

Oilfield Battleground: Louisiana's Legacy Lawsuits in Historical Perspective

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Oil and gas development has left an enduring economic and environmental legacy in Louisiana. The discovery of oil in Jules Clément's rice field in Evangeline in 1901 changed the fortunes of many people in south Louisiana and forever transformed the state's economy. By mid-century the oil and gas sector grew to become the state's main economic enterprise, surpassing all other traditional industries. In the process of shaping Louisiana's economy and way of life, energy development left a significant environmental footprint across the landscape, particularly in the southern parishes. Contaminated soils and ground water from oilfield waste and coastal land loss from the dredging of canals were consequences of a century of oil and gas operations. The rudimentary exploration and production (E&P) practices of the past and the discovery of environmental contamination in many of Louisiana's historical oilfields has, in recent years, led to hundreds of environmental lawsuits. These so-called legacy lawsuits have sought millions of dollars in damage claims and clean-up costs from scores of oil and gas companies to restore private property from pollution that occurred decades ago. This article provides historical context for understanding how these industry practices evolved, how the state dealt with the problems of oilfield waste disposal in earthen pits, and how the growing public concern and regulatory reforms of the late 1980s finally led

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to the forced closure and eventual remediation of these contaminated oilfield sites. It is important to recognize that from the beginning of energy development in Louisiana, certain trade-offs were made by the state, landowners, and other stakeholders in pursuit of oil wealth, high-paying jobs, and economic stability and prosperity. The history of oilfield waste pollution, state regulations, and the resultant environmental consequences are closely linked to those trade-offs.

In the early twentieth century, oil men searched for and found an abundance of petroleum near Louisiana's coastal salt domes. Developing these fields economically caused some unusual and complicated land issues in the prairies and low-lying coastal areas. From the beginning, the disposal of oilfield waste, particularly salt water brine that accompanied the production of oil and gas from subsurface wells, posed significant challenges for the industry and state regulators. To handle these large volumes of produced salt water, companies dug earthen impoundments called "pits" to hold the wastes until the material was either reinjected into subsurface wells, stored for evaporation, or flushed into various waterways during winter floods, as was typically allowed by state agencies for most of last century. This pit storage method became the most efficient and economical way to handle these wastes, but over time these facilities leaked and polluted the surrounding landscape. There were limited regulatory requirements restricting the use of unlined pits to support the development of hundreds of oilfields across Louisiana. As such, this primitive disposal method remained a customary practice for much of the last century, resulting in decades of soil and ground water contamination. For the most part, the public and landowners remained largely ambivalent to the environmental impacts of oil and gas development until attitudes began to shift in the 1970s and 1980s, long after most of the original activities had occurred.¹ The location of these pits and subsequent discoveries of contamination ultimately led to the pursuit of hundreds of environmental lawsuits. These legacy cases galvanized the landowner and environmental community, upended Louisiana's oil and gas industry, and forced the state legislature and agencies to intervene.

¹The United States established major national environmental reforms in 1970 with the passage of the National Environmental Policy Act and the creation of the Environmental Protection Agency.

The legacy lawsuits, which presently total more than 350, raise important historical questions about Louisiana's energy and environmental past. How did the knowledge of the problems associated with oilfield waste disposal and pits change over time, and what was done to address those issues? What factors influenced the state in implementation and enforcement of major reforms for restricting and ultimately ending the use of waste disposal in pits? To what degree should these historical E&P operations be considered unreasonable or excessive within the context of the time and place in which they occurred? A recent piece of legislation dealing with these issues suggests that historical analysis should play a part in evaluating reasonable monetary damages for restoring contaminated oilfield sites. Act 400 of the 2014 Louisiana legislative regular session requires that the cost of repairing environmental damage must take into account a standard of reasonableness based on the rules, regulations, lease terms, and implied lease obligations that governed these customary practices at the time.²

The state has played an important role in the development of oil and gas resources and within the ever-evolving legacy lawsuit saga. The Louisiana Department of Conservation (later the Office of Conservation) governed oil and gas activities in the state throughout the twentieth century. Regulating the disposal of oilfield waste by various agencies paralleled the development of the petroleum industry; however, the pace and scale of E&P activities far exceeded the ability of the regulators to control pollution. What is more, a general lack of public concern for pollution abatement in Louisiana's oil and gas fields gave the industry broad discretion in self-regulation, even during the reign of the Louisiana Stream Control Commission (SCC), the agency that regulated industrial pollution in the state's waterways from the 1940s to the 1970s. Louisiana finally passed comprehensive rules governing the disposal of oilfield waste in 1986, with amendments to Statewide Order No. 29-B, long after many of the issues with unlined earthen pits had surfaced. Growing public awareness of the problems and pressure from environmental protection agencies largely influenced these policy changes, which many felt were long overdue. The new laws ultimately led to the

²2014 La. Sess. Law Ser. Act 400 (S.B. 667) (WEST) (codified as La. R.S. 30:29(M)).

closure of thousands of oilfield disposal pits.³ But by the 1990s, it became widely known to the general public that those old waste sites contained various invisible contaminants below ground, including heavy metals and radioactive substances, that posed environmental and health risks. The threat of liability and expensive remediation, and the potential financial gain for some, convinced many landowners to pursue legal action to press energy companies to pay for damages that far exceeded the market value of the land. The historic 2003 State Supreme Court ruling in the case of *Corbello v. Iowa Production et al.* awarded tens of millions in damage claims to a private landowner from past oil and gas activities.⁴ The *Corbello* decision opened a "Pandora's box" and ushered in a new era of litigation that transformed Louisiana's oil and gas fields into a legal, political, and environmental battleground.

For many years, proponents and opponents of these lawsuits, and all interested parties in between, have struggled with the notion of what constitutes reasonable restoration of contaminated oilfield sites. The conflicts between landowners, farmers, fishermen, and the oil companies over the detrimental effects of oilfield waste date back to the first decades of the last century, but nearly all these cases prior to *Corbello* involved impacts to tangible resources, such as crops and fisheries. The true extent of an operator's restoration obligation has been interpreted both broadly and narrowly to fit specific perspectives. The legal scholars who drafted the state's mineral laws first dealt with similar questions decades ago. But those authors never contemplated the use of the language in these twenty-first-century pollution cases. In the years since *Corbello*, the state legislature has introduced new guidelines and reaffirmed standards for dealing with oilfield site restoration and litigation. The courts have also weighed in on the issue, adding another layer of complexity to this controversy.

One crucial layer that has been left out of the story is the historical dimension. While petroleum has been important to Louisiana's past, there exists a dearth in the scholarship on the

³Prior to the 1980s, other oil-producing states established regulations that either outlawed the use of pits or required specific liners at the bottom of pits to control seepage of effluents.

⁴*Corbello v. Iowa Production et al.*, No. 02-C-0826, Supreme Court of Louisiana (June 20, 2003).

history of energy development and related environmental impacts in the state.⁵ Understanding this relationship in historical perspective is important because of the ways in which modern society tends to view past damages from oil and gas activities through a present lens. It is common knowledge that extractive industries, such as fossil fuels, have generated impacts to the environment over many decades. The altered landscape of south Louisiana is clearly representative of these profound changes. A review of several pioneering oilfields in south Louisiana will help reconstruct the past and analyze how companies, landowners, and the state dealt with these issues over time. With such an intense regional and national debate surrounding energy production and its impacts to land, air, and water, a review of Louisiana's oil and gas history and its environmental legacy is overdue.

The Birth of Louisiana's Oil Industry and the Introduction of Earthen Storage

Louisiana's oil and gas industry began in 1901 with the first successful well drilled by the Heywood brothers in southwestern Louisiana's Evangeline field. The development of this pioneering field influenced the methods of oil and gas operations in the state for nearly a century. This early period is fundamental to understanding oil development, but it has a limited written history.⁶ The Heywoods first introduced the earthen pit storage technique at the Evangeline field. Storing crude oil in above-ground reservoirs, originally called "tanks," was a system born of

⁵See Jason P. Theriot, *American Energy, Imperiled Coast: Oil and Gas Development in Louisiana's Wetlands* (Baton Rouge, La., 2014); Tyler Priest and Jason P. Theriot, "Who Destroyed the Marsh?: Oil Field Canals, Coastal Ecology, and the Debate over Louisiana's Shrinking Wetlands," in Janet Allured and Michael S. Martin, ed., *Louisiana Legacies: Readings in the History of the Pelican State* (West Sussex, UK., 2013); Craig E. Colten, ed., *Transforming New Orleans and Its Environs: Centuries of Change* (Pittsburg, Penn., 2000); Bill Streever, *Saving Louisiana?: The Battle for Coastal Wetlands* (Jackson, 2001); Donald W. Davis, *Washed Away? The Invisible Peoples of Louisiana's Wetlands* (Lafayette, La., 2010).

⁶See D. M. Lindstedt, L. L. Nunn, J. C. Holmes Jr., and E. E. Willis, *History of Oil and Gas Development in Coastal Louisiana* (Baton Rouge, La., 1991); Kenny A. Franks and Paul F. Lambert, *Early Louisiana and Arkansas Oil: A Photographic History, 1901-1946* (College Station, Tex., 1982); Robert Gramling, *Oil on the Edge: Offshore Development, Conflict, Gridlock* (Albany, N.Y., 1996).

necessity. With limited transportation, low prices, and the rule of capture, producers needed to devise a cheap, efficient system for storing oil nearby until markets and infrastructure improved. Rapid oil development spurred the industrialization of the region and supported the burgeoning rice industry. However, problems resulting from the discharge of oilfield waste, particularly salt water brine, into the natural waterways used by the agriculture industry for irrigation created tension in Louisiana's first oilfield. These tensions forced oil companies to adopt new methods that, along with new state-led conservation rules, temporarily fixed the problem. The utilization of earthen pits to store salt water evolved as an adaptation from land-use in the Evangeline field and became a customary and standard industry practice by the time of World War II.

Oil was first discovered in Louisiana in September 1901 about six miles northeast of Jennings. Shortly after the record-setting oil discovery at Spindletop near Beaumont, Texas, in January of that year, a group of investors from Jennings traveled to southeast Texas in search of oil men. They found the Heywood brothers, veterans of the Alaskan gold rush and the Texas oil boom, and sold them on the prospects of oil in southwestern Louisiana. Intrigued, Scott Heywood traveled to the Jennings area and investigated gas seeps in a rice field owned by Jules Clément, a French-speaking farmer. Prior to the development of sophisticated geophysical tools, oil and gas seeps on the surface indicated the presence of subsurface salt domes, which were known to contain petroleum deposits. When Heywood toured the Clément track and discovered the gas seeps, it made the oil man "crazy to get out and get some leases on that land."⁷ The brothers signed a lease with Clément to drill two separate one thousand-foot wells on the top of the salt dome. They set up the Jennings Oil Company and hired a driller from Spindletop. After drilling down a thousand feet without hitting oil, the Heywoods decided (and the landowner agreed) to drill the required second thousand-

⁷Scott Heywood letter to Dewey Heywood, November 14, 1901, Jennings-Heywood Oil Syndicate Records, mss. 3262, box 1, fol. 2, Louisiana and Lower Mississippi Valley Collections, LSU Libraries, Baton Rouge, La., hereafter cited as Heywood papers, LSU.

foot well beginning at the bottom of the first well. Just shy of two thousand feet, they struck oil.⁸ Louisiana's oil industry was born.

For the next five years, the Evangeline field (often referred to as the Jennings field) underwent extensive drilling and production operations. The Heywoods established the Jennings-Heywood Syndicate to operate the leases. They built pipelines, storage tanks, and loading racks near a railroad to move the oil to markets. They also invested in a marine transportation company equipped with several barges and tugboats to haul the oil to customers via the Mermentau River and its tributaries.⁹ At thirteen cents a barrel, oil was shipped out of the field as fast as it could be produced. Production soon surpassed one hundred thousand barrels per day.¹⁰ The transportation and storage capacity, however, could not keep up. The oil operators needed to improvise.

The Heywoods and their competitors consequently adopted a crude but resourceful method first implemented in the southeast Texas oilfields. They hired contractors to dig massive pits, which they called "earthen tanks," to store the oil above the ground. Constructing these giant reservoirs required dozens of laborers and teams of mules pulling carts to remove the loam, pile up levees, and pack the inside of the pit with puddled clay to control seepage.¹¹ These earthen tanks resembled small lakes and each had the capacity to store several thousand barrels (see figure 1). A typical 25,000-barrel earthen tank cost \$750 (about \$18,000 in 2014 dollars) to build, plus annual maintenance.¹² Dozens of these pits, the largest of which held a million barrels, were strategically located throughout the field and connected to the

⁸Scott Heywood, "Heywood Tells How First Oil Well Was Brought In, in Jennings Field; 50,000,000 Barrels Produced From Area of 200 Acres; Recalls Boom Following Big Discovery," *Jeff Davis Parish News*, October 28, 1930, np.

⁹"Activity in the Jennings Field," *Oil Investor's Journal*, 1 (August 1902): 2.

¹⁰Heywood, "Heywood Tells," *Jeff Davis Parish News*.

¹¹Tierce and Brooks & Woodworth agreement to build earthen tank, October 24, 1904, Scott Heywood Papers, Collection No. 26, box 1, fol. 14, Archives and Special Collections Department, Frazar Memorial Library, McNeese State University, Lake Charles, La., hereafter cited as Heywood papers, McNeese.

¹²Jennings Oil Company, *Third Annual Report*, May 3, 1904, Alba Heywood Papers, Collection No. 19, box 1, fol. 4, Archives and Special Collections Department, Frazar Memorial Library, McNeese State University, Lake Charles, La.

well sites via flow lines and sluice ditches.¹³ The tanks became an integral part of developing the field, allowing the operators to rapidly produce the oil for the mutual benefit of their firms and the landowners, who shared in the royalties.

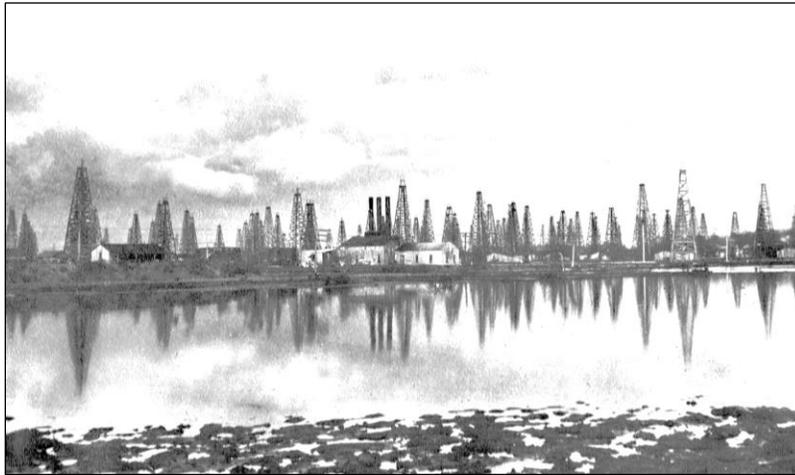


Figure 1: Large oil lake. Courtesy of Jennings Library Archival Collection, Jennings, La.

