INTRODUCTION

The Santa Barbara Oil Spill of 1969

THIS BOOK TELLS the tale of how the blowout off the Santa Barbara coast sped up and influenced the decision-making process for some of the most important environmental legislation of the twentieth century. The spill transformed the development, regulation, and enforcement of United States environmental policy and changed the way the American public viewed and reacted to environmental pollution. It will also show how the spill became the catalyst for new scientific technologies that informed pollution prevention and environmental contamination. I argue that the aftermath of the spill forced Congress to pass long-delayed legislation that gave federal agencies the authority to take an active role in the enforcement of water pollution from industrial processes. In addition, the congressional actions compelled federal agencies to consider environmental issues when considering large projects such as offshore oil drilling. Finally, the response to the spill brought new technologies and scientific methods to the attention of congressional representatives so that standards for water pollution from increasing chemical use could be established and enforced. The standards forced industrial facilities to develop processes to mitigate water pollution into navigable waters of the United States.

The blowout occurred as Congress, research scientists, and the public were coming to grips with the increased pollution from myriad emerging industrial processes that made life easier and more convenient for the growing middle class. Since the end of the Second World War, Congress had taken steps toward dealing with the dramatic changes in the generation of pollution and the disappearance of landscape unaffected by its consequences. In the 1960s, the Johnson administration and Congress moved toward preserving federal lands and wild and scenic rivers—places that had yet to be despoiled by timber cutting, mining, damming, and industrial pollution. In trying to control and abate pollution from residential and industrial processes, Congress remained hamstrung by its inability to dictate how states could manage their water and air. Congress needed to convince the states that it was not meddling in their affairs. And states needed to be convinced. Before the Santa Barbara oil spill, Congress passed few laws pertaining to antipollution policy. It did not help that few analytical tests could cheaply and effectively detect the presence of chemical pollutants in water. Odor, taste, color, and waterborne diseases, along with fish kills, remained the harbingers of water pollution. The spill, its effects on the environment, and the chaotic local and federal response to the disaster gave congressional decision makers the justification for comprehensive environmental legislation and federal water pollution control laws. Congress was finally convinced that federal intervention was needed to slow and eventually reverse the degradation of the environment.

Until the oil spill, Santa Barbara was a relative haven from the growing pollution in the United States. Clean air and a gentle climate beckoned people and industry to its confines. In 1969, the city of Santa Barbara had seventy thousand residents, and Santa Barbara County contained a little more than twice that number. More than four million tourists per year enjoyed its mountains, beaches, ocean, and the nearby Channel Islands. In addition to tourism, the economy of Santa Barbara encompassed primarily research and development industries, retirement communities, and the University of California, Santa Barbara (founded in 1944). Although offshore oil and natural gas drilling was also an important part of Santa Barbara's economy, Santa Barbara residents for decades had expressed concerns that the offshore drilling would foul their beaches, ruin their communities, and end their tourist economy. Indeed, as offshore drilling in California waters increased between

the Second World War and the mid-1960s, residents increasingly complained about oil and tar washing up on their treasured coast.

Places like Santa Barbara were far away from the majority of the negative effects of postwar industrialization and manufacturing. Santa Barbara's population growth had increased pollution from sanitary waste, but the lack of heavy manufacturing facilities meant Santa Barbara avoided the increased water pollution from heavy industry that was affecting other urban areas. The lack of manufacturing facilities lessened the effect of the increased pollution from the growing number of cars, appliances, and other consumer products on the coastal city and county. This secluded place on the California coast was not only geographically far from the industrial shores of Lake Erie and Lake Michigan but also far from the visible water pollution that scarred these once beautiful waterways. The blowout brought Santa Barbara and its residents philosophically and experientially closer to the residents of large manufacturing cities and their pollution problems. For months after the blowout, Santa Barbara's beaches and coastlines were covered with oil, like the pollution-covered shores of lakes, rivers, and streams of the industrial cities of the United States. In contrast to Gary, Indiana, and Youngstown, Ohio, the environmental catastrophe in Santa Barbara garnered the media attention necessary to force the discussion and eventual development of federal antipollution policy in the next decade.

