



Recreational Boating and Offshore Use Damages Due to the Refugio Beach Oil Spill

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prepared for:

Refugio Beach Oil Spill Natural Resource Damage
Assessment

prepared by:

Eric Horsch, Chris Leggett, and Mark Curry

Industrial Economics, Incorporated

2067 Massachusetts Avenue

Cambridge, MA 02140

617/354-0074

INTRODUCTION On May 19, 2015 an underground pipeline ruptured just west of Refugio State Beach in Santa Barbara County, California, spilling over 120,000 gallons of crude oil into the soil and onto the ground (hereafter referred to as “the spill”).¹ A significant portion of the oil flowed down a nearby ravine and into the Pacific Ocean. After reaching the ocean, the oil spread primarily southward and eastward. Oil washed up on shore at and around Refugio and El Capitan State Beaches (Exhibit 1). In the weeks following the spill, oil and/or tarballs washed ashore in numerous locations along the coastlines of Santa Barbara, Ventura, and Los Angeles Counties.

The spill occurred within the undeveloped portion of Santa Barbara County referred to as the “Gaviota Coast.” The Gaviota Coast is widely recognized for its scenic beauty and outdoor recreation opportunities, and the area supports California State Park’s mission of supporting health, inspiration, and education through the preservation of extraordinary biological diversity, protecting valued natural and cultural resources, and creating opportunities for high-quality outdoor recreation. In fact, in the early 2000s, the National Park Service (NPS) undertook a feasibility study to determine if the Gaviota Coast should be added to the National Park System (NPS, 2003).

EXHIBIT 1. OVERVIEW OF ASSESSMENT AREA



¹ The United States Department of Transportation’s failure investigation for the spill indicates that, according to the pipeline owner, 2,934 barrels, or 123,228 gallons of oil were released (USDOT, 2016).

Federal and state natural resource trustee agencies (“Trustees”), in coordination with Plains All America Pipeline (the pipeline owner and operator), conducted a Natural Resource Damage Assessment (NRDA) to assess the impacts of the spill on natural resources. The Trustees for the natural resources injured by the spill include the United States Department of Commerce represented by the National Oceanic and Atmospheric Administration; the United States Department of the Interior represented by the United States Fish and Wildlife Service (USFWS) and the Bureau of Land Management (BLM); the California Department of Fish and Wildlife; the California Department of Parks and Recreation; the California State Lands Commission; and the Regents of the University of California.

As part of the NRDA, the Trustees assessed the impacts of the spill on recreational users of the coastal and marine environment. Recreational users were potentially impacted due to the direct oiling of natural resources and the reasonable expectation of oiling, shoreline and fishing closures, advisories, and cleanup activities. This report documents the impact of the spill on recreational boating and offshore uses, including motorboating, sailboating, nonmotorized boating, and use of Channel Islands National Park (accessible by park concessionaire boats and planes or private boat).²

Economic losses to recreational boaters and offshore users are based on the economic concept of consumer surplus (USDOJ, 1987). An individual’s consumer surplus from a boating or offshore trip represents the difference between (1) the maximum amount that the individual would be willing to pay for the trip and (2) the amount that the individual actually paid for the trip (in gasoline, supplies, reservation fees, etc.). Thus, consumer surplus is a measure of the net value of a trip, after all expenses have been paid. Boating and offshore use damages estimated in this report are measured as the aggregate decline in value across all impacted individuals.

We estimated damages in four steps:

- 1) Estimate the number of lost boating and offshore days;
- 2) Estimate the economic value associated with a boating and offshore day;
- 3) Multiply the number of lost days by the value per day; and
- 4) Adjust losses to present value.

The remainder of this report provides a general overview of spill impacts on boating and offshore uses, and then we summarize the methods and results for each of these four steps

IMPACTS TO BOATING AND OFFSHORE USES

Santa Barbara, Ventura, and Los Angeles Counties have a limited number of developed boating access points (Exhibit 2). In Santa Barbara County, the primary boating access point is Santa Barbara Harbor, which contains a large marina and a public boat launch. Goleta Beach County Park is the only other access point in the county, but is more

² Nonmotorized boating includes canoeing, kayaking, stand-up paddle boarding, and other similar activities. This report assesses nonmotorized boating originating from boat launches and marinas. A separate shoreline use assessment assesses impacts to nonmotorized boating originating from beaches and other shoreline access points (see Horsch et al., 2018).

limited, with a hoist launch on the park's pier. Use of this launch is limited by the amount of time it takes to launch a boat and the need for specialized equipment. Ventura County has two large harbors (Ventura Harbor and Channel Islands Harbor), while Santa Monica Bay in Los Angeles County has access at Marina Del Rey and King Harbor Marina.