Scott Heywood later described the reasoning behind this unusual land-use strategy: "With our 40 percent royalty in the Jennings field coming in from subleased land, and with five drilling rigs running night and day, we started—and others followed—building earthen tanks and storing oil that could not be readily sold."¹⁴ The tank-building program continued until capacity reached seven million barrels in the field. The operators built towers for armed watchmen to stand guard at night and protect the oil from would-be violators and trespassers, including flocks of wild ducks that mistook the large pits for fresh water lakes (see figure 2). Although some oil was lost through underground seepage, the earthen tank strategy worked. As the oil men predicted, once the boom in production subsided, prices for oil rose sharply, tripling in some cases. "Of course, we lost

¹³"Early Pictures from Jennings Oil Field," *Jennings Daily News*, September 21, 1951, 7.

¹⁴Walter D. Morse, *The Birth of Jennings and Jennings Firsts* (Jennings, La., 1961), 108.

about 6 percent in seepage, leakage and evaporation," Heywood recalled, "but if we hadn't produced the oil and stored it others would have done so, and the earthen tanks made us money under such circumstances."¹⁵



Figure 2. Earthen tanks. Courtesy of the Jennings Library Archival Collection, Jennings, La.

As more earthen tanks emerged within the forest of drilling rigs in the Jennings field, production foremen and oilfield services contractors instituted standards for constructing the pits and calculating the rates of seepage into the subsurface. R. E. Brooks of Brooks & Woodworth, an oilfield service company in Jennings, explained in 1905 how the earthen tanks were built. Once an embankment had been dug, clay was packed into the walls and wetted by hose or pipe to temper and hardened the base. "That is all the puddling the tank gets," Brooks noted. Weather and differing soil characteristics throughout a particular oilfield, he explained, affected the amount of seepage for each individual tank. "There is no rule that applies to all cases," said Brooks.

It depends on so many different things that there could not be any rule. The percentage of loss depends, first, upon the character of the material; second, how the tank is constructed, and third, on the weather. For instance, you take dry, hot weather, and the loss is much more than in wet weather. I have tested these tanks every morning to see what the loss would be, and I have built tanks over the different fields, and have made a business of studying it, so that I would know what I was doing, and I find that the loss during a dry spell of weather would be double of what it would be in damp weather . . . impossible to

¹⁵Ibid.

make any estimate of what the average is . . . It runs all the way from 10 percent to 30 percent.¹⁶

Brooks added that once the oil seeped into the ground, it formed a "crust" that mixed with the soil. The heaviest seepage in the earthen tanks occurred within the first thirty days, after which time the rates declined.

Over the next several decades, building earthen tanks for storing oil became a customary practice throughout the oil-producing states, particularly along the Gulf Coast. In his book *Oilfield Trash*, author Bobby Weaver noted that the Gulf region became overrun with these open earthen storage pits holding hundreds of thousands of barrels of oil each. "By mid-1917 open pit oil storage on the Gulf Coast was credited with creating a 2 percent to 8 percent seepage, which amounted to a loss of 8,000,000 barrels of oil per year," Weaver stated.¹⁷ In 1917, the Texas Railroad Commission issued a general ban on the practice of earthen oil storage and companies began using more concrete-coated pits and steel tanks in their operations.¹⁸

Louisiana operators continued to use open pit storage for oil. Language was even inserted into lease agreements whereby landowners granted operators the right to build earthen tanks on the leased land.¹⁹ A report from the early 1900s noted the importance of ground-based storage to the developing industry:

The tankage in the [Jennings] field to the close of 1904 amounted to about 30,000,000 barrels. The larger part of this is in earthen reservoirs which have been found fairly satisfactory and much cheaper than steel tanks. Some of these earthen tanks have nothing done to them beyond excavating to the required depths.²⁰

¹⁶Testimony of Judge R. E. Brooks in *Brooks & Woodworth v. Tierce & Hoffman et al.*, 15th Judicial District Court, State of Louisiana, Parish of Calcasieu, 5503, box 2, fol. 1, January 26, 1905, Heywood papers, McNeese.

¹⁷Bobby D. Weaver, *Oilfield Trash: Life and Labor in the Oil Patch* (College Station, Tex., 2010), 150.

¹⁸*Ibid.*

¹⁹Notary, Clement lease transfer to Heywood, box 1, fol. 5, July 28, 1902, Heywood papers, McNeese.

²⁰N. M. Fenneman, *Oil Fields of the Texas-Louisiana Coastal Plain*, U. S. Geological Survey Bulletin 212 (Washington, D. C., 1906), 183.

The incorporation of these facilities at other early pioneering fields in south Louisiana, such as Anse la Butte and Bayou Boullion, and the eventual use of similar pits for storing produced salt water, illustrate the influence of the Heywoods and their adopted techniques on oil development in the state.

Oil development represented the beginning of an energy transition for the nation and a new economic enterprise for Louisiana. Fuel oil, transported from the field via barges, pipelines, railcars, and even horse-and-buggy, provided a cheap new fuel source for Louisiana's growing agriculture industry. Canal companies and pumping stations in the rice belt from Lake Charles to Crowley used fuel oil in their pumps to irrigate the rice lands. With the discovery of oil and the development of commercial rice production, Jennings became a boomtown. A letter from one of the Heywood brothers to an associate in New York noted: "The town of Jennings is on the boom as is also Beaumont. . . . Northern men and Northern capital with their push and energy are coming in here and are making rapid strides and progress."²¹ The influx of capital, immigrants, and canal companies into the region occurred even before the Heywood Brothers arrived. While oil men were taking over the landscape, northern investors were busy converting the prairie region into a highly industrialized rice producer, complete with massive canals and new state-of-the-art equipment fueled by petroleum from the Jennings field.

A conservation ethic emerged at the end of the nineteenth century in response to American industrialization and the misuse of natural resources. However, society at the turn of the new century viewed pollution control as a means to curb wastefulness, not to preserve environmental integrity. Pres. Theodore Roosevelt, a leading conservationist, convened a major conference for governors in the early 1900s to discuss a broad national strategy. Louisiana responded with the creation of a state conservation commission. In 1916, the Louisiana Department of Conservation (DOC) was formed with the authority to supervise all mining operations, including the regulation of "reckless drilling activities" across the state and the prevention of waste in

²¹Heywood letter to W. H. Stenger of Buffalo, New York, box 1, fol. 4, December 26, 1901, Heywood papers, LSU.

oil and gas operations, especially the mass volumes of natural gas being wasted in the Monroe gas field.²² The main function of the DOC, according to a *Tulane Law Review* article in 1942, was "not to prohibit, but rather to encourage, the development of oil and gas resources, in a manner designed to bring about a normal and healthy economic benefit to the industry and the public."²³ Dealing with oilfield waste pollution became one of the agency's first (albeit minor) tasks.

Pollution problems from salt water brine discharges into the environment first arose in the Jennings oilfield in 1906 when the field began producing more water than oil. Oil men had long recognized that salt water migrating through the reservoirs inevitably would invade oil wells. A concerned investor wrote a letter to the Heywoods inquiring if the Jennings field was "doomed." Alba Heywood replied that the field had indeed experienced an increase in salt water and that oil production had slowly diminished. "Every field has it [salt water problems]," Heywood wrote. "It is of course increasing each year. To answer your question specifically, yes the Jennings field is doomed sometime. Salt water has materially affected it. The production of every well has decreased since it was brought in."²⁴

Handling the increased volumes of salt water posed a challenge. Brine, like virtually all other forms of industrial waste, was simply released into adjacent bayous, which fed into other fresh water bodies, such as the Mermentau River tributary system. During periods of excessive production and discharging of salt water, the higher levels of chlorides would affect the salinity regimes of these natural systems. In some cases, the introduction of these wastes into local streams made the water resources unfit for use by the farming community. In December 1906, the Heywoods received a letter from landowners in western Acadia Parish complaining about the impacts to rice irrigation interests from the discharge of produced salt water into local waterways. "We have taken counsel with whom we presume to be the Highest

²²Louisiana Department of Conservation, *Ninth Biennial Report, 1928-1929* (New Orleans, 1929), 155.

²³R. Nolan Moosa and Kaliste J. Saloom Jr., "The Oil and Gas Conservation Movement in Louisiana," *Tulane Law Review*, 16 (1942): 200.

²⁴R. N. Campbell letter to Alba Heywood, box 4, fol. 209, September 29, 1906, Heywood papers, LSU.

Legal Authority in the State," the letter explained, "and we are assured that we have the right to compel the operators to discontinue the drainage of Salt Water into this Bayou, and as a matter of self-protection we will be forced to begin proceedings at once unless the operators upon the field will agree to discontinue the drainage of Salt Water into the above named Bayou without litigation."²⁵ This incident compelled the Heywoods to obtain storage to temporarily retain the salt water. In the company's annual statement, dated October 1907, the brothers noted,

Since the last annual meeting it has become necessary, to avoid litigation and possible injunction from operating, to provide storage for the salt water produced at the field during the rice-pumping season, May to September. This was done the present year at a great expense, and it is a very serious proposition to meet next year. The Syndicate has not sufficient tankage to store all of the salt water produced with the oil and if the production is not greatly diminished it will be necessary to build other tanks next year for the storage of the salt-water.²⁶

Oil production in the Jennings field had declined dramatically by 1907. Yet the added cost of finding sufficient storage for the increased salt water on account of complaints from the rice growers caused the cost of field production to rise.²⁷ The Heywoods needed a cost-effective means to store the waste. They turned to the empty earthen oil tanks and simply converted many of them to impound the salt water during the rice irrigation season.²⁸ The temporary storage of salt water in these large open pits offered a realistic solution and eased the tension over water use in the Mermentau River basin. The *Oil Investor's Journal* described the conflict and the apparent compromise:

The oil operators claim equal rights with the rice people in the case of natural waterways, maintaining that the life of the oil

²⁵P. B. Lang letter to Alba Heywood, box 4, fol. 217, December 12, 1906, *ibid.*

²⁶Jennings-Heywood Oil Syndicate, *Annual Statement*, box 2, fol. 7, October 21, 1907, Heywood papers, McNeese.

²⁷G. D. Harris, *Oil and Gas in Louisiana with a Brief Summary of Their Occurrence in Adjacent States*, U. S. Geological Survey Bulletin 429 (Washington, D. C., 1910), 55-6.

²⁸Morse, *The Birth of Jennings*, 90.

industry at Jennings is largely dependent on getting rid of the large volume of salt water that is constantly being produced from the wells together with the oil. It is a feature of Jennings production that water constitutes a large percentage of the gross yield of the wells. It is understood that the rice farmers are preparing to enjoin [sue] the oil people. This was done last year and a large amount of earthen storage in the Jennings oil field originally prepared for oil was used to care for the salt water from the field until the flooding season was over.²⁹

To limit the firm's liability and adhere to the concerns of its local customer base, primarily the rice industry, the Heywoods demanded that other operators in the field also halt their discharge of salt water into the surrounding waterways. "You are hereby warned not to send foregoing substances, such as salt water, oil, etc., through the gully . . . and thence to the Bayou Des Cannes," a Heywood brother wrote to another operator. "We will hold you responsible for all damages resulting from a disregard of this notice, and will, besides, stand ready to enforce this warning by resort to the appropriate legal remedies."³⁰ The demands no doubt stemmed from an earlier lawsuit, *McFarlen v. Jennings-Heywood Oil Syndicate et al.* (1907), in which a farmer sued the company for damages to his land, asserting that quantities of oil and salt water were allowed to flow down a coulee from the oilfields and onto his property. The judge agreed but lowered the award from \$30,000 to \$1,000, noting that the total value of the plaintiff's farm was not more than \$6,000.³¹ The Heywoods were shrewd businessmen who looked upon the Jennings field as purely a means to extract oil and generate a profit. But as history shows, they also took up residence in the area and ultimately became part of the community. Scott Heywood was closely involved in local civil affairs and later served as a state senator. Maintaining a happy coexistence with local interests was good for business.

As the newly established regulator of oil and gas operations in Louisiana, the Department of Conservation developed rules and

²⁹"Trying to Keep Salt Water Out of Bayous," *Oil Investor's Journal*, (April 5, 1908): 19.

³⁰Heywood letter to Laguerre Oil Co., box 4, fol. 255, April 8, 1908, Heywood papers, LSU.

³¹*McFarlin v. Jennings-Heywood Oil Syndicate et al.*, (1907) 118 La. 537

procedures for governing oil and gas activities, including waste disposal. The agency responded to the concerns of the rice producers over oilfield waste with new laws that sanctioned the adoption of earthen pits for waste disposal. Act 183 of 1910 created "open" and "closed" seasons for surface salt water disposal. The purpose of the act was to "protect the rice planters and owners of the canals who use water for irrigation purposes against the pollution of the streams by salt water, oil and other substances. . . ." The act declared it unlawful to discharge salt water into streams,

provided, that the operators or owners of wells shall have the right to turn their water from wells, reservoirs or tanks into the rivers, bayous, streams or other waterways, between September 1 and March 1 of each year, and are prohibited from doing so between March 1 and September 1 of each year. Said owners or operators shall provide reservoirs or tanks and shall keep the water out of the said streams or waterways during the closed season.³²

This "hold-and-release" method contained the salt water until periods of heavy rainfall during the winter months, when the pits were then drained and allowed to flow into local streams to be diluted with fresh water. This process, it was believed, reduced the effects of chlorides on water supplies critical to agriculture. The state sanctioning of this new technique for managing salt water seemed to gain acceptance, particularly in the rice belt. The *Rice Journal* reported in 1917 that the "Louisiana Conservation Commission has concluded arrangements with oil producers in southwest Louisiana, whereby rice growers adjacent to oil fields will be protected from salt water in the future. Heretofore salt water pumped from these wells was allowed to run into irrigation canals, which did great harm to the growing rice crops."³³

In southeast Texas, oil operators and landowners addressed similar issues. "In years gone by one man's salt and another man's rice have been factors in litigation in the district and federal courts as well as the subject of countless hearings," the

³²Act No. 183, Louisiana Legislature, Regular Session, 1910.

³³"Current Rice News Notes: No Salt Water," *Rice Journal*, 20 (April 1917): 44.

Rice Journal reported in 1918.³⁴ Yet unlike Louisiana, the oil operators in Texas elected to pool their money and established independent companies for the strict purpose of closely managing their waste streams. One such disposal company in the Sour Lake, Saratoga, and Batson fields of southeast Texas, for example, was created with \$100,000 in stock to establish reservoirs and a system of canals and hire an engineer to manage the daily operations, "who will bear in mind the interests of the rice growers, as well as those of the oil producers."³⁵ Operators in Oklahoma and California also elected to form similar independent companies for the purpose of better managing salt water disposal and, conceivably, to reduce the possibility of litigation from local landowners and farmers.³⁶ By comparison, operators in Louisiana had no incentives or outside pressure to establish such practices.

