the project area. Greene estimates that the majority of 17.5 km (10.9 mi) cable route from the 22 m (72 ft) isobath to the OBS 1 location is sedimentary. That report suggests that approximately 1.1 km (0.7 mi) of the route crosses rock substrate which consists of isolated boulders and low to moderate-relief rock reefs. A relatively continuous low-relief rock reef habitat is present along an approximate 1 km (0.6 mi) segment in water depths of 25 to 27 m (82 to 89 ft) with other rock features located at approximately 62 m (203 ft) depth. The seafloor at all of the temporary and long-term OBS sites is sedimentary, with no rock features were found within 15 m (50 ft) of any of the proposed OBS locations (Greene, 2011).

Project-specific ROV surveys of the potential rocky habitat areas along the cable route were completed in June and December 2011. Figure 3 shows the survey area and the

navigational “fix points” (point where the location of the ROV was recorded) along the June survey route; Figure 4 shows the December ROV survey area. Of the almost 5 km (3 mi) of surveyed area in June, rocky substrate was observed within approximately 0.5 km (0.3 mi) of the cable route; surveyed areas included water depths from 23 to 69 m (75 to 226 ft). The results of the June survey indicate that low to moderate-relief rock reefs (up to 1 m [3 ft]) high are present in three relatively inshore distinct areas (see Figure 3): between Locations 3 and 5 (water depths of 26 to 27 m [85 to 89 ft]) and Locations 8 and 10 (35 to 37 m [115 to 121 ft]).

The December survey indicated that rocky substrate was present in approximately 58 m (190 ft) and between 62 and 65 m (203 and 213 ft). Figure 4 also shows the other rocky habitat features that were observed during the survey. All of those features were between 9 and 30 m (30 and 100 ft) from the proposed alignment in water depths of 55 m (180 ft) between Locations 6 and 8 and in 64 m (210 ft) northeast of Location 2.

Both surveys utilized interpreted multibeam side scan sonar data (Greene, 2011) to provide information on the possible rocky substrate locations which were pre-plotted into the navigation computer prior to initiating the surveys. Sedimentary seafloor along the proposed cable alignment was also surveyed and epibiota and fish observed were recorded.

Epibiota associated with the sedimentary habitats observed during both ROV surveys, which ranged from coarse-grain sand and gravel in areas of sand waves to fine clayey silts in deeper water areas, included seastars (*A. miniata*, *Mediaster* sp., *Astropecten* sp., *Pycnopodia helianthoides*, and *Solaster* sp) and sea pens (*Stylatula elongata, Acanthoptilum* sp and *Ptilosarcus* sp.). Tube worms (cf *Diopatra* spp), burrowing anemones, and Dungeness crabs (*Metacarcinus = Cancer magister*) were present, and unidentified ophiuroids were common to locally abundant within some areas of the sedimentary habitat. Sanddabs (c.f. *Citharichthys sordidus*), hagfish (*Eptatretus stouti*), pink perch (*Zalembius rosaceus*), and lingcod (*Ophiodon elongatus*) were present on the sediment; however fish were not common throughout the sedimentary habitat that was surveyed.

Rocky feature macroepibiota varied with water depth; shallow water (to 40m [131 ft]) taxa included unidentified leafy red algae (on the upper surfaces of higher features only), unidentified solitary corals (probably *Coenocyathus* and *Paracyathus*), seastars (*A. miniata* and *Pisaster* spp), the powder puff anemone (*M. farcimen=senile*), and unidentified encrusting sponges. Deeper water rocky features supported some gorgonian corals (cf *Eugorgia* or *Lophogorgia* sp) and the feather star (cf *Florometra* sp). Fish were not abundant at most of the rock features, however subadult and adult rockfish (including *Sebastes flavidus, S. rosaceus, S. caurinus,* and *S. mystinus*) and lingcod were observed at and around the larger rock features.

Managed Species of Interest

Distribution and habitat information available in Miller and Lea (1972) and Leet, et al (2001) was used to examine which of the managed species could occur in the vicinity of the project site. Table 1 below is a list of managed taxa potentially occurring within the Project area. Species not occurring in central California are not included in the table. A total of 95 taxa, including five from the Coastal Pelagics Fishery Management Plan (FMP) (PFMC, 1998), three from the Pacific Salmon FMP (PFMC, 2003a), 78 from the Pacific Groundfish FMP (PFMC, 2003b), and nine from the Highly Migratory FMP (PFMC, 2007) could potentially occur within the Project vicinity.