Not only was Santa Barbara geographically far from northern industrial cities, its residents were largely rich, white, and Republican. Its employment sector concentrated on research and development and academics. In the 1960s, catastrophic water pollution events primarily occurred in manufacturing centers of the United States. Cleveland's burning Cuyahoga River and fish kills in Bethlehem, Pennsylvania, Portland, Oregon, and Lake Michigan occurred because of established industries such as steelmaking that had polluted these areas for decades.[1] These industries existed in urban areas of poor and working-class people. As the 1960s progressed and increasing incomes gave some families a chance to escape from polluted industrial centers, the residents of the polluted areas became predominantly families of color. African American families were unable to move due to prejudicial housing covenants that precluded them from moving to less polluted and more white areas.[2] Upper-class and white families thought they had escaped catastrophic

and acute pollution events by moving away from these industrial centers but the spill showed that this was not the case. They thought if it could happen to the predominantly white privileged residents of Santa Barbara it could happen to families who considered their homes and communities safe from pollution.

Over the years, books, news programs, and scholarship have credited the spill as the turning point for public involvement and action to bring environmental awareness to the forefront of American culture, but the exact mechanism of this sea change has not been thoroughly explored.[3] By exploring the actions of forces involved in federal policy change, including government representatives, scientists, the media, and Santa Barbara residents, I illustrate both the direct and indirect effects of the spill. I look in familiar and unfamiliar places to find the far-reaching role the Santa Barbara spill played in federal pollution policy. Historians note that the spill spurred the environmental movement and assisted in the development of federal antipollution legislation including the Clean Water Acts of 1970 and 1972. But I also show that the spill influenced the creation of the United States Environmental Protection Agency (EPA) and the National Environmental Policy Act. My experience as a practicing environmental engineer and former regulator guided me to places I did not expect to explore, and allowed me to clearly see that scientists and the development of pollution detection systems played an active role in influencing the structure of the federal regulations, which both surprised and delighted me. The acceptance of new scientific techniques is one of the often-overlooked results of the Santa Barbara oil spill.

With these objectives, I follow the history of national water pollution control policy from its beginning in the late 1890s with the passage of the Refuse Act and the Oil Pollution Act of 1924 to the passage of the 1972 Clean Water Act amendments. I investigate concomitant issues such as the development of national environmental policy and the science behind measuring and classifying pollution. I show the spill as the catalyst for the transformation in United States environmental policy. I initially disliked the word "catalyst" because a catalyst implies that the substance returns to its original state as it increases the rate of change. Santa Barbara did change and so did the offshore oil industry off the California coast. But as metaphor, it is the correct

word since the blowout accelerated the creation of national environmental policy, transformed the state–federal relationship for water pollution policy, and forced scientists to find and use better measuring tools for detecting pollution. And to the dismay of the Santa Barbara residents, offshore drilling continued in the channel.

For decades before the spill, efforts of activists and Congress to develop comprehensive antipollution measures at the national level failed. From the first bill passed in the late 1890s to the period after the Second World War, state governments and corporate lobbyists thwarted the attempts of Congress. At best, Congress passed two pieces of legislation before the spill that regulated the discharge of wastes and oil into waters, but both of these attempts failed since the federal government lacked any enforcement powers against the polluters. At worst, industrial facilities worked to limit the types of pollution regulated while states worked to ensure that federal agencies did not interfere with their affairs.

After the Second World War, increasing pollution and increased public attention intensified activity in national environmental policy development, but little change occurred until after the spill. Increased pollution and activism went hand in hand as the postwar years allowed the American public to concentrate on domestic issues without the distractions of high unemployment rates and economic and political uncertainty of the 1920s, 1930s, and 1940s. The postwar years brought increased consumerism, the rise of the middle-class standard of living, and suburban migration.[4] Greater accessibility to higher education allowed many families to attain higher incomes, which in turn allowed the middle class to purchase new homes, appliances, and automobiles. This consumerism transformed small manufacturing facilities into large industrial complexes that spewed pollutants into the air and water. As the middle class produced and purchased products, the amount of air and water pollution increased exponentially. Moreover, the higher manufacturing rates brought about new, quicker, and cheaper production methods and more toxic chemicals to make air conditioners, automobiles, and household appliances that allowed for even more leisure time. This continuous feedback loop caused visible and at times deadly pollution that fouled the air and water. With increased leisure time, it became harder for the general public to ignore the pollution that affected the drinking water and air of many major cities

and suburbs. They saw it outside their windows and when they vacationed and picnicked in the surrounding countryside and parks.