Excessive oilfield brine discharges compounded an existing problem with naturally occurring salt water intrusion from the Gulf of Mexico into the Mermentau and Vermilion watersheds. This increased movement of salt water from the sea into coastal waterbodies typically resulted from excessive removal of groundwater supplies to irrigate farmland during periods of reoccurring drought. In 1917, Vermilion Parish suffered a 30 percent loss in the rice crop from inland encroachment of salt water from the Gulf. The issue of natural intrusion arose again in 1931 when canal companies took out so much fresh water from the system that salt water began intruding through the newly dug Intracoastal Waterway.³⁷ The trouble with salt water intrusion persisted for decades. A report from the 1940s explained the complexity of the problem:

In all cases of damage, alleged or actual, from salt water, after the nature and extent of the damage is determined, the problem lies in determination of the source. The salt water may come from oil and gas fields, quarries, industrial plants such as

³⁴"Oil Field Brine Menace in Beaumont District Removed," *Rice Journal*, 21 (July 1918): 33.

³⁵*Ibid.*

³⁶Wilbur F. Cloud, *Petroleum Production* (Norman, Okla., 1937), 502.

³⁷"Rice Growers in Mermentau Valley, Louisiana Seek Relief from Salt Water," *Rice Journal*, 34 (November 1931): 20.

chemical installations, or from natural sources such as salt licks and springs, or intrusions from the Gulf of Mexico. In the coastal streams, particularly those having direct contact with the Gulf, as in the Mississippi, Vermilion, Mermentau, Calcasieu, and Sabine Rivers, Gulf intrusion is a major complicating factor.³⁸

State agencies and researchers were only beginning to investigate Louisiana's dynamic coastal processes and the changes resulting from natural and manmade impacts.

Similar concerns over the potential effects of brine discharges on fisheries led to the passage of Act No. 133 in 1924, which reaffirmed the use of pits in oilfield operations. This act declared it "unlawful and a misdemeanor . . . to knowingly or willfully empty or drain into or permit to be drained from any pumps, reservoirs, wells or oilfields into any of the natural streams of the said state any oil, salt water, or noxious or poisonous gases or substance in quantities sufficient to destroy the fins in said streams." Section two of the act noted that the DOC "shall have supervision over drainage of brine into streams and shall force operators to impound such substance when the discharge reaches sufficient quantities to kill fish."³⁹ This new rule may have stemmed from a growing conflict in the northern parishes where sports fishermen of the Izaak Walton League battled oil operators over pollution of fresh water streams.⁴⁰ Percy Viosca Jr., the director of fisheries for the DOC and a renowned biologist, led a joint study by the agency and the oil and gas industry that investigated the effects of produced salt water on fisheries. He noted that when brine-polluted streams were relatively small, they literally became "aquatic deserts" devoid of all plant and fish life. Higher salt concentrations in the streams, along with iron compounds, tended to "drive fresh water fish away even when they are not killed outright," Viosca reported. He recommended a system to treat and dilute the salt water before it was discharged, and impoundments to hold the brine during severe dry spells,

³⁸Louisiana Department of Conservation, *Sixteenth Biennial Report, 1942-1943* (New Orleans, 1943), 166.

³⁹Act No. 133, Louisiana Legislature, Regular Session, 1924.

⁴⁰Louisiana Orders Salt Water Impounded," *Oil Weekly*, 43 (October 8, 1924): 54.

only to be flushed amid periods of heavy rainfall.⁴¹ The new order left some doubt as to the actual allowable concentration of brine discharges throughout hundreds of individual oilfields, and the ability of the agency to regulate and enforce the requirements. Although new rules and methods were adopted to lessen the effects of produced salt water, the problem of managing the waste stream increased in the late 1920s and 1930s when the industry discovered vast new reserves of petroleum in the deep strata along the flanks of salt domes across southern Louisiana.

Technological advances in exploration and drilling led to the discovery of several deep-seated salt domes buried far below the surface. These features contained geologic faults and sediment traps conducive to the accumulation of hydrocarbons. Oil men found oil not on the top of the shallow salt cap rock, but several thousand feet deep on the flanks of the salt plug. The findings sparked renewed development in older fields, such as Jennings, where operators expanded out from the center to drill even deeper wells.⁴² Landowners welcomed the new epoch, especially those like Jules Clément, whose royalties had declined as the oil production in the Jennings field diminished. As a result of these new discoveries, Clément demanded more drilling on his land, and in places that he had originally said were off limits to operators. An internal company letter revealed Clément's desire for renewed drilling: "After 24 years of continuous development with about \$300,000 placed [about \$7.2 million in 2014 dollars] in his hands from royalty, he wants more development and wants all of his land tested out as to whether it contains oil or not." The letter went on, "I think the reason the old man is kicking is because his production is lower than it ever has been."⁴³ Deep flank production offered new opportunities and challenges for companies, landowners, and state regulators, especially in the isolated coastal areas.

By the mid-1930s, more than fifty fields with oil-bearing salt domes had been discovered in southern Louisiana, resulting in

⁴¹D. H. Bancroft, "Disposal of Salt Water and Waste Solved in the Louisiana Field," *Oil and Gas Journal*, (April 12, 1928): 174-75.

⁴²Yount Lee Oil Co. discovered oil in the deep strata at the Jennings field at 7,300 feet in 1928. Heywood, "Heywood Tells," *Jeff Davis Parish News*.

⁴³O. W. Heywood letter to Scott Heywood, box 1, fol. 18, January 2, 1926, Heywood papers, McNeese.

increased oil production, but also higher volumes of produced salt water.⁴⁴ "In fields with high volumes," a paleontologist with the DOC reported in 1931, "salt water is impounded into ponds, and held until periods of heavy rainfall, and the consequent flood conditions of the streams, during which time these ponds are drained, and the excessive dilution of the salt water by fresh rain water reduces the damage to soil and vegetation to a minimum."⁴⁵

The earthen tanks performed an important role for the industry in the early days, but the system had limitations. A U. S. Bureau of Land Management (BLM) study in 1929 reported that when high concentrations of brine were released into streams, it contaminated fresh water for livestock, agriculture, human consumption, and fish. Results also indicated the presence of barium in brine discharge areas that resulted in cattle poisoning.⁴⁶ While a few larger companies began experimenting with reinjecting brine into subsurface wells, this method was far more expensive than pits and was still several years away from commercialization. In 1938, a biologist with the DOC noted the shortcomings of pits, particularly in coastal areas: "In some cases the storing of oil field brines in open pits has become impractical because of the volumes to be stored," he said. "In the marsh areas, storing of the brines in reservoirs or pits is almost prohibitive, because of the cost and is often unsuccessful because of seepage through and beneath the earthen dykes of reservoirs."⁴⁷ In his 1937 book *Petroleum Engineer*, Wilbur Cloud championed the use of pits, but also questioned their future as an industry practice:

The prevalent methods used in the disposal of salt water and oil field wastes, crude as they may appear in some instances, at present are rendering a real service to the surrounding communities in safeguarding health and other public interests. As in other industries, conditions may arise which will compel

⁴⁴Neil Williams, "Extensive Development Program Assured in Gulf Coast Territory," *Oil and Gas Journal*, 33 (April 4, 1935): 65-6, 88.

⁴⁵Clarence P. Dunbar, "General Effects of Salt Water on Plant and Animal Life," *Louisiana Conservation Review*, 2 (December 1931): 25.

⁴⁶Ludwig Schmidt and J. M. Devine, "Oil Field Brines Present Problem," *Oil and Gas Journal*, 27 (September 12, 1929): 39.

⁴⁷Donald E. Fuellhart, "Subsurface Disposal of Oil Field Brines in Southern Louisiana," *Oil and Gas Journal*, 36 (January 6, 1938): 46.

improvements to be made or some of the systems to be abandoned entirely.⁴⁸

By the end of the 1930s, the practice of earthen pit storage for oilfield waste had become a part of standard, regulator- and landowner-approved oilfield operations in Louisiana.

The hold-and-release pit system and regulations that sanctioned its use were designed to minimize, not eliminate, the ill effects on other natural resource users. And while a few local stakeholders took notice of the growing industrial pollution on the landscape, particularly the effects of salt water brine on crops and fisheries, the idea of protecting environmental integrity was still more than a half-century away in Louisiana. The Heywood brothers' idea to use earthen oil tanks to impound salt water offered a realistic solution to the industry and to other users of Louisiana's fresh water supplies, particularly the farming community. As the industry discovered more salt domes and expanded across Louisiana, more earthen pits were dug to handle increased volumes of salt water and related drilling wastes. The use of earthen storage, which clearly suffered from "environmental deficiencies" by modern standards, provided a means for managing oilfield waste during a period of rapid economic growth (see figure 3, p. 422). These pits remained a central feature of oil and gas development for decades.

Regulatory Headway and Expanding Oil and Gas Development

The expansion of Louisiana's oil and gas fields beginning in the 1930s marked a new era of energy development and pollution problems. In 1940, the state created the Louisiana Stream Control Commission (SCC) to regulate stream pollution from various activities, including oilfield operations. All the while, the DOC actively promoted the development of salt water wells and reinjecting the effluent back into subsurface formations. However, the broader industry viewed this emerging technological solution to waste disposal as an added expense. In the absence of strict regulations to force the switch to a new disposal system, companies operating in Louisiana continued using pits as the primary method of managing oilfield brine and

⁴⁸Cloud, *Petroleum Production*, 511.

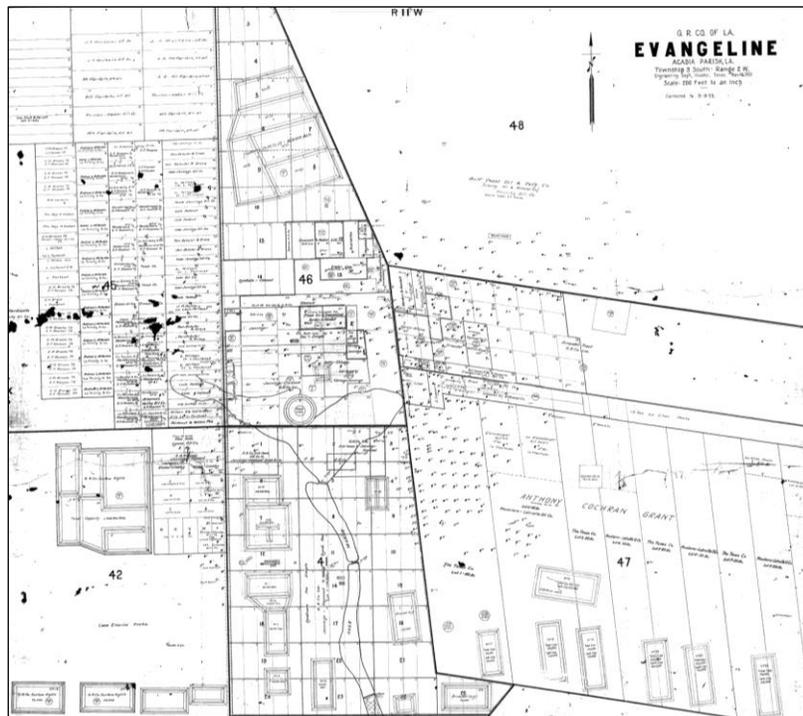


Figure 3. 1920 Jennings Oilfield Map with tanks (rectangular features). Courtesy of Acadian Manuscripts Collection, Special Collections Department, Dupré Library, University of Louisiana at Lafayette, Lafayette, La.

related wastes. In fact, in 1940 the state put forth a recommended design of earthen separating pits (see figure 4) to separate out any remnant oil from the brine prior to the water being disposed by other means. The Gueydan and Bayou Pigeon/Bay Natchez oilfields offer examples of how industry, landowners, and regulators dealt with the realities of increased petroleum production and waste disposal at mid-century. Regulations were adopted, but not at the scale and enforcement level needed to keep up with industry expansion. Nor was there broad public support for restricting industry activities and growth in this period of postwar prosperity. The industry and regulators made some progress in the area of waste control, but major reforms were delayed. This resulted in the continuation of old operating practices, even as evidence of the pit system's environmental problems surfaced in the 1960s and 1970s. Failure to effectively enforce existing regulations and to pass strict rules on brine disposal at the dawn of national environmental reform allowed the perpetuation of an environmentally questionable but legal and regulator-approved practice for several decades.

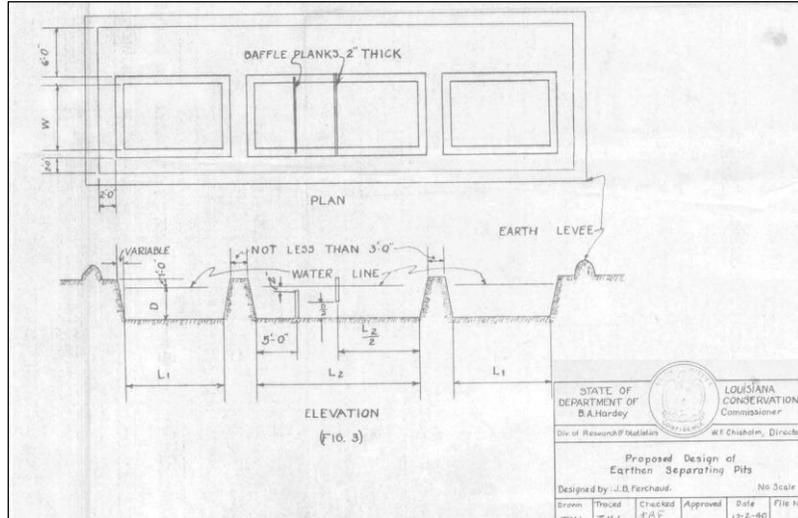


Figure 4. Proposed Design of Earthen Separating Pit, Louisiana Department of Conservation, December 1940, Courtesy of Louisiana Department of Environmental Quality Records Management, Baton Rouge, La.

Prior to World War II, there emerged in America and in Louisiana a growing desire for regulatory control over stream pollution.⁴⁹ During the 1930s, the DOC recognized some of the environmental impacts associated with produced salt water from oilfields, but it lacked analytical tools to measure and quantify these effects.⁵⁰ "It is obvious that the introduction of such vast quantities of [salt] water when continued steadily over considerable periods of time must effect profound changes in the constitution of the surrounding area," a DOC newsletter explained.⁵¹ However, biologists and chemical engineers within the Division of Research and Statistics for the DOC were only beginning to study the effects of oil activities and salt water brine—or "bleed water," as they referred to it—on fisheries, water bodies, and agriculture. Reports of oyster mortality in the vicinity of intense oil and gas development along the coast led to several studies on oil and salt water pollution.⁵² It also led to the establishment of rules requiring the construction of levees or catch basins around facilities to prevent oil and oily water from escaping into the environment.⁵³ Evidence suggests that some operators employed new pollution abatement techniques to minimize the problem of contaminating oyster beds with oily waste in the coastal oilfields.⁵⁴

Louisiana subsequently created a new entity to formally investigate pollution and, where necessary, to pass reasonable regulations and enforce compliance orders. Act 367 of 1940 established the SCC. The commission started as a fact-finding board made up of top officials from other state agencies, with advisory committees made up of individuals from various

⁴⁹For a study on early oil pollution in America, see Joseph A. Pratt, *Black Water: Responses to America's First Oil Pollution Crisis* (Kansas City, 2008).