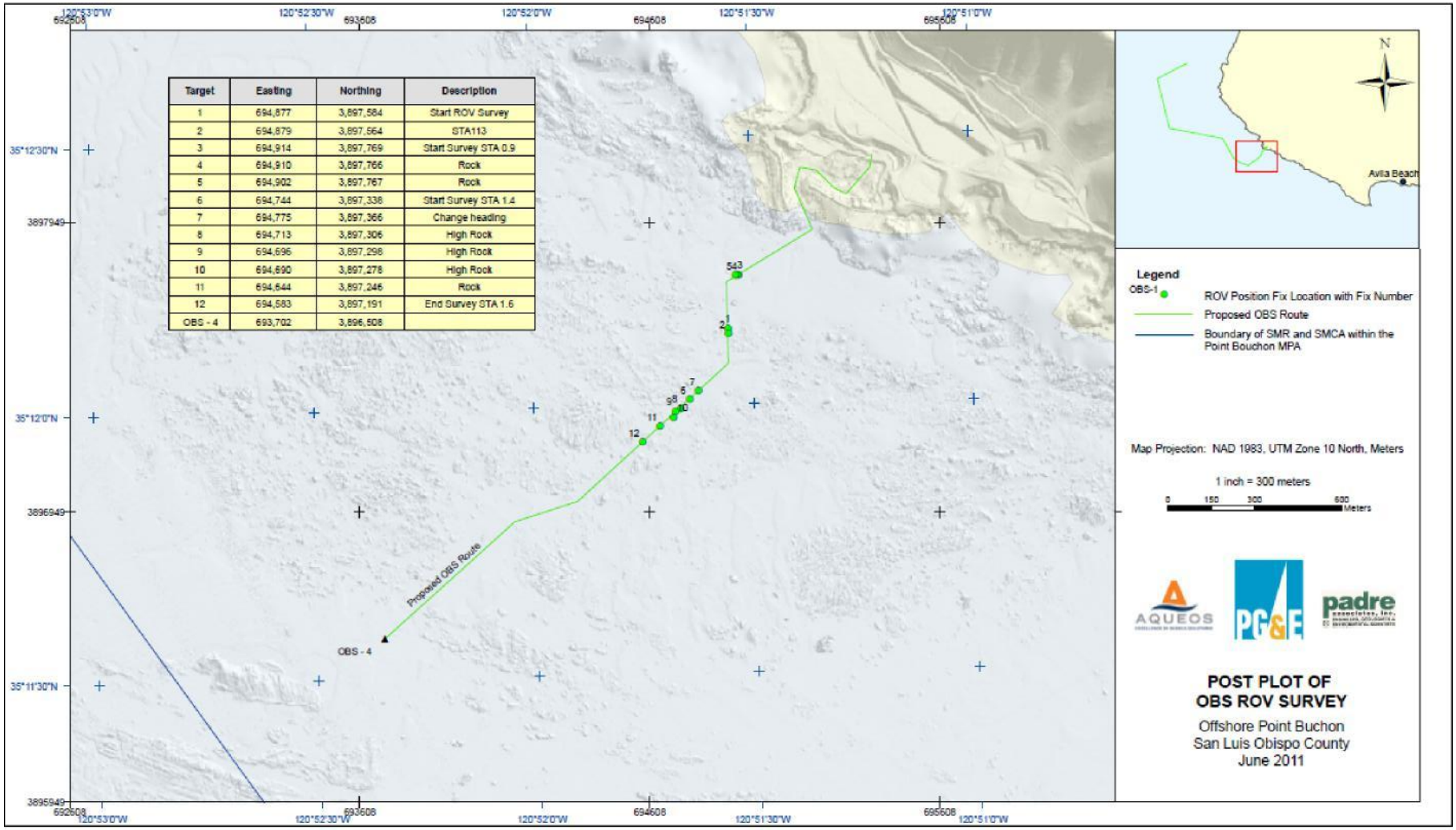