At first, success was found shifting federal land management policies. These changes first begin with the reclassification and preservation of primarily western lands. Activists working with congressional representatives stopped dam building in Dinosaur National Monument, protected numerous primitive areas, and passed the Wilderness Act of 1964 and the Wild and Scenic Rivers Act of 1968. The passage of these two acts cemented ideas surrounding federal land use that had been stirring since John Muir tried to stop the Hetch Hetchy Dam in Yosemite National Park. These designations by Congress and the Johnson administration showed that the federal government believed it needed to take an active role in efforts to slow pollution. Citizen groups like the Sierra Club, the Izaak Walton League, and the Wilderness Society led these efforts and worked with Congress to write legislation and lobby members.[5] Scientists and engineers became involved in these campaigns when activists requested their expertise in showing why dam building in the Grand Canyon would not meet the water and energy supply needs of the West.

Congress also worked on developing, modifying, and strengthening federal policy for water and air pollution, but continued to find little lasting success. Only a few years after the end of the Second World War, Congress passed the first federal water pollution law after almost twenty-five years. This law, like the others that followed, did very little to break down federalist walls. State and local governments continued playing the largest role in water pollution abatement by enforcing their own laws, which varied from state to state and region to region. Congress tried multiple times to increase its sway in water pollution issues through strengthening federal legislation but was successful only one time during the Eisenhower years and three times during the Johnson years. These laws increased funding but did nothing to strengthen water pollution laws. Many stakeholders, including President Eisenhower, believed that the states could do a better job controlling pollution through regulation than the federal government. Of course, these ideas failed as the 1950s became the 1960s and water pollution only increased in many areas, including interstate locations such as the Great Lakes and the Mississippi, Missouri, and Ohio Rivers.

Overcoming the continuous failures to create effective water pollution policy is the crux of the blowout's role in the development of environmental policy. Most pollution occurred within a state's boundary and on nonfederally managed land, which precluded the federal government's involvement. Beyond these issues, the pollution from industrial facilities was also a direct result of increased manufacturing that brought tax dollars, jobs, and progress to the states. Unlike wilderness areas and other federally managed land, corporations had the ability to lobby state governments to stop, slow or modify new regulations, or threaten to move manufacturing facilities to other states with less stringent regulations. Progress occurred in a few areas of the country, mostly in cities hit hardest by air pollution, with the creation of antismoke laws in Pittsburgh and antismog laws in Los Angeles.[6] Before the spill, congressional members found a small opening with interstate water and air pollution and tried to exploit this issue. This route provided Congress an opportunity to attempt to chip away at the hegemony of state control over environmental policy.

In addition to environmental policy reform, the Santa Barbara spill forced scientists and engineers to make advancements in the measurement and definition of water pollution. Before the spill, chemists continued to rely on odor, color, taste, oil thickness, temperature, and bacterial content to determine contamination despite increasing pollution from many industrial sectors. When these basic measures of pollution detection were not effective, scientists counted the ratio of live to dead organisms to assess damage to the environment. These methods did not keep pace with the changes in industrial processes. New chemicals brought lasting effects to ecosystems that we are still trying to understand in the twenty-first century. Fish kills and biological testing did not begin to address issues of toxicity. With the use of technology developed, ironically, by industrial scientists to advance manufacturing processes, scientists began to find ways to detect and measure these new and emerging contaminants. Scientists no longer described pollution as observed or not observed. Sediments and water samples were tested and concentrations of constituents of chemicals, including petroleum-based chemicals, were detected in what were formerly considered "clean" or pollution-free samples.