⁵⁰See *Doucet v. Texas Co., et al.*, Supreme Court of Louisiana (205 La. 312; 17 So. 2d 340), 1944.

⁵¹Louisiana Department of Conservation, *Eleventh Biennial Report, 1932-1933* (New Orleans, 1933), 104.

⁵²James Nelson Gowanloch, "Oyster Beds and Oil Wells, a Complex Conservation Problem," *Louisiana Conservation Review*, 4 (April 1934): 2, 47-8.

⁵³"Additional Pollution Regulations Prescribed by Commissioner of Conservation," *Louisiana Conservation Review*, 4 (April 1934): 8-11.

⁵⁴"The Prevention of Pollution," *Louisiana Conservation Review*, 7 (Winter 1938-1939): 19-20.

industries. It had limited funds, a small staff, and relied on outside sources to provide data on a broad range of pollution activities.⁵⁵ In 1943, the SCC adopted the newly enacted Statewide Order No. 29-B rules, which established guidelines for governing the disposal of oilfield waste. The SCC's enforcement arm was within the DOC until 1944 (Act 328), when that obligation was transferred to the newly created Louisiana Department of Wildlife and Fisheries (WLF). With the SCC, the responsibility of regulating oilfield waste disposal by the DOC had diminished. "The Commissioner of Conservation is, therefore, no longer concerned with waste from oil wells insofar as that waste affects aquatic life," a representative from the DOC stated in 1946.⁵⁶ With its mandate to protect aquatic life and water resources, the SCC set out on the ambitious task of curtailing industrial pollution in the state's waterways.

The SCC ultimately had the authority to permit or restrict an individual request to discharge salt water into public waters. If the discharges were deemed unreasonable or potentially harmful to human and animal health, the SCC could set specific parameters on the amount of discharge, or deny the request. By one account, salt content of ten thousand parts per million, or 1 percent, was believed to cause damage to aquatic life, but those levels often varied according to location, salinity regime, and the size of the water body.⁵⁷ Still, most game fish were found in brackish coastal waters. Local inhabitants were well aware of this relationship and therefore "tend to be less concerned about the influence of moderate salt pollution upon aquatic life than those who are not familiar with tidewater conditions," the DOC reported, unless of course the discharges occurred at or near

⁵⁵Louisiana Stream Control Commission, *Biennial Report, 1946-1948* (Baton Rouge: Louisiana Stream Control Commission, 1948), State Library of Louisiana, Baton Rouge, La.

⁵⁶Act 328 of 1944 transferred expressly to the commissioner of Wildlife and Fisheries all the authority conferred to the commissioner of Conservation to supervise the drainage of wastes, including oilfield brine, into natural streams, by Act 133 of 1924. See "Stream Control Commission Minutes," October 17, 1946, Louisiana Department of Environmental Quality Records Management, Baton Rouge, La., hereafter cited as LDEQ Records.

⁵⁷Louisiana Department of Conservation, *Sixteenth Biennial Report, 1942-43* (New Orleans, 1943), 176.

prime oyster grounds.⁵⁸ In the West Lake Verret oilfield in the Atchafalaya Basin, for example, the SCC granted Shell Oil permission to discharge ten thousand barrels of salt water a day into a local bayou, so long as the superintendent of the Morgan City Water Plant found no problems with the water supply.⁵⁹ A hundred miles to the west, in an oilfield near Lake Charles, the SCC denied a similar request from Magnolia Petroleum Corporation to dispose of salt water into the Calcasieu River system due to concerns of the local rice farmers over salt water intrusion.⁶⁰

During the late 1940s, a small team of inspectors began investigating oilfield operations. They observed, sampled, and reported on levels of pollution in streams, particularly chlorides from produced salt water. When biologists from the WLF discovered that discharging oilfield waste (oil and brine) into coastal estuaries had potential detrimental effects on oyster life, the SCC passed a resolution prohibiting such action.⁶¹ From 1946 to 1947, the newly formed Coastal Waste Control section of the WLF conducted patrols in southeastern Louisiana and found more than a hundred violations. Letters were sent to violators informing them that they needed to meet SCC compliance orders and properly manage their waste streams. These violations included: no catch tanks or pans under wells, excessive oil spillage, and discharge of brine into canals and marshy areas.⁶² Operators in the coastal areas became aware of the new rule, and made the appropriate adjustments. A lengthy report from January 1948 listed all the violations and the corrective actions taken. These included cleaning up oiled areas, repairing leaky equipment, and constructing gathering ditches or pits to contain the brine.⁶³ "These violations have been corrected after being

⁵⁸Ibid.

⁵⁹Stream Control Commission, "Proceedings of Meeting of the Louisiana Stream Control Commission," May 29, 1941, LDEQ Records.

⁶⁰Ibid., December 31, 1941, LDEQ Records.

⁶¹Ibid., January 7, 1947, LDEQ Records (date of the signed resolution was November 26, 1946).

⁶²Ibid., September 5, 1947, LDEQ Records.

⁶³Stream Control Commission, Reports and Inspections, 1948, "Corrections of Violations of Stream Control Commission Rules Governing Disposal of Oil Field Waste (as amended April 19, 1943) previously reported, January 27, 1948."

called to the attention of the offending oil companies," the WLF inspectors reported.⁶⁴

One of the companies found in violation was the Texas Company (Texaco). The company ultimately filed a lawsuit claiming that the SCC did not have constitutional powers to pass laws and force companies to cease operations that resulted in alleged violations of those laws. In its petition, the Texas Company made it clear that its multiple operations in south Louisiana accounted for a large sum of revenue to the state (\$2.8 million paid in severance taxes in 1946) and to landowners (\$6.7 million paid in rents and royalties in 1946) and, therefore, it should have the ability to dispose of waste as it had in the past without the oversight of a new agency.⁶⁵ As the postwar years advanced, oil interests became more intertwined in state and local politics, where strong lobbying efforts constantly opposed tougher regulations on energy operations. Nevertheless, in *Texas Co. v. Montgomery*, a panel of federal judges upheld the powers of the SCC to prevent pollution and to control the disposal of wastes into the waters of the state.⁶⁶ While this decision solidified SCC's jurisdictional authority over pollution control, it did not improve the agency's ability to physically regulate and enforce laws on the ground.

The early history of the SCC suggests that the agency approached pollution abatement on a case by case basis and did not follow stringent guidelines that specially outlawed brine discharges into the surrounding environment. The few pollution inspectors were no doubt stretched thin and were forced to cover a wide geographic area with several industries, including sugar mills, paper mills, canning businesses, and refineries, in addition to the hundreds of oilfields, all along Louisiana's numerous waterways. Even with these limitations, the inspectors communicated the pollution problems to the individual operators in the fields, worked with the onsite managers to address the situations, and often returned to the areas several weeks later to assess if compliance was met. Violators were given additional

⁶⁴Stream Control Commission, "Progress Made on Stream Pollution Problem," *Louisiana Game, Fur and Fish*, 5 (July 1947): 1.

⁶⁵Federal Court Dismisses Suit of Texas Co. Against Stream Control Body," *Louisiana Game, Fur and Fish*, 5 (September 1947): 2.

⁶⁶Ibid.

time to reduce disposal rates, offered a public hearing to dispute claims of noncompliance, or requested by the SCC to cease and desist operations completely, depending on the severity of the case.⁶⁷ The agency, as John L. Madden, assistant attorney general of Louisiana, stated in 1951, was not set up as a police force to suppress all the discharges of pollution into the state's waters, nor was it tasked with hauling into court the violators of these rules without the benefit of a public hearing to reach a compromise. "No doubt the Legislature realized the importance of maintaining public health, protecting wild life and fisheries, and encouraging agriculture," Madden said, "but it had to consider and give attention, as well, to the economic significance of industry in promoting the general welfare. . . . Quite obviously, the plan was . . . to strike a proper balance between the needs of industry on the one hand and the demands of public health, aquatic life protection and agricultural growth on the other."⁶⁸ As oil and gas rapidly advanced as Louisiana's dominant economic sector, state and local officials recognized the need to limit erecting barriers to growth while still conducting their missions. Yet over time, the influence of the oil business in Louisiana's political economy grew even stronger, making the job of regulating the industry and enforcing existing laws more challenging.

The history of the Gueydan oilfield reflects some of the changes confronted by the industry, regulators, and locals from the 1930s to the 1950s with respect to oil development and waste disposal. Pure Oil Company discovered the field in 1932. Following several years of peak production, the field began producing higher volumes of salt water. This led to a string of complaint letters from farmers and state compliance orders related to Pure Oil's waste disposal activities. The SCC responded to the complaints in 1942 by taking samples and inspecting the wells and the brine storage system. "It has ample capacity and good levees all around," the agents noted in a report. "It is felt that this field offers no pollution hazard as far as salt water is concerned at the

⁶⁷Stream Control Commission, "Proceedings of Meeting of the Louisiana Stream Control Commission," May 7, 1947, LDEQ Records.

⁶⁸John L. Madden, "Fundamentals of the Stream Control Commission Program," in *Proceedings of the First Annual Symposium on Water Resources of Louisiana and Their Utilization, Engineering Experiment Station*, Bulletin No. 31 (Baton Rouge, 1952), 26.

present time, and it is unlikely to offer any hazard in the future."⁶⁹ A few years later, the Gueydan Drainage District manager sent a similar letter to state authorities explaining that he had received several complaints from farmers that salt brine from the area oilfields had been dumped into the main drainage ditch "in such quantities that it is a menace to livestock." He asked for the agency to "remedy this situation."⁷⁰ Shortly thereafter, state agents and company men from Pure Oil visited the field and took additional samples. Records indicate that no violations were reported. A few years later, after Pure Oil had installed a salt water disposal well in the field, additional complaints surfaced after the SCC had authorized the company to discharge oilfield brine presently impounded in pits. The agency made it clear, however, that this particular approval did not grant Pure Oil the right to continue open discharges in the future.⁷¹ In areas where water resources were particularly important, such as in Vermilion Parish, regulators were constantly challenged to balance the needs of the oil and gas industry with the needs of other local users.

By the late 1940s and 1950s companies began investing in salt water disposal wells. This consisted of drilling new wells or opening abandoned ones to inject the brine back into the subsurface formation. Although the technology had emerged in the late 1930s as a practical method for storing waste water in the Gulf Coast region, the extra measure added costs to the operations. Nonetheless, salt water disposal wells gradually became an integral part of oilfield development. In the Gueydan field, for example, Pure Oil began operating salt water wells in 1946, but still used earthen pits for various applications: to separate the oily water from the salt water, to impound brine once the salt water wells reached capacity, and for emergency purposes. This dual systems approach to managing salt water became a standard for field operations and usually consisted of a series of flow lines, settling pits, and injection wells to handle the wastes. Operators in Gueydan used the adjacent canal to discharge produced water once the system reached maximum

⁶⁹Stream Control Commission, Inspection Reports: Gueydan Field, 1954, LDEQ Records.

⁷⁰Ibid.

⁷¹Ibid.

capacity and conditions were appropriate for release, as state guidelines dictated.⁷² By 1950, nearly half of the reported produced salt water in the state was being reinjected into subsurface wells.⁷³ However, the number of newly developed oil and gas fields nearly tripled during that period, creating greater volumes of related oilfield waste.⁷⁴

The increase in salt water discharges in the early 1950s put a strain on the fresh water supplies during one of the worst incidents of natural salt water intrusion from the Gulf to hit the rice belt region. A report noted that as a result of severe drought, salt water from the Gulf had encroached thirty-eight miles up through the Vermilion River tributary system. Salt levels remained high for more than three months.⁷⁵ Consequently, a bill sponsored by the Louisiana Farm Bureau Federation in the 1952 legislative session sought to prohibit dumping produced salt water from oil wells into streams for twelve months. This would have created a financial burden for the industry. After compromising with industry interests, the Federation agreed to a nine-month closure. "It would be better to have year around prohibition of the dumping of stream polluting materials," the *Rice Journal* reported, "but in view of the opposition of oil and other industrial interests which feared that they might be forced to close down, the Farm Bureau agreed to compromise and accept a provision permitting dumping during the period of Oct 1 through Dec 31."⁷⁶ Trade-offs were evidently necessary to maintain economic growth, particularly in the oil and gas sector, which had surpassed all other industries by mid-century.⁷⁷

⁷²Ibid.

⁷³A. N. Turcan Jr., "Industrial Use of Ground Water in Louisiana," in *Proceedings of the First Annual Symposium on Water Resources of Louisiana and Their Utilization, Engineering Experiment Station*, Bulletin No. 31 (Baton Rouge, 1952), 6.

⁷⁴Louisiana Department of Conservation, *Twentieth Biennial Report, 1950-1951* (Baton Rouge, 1951), 13.

⁷⁵Paul H. Jones, A. N. Turcan Jr., and Herbert E. Skibitzke, *Geology and Ground-Water Resources of Southwestern Louisiana*, Geological Bulletin, No. 30 (Baton Rouge, 1954), 228.

⁷⁶"The Voice of the Louisiana Farmer," *Rice Journal*, 55 (July 1952): 19.

⁷⁷In 1944, oil and gas production in south Louisiana generated an estimated \$150 million, compared to the combined productive value of shrimp, oysters, and

A striking example of this occurred in La Salle Parish in north Louisiana where for many years fishing in Little River and its tributaries suffered from a heavy influx of produced salt water that originated from the Tullos-Urania oilfield. The "stripper wells" located in this area were largely depleted and produced hundreds of barrels of salt water per barrel of oil daily. The smaller producers that operated these wells simply released the brine directly into the local waterways, causing a decline in aquatic life and a drop in fish stocks. Over many years of investigating the problem, the SCC debated whether or not to force the operators to greatly reduce their discharges of brine into the river by upgrading existing disposal pits or building new ones. At a meeting in 1955, the SCC cautioned that such measures could force many of these companies out of business, resulting in economic losses to the state and the local community. The severance taxes paid to the state from the production in this field amounted to \$125,000 annually. "It is a situation [whereby] we should temper justice with mercy, so to speak, where the economics of the state and community would be justified," stated John Hussey, commissioner of the DOC and member of the SCC.⁷⁸ The problem persisted for many more years.⁷⁹

New rules in the early 1950s essentially reaffirmed the use of pits in oilfield operations. Act 203 of 1952 expressed that no person shall dump brine "except during an open season hereby established between Oct 1 and Dec 31 of each year, when the operators or owners of wells may turn their water from wells, reservoirs, or tanks into such natural streams and drains. Brine must be impounded in reservoirs or tanks during closed season between Jan 1 and Sept 30."⁸⁰ The following year, the DOC passed amendments to 29-B, reaffirming that it was permissible, upon the commissioner's approval, to discharge brine into streams. The order stated,

furs at \$17 million. Armand P. Daspit, "Louisiana Marshes Worth Millions," *Louisiana Conservationist*, 2, (May-June 1950): 20-1.

