

OIL SPILLS

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RESPONSE TO THE EXXON VALDEZ OIL SPILL BY THE ALASKA
DEPARTMENT OF ENVIRONMENTAL CONSERVATION

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The ADEC is the primary State agency responding to the Exxon Valdez oil spill, actively participating in the spill-response effort from the first hours after the vessel grounded. Agency functions included aerial spill tracking, protection of sensitive resources, cleanup monitoring, logistics and supply, documentation, scientific assessment, cleanup monitoring, and liaison and coordination.

After an intense program associated with the 1989 response effort, Spring 1990 surveys revealed a substantial diminution of remaining oil due to winter wave conditions. Oil, however, was found along 396 miles (634 km) of shoreline (very light to heavy categories) with 15 miles (24 km) remaining heavily oiled. Problem areas are being treated as part of the Summer 1990 cleanup program.

1. Introduction

The Alaska Department of Environmental Conservation (ADEC) is designated by Alaska law to lead the State spill-response effort as described under the Alaska Oil and Hazardous Substances Pollution Contingency Plan. Agency actions at the Exxon Valdez oil spill followed this plan.

The response by ADEC to the grounding of the Exxon Valdez on Bligh Reef on the night of 24 March 1989 was swift and in force. When the ADEC District Supervisor learned of the incident one hour later, the State Spill Response Team was notified. By 0400, the Team was enroute to Valdez or making plans to do so. Three hours and one-half hours after grounding, the local ADEC representative boarded the vessel to assess the extent of damages and remained onboard throughout the night.

At daybreak, other ADEC staffers were using two aircraft to map the location of the spilled crude. In Juneau, the State capital some 800 miles from

the site, ADEC department managers met with the ADEC Commissioner and Governor concerning organizational response. Seven hours after this meeting, Governor Cowper and Commissioner Kelso were aboard the stricken tanker. Within 36 hours after the incident, 26 ADEC personnel were on-scene.

The State's principal activities were defined as: (a) aerial spill tracking, (b) protection of sensitive resources (c) cleanup, logistics, and supply, (d) documentation, (e) scientific assessment, (f) cleanup monitoring, and (f) liaison and coordination.

2. Aerial Surveillance

To protect State resources and give fair warning of the spread of oil and extensive aerial surveillance program was undertaken immediately and sustained throughout most of 1989 and 1990. Information was catalogued and digitized into a portable geographic information system (GIS) to produce maps of oil distribution and shoreline impacts. The first map of spill distribution was produced on 27 March 1990 and distributed immediately to the public. Figures 1 to 3 depict the spread of Exxon Valdez oil. Figure 4 presents a summary map indicating the extent of observed surface sheens. Shoreline impacts extend beyond areas where sheen was observed. In addition to visual observations from low-flying fixed-wing and helicopter aircraft, high-altitude vertical photographs were taken to track the slick movement. This information was critical in scheduling fishery openings to avoid the fouling of fish and gear.

3. Protection of Critical Habitats

As the potential effects of the spill became obvious, ADEC worked closely with the representative of the local fishermen's group, the Cordova District Fishermen United, to protect sensitive fisheries habitat. Seining vessels were used to place booms to protect the village of Tatitlik, only a short distance to the northeast of the stricken vessel.

Further away, a major salmon-hatchery lay directly in the path of the spreading oil. An all-out effort utilizing local fishermen, ADEC and hatchery staff, numerous fishing vessels and the State Ferry Bartlett, placed several thousand feet of sorbent boom in front of the hatchery. The first set of booms were breached by incoming oil; however, interior booms held and the hatchery escaped unoiled.

4. Cleanup

The ADEC staff coordinated skimming and oil collection operations during the first weeks of the spill. Utilizing a variety of smaller vessels, and a "supersucker" vacuum truck placed on a rig tender for oil transfer and storage, several thousands of gallons were collected. As Exxon cleanup staff increased, this operation was incorporated into the Exxon-sponsored effort.