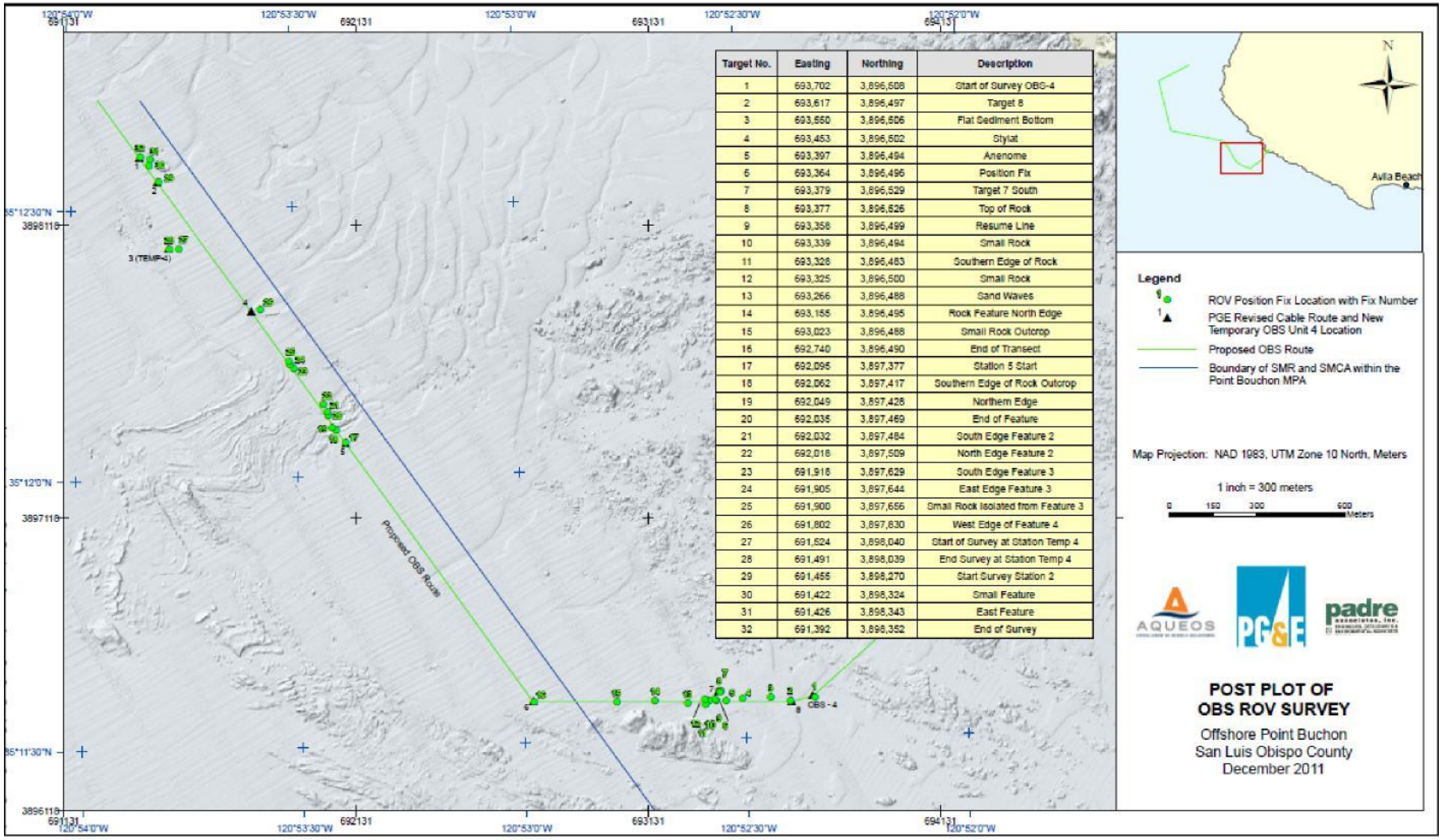