⁷⁸Stream Control Commission, "Proceedings of Meetings of the Stream Control Commission of Louisiana," Baton Rouge, La., March 11, 1955, DEQ online records

⁷⁹"Louisiana battling brine pollution," *Oil and Gas Journal*, 62 (June 1, 1964): 45.

⁸⁰Louisiana Legislature, Act No. 203, Regular Session, 1952.

No oil field brine shall be discharged into any stream, lake or other body of water, or into any ditch or surface drainage leading to any stream, lake or other body of water when it is determined by the SCC that such discharge would adversely affect the following: drinking water, public health, agriculture, livestock, fish life, or vegetable life; provided that oil-free brine may be discharged under maximum dilution ratios prescribed for any part of a stream or field by the SCC, or during any particular period in which such discharge is determined by the Commissioner to be free from pollution hazard, or necessary in the public interest.

The amendment also emphasized the use of injection wells, but it did not specially require it. "Wherever possible," the rule stated,

disposition of oil field brine shall be accomplished by discharge through disposal wells to underground horizons below the fresh water level; provided that this rule shall not apply in fields or areas where it is determined by the SCC that disposition of the brine is or may be accomplished by discharge into water bodies normally or seasonally sufficiently saline to preclude any actual or potential pollution hazard due to such discharges.⁸¹

This second provision allowed for the continuation of salt water discharges into tidally affected coastal wetlands, where the state deemed it appropriate. A situation with the Atlantic Refining Company later that year illustrated that view. The SCC met and discussed the company's application to discharge oilfield brines from producing wells into tidally affected canals connecting to the Bayou Sale Field in St. Mary Parish. With no objection from the landowner, the SCC granted the permit, under the condition that the company would agree to halt the discharges if damages to muskrats and aquatic life occurred.⁸²

The rules of the early 1950s sanctioned the standard (yet antiquated) waste disposal methods of the past, even as the knowledge of adverse effects of salt water and related effluents on the environment gradually surfaced in Louisiana. Evidence

⁸¹Stream Control Commission, "Rules Governing Disposal of Waste Oil, Oil Field Brine, and All Other Materials Resulting from the Drilling for, Production of, or Transportation of Oil, Gas or Sulphur, as amended January 27, 1953," Stream Control Commission, State Library of Louisiana, Baton Rouge, La.

⁸²Stream Control Commission, "Proceedings of Meeting of the Louisiana Stream Control Commission," November 16, 1953, LDEQ Records.

suggests that industry and regulators in other states were well aware of some of the problems prior to the 1950s, but it is not clear how that knowledge translated to operations in Louisiana. In 1930, a presentation by an engineer to the Panhandle Chapter of the American Petroleum Institute in north Texas cautioned his audience about the effects of produced water on other natural resources: "Apparently, it is only a question of time until the opposition to the escape of our waste will be strong enough to force us, as an economical measure, to dispose of them in such a manner as will not be objectionable to anyone, and, without doubt, such disposal will also be effected at a profit."⁸³ A number of historical documents convey that the broader industry, at least the research units within a few of the major oil firms, had some knowledge of hazardous materials in produced salt water and recognized that seepage through the unlined earthen pits could lead to contamination. "We cannot expect to successfully impound salt water without seepage," one commentary noted.⁸⁴ A geologist from the Kansas State Board of Health noted that the use of earthen storage led to early contamination of ground water supplies. "Fortunately," he wrote, "most major oil companies and many leading industries realize that any attempt to store brines in earthen ponds is quite futile."⁸⁵ Most of these remarks, however, involved issues with brine storage in oilfields outside of Louisiana. In Louisiana, pits were regarded by the industry and regulators as an efficient method for separating out oil and water and temporarily impounding brine until conditions were appropriate for release. The notion of seepage through pits was either marginalized or disregarded at the time. The added cost of requiring all operations to use injection wells for salt water disposal (a superior method to pits) or some other state-of-the-art means was seen by many as an unnecessary financial burden for the state's most important industry. Consequently, few improvements to the standard practices were made by the industry or required by Louisiana regulators until many years later when more advanced scientific knowledge emerged in the

⁸³V. L. Martin, "Disposal of Production Division Wastes," a presentation to the American Petroleum Institute Panhandle Chapter, Pampa, Texas, April 12, 1930.

⁸⁴Ibid.

⁸⁵Ogden S. Jones, "Subsurface Disposal of Inland Oil-Field Brines Conserves Fresh Water Supply," *Civil Engineering*, 17 (February 1947): 61.

study of toxic substances and petroleum effluents, and their potential effects on the environment and human health.

Throughout the 1950s, the oil and gas industry sparked a resurgence of economic activity and prosperity in the bayou country following a decade of war and dislocation. The development of the Bayou Pigeon and Bay Natchez fields in the Atchafalaya Basin exemplifies the industry's far-reaching impact across the landscape, both economically and environmentally. The lease agreements between several operators and the Brownell Land Company reflected the changes of the period. The right to dispose of salt water in wells was added to the standard lease contracts, granting the operators the ability to drill additional salt water wells, as was the right to use pits on the property to dispose of waste accumulated from the fields. The standard lease contracts became more detailed, which illustrates the level of sophistication of the technical operations, but also underscores the degree to which landowners had become more experienced in matters dealing with oil leases and royalty interests on their land. One aspect of the contracts remained unchanged: the priority of mutual economic benefit from mineral development. Very little if any emphasis was placed on environmental considerations during this period.

Mike Vanover, the president of the Brownell Land Company, commented on the industry's legacy within the context of the postwar era:

First of all, you have to understand the landowners' point of view back in the 1940s and '50s. All of timber had been harvested and in their minds the land was worthless. There was no income coming in whatsoever, but there were taxes. So when oil and gas was discovered, they were very anxious to get any income they could out of this thing, so they were open-minded and had no experience dealing with oil and gas people, so they depended on the oil and gas companies to drill the wells and drill them according to existing laws at the time.⁸⁶

A survey of Brownell's mineral and nonmineral property assets in the late 1950s clearly illustrates how the value system changed for Louisiana. The acres containing oil and gas wells accounted

⁸⁶Mike Vanover, interview by Jason Theriot, February 5, 2014, Morgan City, La.; all interviews cited without reference to repositories are in the author's possession.

for one-third of the total Brownell landholdings, but the value of the royalty-generating tracts were more than four times greater than the rest of the swampland.⁸⁷

While Louisiana remained largely ambivalent to the emerging environmental problems associated with energy development, the nation began a shift to major environmental reforms. Articles in national trade journals reflected these broader concerns. The *Oil and Gas Journal* reported in 1963 that "Pollution-control authorities in oil states are well aware of the contaminating power of oil-field brine. And landowners, farmers, water districts and other local or regional governmental bodies are becoming better educated to the existence or threat of oil-field-originating pollution."⁸⁸ In Texas, the chairman of the Water Commission said that his state "is reaping a harvest in loss of water quality which is the result of four decades of statewide disposal of oil-field brines into surface pits, into inadequately constructed disposal wells, and directly into streams."⁸⁹ Farmers and ranchers in the Panhandle region led the calls for tighter regulations because of the impacts from salt water brine to subsurface fresh water used for irrigation. In 1961, the legislature set up the Texas Water Pollution Control Board, which, along with the Texas Railroad Commission, required permits for operating pits and curtailed the use of unlined surface pits when pollution was detected. The state also posed a complete ban on unlined pits for twelve counties. The report noted that the use of unlined surface pits was also declining in Oklahoma. "This method of brine disposal appears destined for near extinction in the larger oil-producing states, especially where top soils are not tight clays," it concluded. "Even where such soil conditions exist, pits are not considered adequate by many pollution-control people."⁹⁰ The article alluded to the fact that similar regulatory changes in Louisiana were at least being considered.

⁸⁷"Appraisal of the Royalty and Mineral Interests Owned by the Succession of Mrs. Norma B. Chalstrom as of May 13, 1959," Brownell Land Company records, mss. 5112, box T:10, Louisiana and Lower Mississippi Valley Collections, LSU Libraries, Baton Rouge, La., hereafter cited as Brownell records.

⁸⁸Robert J. Enright, "Oil Field Pollution," *Oil and Gas Journal*, 61 (June 24, 1963): 77.

⁸⁹*Ibid.*, 78.

⁹⁰*Ibid.*, 86.

The SCC, along with the DOC, inched closer toward a major policy shift when the newly created Federal Water Pollution Control Administration (established by the Water Quality Act of 1965) required states to submit standards for water quality by 1967.⁹¹ In March 1967, the DOC held a large public meeting to discuss a set of "tentative criteria" for meeting those new water quality standards, which included stricter rules on waste disposal.⁹² The state approached industry representatives and it was agreed that the Pollution Control Committee of the Mid-Continent Oil and Gas Association, the leading advocacy group representing the oil and gas industry in Louisiana, should play an advisory role in developing the new rules.⁹³ The collaboration of industry and the state in establishing best management practices with respect to salt water disposal held promise, but also spoke to the influential role of oil interests in policy making and lobbying efforts throughout Louisiana's controversial political past.

In October 1967, after holding several committee meetings, the DOC passed an amendment to Statewide Order No. 29-B that was favorable to industry. The new rules required that brine "shall be disposed of in subsurface formations *except* [italics added] in approved pits or in approved tidally affected waters not suitable for human consumption or agricultural purposes."⁹⁴ The amendment attempted to combine all "specific field" related orders into a single comprehensive guideline for all oil and gas operations throughout the state. "With increased emphasis being put on pollution by the federal authorities, it became evident that Louisiana, in order to stay abreast of this problem, should have a Statewide Order which would apply to all operations and have all

⁹¹"Salt Water Disposal and Oilfield Water Conservation," *Petroleum Equipment and Services*, 30 (July/August 1967): 22, 24-6, 28.

⁹²Stream Control Commission, "Proceedings of Meeting of the Louisiana Stream Control Commission," Lafayette, Louisiana, March 31, 1967, LDEQ Records.

⁹³"Louisiana Tightens Brine Rules," *Oil and Gas Journal*, 65 (October 30, 1967): 49.

⁹⁴Louisiana Department of Conservation, *Report of Hearings, Statewide Order No. 29-B Amendment to Section XV, Docket No. 67-485*, October 10, 1967, New Orleans, La., Louisiana Office of Conservation records, Baton Rouge, La., hereafter cited as Conservation records.

operators regulated by the same rules," the commissioner of the DOC added.⁹⁵

The new rules appeared contradictory, however. While it implied that all pits be inspected and approved, the amendment offered considerable leeway on the part of oil and gas companies in oilfield waste disposal operations, particularly in the coastal parishes. On one hand, it gave the impression that disposal of brine in underground wells was the state's preferred method and established guidelines for the injection process. The agency was aware of the deficiencies with the industry-preferred disposal methods; it had studied the effects of "bleed water" and surveyed sites going back to the 1930s. On the other hand, the rules clearly allowed the permitted use of unlined earthen pits to continue. Additionally, brine could be discharged directly into marshes, shallow bays, canals, and estuaries, pursuant to state approval. The new rules confused some and encouraged others. "I am wondering what approved methods are there for disposing of water in pits and those that are not approved, does this order in effect constitute a 'no pit' order in Louisiana[?]" asked an oil representative. "It is based on an inspection," an agency member replied, "and not just on an automatic approval of pits."⁹⁶ Regardless of whether the pit was being used for temporary brine retention to be disposed into subsurface wells or natural drainage at some later date, the pit "should hold what is in it and not let it get out," the DOC explained.⁹⁷

The issue of seepage from unlined pits conflicted with the larger policy goal of water quality improvement and pollution abatement. When asked by an industry representative about provisions for seepage through the pit, the regulator said, "Well, seepage is part of it, you see. If seepage is detected, provided that the inspection of the disposal facility does not disclose any salt water damage or pollution. In other words, seepage would certainly be a reason for not approving the facility."⁹⁸ According to the rule, each pit facility would need to be inspected, and those units found to be insufficient in preventing pollution into the

⁹⁵Ibid.

⁹⁶Ibid.

⁹⁷Ibid.

⁹⁸Ibid.

surrounding landscape could be held in violation of the rule, resulting in a possible cease and desist order. Records indicate that throughout the 1960s inspectors continued to investigate oilfield operations across the state and issue compliance orders to the operators that violated the regulations. Although many pits were inspected, it is not clear if any rigorous scientific testing methods were used to determine if seepage was occurring.⁹⁹ Most of the violations involving leaky pits in the late 1960s and early 1970s were determined by visual inspection of the surrounding areas. With never more than a few dozen inspectors to conduct the inspections, file reports to the SCC, write letters of noncompliance to the companies, and otherwise regulate the hundreds of oil and gas fields, the state continued its enduring, uphill battle with pollution control. Texas, by comparison, formally outlawed the use of unlined earthen pits in the late 1960s. With the enactment of the 29-B amendments, Louisiana flat-out rejected the idea of a "no pit order."¹⁰⁰

In Louisiana, oil revenue was valued above all other resources, especially undervalued swampland and low-lying coastal areas. Dr. C. R. "Doc" Brownell Jr., the legendary mayor of Morgan City, Louisiana, and long-time president of Brownell Land Company, knew all too well the limitations of government oversight with respect to oil and gas development in the state. At a 1967 public hearing to discuss the changes to 29-B and the state's proposed water quality criteria, his declaration—"I don't care how many laws you pass—it's a matter of enforcement"—captured a central theme throughout the history of oil-led development in Louisiana: environmental impacts associated with oil and gas activities were largely viewed as an acceptable trade-off, if not totally disregarded.¹⁰¹ Within the context of the 1960s, this certainly was not unusual, especially for Louisiana, which had long championed resource extraction and the economic benefits from petroleum over environmental protection. "As enforcement of new water

⁹⁹For a description of the DOC Enforcement Division activities, see "Proceedings of Meeting of the Louisiana Stream Control Commission," Shreveport, La., October 21, 1965, LDEQ Records.

¹⁰⁰*Statewide Order No. 29-B Amendment to Section XV, Docket No. 67-485.*

¹⁰¹Stream Control Commission, "Proceedings of Meeting of the Louisiana Stream Control Commission," Lafayette, Louisiana, March 31, 1967, LDEQ Records.

pollution standards moves across the country," an industry trade journal author argued in 1967, "I believe it can be expected that the enforcement agencies will take little action without public support."¹⁰² With the growing scientific knowledge of impacts to human health and ecosystems from fossil fuel effluents, society's views on energy and the environment began to shift. Yet it would take several more years before environmentally conscious individuals and groups in Louisiana generated enough public support to force the industry and the regulators to adopt best practices that protected environmental quality by ending the use of earthen pits in oilfield operations.