With the new technologies, policymakers had tools to further convince

Congress and the public that strong federal laws and policy and enforcement power were needed to solve the pollution problem. The results from these scientific developments led to the growth of the political movement for increased oversight and enforcement of environmental pollution. This new movement consisted of a group very different from those involved with federal land management. State and local health departments, corporate executives, representatives of trade groups and chambers of commerce, engineers, scientists, local activists, and countless citizens came to the table to weigh in along with state legislative representatives. Congressional representatives played a large role because the Constitution gave the states substantial control over actions inside their borders. The Constitution walks a thin line between giving full control of governing to the states and providing powers to the federal government for security, internal harmony, and the regulation of commerce.[7] Congressional proponents of federal pollution oversight needed to convince their congressional and state colleagues that federal authority over pollution control did not overstep state's rights. Before the spill, Congress gave federal agencies little authority over water pollution. Federal agencies had no jurisdiction unless each state involved with a water pollution problem invited federal oversight for any interstate or regional conflict. For example, to address Ohio River pollution, government officials from each state bordering the river had to agree to federal oversight before any federal agency could become involved. In addition, congressional leaders did not directly strive for increased federal oversight and, instead, accepted a slow, steady progression toward it. Therefore, each successive bill provided additional funds for state water pollution abatement programs along with a slow breakdown of state authority. Since most congressional representatives saw pollution as an increasing concern for their districts or states, they voted overwhelmingly for improved funding and the slow increase of federal oversight for the projects. This slow progress allowed for the avoidance of any intense opposition to federal intervention. To pacify states and show that Congress wanted to assist in state water pollution abatement programs, Congress first passed laws that appropriated large grants and loans to state and local governments to design and build water and wastewater treatment plants, but yearly congressional budgets included little funding for these projects.

The Santa Barbara spill forced federal government control of water pollution onto center stage. California had no choice since the spill occurred on federally owned land and California had little jurisdiction over the response. Before the spill, federal regulators had been explicit about the role of California in offshore drilling on federal tidelands. Stay away. But the spill's long-term consequences affected non-federally owned land and water. The oil covered private property and state- and county-owned beaches. Santa Barbara and California residents, governments, and industries shouldered much of the economic, health, and environmental effects but they had little say in the response. Federal agencies and their representatives were the first responders and the earliest decision makers. These federal representatives drew the media attention. For example, Lieutenant George Brown of the United States Coast Guard was the first person contacted by Union Oil about the spill, and he ultimately became the on-scene emergency coordinator. California and Santa Barbara officials took a backseat. With the existing regulatory scheme, the federal government did not need to be invited to the party; they hosted it and sent out the invitations. The lack of federal law and policy was laid bare for all to see and experience. The federal government was and needed to be in charge.

The federal government responded in numerous and uncoordinated ways to the disaster. Federal personnel from various agencies responded to assist and direct cleanup activities in the Santa Barbara Channel and on the beaches. Nixon administration representatives, including the newly appointed Interior Department secretary, Walter Hickel, and congressional representatives worked to develop a plan to stop the oil spill and allow for additional offshore platforms in the channel. Regardless, it would take ten days to stop the oil flow from the blowout, and close to a year before the seepage from the area ended. With few methods to effectively contain and remove the escaped oil, it covered the Santa Barbara coast and the neighboring Channel Islands. Pictures of oil-covered birds and blackened beaches were splashed on the pages of newspapers and magazines and television news broadcasts while cleanup crews struggled to remove the oil from sandy beaches, rocky shorelines, birds, and marine mammals.

The spotlight exposed the limitations of environmental protection and the lack of federal coordination to the American public. This beautiful sea-

side town had been despoiled in the same way as industrial cities. Citizens wanted answers and solutions. The federal government held the spotlight and congressional decision makers leaped into action by holding hearings, introducing new legislation, and reintroducing legislation that had been ignored or rejected by preceding congressional sessions. Moreover, the spill forced newly inaugurated president Richard Nixon—he had been president only eight days when the blowout occurred—to put environmental issues at the forefront of his administration's agenda. Since Nixon had not foreseen this change in the public mood, Senators Edmund Muskie (D-Maine) and Henry "Scoop" Jackson (D-Washington) and a coalition of House members took full advantage of the momentum and transformed environmental policy.