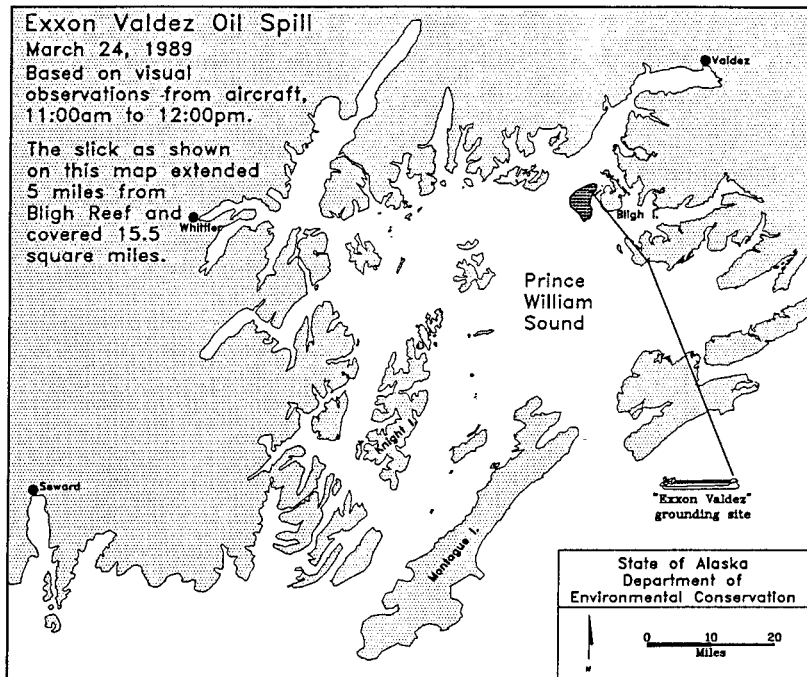


Figure 1. Location of Exxon Valdez grounding site and slick size on 24 March 1989, 1200 hours.

5. Documentation

The ADEC started and maintained a computer-based system to diligently track all documents, tapes, photographs, notebooks, etc. related to the Exxon Valdez incident. This material serves as a reference databank for all aspects of the spill. For instance, data can be retrieved relating to cleanup activities and site surveys at particular locations of interest.

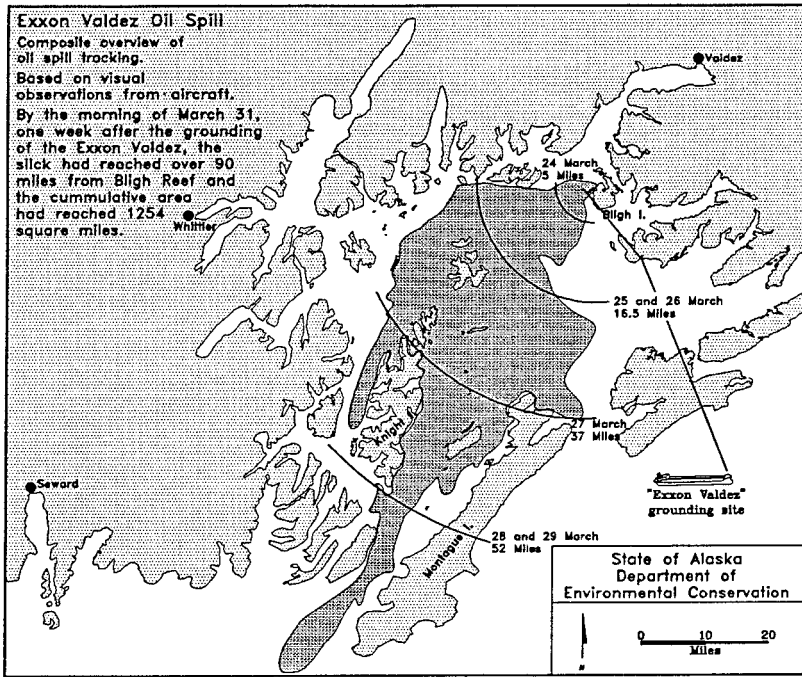


Figure 2. The cumulative extent of the observed Exxon Valdez oil spill slick on the morning of 31 March 1989, one week after the grounding.