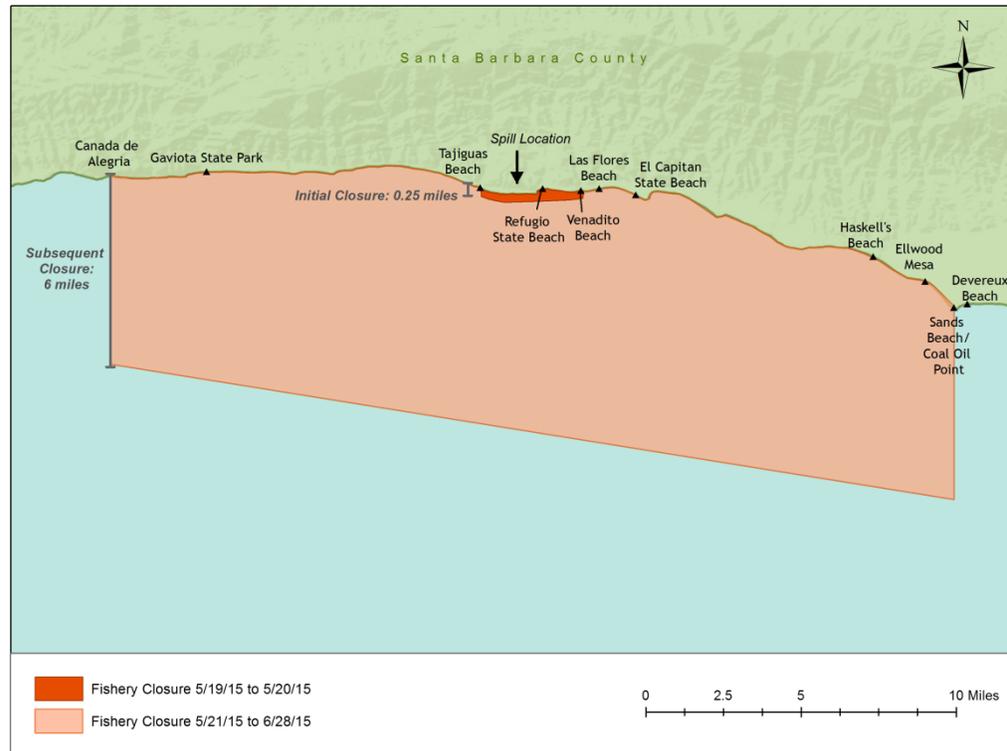
As described above, boating and offshore uses were potentially impacted due to the direct oiling of natural resources and the reasonable expectation of oiling, shoreline and fishing closures, advisories, and cleanup activities. Shortly after the spill, Refugio and El Capitan State Beaches were evacuated and closed, along with nearby pocket beaches. The closures at these locations lasted for 59 days, 37 days, and 100 days, respectively. On the day of the spill, a fisheries closure was established for the immediately affected area around the release point (Exhibit 3). On May 21, the fisheries closure area was expanded to include the shoreline between Canada de Alegria and Coal Oil Point, as well as all ocean waters within six miles of this shoreline. The fisheries closure remained in place through June 28.

In the weeks following the spill, advisories were posted in numerous locations in Santa Barbara and Ventura Counties, and temporary beach closures were instituted around Coal Oil Point, in the southern area of Santa Monica Bay, and in Long Beach. Numerous response vessels operated in the spill area, attempting to contain and remove the oil. Cleanup personnel were dispatched to coastal areas of all three impacted counties. Media coverage of the spill was pronounced throughout the South Coast region, and to a lesser extent nationally, on television, social media, and in newspapers.

EXHIBIT 2. BOATING AND OFFSHORE USE LOCATIONS IN ASSESSMENT AREA



EXHIBIT 3. FISHERIES CLOSURE AREA

ESTIMATE OF
LOST DAYS

The number of lost boating and offshore days equals the reduction in use relative to baseline, or the level of use that would have existed had the spill not occurred. We considered several data sources to estimate the number of lost days (discussed below). Only one data source was indicative of impacts to boating and offshore uses: phone interviews conducted with water- and shore-oriented recreation businesses in the assessment area during late summer and early fall of 2015. These interviews were conducted to collect information about trip cancellations, diminished outings, and other impacts to their customers due to the spill.³

Interviews were attempted with 96 businesses, some of which support boating and offshore uses, including fishing, kayaking/canoeing, sailing, stand-up paddle boarding, surfing, whale watching, and other boat charters. We successfully reached 67 of the businesses contacted. Eighteen of these businesses reported a combined total of 2,379 boating and offshore trips canceled or relocated due to the spill. Most of these businesses were located in Santa Barbara Harbor, though a few businesses were in Ventura Harbor and one was in King Harbor Marina. Since most of the affected trips last a day or less, we estimate 2,379 lost days from these interviews.

³ Our quantification of lost days includes impacts to public recreational use (i.e., customers of water- and shore-oriented recreation businesses), but our loss estimate does not include private claims for impacts to commercial fishing or recreation-based concessionaires.