Back in Santa Barbara, federal government personnel supervised the spill cleanup and relied on the oil industry to provide equipment, funding, and responders. In addition, federal officials monitored the population of marine organisms and fishes to determine the effects of the oil. As the oil slowly stopped washing onto the beaches, federal officials requested and the oil industry funded a study to establish the effects of the oil on the marine organisms in the Santa Barbara Channel. This study used traditional biological techniques to ascertain the oil's effects. Scientists counted dead, dying, and living organisms and developed hypotheses on their conditions based on these numbers. In addition, they took sand and sediment samples to *visually* detect oil remaining in the environment. This technique of visual detection was the standard method of quantifying the amount of oil in a sample. The researchers concluded that the spilled oil had little or no effect on the populations and communities of the channel's marine organisms. The pollution detection techniques, which primarily included visual and biological methods along with smell and pH level, had not kept up with the massive increase in chemicals that were being used to make the new products enjoyed by the American public.

The results of the study caused an uproar in the Santa Barbara community. Santa Barbara residents and activists accused the study's principal investigator, Dale Straughan, of lying about the results since an oil industry group funded the research. Based on the information collected, Straughan responded that the results showed no conclusive evidence that the spill had caused any of the mortality among the flora and fauna of the channel. Straughan

reminded Santa Barbara residents that the large winter storm that occurred one week before the spill complicated the process of identifying a cause for the mortality of nonavian species. However, the belief that nonvisual pollution could be a serious problem was slowly gaining ground. Scientists had been developing detection technologies to measure these contaminants and they were beginning to standardize the methods for contamination detection. A smaller oil spill off the Massachusetts coast that involved scientists of the world-renowned Woods Hole Oceanographic Institution allowed for the development of new techniques to measure oil pollution in the environment. Woods Hole geochemist Max Blumer used gas chromatography to detect and quantify the concentrations of oil constituents remaining in soil and sediments below visual detection limits. The advance introduced scientists to detection methods for nonvisual contamination, but more important, it gave federal officials new techniques to set standards for water pollution from industry and municipal sources. Water pollution standards became the cornerstone of the Clean Water Act of 1972.

On a national scale, the spill had lasting effects on environmental policy but it also showed the limits of the newly burgeoning power of citizen groups. Back in Santa Barbara, the residents pressed for a ban on further channel drilling. For close to twenty years, Santa Barbara residents had tried to stop federal involvement and further proliferation of offshore oil platforms in the channel as they warned of disastrous results. Now with the spill as evidence of their concern, a local grassroots organization that called itself Get Oil Out! (GOO!) rose up. With the spill on the front pages of newspapers and in the minds of influential senators, GOO! members and local representatives attended hearings, convinced both California senators, and collected tens of thousands of signatures requesting Congress to pass a drilling prohibition. Their failure showed the limits of local environmental activism in the early days of the environmental movement. The Santa Barbara activists used a top-down approach to achieve their goals. But this approach backfired as Edmund Muskie and others used their political capital and leadership to change large-scale environmental policies. The Santa Barbara activists would never achieve their legislative drilling ban.

The structure of this book is inspired by the desire to understand the state of federal antipollution policy and pollution detection methods before their

upheavals in the first years of the 1970s. Historians have pointed to the years surrounding the Santa Barbara spill and Earth Day as a time of great change in the environmental movement.