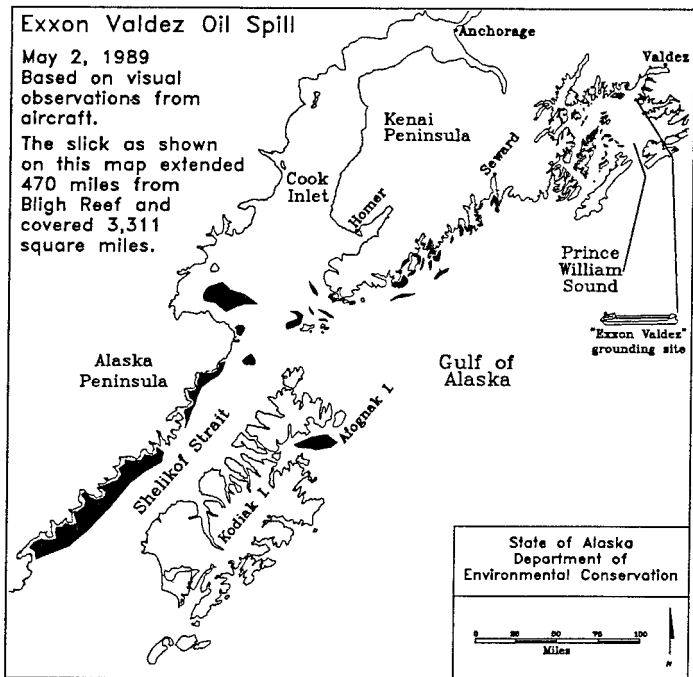


Figure 3. Observations of Exxon Valdez oil slicks observed during ADEC overflights 2 May 1989.

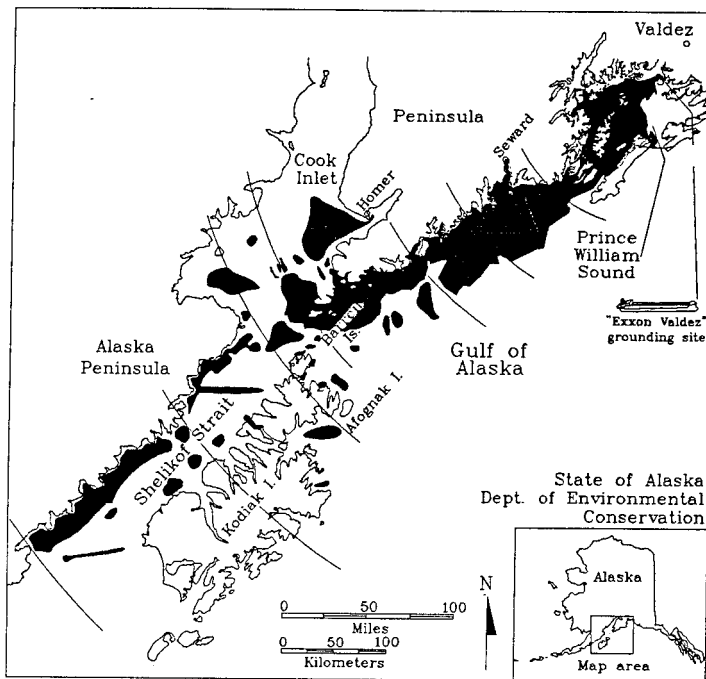


Figure 4. The cumulative extent of ADEC-observed oil slicks and sheen on the waters surface from the Exxon Valdez. Shoreline surveys located oil in areas where surface sheen was not observed from the air, primarily due to bad weather conditions.