Figure 3 ROV Survey Area and Navigation Fix Locations (June 2011)



Target No.	Easting	Northing	Description
1	693,702	3,896,508	Start of Survey OBS-4
2	693,617	3,896,497	Target 8
3	693,550	3,896,506	Flat Sediment Bottom
4	693,453	3,896,502	Stylat
5	693,397	3,896,494	Anenome
6	693,364	3,896,496	Position Fix
7	693,379	3,896,529	Target 7 South
8	693,377	3,896,526	Top of Rock
9	693,358	3,896,499	Resume Line
10	693,339	3,896,494	Small Rock
11	693,328	3,896,483	Southern Edge of Rock
12	693,325	3,896,500	Small Rock
13	693,266	3,896,488	Sand Waves
14	693,155	3,896,495	Rock Feature North Edge
15	693,023	3,896,488	Small Rock Outcrop
16	692,740	3,896,490	End of Transect
17	692,095	3,897,377	Station 5 Start
18	692,062	3,897,417	Southern Edge of Rock Outcrop
19	692,049	3,897,428	Northern Edge
20	692,035	3,897,469	End of Feature
21	692,032	3,897,484	South Edge Feature 2
22	692,018	3,897,509	North Edge Feature 2
23	691,918	3,897,629	South Edge Feature 3
24	691,905	3,897,644	East Edge Feature 3
25	691,900	3,897,656	Small Rock Isolated from Feature 3
26	691,802	3,897,830	West Edge of Feature 4
27	691,524	3,898,040	Start of Survey at Station Temp 4
28	691,491	3,898,039	End Survey at Station Temp 4
29	691,455	3,898,270	Start Survey Station 2
30	691,422	3,898,324	Small Feature
31	691,426	3,898,343	East Feature
32	691,392	3,898,352	End of Survey

Figure 4 ROV Survey Area and Navigation Fix Locations (December 2011)

Table 1. List of Managed Taxa Potentially Occurring Within the Project Area

Common Name	Scientific Name	Common Name	*Scientific Name*
COASTAL PELAGICS			
Northern anchovy[1]	*Engraulis mordax*	Pacific sardine[1]	*Sardinops sagax*
Pacific mackerel[1]	*Scomber japonicus*	Jack mackerel[1]	*Trachurus symmetricus*
Market squid[1]	*Loligo opalescens*		
PACIFIC SALMON			
Chinook salmon	*Oncorhynchus tshawytscha*	Coho salmon	*Oncorhynchus kisutch*
Pink salmon	*Oncorhynchus gorbuscha*		
PACIFIC GROUNDFISH			
Butter sole[1]	*Isopsetta isolepis*	Flathead sole	*Hippoglossoides elassodon*
Curlfin sole[1]	*Pleuronichthys decurrens*	Dover sole[1]	*Microstomus pacificus*
English sole[1]	*Parophrys vetulus*	Petrale sole	*Eopsetta jordani*
Rex sole	*Glyptocephalus zachirus*	Rock sole[1]	*Lepidopsetta bilineata*
Pacific sanddab[1]	*Citharichthys sordidus*	Sand sole[1]	*Psettichthys melanostictus*
Arrowtooth flounder	*Atheresthes stomias*	Ratfish[1]	*Hydrolagus colliei*
Finescale codling	*Antimora microlepis*	Pacific rattail	*Coryphaenoids acrolepis*
Starry flounder[1]	*Platichthys stellatus*	Soupfin shark[1]	*Galeorhinus zyopterus*
Leopard shark[1]	*Triakis semifasciata*	Big skate[1]	*Raja binoculata*
Spiny dogfish	*Squalus acanthias*	Pacific ocean perch	*Sebastes alutus*
Longnose skate	*Raja rhina*	Aurora rockfish	*Sebastes aurora*
Shortbelly rockfish[1]	*Sebastes jordani*	Widow rockfish[1]	*Sebastes entomelas*
Bank rockfish	*Sebastes rufus*	Calico rockfish[1]	*Sebastes dallii*
Black rockfish[1]	*Sebastes melanops*	Black-and-yellow rockfish[1]	*Sebastes chrysomelas*
Blue rockfish[1]	*Sebastes mystinus*	Bocaccio[1]	*Sebastes paucispinis*
Blackgill rockfish	*Sebastes melanostomus*	Bronzespotted rockfish	*Sebastes gilli*
Brown rockfish[1]	*Sebastes auriculatus*	Canary rockfish[1]	*Sebastes pinniger*
Copper rockfish[1]	*Sebastes caurinus*	Gopher rockfish[1]	*Sebastes carnatus*
Grass rockfish[1]	*Sebastes rastrelliger*	Kelp rockfish[1]	*Sebastes atrovirens*
Olive rockfish[1]	*Sebastes serranoides*	Treefish[1]	*Sebastes serriceps*
Yellowtail rockfish	*Sebastes flavidus*	California scorpionfish	*Scorpaena gutatta*
Cabezon[1]	*Scorpaenicthys marmoratus*	Splitnose rockfish	*Sebastes diploproa*
Chilipepper[1]	*Sebastes goodei*	China rockfish[1]	*Sebastes nebulosus*
Cowcod	*Sebastes levis*	Darkblotched rockfish	*Sebastes crameri*
Flag rockfish	*Sebastes rubrivinctus*	Greenblotched rockfish	*Sebastes rosenblatti*
Greenspotted rockfish	*Sebastes chlorostictus*	Greenstriped rockfish[1]	*Sebastes elongatus*
Honeycomb rockfish	*Sebastes umbrosus*	Pink rockfish	*Sebastes eos*
Rosy rockfish	*Sebastes rosaceus*	Speckled rockfish	*Sebastes ovalis*
Squarespot rockfish[1]	*Sebastes hopkinsi*	Starry rockfish[1]	*Sebastes constellatus*
Stripetail rockfish[1]	*Sebastes saxicola*	Vermilion rockfish[1]	*Sebastes miniatus*