As mentioned earlier, environmental historians consider the publication of *Silent Spring* as the beginning of the environmental movement in the United States. Rachel Carson's beautifully written book brought to the forefront the potential risks of the indiscriminate use of pesticides. She warned that the use of DDT, chlordane, and other pesticides for eradicating every type of agricultural and residential pest might have many side effects that humans did not quite understand. She spoke of bioaccumulation and persistence in the ecosystem and the bodies of humans, mammals, and other organisms. Carson's book brought the perils of chemical production from the post–Second World War boom into suburban homes. The book concentrated on pesticides that were a small part of the chemical pollution from the increasing manufacturing. Its publication forced scientists and policymakers to defend their actions. But more important, Carson introduced ecological principles into the emerging environmental consciousness of the general public.[8] Introducing the connections between pesticides and environmental damage caused citizens, decision makers, and scientists to begin to question the risks of the booming economy.

As the 1960s progressed, many historians of the environmental movement chose to skip over the details of the time between the publication of *Silent Spring* and the Santa Barbara spill or Earth Day. They describe these events along with the Cuyahoga River fire as tipping points for environmental activism. Sam Hays concentrates on the emerging middle class and its increased desire for environmental and personal health as the foundation for the increased activism in the 1970s. Philip Shabecoff points to the fear of cancer and other effects of industrial chemicals that came to full boil after Earth Day. Thomas Wellock believes the growing anxiety from overpopulation, pollution, and other worries such as nuclear weapons and the Cold War caused uncertainty that exploded with the environmental catastrophes of the early 1970s.[9]

Environmental historians attempt to determine how so many changes occurred in the first few years of the 1970s, but at times it is difficult to comprehend what motivated environmental and science policy throughout the

1960s. Was it a rising fear of cancer? Was it an undetermined anxiety tied to overall changes in the United States? Did Americans finally decide that they needed to take control of the effects of their affluence? While this book concentrates on the Santa Barbara spill, I attempt to analyze changes to the science of environmental contamination and the federal environmental policy that sprang from this new knowledge. I do not concentrate on ecology, population growth, or human health; instead I take a look at how scientists and environmental decision makers considered the chemical pollution itself. The change can be seen as swift and instantaneous or slow and plodding based on your frame of reference. For example, Jackson spent at least five years working on bills that ultimately became the National Environmental Policy Act. To understand what environmental and science policy looked liked before the spill I concentrate on water pollution policy from its infancy in the late 1800s to the passage of the Clean Water Act of 1972. To construct the state of water pollution policy before the spill I seek to comprehend how scientists and engineers understood pollution while investigating the tools they used to determine the amount and type of pollution in the streams and rivers. Concomitant with these issues, I explore how congressional decision makers created comprehensive federal environmental policy.

In the early twenty-first century, engineers and scientists have methods to detect contaminants in the environment. These detection technologies did not come into play until the spill's aftermath forced their use. In 1969, the scientists who investigated the effects of the spill did not have ready access to detection technologies that are part of late twentieth-century sciences' understanding of contamination. By 1988, less than twenty years after the spill, chemical methods were able to detect organic contaminants in water, air, and land to the parts per billion level, but in the 1960s, these methods were only beginning to be introduced into the scientific community. Sensory perception of pollution was the dominant method to determine contamination, which is why the fires, oil spills, and fish kills were the dominant events to change minds and policy. As Rachel Carson noted, "For the most part this pollution is unseen and invisible, making its presence known when hundreds or thousands of fish die, but more often never detected at all. The chemist who guards water purity has no routine tests for these organic pollutants and no way to remove them."[10]

Edmund Russell notes that public fears of toxic substances, the rise of risk assessment methodology, and the prevention of environmental cancer rose in the 1970s and became major emphases for the EPA. Russell uses this argument to explain the changes at the EPA from ecological to cancer-based decision making. I look at the tools that caused this change. Scientists detected these chemicals in the environment and, by latching onto the information obtained from workplace exposure to chemicals, human health issues rose to the forefront of environmental policy. I concentrate on the technology that caused these changes.[11]

So that the dramatic changes in the history of water pollution policy and its connections to the changing chemical detection technology can be understood in the context of the spill, I have structured this book in three parts. The first part of the book describes pre-1969 actions so that readers can understand the status of water pollution detection technology and the role of the federal government in water pollution policy before the spill. This part sets the stage for the dramatic changes that came from the response to the spill. In the second section of the book, I tell the story of the immediate actions of federal and California agencies, the Nixon administration, congressional decision makers, local Santa Barbara groups, and media organizations as they responded to the spill. In the third part of the book, I explore the transformation of environmental and science policy in the aftermath of the spill. Decision makers needed fewer than four years from February 8, 1969 (when the spill was ultimately controlled), to October 18, 1972, when Congress overrode Nixon's veto of the Clean Water Act of 1972 to strengthen federal environmental laws and solidify federal environmental protection as a policy directive and change the way that federal regulators defined and measured water pollution.