6. Scientific Assessment

As the slick spread, a joint scientific program was undertaken by the ADEC and Exxon-supported scientists to obtain water-column samples within and below the slick to determine oil uptake and potential biological effects. Additional surveys were undertaken by ADEC to determine the extent of oil contamination in intertidal and nearshore sediments and shellfish.

An extensive shoreline survey program was also created to track initial impacts of oil on the shoreline, and its persistence through time. Over 200 sites were established to monitor the changes throughout the spill site. Ground

surveys were integrated with observations from low-level overflights to produce a series of shoreline oil impact maps. These maps were openly distributed to all parties and were used to direct the initial cleanup effort as well as other scientific studies.

After treatment during 1989 ended on 15 September, an extensive walking survey was undertaken to determine the extent of oil remaining, to serve as a guide for Winter scientific studies and Spring cleanup. A followup survey, with the Federal agencies, Exxon, and ADEC as co-participants, was undertaken in Spring 1990. Results of these surveys in terms of the extent of oiling, are enclosed in Table 1.

Table 1. Comparison of Fall 1989 to Spring 1990 oiled shorelines derived from detailed shoreline surveys, primarily by walking. ADEC independently undertook the Fall survey. The Spring survey was conducted jointly by Exxon, ADEC, and other agencies. PWS = Prince William Sound, Kenai = Kenai Peninsula area, and Kodiak = Kodiak Island area and the Alaska Peninsula; 1 mile = 1.6 km.

Region	Degree of Oiling	Fall 1989 Miles	Spring 1990 Miles
PWS	Heavy	47	13
	Medium	40	29
	Light	82	50
	Very light	192	170
	H+M+L+VL	361	261
	Tot. Surveyed	721	688
KENAI	Heavy	6	1.6
	Medium	8	5
	Light	15	10
	Very light	52	53
	H+M+L+VL	81	69
	Tot. Surveyed	161	249
KODIAK	Heavy	0.3	0.3
	Medium	1	3
	Light	5	4
	Very light	41	59
	H+M+L+VL	47	67
	Tot. Surveyed	96	281
ALL REGIONS			
	Heavy	53	15
	Medium	49	36
	Light	102	64
	Very light	285	281
	H+M+L+VL	489	396
	Tot. Surveyed	978	1217

7. Cleanup Monitoring

A major role for the ADEC in responding to oil spills is the monitoring of the cleanup to (1) protect State resources (aquatic and land-based), (2) assist in developing more efficient cleanup techniques, and (3) verify the adequacy of oil removal. ADEC had over 40 people assigned on rotation aboard five vessels in Prince William Sound. Outside the Sound, the monitoring staff utilized helicopters based in Homer, Seward, and Kodiak. Each oiled area was co-signed off as treated ("gross contamination" removed) by ADEC and the U.S. Coast Guard. During the summer 1990 treatment program, ADEC monitors are again in the field.

8. Liaison and Coordination

The ADEC coordinated its activities with Exxon as well as State and Federal agencies, particularly Alaska Fish and Game, U.S. Fish and Wildlife Service, U.S. National Oceanic and Atmospheric Administration, and U.S. National Marine Fisheries Service. ADEC was a member of various committees dealing with shoreline treatment, resource protection, and the testing of new cleanup methods (biological and mechanical).

9. State of the Shoreline (Summer 1990)

The Spring walking survey found over 100 miles (160 km) of moderately to heavily oiled shoreline. Oil was present primarily as surface stain and tar, asphalt pavement, and as subsurface oil (weathered and fairly fresh). Site specific work plans were developed to remove the asphalt pavement and to concentrate on surface contamination. Treatment methods being applied include hot-water spot washing, sorbent pads and boom, sediment removal (shovel and bag), and the application of fertilizers to enhance biodegradation. Heavily oiled berm areas at less than ten sites are to be reworked onto the upper intertidal to enable wave action to assist cleansing. The field testing of chemical agents to remove encrusted oil has also occurred.

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