The period from the 1940s to the end of the 1960s marked an important crossroad for the state and the industry with respect to oilfield waste. The transfer of brine disposal oversight from the DOC to the SCC in 1940 effectively removed pollution control from the industry's main governing body and gave authority to a new entity that was woefully inadequate to handle the task. The SCC suffered from resource limitations and an expanding jurisdiction that covered a wide geographic area and multiple industries. This made the job of controlling pollution abatement in Louisiana's oilfields difficult to fulfill. The agency largely relied on "self-reporting" from oil and gas producers to determine appropriate levels of compliance to the rules governing the disposal of salt water brine and related wastes. Although the DOC did pass an amendment to Statewide Order No. 29-B in 1967, it did so with considerable input from industry. And while the presence and persistence of the SCC may have influenced the oil and gas companies to address some of their most obvious wasteful practices, such as wantonly dumping oily waste into streams, operators were essentially allowed to continue the use of earthen pits in oilfield operations for at least two more decades. The passage of the Federal Water Quality Act of 1965 indicated that national environmental reforms were on the horizon. With influence from oil and gas interests, Louisiana elected to maintain the status quo. That position would be challenged throughout the 1970s and 1980s, when broader environmental concerns finally forced major changes in oilfield waste disposal.

¹⁰²"Saltwater Disposal and Oilfield Water Conservation," *Petroleum Equipment and Services* (July/August 1967): 26.

Environmental Reform in Louisiana's Oil and Gas Fields

During the 1970s and 1980s, pressure from local groups, elected officials, and environmentalists convinced the state and major oil companies that reforms concerning oilfield waste disposal were long overdue. Testimonies at numerous public hearings regarding the promulgation of stricter regulations spoke to a shift in societal values in the state. An environmentally conscious and politically charged public largely influenced regulatory reform to restrict and ultimately end the use of unlined earthen pits in Louisiana's oil and gas fields. These changes occurred at a time of great economic turmoil for the state and the industry and placed a real financial burden on companies, requiring them to close thousands of oilfield waste pits to certain state standards that were established with the 1986 amendments to Statewide Order No. 29-B. This was particularly true for the smaller, independent operators, which assumed a large percentage of the onshore assets and environmental risk when the oil majors ventured offshore. The changes to Statewide Order No. 29-B coincided with the historic "oil bust," which left the industry, the regulators, and the environment in a state of disrepair. Enforcing new laws did not bring about rapid environmental improvements, but the state finally came to terms with trade-offs made in the past and, along with oil and gas operators, began the process of phasing out salt water disposal pits. By then, the industry was clearly aware of the problems with unlined pits, and some of the larger companies began to transition to more sound environmental management. However, abrupt changes to deeply embedded practices would not happen overnight. Implementing these new waste pit closure rules after nearly eighty-five years of unimpeded use ultimately led to the discovery of widespread contamination in Louisiana's oilfields, expensive cleanup efforts, and environmental lawsuits that followed decades later.

The growing environmental movement in Louisiana awakened citizens to the "possibility that current oilfield waste disposal practices were polluting the soil and groundwater and fouling the air."¹⁰³ Images of severe oilfield pollution in places like La Salle

¹⁰³Carroll D. Wascom, "A Regulatory History of Commercial Oilfield Waste Disposal in the State of Louisiana," First International Symposium on Oil and

Parish graphically depicted some of the industry's most egregious errors of the time. The poorly managed pits, leaking tanks, and unpermitted salt water overflows into surrounding streams left the landscape scarred and devoid of vegetation in many abandoned oilfields.¹⁰⁴ A U. S. Environmental Protection Agency (EPA) report in 1974 emphasized the environmental effects of salt water disposal in the South. "Thousands of unlined brine pits were in use in the five state area until only a few years ago when they were prohibited by the oil regulatory agencies of the respective states [excluding Louisiana]. . . . Brine-contaminated ground water is only now being discovered in the many areas of oil development abandoned 20-30 or more years ago," the EPA confirmed.¹⁰⁵ Compared to other states, Louisiana still had not effectively addressed the problems of salt water disposal. Similarly, in the postwar era of progress, Louisiana had difficulties regulating the discharge of petroleum effluents from manufacturing and chemical plants into the Mississippi River system. Craig Colten, an expert on the subject, argued that state authorities did not begin to challenge the petrochemical sector on pollution issues until the 1960s, and then "only tentatively."¹⁰⁶ During most of the postwar period, the state sought a "cooperative rather than a legal solution" to the problems of pollution control.¹⁰⁷ Federal agencies, local interests, and scientists put the spotlight on Louisiana's myriad environmental problems that had been festering since oil development first began at the dawn of twentieth century.

Although protecting environmental quality gradually emerged as a real issue for people in south Louisiana, few landowners were aware of or concerned about these problems. Wilma Subra, a

Gas Exploration and Production Waste Management Practices, September 10-13, 1990, New Orleans, La., Conservation records, 1.

¹⁰⁴Kathleen Blakeney "Sores on the Land," *Louisiana Conservationist*, 22 (July/August 1970): 20-3.

¹⁰⁵M. R. Scalf, J. W. Keeley, and C. J. LaFevers, "Ground Water Pollution in the South Central States," Environmental Protection Agency, Office of Research and Monitoring, Environmental Protection Technology Series EPA-R2-73-268, 1973, 84.

¹⁰⁶Craig E. Colten, "Too Much of a Good Thing," in Colten, *New Orleans and Its Environs*, 142.

¹⁰⁷*Ibid.*, 146.

former researcher at the Gulf South Research Institute, recalled that in the early 1970s farmers were struggling to make ends meet. Royalties and leases from oil and gas production were a welcome sight to many. Subra related a story about a landowner who leased a portion of his sugarcane farmland for a facility that separated salt water from oil and gas. This facility leaked and salt water migrated into the adjacent sugarcane field, causing damages. However, the landowner seemed apathetic to the pollution. When Subra consulted with him on the matter, he stated: "Well, you have to understand where most of my money is coming from." No doubt other landowners and farmers viewed oil and gas development on their property in a similar light. But as the decade wore on, Subra noted, people gradually began to pay attention to these problems and to call for better industry practices.¹⁰⁸

One man in particular, Doc Brownell, took notice of the growing pollution on his family's land in the Atchafalaya Basin and made strides to force companies to clean up the visible mess. His discovery of pollution in the 1960s and 1970s and his dealings with cleanup operations at various oilfield sites on his property foreshadowed the problems to come, as more landowners and stakeholders eventually became aware of the contaminated soils lying beneath the pits and in the surrounding areas. Mike Vanover, Doc Brownell's adopted son, explained his father's disposition on the matter:

My dad was extremely aware of [pollution]. He had pictures, when I was growing up, he'd show me pictures of dead fish that he was concerned about, dead trees that he was concerned about, not so much the tree value, but what was killing the tree. He was very much an environmentalist and he pushed very hard on the oil companies as a landowner to clean up their messes when they left. They did that, but they left the pits. And they left the overflow of the pits, which is bad because in our area, most of the Atchafalaya Basin, every pit would overflow every year when high water comes. So whatever is in that pit spreads. And I was particularly concerned about radioactive material getting out into the swamp because the crawfish. It leaked on the dirt and the crawfishermen catch the fish and people eat it and I knew that that was a real problem and it was

¹⁰⁸Wilma Subra, interview by Diane Austin, July 24, 2003, New Iberia, La., University of Houston Special Collections.

on my mind for years. But nobody had done anything about it. Nobody seemed to be concerned about it. And I just was aware of it.¹⁰⁹

The provisions in standard lease agreements typically provided for reimbursement of damages to destruction of crops, trees, or fences as a result of normal drilling and production operations. Few contracts contained specific references to the restoration of property at the end of the lease term. Brownell, perhaps sensing that oilfield activities impacted much more than trees and fish, added a clause in his lease agreement that made operators liable for "all damages" caused by lessees' operations.¹¹⁰ Brownell frequented his property by boat, and when he encountered pollution or spillage, he reported the violations to the SCC and pressured the operators to clean up the site. According to Vanover, his father's environmental ethic was an evolving process, informed largely by the rapid man-made changes that occurred in the Atchafalaya Basin. "Landowners were so glad to finally get income on the property, they didn't give a darn what the [oil companies] did. Just give us the money," he echoed. "Well, when Doc took over the land company, he may have been in that same boat for a while till he noticed the damages. And this [changes to leases and letters to the SCC] is an evolution of his concerns put on paper."¹¹¹

Throughout the 1970s and early 1980s, major oil firms took notice of the growing concerns among landowners and governmental authorities and started to implement new policies related to environmental risk management. Shell Oil, historically one of the leading oil and gas producers in coastal and offshore Louisiana, recognized that changes needed to be made in the way it operated pit sites. The company reported in 1979 that "several environmental surveys have been conducted that show some of these pits to be either out of compliance with state regulations or deteriorating in a manner that threatens environmental damage." According to the report, the lack of economic incentive

¹⁰⁹Vanover interview.

¹¹⁰Lease agreement, Brownell Kidd and Allied Chemical Corp, box M7, fol. "Mineral Leases and Land Documents, 1950-1970s," March 29, 1963, Brownell records.

¹¹¹Vanover interview.

to properly maintain these facilities led to declining conditions. Furthermore, the report noted, "The upkeep problem has become compounded because the State Department of Conservation has been slack in enforcing Statewide Order 29-B. This slackness may be considered beneficial when industry looks at cost, but it has created a mood of operational indifference that has in some instances resulted in poor upkeep of facilities. Through the years, this cost savings has been enjoyed by Industry, but pressure from EPA on the State could reverse this trend. Cost savings realized in the past may have to be re-paid at exceedingly high interest rates because of regulations imposed on Industry" by federal statutes.¹¹² In the early 1980s, Shell initiated a pit closure program to clean up old oilfields and restore the areas. According to a 1982 Shell newsletter, the firm allotted \$5.9 million to clean up more than three hundred abandoned well pits in Louisiana. Shell hired Dr. Lloyd Deuel Jr., a soil scientist from Texas A&M University who specialized in remediation work, to analyze soil samples from the pits and check for heavy metals content. The scientist then recommended various treatments to close each waste site. The most extensive process, costing upward of \$100,000 per pit, involved removing and hauling off the contaminated soil and filling in the pit with new material.¹¹³ Deuel's study and recommendations for Shell's pit remediation program influenced the state's technical pit closure criteria developed in the mid-1980s.¹¹⁴

While some oil companies transitioned to better environmental practices, the state reorganized its governmental agencies to meet the ongoing regulatory challenges. In 1976, the Department of Conservation became the Office of Conservation (OC) within the newly formed Department of Natural Resources (DNR). In the late 1970s, the DNR received a grant from the EPA to develop a Surface Impoundments Assessment Program. This program

¹¹²Shell Oil Company 1979 internal memo, <http://www.cleanwaterlandcoast.com/what-big-oil-gas-knew-and-when-they-knew-it/>.

¹¹³"Well Pit Clean Up Program Brings Beauty to Oil Patch," *Shell Record*, 14 (April-May 1982): 8-11.

¹¹⁴Carroll D. Wascom, "Oilfield Pit Regulations: A First for the Louisiana Oil and Gas Industry," Louisiana Department of Natural Resources, Office of Conservation, Injection and Mining Division, Baton Rouge, La., May 30, 1986, Conservation records.

provided an initial approximation of the location and number (1,863) of waste impoundments in the state, including brine pits and related oilfield waste sites.¹¹⁵ In the early 1980s, the legislature created the Louisiana Department of Environmental Quality (DEQ), which assumed some of the regulatory duties from the recently disbanded SCC. Around this time, representatives from various state agencies and the Mid-Continent Oil and Gas Association began debating the environmental impacts associated with earthen pits and how regulations should be reformed and enforced. According to Carroll Wascom, former director of the Injection and Mining Division at the OC, "The handwriting was on the wall: pits were soon to be a thing of the past."¹¹⁶

In 1980, the OC proposed new rules for oilfield waste management.¹¹⁷ The public hearings to debate the proposed rules reflected significant shifts in attitudes from the previous era. At one of the initial hearings, Rep. Sam Theriot of Vermilion Parish spoke to the gravity of the situation: "We and industry must attack the issues of better insulated disposal pits, to look at better methods of storage, tighter reigns on the actual disposal process, the uncovering of non-permitted disposal sites and their immediate closure. This is a must."¹¹⁸ Some believed that the proposed rules lacked teeth. Leaders from the Vermilion Association for the Protection of the Environment (VAPE) criticized the state actions. "For all practical purposes, you have made no improvement over the regulations that you had in the past." Open, unlined pits are the "worst, most obnoxious possible way to dispose of these wastes" a VAPE representative asserted.¹¹⁹

¹¹⁵Whitney J. Autin, "Surface Impoundments Assessment Final Report for Louisiana," Louisiana Department of Natural Resources, May 1980, *ibid*.

¹¹⁶Wascom, "A Regulatory History of Commercial Oilfield Waste Disposal," Conservation records, 4.

¹¹⁷In 1976, the Department of Conservation became the Office of Conservation within the Department of Natural Resources.

¹¹⁸Louisiana Office of Conservation, *Report of Hearing, Statewide Order 29-B Amendment to Section XV, Docket No. 80-120*, March 25, 1980, Baton Rouge, La., Conservation records.

¹¹⁹*Ibid*.

Public criticism remained consistent at subsequent hearings debating similar rule changes. Officials at D'Arbonne Ouachita National Wildlife Refuge in the northern parishes complained about the contamination resulting from leaking pits. They took soil borings around oilfield pits and found high levels of chlorides and seepage. The refuge strongly recommended the complete elimination of pits. However, spokesmen for the business sector pushed for exemptions to the rules, because, they argued, complete pit closure would hurt the industry "beyond repair." The Commissioner of the OC did not initially concur with absolute pit closures, but recommended that all pits go through a recertification process to determine their effectiveness in protecting the environment.¹²⁰

As the debate on pit reform mushroomed in the early 1980s, leaders from the state and the oil and gas industry worked closely to develop a framework for regulations suitable to both parties. By coordinating with the OC on drafting the new guidelines, the industry hoped to minimize the cost associated with pit closures and site remediation—an estimated \$280 million. The industry also lobbied for exemptions to these proposed rules for operations in the wetlands. Some argued that stringent pit laws requiring liners or closed containment systems in the marshes would be cost prohibitive and impossible to maintain due to the fragile nature of the soil and remoteness of the location. Oil and gas interests also strongly recommended that regulatory oversight of brine pits stay within the OC and out of the hands of the newly formed DEQ. A 1984 *Wall Street Journal* article drew attention to this perceived "cozy relationship" between big oil and the state's leading conservation agency.¹²¹ Critics of this longstanding affiliation lambasted the OC, arguing that while a lack of manpower and weak laws contributed to the current dilemma, the problems of enforcement of oilfield regulations had roots in the philosophy of the agency's historical mission—to encourage resource development through reasonable regulations. Fritz Spencer, head of enforcement for the OC, reiterated the point by

¹²⁰Louisiana Office of Conservation, *Report of Hearing, Proposed Amendment to Statewide Order 29-B Amendment and Statewide Order 29-N-1*, September 23, 1981, Baton Rouge, La., Conservation records.