PRE-1969 ENVIRONMENTAL AND SCIENCE POLICY

Chapter 1 brings federalism and its ghosts to the forefront of the story with the battle between states and the federal government over jurisdiction of the country's tidelands (the land beyond the low-water limit of the tide but

within the country's territorial waters). Both before and after the Second World War, offshore drilling proliferated on the Outer Continental Shelf. As coastal states, particularly Louisiana, Texas, and California, permitted more and more drilling platforms in the tidelands, the leasing revenues from these platforms caught the attention of the Truman administration. With technological advances allowing for drilling in deeper and deeper waters farther from the shore, federal representatives sued California for control of the tidelands and the revenue it generated. This confrontation stretched over four presidential administrations and would bring in the three branches of the government until the Supreme Court ruled that the federal government had control of channel tidelands and President Eisenhower gave back the tidelands three miles from the low tidemark. I also survey the history of opposition to offshore drilling by the residents of Santa Barbara before the spill. Many citizens, as well as state and local government representatives, fought against the construction and placement of offshore drilling platforms. The Supreme Court ruling that gave the federal government jurisdiction over drilling in channel waters more than three miles from the low tidemark forced the Santa Barbara residents to work with federal representatives who believed that tideland oil—much like trees—on federal lands needed to be exploited for revenue to replenish federal coffers. Unfortunately, the protests and activism of Santa Barbara residents fell on deaf ears, and the federal government's failure to more strictly regulate offshore drilling eventually resulted in the realization of Santa Barbara residents' fears of an environmental disaster.

Chapter 2 connects contamination detection with the transformation of environmental policy. Before the 1960s, the analysis and detection of taste, odor, color, and waterborne diseases were the primary methods for determining contamination. The responsible party for monitoring and removing contaminants from the country's water and air remained elusive. Cities discharged their sanitary wastes straight into rivers and streams with little or no treatment into the 1970s.[12] In most cases, city planners and engineers ignored industrial wastewater discharge. The responsibility for treating water remained with the industry or organization drawing water from the stream. Therefore, early regulation and technology advances concentrated mostly on the dramatic consequences of pollution such as incidences of disease and

death. Sanitary engineers turned their attention to detecting bacteria that caused waterborne diseases. As the types and quantities of water contaminants increased after the Second World War, scientists and engineers did not develop methods to test for their presence, although pesticide detection was an exception. I investigate the methods and emerging technologies used from the 1890s until the late 1960s, and how the lack of progress in contaminant detection hindered the ability to sound the alarm over increased pollution. Without new detection technologies the ability of government representatives to develop useful laws and regulations that could overcome the federalist roadblocks remained impossible.

Chapter 3 focuses on the history of the development of comprehensive federal environmental policy. The tidelands oil platform fight showed that before the Santa Barbara spill, oil spills were not a primary factor during negotiations between federal government representatives and state and local representatives and residents. There was no mechanism for this type of opposition. I investigate the progression of comprehensive environmental policy from Lynton Caldwell's article in the early 1960s on the environment as a public policy concern to Scoop Jackson's first bills to create a comprehensive method to include environmental issues in policy decisions.[13] I particularly concentrate on the inability of Jackson and others to create consensus and interest in this ultimately groundbreaking legislation.