Our estimate of lost days constitutes a lower-bound for a couple reasons. First, some businesses that reported impacts did not provide an estimate of affected trips. Second, some businesses refused to participate or could not be reached, and customers of these businesses may have been impacted by the spill.

We considered other available data to evaluate impacts to boating and offshore uses. These data sources, listed below, provided limited information and were not relied upon for developing our damages estimate.

- **Santa Barbara Harbor boat launch trailer parking sales:** daily boat trailer parking sales data were obtained for 2010-2013 and quarterly data for 2014-2016 (daily data were not available for the latter time period).
- **California Recreational Fisheries Survey (CRFS) estimates and Commercial Passenger Fishing Vessels (CPFV) log summaries:** estimates of monthly angler days for boat-based fishing were obtained for District 2 (Santa Barbara and Ventura Counties) from May through September, 2010 to 2015. Separate estimates were provided for private/rental boat fishing and fishing from commercial passenger vessels. Site-specific estimates of private/rental boat fishing were obtained for Santa Barbara Harbor, Ventura Harbor, and Channel Islands Harbor. Further, monthly recreational fishing passenger days were obtained for CPFVs returning to the port of Santa Barbara from May through September, 2010-2015.
- **Santa Barbara Harbor fuel dock sales:** Santa Barbara harbor fuel dock sales data were obtained for the 2010-2015 period. For each year, three separate fuel sales totals were obtained: (1) May and June combined, (2) May 19–31, and (3) June 1–30.⁴ The data include total gallons sold, total revenue, and gallons sold to response boats in 2015.
- **Channel Islands National Park attendance data:** monthly visitation data for Channel Islands National Park for recent years were downloaded from the NPS Visitor Use Statistics web portal (<https://irma.nps.gov/Stats/>).

ESTIMATE OF VALUE PER DAY

We estimated the value per boating and offshore day using benefits transfer. Benefits transfer is the process of adapting trip or day values from existing literature to fit the conditions associated with the site, activity, and incident of interest. The methodology has been used to assess recreational use damages for several past oil spills (Chapman and Hanemann, 2001; Curry and Scherer, 2010; Leggett and Curry, 2010). We reviewed literature that estimates the value of boating and offshore use for the benefits transfer. Based on our review, we selected an estimate from a 2013 study conducted by researchers at the University of California-Santa Barbara on the value of recreational boating in the Channel Islands National Marine Sanctuary (Gornik et al., 2013).

⁴ Only the combined May/June total was available for 2010.

The authors use a random-utility travel cost model to estimate the value of single-day trips to 31 sites around Anacapa, Santa Cruz, and Santa Rosa Islands for four activity categories: non-consumptive underwater (e.g., snorkeling, free diving, scuba diving), surface non-consumptive (e.g., dinghy, kayaking, mammal or bird watching), consumptive (e.g., hook and line fishing, spearfishing, and lobster diving), and land-based (e.g., going to the beach, tidepooling, and hiking). The model was estimated using data from an intercept survey conducted in 2006/2007 near Santa Cruz Island.⁵

We adapt the average value of the three water activities for use in the benefits transfer because these are the types of activities represented in our estimate of lost days.⁶ We adjust this estimate to July 2018 dollars using the consumer price index (CPI) (Bureau of Labor Statistics, 2018). Our estimate of the value per day is \$59.01.

SUMMARY OF DAMAGES

We combine our estimate of lost boating and offshore days (2,379) with the estimated value per day (\$59.01) to calculate damages. Present value damages as of July 2018 are calculated using monthly discounting at an annual rate of three percent (NOAA, 1999). Since the business interviews did not provide information about the timing of lost days, we allocate lost days to specific months for the purpose of discounting using the temporal distribution of shoreline losses (see Horsch et al., 2018). This distribution is presented in Exhibit 4.

EXHIBIT 4. TEMPORAL DISTRIBUTION OF BOATING AND OFFSHORE USE LOSSES

MAY	JUNE	JULY	AUGUST	SEPTEMBER
44%	39%	13%	4%	<1%

Our estimate of boating and offshore use damages as of July 2018 is \$153,867.

⁵ The travel cost variable used in the model incorporates round-trip out-of-pocket costs such as gasoline and maintenance (including on-land and on-water expenses) and the opportunity cost of time associated with traveling to the site. On-land costs were calculated using a rate of 21.28 cents per mile for all boaters. On-water costs were calculated using boater-specific fuel costs per mile, which were based on the boat type and size. The opportunity cost of time was calculated as 50 percent of a boater's hourly wage rate.

⁶ The three values are \$53.21 (underwater non-consumptive use), \$53.69 (surface water non-consumptive use), and \$34.72 (consumptive use) (2006 dollars). These values come from Table 4 in Gornik et al. (2013).

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