¹²¹Thomas Petzinger Jr. and George Getschow, "Oil's Legacy," *Wall Street Journal*, (October 22, 1984), 1.

stating that the regulations covering pits "aren't worth a damn."¹²²

In 1984, the state once again revised the proposed rules and held subsequent hearings to discuss the changes. For the first time, these proposed guidelines required operators to report on the status of existing pits and provided criteria for the proper and timely closing of pits that did not comply with new standards. The major oil companies, while challenged by the added cost, reluctantly agreed. The independent firms, however, feared that the cost of maintaining compliance with the new regulations would force them to abandon marginal fields and potentially go out of business. Environmentalists and other concerned citizens, however, balked at the provision that allowed certain pits without liners to remain in effect, if those facilities met specific state requirements. A growing number of people wanted all of the waste pits in Louisiana to be permanently closed. An official from Terrebonne Parish exclaimed: "I have for some years been in opposition of these so-called waste pits being allowed to fester and pollute our valuable, irreplaceable waters and marshes. . . . I think it is passed [*sic*] time that we outlaw these pits."¹²³

Public hearings commenced again the following year with a focus on the economic impact to the industry from complying with the new pit rules. The big issue at this hearing centered on the requirement for liners in all pits, including those in the marshes. This meant that oil and gas operations in the coastal areas would have to resort to salt water disposal wells or closed containment systems, both of which had long been viewed as superior (though costly) methods for handling oilfield waste (see figure 5, p. 448). Still, even with stricter criteria on new and existing facilities, some pits were allowed to stay, at least temporarily, while the OC delayed the inevitable and gave the industry more time to comply with the changes. According to Herbert Thompson, commissioner of the OC, "The state is trying to change the customs of 86 years

¹²²Bob Anderson, "Oil Field Waste Enforcement Effort Called Weak," *Sunday Advocate*, August 12, 1984, np, State Library of Louisiana, Baton Rouge, La., vertical files.

¹²³Louisiana Office of Conservation, *Report of Hearing, Statewide Order 29-B, Docket No. UIC 84-24*, October 22, 1984, Baton Rouge, Louisiana, Conservation records.



Figure 5. Oilfield waste containment in steel barges.
Courtesy of the author.

of oil and gas operations, and it has to do so with regulations that are realistic and can be enforced."¹²⁴

The rules for disposal specifically required that all pits that did not meet OC liner and operational requirements had to be closed within three years in an environmentally acceptable manner in accordance with the regulations. Mike Lyons, executive vice president of the Mid-Continent Oil and Gas Association, championed the new orders: "We feel that the document before us today represents the most comprehensive set of oil field waste regulations in the United States . . . and are among the toughest rules in the country on the subject."¹²⁵ Commissioner Thompson summarized the enduring compromise that took nearly a decade to resolve. "This rule will be a balanced approach," he said, "We have to protect the environment on one hand, but we have to protect our industry on the other hand that . . . has produced better than half of our taxes over the years. . . . I have, and this Commission has, absolutely no intention of bankrupting the State

¹²⁴Bob Anderson, "Proposed Oilfield Rules Criticized," *Morning Advocate*, December 4, 1985, 2B.

¹²⁵Louisiana Office of Conservation, *Report of Hearing, Proposed Revision to Statewide Order 29-B, Docket No. UIC 85-39*, December 3, 1985, Baton Rouge, Louisiana, Conservation records.

by putting this industry out of business."¹²⁶ The statement offered a glimpse into the historical paradox of oil-led development in Louisiana, but it also highlighted the potential impact of stricter regulations on the industry, as the state promulgated the amendments to Statewide Order No. 29-B on January 20, 1986, at the peak of the worst oil recession in Louisiana history.

Louisiana's oil-driven economy suffered a tremendous setback in the mid-1980s, as oil prices plummeted to \$10 a barrel—the so called oil bust. Many companies went bankrupt, thousands of oilfield workers lost their jobs, and economic hardship swept through all facets of society. The collapse of the energy sector coincided with the new pit rules. Beginning in the 1970s, many of the oil majors had divested their onshore assets and moved offshore. In the process, they sold a sizable number of these older, marginal oil and gas fields to independents. It became clear that many of the independent firms that had assumed the liability for these pit facilities beginning in the late 1970s would be financially strapped by the cost of expensive pit closure and remediation. "The original producers and creators of these pits made their profits in the boom periods of high production, and then abandoned the leases to stripper producers," expressed Rep. James David Cain. "Are these present lease holders responsible for cleaning up eighty years' worth of open pits?"¹²⁷ If the smaller operators were financially unable to comply with the new rules, could the state and landowners be held liable for the cleanup? What responsibility should the original operators of the pit facilities have in the cleanup? The roots of legacy litigation can be traced back to these ambiguous circumstances.

The state and industry struggled to adapt to the new reforms. Implementing the new orders posed a "regulatory nightmare" for the OC. Hundreds of calls a day came in from confused operators asking compliance questions.¹²⁸ In a short history of 29-B, Carroll Wascom summarized the challenges to implementation:

¹²⁶Louisiana Office of Conservation, *Report of Hearing, Amendment to Statewide Order 29-B, Volume I, Docket No. UIC 85-16*, August 5, 1985, Baton Rouge, Louisiana, Conservation records.

¹²⁷Louisiana Office of Conservation, *Report of Hearing, Amendment to Statewide Order 29-B, Volume II, Docket No. UIC 85-16*, August 5, 1985, Baton Rouge, Louisiana, Conservation records.

¹²⁸Wascom, "Oilfield Pit Regulations," Conservation records.

The success of the regulations in protecting the State's groundwater and soil will be measured by the willingness and efforts of the oil industry to comply, by a willingness of the environmentalists and the public to give the rules a chance to work, and by the efforts of the OC to effectively enforce the rules and work with industry and the public to resolve specific problems.¹²⁹

The promise of change, however, did not automatically quell public scrutiny of the new rules.¹³⁰

While several of the major oil companies initiated pit closure operations across Louisiana, some of the independents delayed compliance. At a hearing in 1989, three years following the passage of 29-B reforms, stakeholders met to discuss raising the acceptable levels of barium found near the pit sites. Jerry Fontenot, an environmental consultant, recognized that some companies needed to walk before they could run. He expressed his concern that tightening the already stiff pit closure rules might lead to greater environmental risk. "I hate to, you know, start uncovering some of these graveyards, maybe 10, 15, 20, maybe 50 years from now," he portended, "but the independents are going to be forced to break the law in some manner. . . . They're out there but they just can't spend money blindly."¹³¹ Fontenot revealed what many had anticipated as a drawback to passing the new rules during a time of historic low oil prices. Independent firms typically did not have environmental specialists to deal with brine issues and were more likely to struggle with the economics of pit closure or to outright ignore the rules and risk the consequences. As the decade of disillusion came to an end, many of these operators had gone out of business, leaving hundreds—perhaps thousands—of these pit facilities abandoned.

¹²⁹Ibid.

¹³⁰Throughout the 1980s, Bob Anderson, environmental reporter for the *Baton Rouge Morning Advocate*, covered the debates surrounding oilfield waste regulations. His series "Saltier than the Sea," published in December 1987, chronicled the issues with brine discharges in the wetlands.

¹³¹Louisiana Office of Conservation, *Report of Hearing, Amendments to Statewide Order 29-B Barium Requirements, Docket No. UIC 89-13*, June 8, 1989, Baton Rouge, La., Conservation records.

In the early 1980s, the Federal government initiated plans to deal with similar matters of contamination and the cleanup of the nation's most hazardous sites. The "Superfund" program, which provided for the cleanup of heavily polluted former chemical and dump sites, sought to hold any entity that used a dump site liable for the cleanup cost.¹³² But, as Craig Colten has noted in his work on environmental justice and pollution in New Orleans, as the program developed over the years, the agency focused more on negotiated settlements to clean up the sites.¹³³ Similarly, the modern legacy cases in Louisiana, which seek to hold all companies that historically operated pits on an individual lease liable for damages, have nearly all resulted in out-of-court settlements. The state's contaminated oilfield waste facilities have often been compared to Superfund sites, and environmentalists have often criticized the EPA for not defining oilfield waste as hazardous material. However, lobby efforts by major oil and gas interests in Washington, D. C., led to amendments to pollution control legislation that exempted most petroleum waste from the hazardous waste criteria.¹³⁴ Over the years, critics have pointed to these lobbying efforts in the nation's capital and in Baton Rouge as an example of industry's influence in policy making.

Throughout the 1970s and 1980s, public backlash from a lack of state enforcement, growing environmental sentiment, and concern for pollution of soil and ground water and public health led to real changes in regulations and industry practices related to salt water pits. The debates surrounding the new laws revealed that the processes for reforming pit regulations were arduous, politically contentious, and long overdue. But finally, state officials and industry interests came to a consensus on how to begin phasing out these controversial waste sites and how to adopt acceptable environmental quality measures in Louisiana's oilfield operations. Although the actual cleanup of contaminated

¹³²In 1993, the state created the Louisiana Oilfield Site Restoration Program to clean up abandoned oilfield sites with funds from a tax on oil and gas production in the state.

¹³³Craig E. Colten, *An Unnatural Metropolis: Wrestling New Orleans from Nature* (Baton Rouge, La., 2004), 115.

¹³⁴Wascom, "A Regulatory History of Commercial Oilfield Waste Disposal," Conservation records, 1.

oilfield sites would continue well into the twenty-first century, the new rules in the late 1980s produced some positive results. By 1990 the number of active oilfield pits had dropped from thirteen thousand to sixty-five hundred.¹³⁵ Implementing the new rules took time, but during the course of initial remediation and pit closures, environmental analysis from the sites began to unearth the heretofore unknown magnitude of contamination found beneath Louisiana's historical oilfields. Closing pits cleaned up the visible mess on the surface, but dealing with the enormous problem of soil and ground water pollution became an altogether different challenge that ultimately played out in courtrooms years later.

The Challenges of Reasonable Restoration and the Standards for Oilfield Remediation

Putting an end to a nearly hundred-year-old industry practice was one thing, but dealing with the restoration and remediation of contaminated property proved formidable. Since the late 1980s, the industry, landowners, state agencies, courts, and even the legislature have struggled with the restoration of land from decades of oilfield pollution. While some debated the standards of remediation—in other words, to what degree and depth should certain contaminants be removed from the subsurface—others argued about reasonable costs for cleaning up the sites. The experts often turned to the Louisiana Mineral Code and legal precedent in case law to provide a resolution. Nevertheless, the issue of what constituted reasonable restoration became open to broad interpretation, especially in the wake of the *Corbello* case in 2003. Understanding how companies, landowners, regulators, and legal scholars have dealt with the concept of restoration over time offers insights into the complexity of modern legacy lawsuits in Louisiana.

Since the 1970s, Louisiana's laws dealing with oil and gas activities have been guided by the State Mineral Code developed by the Louisiana Mineral Law Institute. A major challenge in developing the Mineral Code (adopted in 1974) was harmonizing

¹³⁵Bob Anderson, "Louisiana's Polluted Groundwater," *Sunday Advocate*, December 23, 1990, np, State Library of Louisiana, Baton Rouge, La., vertical files.

mineral law principles with the century-old Civil Code.¹³⁶ The major theme of the Mineral Code was to create a partnership for mutual economic benefit of both producer and landowner.¹³⁷ Although the Mineral Code was silent on the duty to restore property, a prominent legal scholar suggested that articles in the Civil Code implied that oil and gas companies had the obligation to (1) act as a reasonable and prudent operator and (2) reasonably return the leased land as near as was practical to its original condition, minus normal wear and tear.¹³⁸ Normal wear and tear on the land resulting from oil and gas activities was traditionally viewed as an acceptable consequence for the mutual benefit of developing an oil and gas lease. Questions later surfaced about the degree to which the environmental impacts due to salt water disposal pits constituted normal wear and tear.

For most of the twentieth century, the concept of restoring property from oil and gas activity focused mainly on recovering damages to crops, roads, fences, trees, ponds, and other surface features located in or adjacent to the lease.¹³⁹ Prior to the 1980s, reclaiming the fertility and productivity of soils damaged by extensive brine discharges or seepage from pits was deemed a reasonable restoration goal by landowners, courts, and companies.¹⁴⁰ This standard of reasonableness began to change in the 1990s once the pit closure programs revealed highly contaminated soils and ground water supplies that could affect human health and the environment. The Aristide Broussard property in lower Vermilion Parish, for example, had been the site of major oil and gas development activities for half a century, including the operation of a Texaco gas plant and the Henry Hub, a nationally important energy facility. With concern that the

¹³⁶Patrick H. Martin, ed., *Louisiana Mineral Law Treatise* (Baton Rouge, 2012), 51-4.

¹³⁷George W. Hardy III, *Suggested Principles of Louisiana Mineral Law: A Basis for Reform, Expose Des Motifs* (Baton Rouge, 1971), 158-59.

¹³⁸Martin, *Louisiana Mineral Law Treatise*, 338.

¹³⁹*West's Louisiana Statutes Annotated: Revised Statutes, Sections 30:2501 to 31: End, Volume 17C* (West Group, 2000), 279.

¹⁴⁰For example, see *Smith v. Schuster* (1953), *Rohner v. Austral Oil Exploration Company, Inc.* (1958), and *Roy O. Martin v. Pan American Petroleum Corp.* (1965). James W. Curlin, "Reclaiming Timberlands Damaged by Oil Field Waste in the Gulf Coastal Region" (M.A., thesis, Louisiana State University, 1959).

property, which included farming and cattle grazing, had been contaminated with oilfield waste, the heirs of the Broussard estate hired environmental experts to test the soil. These experts found leaky pits, countless aluminum pellets, and radioactive material. The estimated cost to clean-up the property ran in the millions.¹⁴¹ Around the same time, two monumental pollution cases concerning radiation contamination in oilfield pipe-cleaning yards revealed to the public and the media the serious health risks associated with exposure to Naturally Occurring Radioactive Material found in and around oilfield waste sites. These cases also showed that some major oil companies had knowledge of these hazardous materials going back decades.¹⁴² The threat of environmental liability and long-term health risks associated with various kinds of oilfield effluent shocked some landowners and forced many of them to seek retribution from the oil companies.