Common Name	Scientific Name	Common Name	*Scientific Name*
Yelloweye rockfish	*Sebastes ruberrimus*	Yellowtail rockfish[1]	*Sebastes flavidus*
Shortspine thornyhead	*Sebastolobus alascanus*	Pacific cod	*Gadus macrocephalus*
Lingcod[1]	*Ophiodon elongatus*	Kelp greenling[1]	*Hexagrammos decagrammus*
Sablefish	*Anoplopoma fimbria*	Pacific whiting	*Merluccius productus*
Mexican rockfish	*Sebastes macdonaldi*	Redbanded rockfish	*Sebastes babcocki*
Redstripe rockfish	*Sebastes proriger*	Rosethorn rockfish	*Sebastes helvomaculatus*
Sharpchin rockfish	*Sebastes zacentrus*	Silvergrey rockfish	*Sebastes brevispinus*
Longspine thornyhead	*Sebastolobus altivelis*	Tiger rockfish	*Sebastes nigrocinctus*
Halfbanded rockfish[1]	*S. semicinctus*		
HIGHLY MIGRATORY SPECIES			
Swordfish	*Xiphias gladius*	Albacore tuna	*Thunnus alalunga*
Blue shark	*Prionace glauca*	Bigeye tuna	*Thunnus obesus*
Mackeral	*Scomber spp.*	Pomfret	*Brama japonica*
Common thresher shark	*Alopias vulpinus*	Bluefin tuna	*Thunnus thynnus*
Yellowfin tuna	*Thunnus albacares*		

1 indicates species that are present along Diablo Canyon shoreline vicinity (Tenera, 2011)

IMPACT ASSESSMENT

Project activities that could result in impacts to EFH include seafloor disturbance from cable and OBS placement onto the seafloor and degradation of water quality or seafloor habitats from the discharge of petroleum in the event of an accidental spill. Discussions of the anticipated impacts to the EFH from the proposed activities are provided below.

Placement of OBS Units. The placement of the long-term and temporary OBS units will be completed using a “live boat” method (no anchoring). Placing the OBS units via “live boat” will reduce the potential to disturbance to the seafloor by the placement of anchors and anchor drag. All OBS units will be located on sedimentary seafloor resulting in minor alterations to seafloor features. The long-term OBS units could also potentially enhance habitat by providing a solid substrate on which epibiota could attach.

Once the units are removed, the minor disturbances in the sediment will be returned to natural contours through current and sediment movements. OBS units will not be placed within a NOAA designated HAPC; therefore, the placement of the OBS units is not expected to have any significant effect on EFH.

Placement of Cable. The cable will be laid onto the seafloor and would not be trenched or buried during installation, but is expected to naturally bury itself into the sedimentary seafloor relatively soon after deployment. The cable will be placed onto some non-sedimentary habitat that includes low- to moderate relief rocky substrate along approximately 1.1 km (0.7 mi) in water depths of 25 to 27 m (82 to 89 ft) along the inshore segment of the cable corridor, in water depths of 35 to 37 m (115 to 121 ft), 54 m (177 ft), 58 m (190 ft), and between 62 and 65

m (203 and 213 ft). With incorporation of the recommended the applicant-proposed mitigation that will preclude a section of the cable from crossing rock between OBS units 3 and 4, installation of the cable is not expected to significantly impact the natural composition of the rocky substrate.

Within and adjacent to the DCPP intake embayment, nearshore rocky intertidal habitat that could contain HAPC, including kelp beds and rocky features, are present (NOAA, 2011; Tenera, 2011). Cable laying operations within the embayment will be preformed by divers, who will attach the free-end of the cable into the conduit on the seafloor. Divers can assist in the exact placement of the cable to minimize the disturbance to kelp beds and boulder habitat within the embayment. The placement of, and the cable itself, is not expected to impact HAPC; therefore, impacts to EFH will be less than significant.