In chapter 4, I narrow my focus to water pollution legislation. Congress passed the first federal laws pertaining to industrial water pollution in the late 1890s and in 1924. These laws concentrated on visible industrial pollution—oil and debris—that fouled boats, hindered transportation, and caused fires. For decades, the federal government tried to involve itself in water pollution abatement but the power of the states stalled any broad changes. Later as citizens and policymakers pressed for responses to pollution, Eisenhower's belief in state control continued the lack of progress. Federal lawmakers tried to slowly chip away at state jurisdiction of water pollution but failed on almost every level because they could not adequately justify the need for increased federal oversight. The chapter introduces Senator Edmund Muskie, the chair of the Subcommittee on Air and Water Pollution, who was the prime advocate for water pollution control, and the author of two significant Clean Water Act amendments in 1970 and 1972.

THE SPILL

In the second section of the book, chapter 5, I tell the story of the immediate response to the spill by federal and California agencies, the Nixon administration, Congress, local groups, and media organizations. I explore their reactions as oil spewed into the Santa Barbara Channel and onto Santa Barbara's shores for the ten long days it took to bring the spill under control. The decisions and actions of federal government representatives during these days caused the spill to become a turning point in the environmental movement in the United States. As the media saturated the news cycle with disturbing photographs and videos of dying birds and oily beaches, Richard Nixon had no choice but to respond to an environmental catastrophe that he was not prepared to manage. The oil industry's inadequate technology to first stop and then contain the oil from the spill heightened the spill's lasting effects on environmental policy. Edmund Muskie and his Subcommittee on Air and Water Pollution changed the agenda of an already-scheduled hearing to include Santa Barbara government representatives and Union Oil's chief executive officer, Fred Hartley, and pressed for immediate action in light of the spill. Last but not least, Santa Barbara residents used their newfound attention to push their agenda to stop drilling in the channel.

POST-SPILL ENVIRONMENTAL AND SCIENCE POLICY

In the third part of the book, I explore the transformation of environmental and science policy in the aftermath of the spill. Congressional decision makers needed less than four years to completely change the ways in which the United States regulates, detects, and measures water pollution. By October 18, 1972 (when Congress overrode Nixon's veto of the Clean Water Act of 1972), Congress strengthened federal environmental laws and solidified environmental protection as a policy directive.

Chapter 6 focuses on two politicians—Scoop Jackson, who jumped at the chance to reintroduce his comprehensive environmental policy initiative, and Gaylord Nelson (D-Wisconsin), who harnessed the public out-

rage and media attention from the spill to establish Earth Day. For years, Jackson's National Environmental Policy Act had languished in the House of Representatives. Using the spill as a harbinger of further environmental disasters, he convinced House colleagues to take quick and forceful action. At every hearing, although each federal government department stated they performed their own environmental reviews for their own projects, the spill showed that the reviews did not occur for offshore oil drilling. Jackson used the lack of environmental review to prove that a comprehensive environmental policy statement and concrete actions were needed. Outside of congressional maneuvering, Nelson used the groundswell of public outrage over the spill and the demands of an increasing environmentally conscious and vocal public to spearhead the first Earth Day.

In chapter 7, I address the role the spill played in the development of emerging pollution detection methods. The new technology resulting from the spill is often overlooked as a consequence of the disaster, even though it played a vital role in the progression of environmental policy. I introduce the men and women who provided the tools that would be needed to measure and detect the pollution from industrial processes. Away from Washington, these scientists began to study changes in both the frequency and size of spills, and made breakthroughs in understanding the lasting presence of environmental pollution. I explore how one oil industry–funded report on damage from the Santa Barbara spill, and the results of a smaller spill off the Massachusetts coast, was responsible for changing how scientists and policymakers defined and measured pollution and its damage. The new technology changed the way that pollution could be regulated and measured. Without the ability to detect invisible pollution, regulating individual sources of pollution would not have been realized in the Clean Water Act of 1972.

In chapter 8, I return to Muskie and his campaign to pass a water pollution control law that gave the federal government expansive power over the enforcement of water pollution laws within each state. In hearings, he wielded the spill as a cudgel to convince skeptical congressional representatives that federal oversight of water pollution was the only way to control and mitigate the pollution that marred rivers, streams, lakes, oceans, and other water bodies. Without the Clean Water Act of 1972, the waters of the United States would have remained acutely polluted for many more years.