With the enormous cost of environmental remediation, many people wondered how "clean" the old pit sites needed to be. State regulations ultimately established standards for remediation and the acceptable concentrations of heavy metals and related constituents allowed to remain embedded in the ground following restoration. Beginning in 1998, the DEQ established minimal remediation standards with the Risk Evaluation/Corrective Action Program (RECAP). These standards informed the responsible parties on how deep to dig below and around the pits to effectively remove the contaminated soil to background levels. Compliance with the RECAP protocols indicated, from a state perspective, that a remediated pit site no longer posed a serious health risk to people and the environment. Once a site has been successfully remediated to the DEQ's RECAP standards, the agency sent a letter to the operator and landowner confirming that no further action was needed and that the waste site was thus considered "restored" and "clean." Some claimed that the

¹⁴¹Campbell Robertson, "Bitter Twist in Louisiana Family's Long Drilling Fight," *The New York Times* (December 29, 2011), http://www.nytimes.com/2011/12/30/us/in-louisiana-twist-in-legal-fight-over-texaco-drilling-lease.html?pagewanted=all&_r=1&.

¹⁴²For a detailed account of the Street case and *Grefer v. Exxon Mobil* (2001), see Stuart H. Smith, *Crude Justice: How I Fought Big Oil and Won, and What You Should Know about the New Environmental Attack on America* (Dallas, Tex., 2015).

standards were fair; others argued that they fell short of the mark to adequately protect the environment. The debates over standards of reasonable remediation formed a basis of arguments in the legacy cases that followed in the wake of the *Corbello* decision.

The *Corbello* case redefined the approach to environmental damage claims and opened the floodgates for hundreds of legacy litigation cases. In *Corbello*, evidence was found by the jury to show that the lessee violated the surface lease, trespassed, and polluted the property without cleaning it up to the landowner's expectations. Shell had improperly disposed of salt water on the property, continued to operate a facility after the lease had expired, and failed to restore the land to its prior condition per a provision in the 1961 surface lease. But the restoration of the property ultimately became a moot point, as did the cost. Mike Veron, lead attorney for the plaintiffs, successfully argued to the court that the state's RECAP standards for environmental cleanup were "not acceptable to the public."¹⁴³ The State Supreme Court heard the case and ruled that damages for breach of a contractual obligation to restore property need not be tethered to the value of the land. The court ordered the defendants to pay more than seventy-five million (including thirty-three million to repair damages to the land) for damages to about three hundred acres. The outcome of the case took many by surprise, including the plaintiffs. But without any specific regulatory or legal framework to oversee or ensure that the land was cleaned up, none of money was required to actually be spent to restore the property.¹⁴⁴ As the case sparked additional environmental litigation, state legislatures intervened and developed laws that required damage awards to be used for site remediation. *Corbello* shifted the paradigm because the amount of damage claims awarded to the plaintiffs were far in excess of the actual value of the pastureland. What is more, the majority of the damage claims were not based on destruction to crops, trees, or fences, as in the past, but to soil and ground water supplies, allegedly from leaking unlined earthen pits and salt water discharges. The case set a public precedent, whereby lands containing oilfield waste

¹⁴³Mike J. Veron, *Shell Game: One Family's Long Battle Against Big Oil* (Guilford, Conn., 2007), 125.

¹⁴⁴*Corbello v. Iowa Production*.

pits and pollution were perceived to have greater monetary value than lands without.¹⁴⁵ *Corbello* created a domino effect, resulting in hundreds of legacy cases that subsequently tilted the balance of oilfield restoration claims in favor of landowners.

The state reacted to the fallout from *Corbello* with a series of legislative acts designed to provide some oversight and cost containment for restoring damaged property. Act 1166 of 2003, the "anti-*Corbello* bill," gave the state DNR the authority to intervene in oilfield pollution cases where plaintiffs claimed damage to usable ground water from past oilfield activities. To avoid involving the state in private matters, plaintiffs' lawyers simply excluded claims based on damage to ground water supplies and only sued for damages to soil.¹⁴⁶ Three years later, the legislature passed Act 312, which, among other policy changes, required the direct involvement of the DNR and OC in legacy cases by requiring the formulation of a feasible restoration plan to ensure compliance with state environmental standards. The act also established a procedure whereby damages awarded from the lawsuits and settlements would be deposited with the court to be used to pay for restoring the property.¹⁴⁷ Louisiana governor Kathleen Blanco hailed the act as a milestone in the management of Louisiana's oil and gas environmental impacts:

Act 312 restores the balance needed between economic development and the environment. Legacy lawsuits have disrupted the balance, stilling oil and gas exploration, creating an uncertain business climate, and leaving oil and gas sites damaged. This legislation encourages consistent environmental cleanup standards and mandates court oversight of the cleanup to ensure the environmental damages are completely addressed.

¹⁴⁵Loulan Pitre Jr., "Six Years Later: Louisiana Legacy Lawsuits since Act 312," *Louisiana State University Journal of Energy Law and Resources*, 1 (fall 2012): 95.

¹⁴⁶Thomas Shachtman, *To Do the Right Thing: An Epic Courtroom Battle Against Big Oil Over the Restoration of a Gulf Coast Marsh* (Cameron Meadows Preservation Trust, 2010), 101.

¹⁴⁷J. Blake Canfield, "Report to the House Committee on Natural Resources and Environment and Senate Committee on Natural Resources as Requested in House Concurrent Resolution 167, 2011 Regular Legislative Session," Louisiana Office of Conservation, Baton Rouge, La., February 1, 2012, DNR records.

Businesses operating in the state will have greater certainty regarding potential liability for environmental damage.¹⁴⁸

As with most controversial legislation involving Louisiana's oil and gas industry and the environment, Act 312 would be widely contested.

These legacy cases took another twist in the mid-2000s. Bill Dore, founder of Global Industries, a major oilfield service company, filed a multi-million-dollar lawsuit against current and past operators for alleged damages to wetlands in the Cameron Meadows oil and gas field in southwest Louisiana. Dore had purchased the Cameron Meadows field to manage it as his own private hunting club, but the level of pollution and marsh degradation concerned him. The cumulative effect of brine discharges into the marsh, seepage from pits, and dredged canals had led to a change in salinity regimes and erosion that over time had altered the natural state of the wetlands. Dore argued and the courts agreed that the operators were negligent and ordered the oil giant ExxonMobil to pay \$80 million, even as the field continued to produce hydrocarbons. Unlike what happened after *Corbello*, Dore used the award, minus attorney and court fees, to begin restoring the land to a healthy condition suitable for productive wildlife habitat. He established the Cameron Meadows Trust Fund and, with input from environmental consultants, began the process of restoring his hunting paradise.¹⁴⁹

Others followed a similar path to restoring oilfield waste sites. Mike Vanover of the Brownell Land Company became aware of the potential financial and health risks of polluted and abandoned oilfield operations on his land. Once he recognized that the environmental liability could bankrupt his small family-run land company, Vanover decided to get proactive. He sent requests to a list of oil and gas companies that leased his land asking them to address the issues. When none of the operators responded, he hired a law firm to investigate the matter. Beginning in 2002, environmental experts conducted tests and took samples at the old waste sites on the property and found high levels of contamination in all of the fields. Vanover then filed

¹⁴⁸Ibid., 122.

¹⁴⁹Ibid.

suit, eventually negotiating a settlement with each of the dozen or more operators.

But, as Vanover explained, his lawsuits were not intended to make any money for the landowner. "They were intended to get the money to clean up the mess," he said. And over the course of several years, the process worked: "It was effective. It was unfortunate, but it was effective."¹⁵⁰ The companies either hired environmental contractors or did the cleanup work themselves. They safely disposed of the water remaining in the pits, pushed in the pit levees, and dug out the contaminated soil that contained arsenic, barium, lead, strontium, chlorides, and other toxic materials that had accumulated for decades. Once they dug deep enough and reached normal background levels that complied with RECAP standards, the excavation stopped. The contaminated soil was hauled off by tug and barge to an offsite disposal facility, and new fill was brought in to complete the restoration. "It's expensive," said Vanover. "It's not cheap. That's why they fought it."¹⁵¹

One by one, Vanover received letters from the state saying the sites have been remediated and no further action was necessary on the property. Letters of indemnification from the operators followed shortly thereafter, and by 2011 all of the cases had been settled. The letters, Vanover emphasized, stated that "everything that's ever been done on Brownell Land Company has been inspected, has been cleaned up, and has been approved by DNR. So we are clean."¹⁵² He credited his legal team with taking the reins and managing the cases and restoration, a process that took more than a decade. Although he stayed informed of the activities over those years, Vanover and his land company never received payment from the operators related to the settlements. All the funds were directed to the actual restoration of the property. "All I was looking for was this letter right here," he said, holding up a notice of indemnification, "telling me that this has been done and here is your release and indemnification. That's all I ever really wanted."¹⁵³ Vanover felt gratified. Not only was his land restored

¹⁵⁰Vanover interview.

¹⁵¹Ibid.

¹⁵²Ibid.

¹⁵³Ibid.

to a reasonable condition, as he saw it, but the next generation of Brownell heirs would not be liable for the legacy of oilfield pollution.

The concept of reasonable restoration has changed over time. For more than eighty years, the state allowed considerable discretion on the part of industry to dispose of waste in the most economically feasible way possible. But while obvious damages on the surface were later cleaned up, much of the invisible oilfield pollution remained hidden below the surface. The state provided standards for closing and cleaning up these waste facilities that allowed for acceptable levels of toxic elements to remain in the ground. But not everyone agreed with the standards, including industry, landowners, environmental experts, and even some judges. The Mineral Code provided some guidance on handling these environmental issues, but Louisiana clearly lacked effective policies and procedures for addressing the onslaught of legacy cases that followed in the wake of *Corbello*. The historic lawsuit opened the broader public's eyes to the industry's environmental footprint and established a template for pursuing landowner litigation against all companies—not just the majors or the independents—that historically operated these salt water disposal pits on their property from the time the original lease was signed.

While oil and gas companies have not, for the most part, disputed the claims of environmental damage resulting from these legacy oilfield sites, the main arguments have revolved around the enormous cost of cleaning up the property, especially the damage claims in excess of what the state and other experts have determined to be reasonable and feasible for remediation. With the passage of Act 400 in 2014, the state attempted to qualify the damage awards by weighing the standards of reasonableness within a historical context. According to the new legislation, damage awards in excess of the court-approved feasible restoration plan, will be evaluated based on whether the operations in question were unreasonable and excessive according to the "rules, regulations, lease terms and implied lease obligations arising by operation of law, or standards applicable at the time of the activity complained of," meaning within a historical timeframe.¹⁵⁴ At stake are potentially millions of

¹⁵⁴2014 La. Sess. Law Ser. Act 400 (S.B. 667) (WEST) (codified as La. R.S. 30:29(M)).

dollars in damage claims per case, not to mention the fate of hundreds of contaminated pit areas that still require remediation. Although some have taken advantage of the financial windfall, others, like Bill Dore and Mike Vanover, used the new legacy litigation model to force companies to pay for the restoration of contaminated lands. "Some landowners abused the law in suing the oil and gas companies for damages far in excess of the clean-up," Vanover confirmed. "They made money. That's not the way to do it. The real way to do it is to put the environment first and clean the land."¹⁵⁵

Conclusion

From the 1900s to the 1980s, the industry stored brine and other wastes in unlined earthen pits in nearly every oil and gas field across Louisiana. This standard practice evolved from the early pioneering fields and became the accepted norm over many decades. The industry clearly left a footprint throughout the state; however, these practices were conducted decades ago without much thought or care for environmental consequences. The use of pits to manage wastes in Louisiana's oilfields paralleled that of historical activities in other oil-producing regions. Yet these other states, including neighboring Texas, established stricter environmental regulations long before the Pelican State. There were complex cultural, political, geographical, and economic reasons why these activities were accepted and allowed to continue for so long in Louisiana, even though pits were known to be substandard long before these issues came to the forefront in the 1980s. As the problem festered throughout the decades, the state's economic dependence on expanding oil and gas development grew. The trade-offs between the economic benefits of energy development and associated environmental impacts to the land largely defined Louisiana's history with petroleum. Legacy litigation is an unintended consequence of those trade-offs. The enormous costs of restoring these former waste sites have in the last decade pitted oil companies, landowners, lawyers, and the state against each other, turning Louisiana's oil and gas fields into a legal battleground.

¹⁵⁵Vanover interview.

Throughout Louisiana's regulatory history of the oil and gas sector, certain patterns emerged. The state consistently struggled to establish and enforce stiff regulations over oil and gas operations. The job of inspecting over 24,000 individual oil and gas wells in nine hundred fields across the state fell to a handful of dedicated professionals who were no doubt overburdened. "We would need a policeman for just about every lease to assure that [the oil and gas] industry did not violate in some manner some of our rules and regulations," said Kenneth Biglane, executive secretary of the SCC, in 1959.¹⁵⁶ The vague and often contradictory rules governing environmental issues not only allowed for wide discretion by operators but also stifled the implementation of major reforms through the years. In the 1980s, Louisiana passed new regulations, specifically amendments to 29-B, that attempted to correct the rudimentary practices of the past, which the industry had for decades fought to maintain. But the economic stagnation of the 1980s undermined the new policy, as many of the companies that operated the pits went out of business or passed the environmental liability on to the next generation of firms. Some companies did comply with these scientifically based regulatory standards, but in the process of closing down thousands of these sites it was discovered that the magnitude of the pollution problem was greater than previously appreciated. The shift in public sentiment from complacency to holding the companies accountable for environmental restoration of polluted sites led to litigation, state intervention, and industry backlash.

Pits had flaws, but history shows that this industry practice was not unusual for the standards of the time, especially in Louisiana. Today's environmentally conscious society often asserts that oil and gas companies should have adopted better environmental practices, regardless of the economic consequences, and without any real pressure or incentives to do so. The controversy over the dredging of oilfield canals and coastal land loss offers similar historical comparisons.¹⁵⁷ The problem lies in the fact that environmental management as we

¹⁵⁶Stream Control Commission, "Proceedings of Meeting of the Louisiana Stream Control Commission," Baton Rouge, La., October 29, 1959, LDEQ Records.

¹⁵⁷See Theriot, *American Energy, Imperiled Coast*; Oliver A. Houck, "The Reckoning: Oil and Gas Development in the Louisiana Coastal Zone," *Tulane Environmental Law Journal*, 28 (2015): 185-296.

know it today simply did not exist until the 1970s, and even then only within the large companies that could afford it. Louisiana and its industries have always been one step behind the national trends with respect to environmental issues and regulations. Throughout the twentieth century, Louisiana's value system championed limited government intervention in business activities that supported a way of life and an economy driven by resource extraction. Putting up barriers to industrial growth was inconsistent with the state's *laissez-faire* business attitude, especially with respect to the oil and gas industry. Widespread public pressure to force industry and regulators to change old habits and outdated policies did not emerge until the 1980s, when stakeholders and local leaders gained enough momentum to force a change.

The industry's legacy in Louisiana is one of economic dependence, cultural survival, and costly environmental consequences. Over the last few decades, lawmakers, oil companies, landowners, and the courts have struggled to deal with the historical problems of oil and gas development and to bring into balance the state's energy and environmental needs. The historical elements presented here represent only a part of the larger and ever-evolving legacy story—a complex, nuanced, and uniquely Louisiana story—that should be viewed from multiple perspectives and through a broad historical lens.