Hazardous Materials. Petroleum-fueled construction equipment and vessels will be utilized to complete the proposed activities. The potential exists for leakage/spills from those vessels and equipment, and the effects of a petroleum spill to the coastal, water column, and seafloor habitats, which are considered essential to several managed species and the associated biota, could be significant. Oil effects include alteration of habitats by coating the existing substrate or modifying sedimentary habitats; smothering by coating epibiota; and/or affecting the water quality. Refined products tend to be more toxic than crude petroleum, but also evaporate and/or dissipate quicker than heavier crude products. A petroleum discharge from a project vessel could result in potentially significant effects on EFH that is essential to the managed species of interest.

MITIGATION MEASURES

- Implementation of a Project-specific Oil Spill Contingency Plan (OSCP). In addition, the Project-specific OSCP would require sufficient and appropriate spill response equipment and materials to be located onboard Project vessels. If needed, spill response organizations will be contracted to provide additional containment and clean-up should an unanticipated release of hydrocarbons to the marine environment occur.

- A zero-discharge policy would be adopted for all project vessels; no fluids or solids would be discharged into the marine waters shoreward of the mile-limit specified by U.S. and state of California regulations.

- Vessel fueling will only occur at an approved docking facility. No cross-vessel fueling will be allowed. Marine vessels generally will contain petroleum products within tankage that is internal to the hulls of the vessels.

- Although already incorporated in the Project design to reduce impacts, the “live boat” method would be implemented to reduce impacts to the seafloor.

Although already incorporated in the Project design to reduce impacts, the cable between the long-term OBS units will not be buried within the sedimentary habitat areas.

- Although incorporated in the Project design to reduce impacts, divers would be used to installed the cable within the seawater intake emabayment area to reduce the disturbance to kelp beds and boulder habitat.

- A portion of the cable between OBS units 3 and 4 will be realigned to avoid a rock feature that supported the largest number of rockfish observed during the December 2011 ROV survey.

REFERENCES

Applied Marine Sciences, Inc. (AMS). 2008. Survey Report: Remotely Operated Vehicle (ROV) Biological Characterization Survey of the Asia America Gateway (AAG) S-5 Project Fiber Optic Cable Route Offshore Morro Bay, California. Prepared for AT&T Corporation. January 2008, Rev. May 2008.

Greene, H. G. 2011. Substrate and Habitat Types Along PG&E's OBS Cable Route. Prepared for PG&E. December 16, 2011.

Lea, R. N., R. D. McAllister, and D. A. Ven Tresca. 1999. Biological aspects of nearshore rockfishes of the genus *Sebastes* from central California. Calif. Dep. Fish Game Fish. Bull. 177, 109 p.

Miller, D. J., and R. N. Lea. 1972. Guide to the Coastal Marine Fishes of California. California Department of Fish and Game. Fish Bulletin No. 157. 249 pp.

NOAA. 1998. A Primer for Federal Agencies, Essential Fish Habitat: New Marine Fish Habitat Conservation Mandate for Federal Agencies. National Marine Fisheries Service, Southwest Regional Office, Long Beach, CA. November 1998.

_____. 2011. Essential Fish Habitat Mapper. Website: http://www.habitat.noaa.gov/protection/efh/habitatmapper.html Accessed on June 8, 2011.

Pacific Fishery Management Council. 1998. Essential Fish Habitat Coastal Pelagic Species *within* Coastal Pelagic Fishery Management Plan. Portland, Oregon.

Pacific Fishery Management Council. 2003a. Pacific Coast Salmon Plan: Fishery Management Plan *within* Commercial And Recreational Salmon Fisheries Off The Coasts Of Washington, Oregon And California. Portland, Oregon.

Pacific Fishery Management Council. 2003b. Pacific Coast Groundfish Management Plan for the California, Oregon, and Washington Fishery. Portland, Oregon.

Pacific Fishery Management Council. 2007. Fishery Management Plan for U.S. West Coast Fisheries for Highly Migratory Species. Portland, Oregon.

Tenera Environmental. 2011. Ocean Bottom Seismometer Cable Landing Habitat Characterization Study, Diablo Canyon Power Plant. May 27, 2011.