

Sanitizing Galveston: Politics, Policies, and Practices Before 1915

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The Republic of Texas chartered Galveston as an incorporated city in January 1839. In April, when there were about 300 residents, Galveston's aldermen adopted ordinances about sanitation, imposing a fine of "not less than five nor more than fifty dollars" for anyone who threw filth, garbage, or dead animals into the streets.¹ The disposal of garbage and wastes were daily problems before the first yellow fever epidemic began in September 1839 and they persisted long after the epidemic abated in December.²

As more people settled in the new city, more refuse accumulated. In February 1840, Francis Sheridan was offended by the "Texian Powldoodies," decaying oysters scattered on the streets.³ With nearly 4,000 residents by 1840, the aldermen employed a public garbage collector, but exactly how he functioned is not known.⁴ More refuse prompted more ordinances. In 1846, the aldermen decided to assess fines of five to 10 dollars for anyone who threw "hay, straw, dung, kitchen stuffs, broken glass, parings or bits of leather, shavings or chips..." onto streets, sidewalks, or gutters.⁵ But, identifying human offenders was difficult and even four-footed animals usually left everything behind except kitchen stuffs.

Presumably Galveston's earliest families constructed privies. In 1846, the aldermen urged businessmen and homeowners to maintain

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privies so that they would not be “offensive” and would not be located within three feet of an adjoining lot, street, or alley. But, they did not define “offensive,” and they did not specify how owners would be punished if their privies were located improperly. Eight years later, they did declare that privies should be emptied between June 1 and October 1.⁶ There is no evidence that these rules were enforced.

The prospects of a yellow fever epidemic did stimulate more interest in sanitation. Customarily, the Hospital and Health Committee (a subcommittee of aldermen) oversaw the work of the “hospital physician” and “port physician and health officer.” In 1853, Samuel Hurlbut attended patients at the City Hospital, and Thomas Stanwood inspected the passengers and cargo of arriving ships to determine if any contagious disease existed.⁷ When the threat of an epidemic appeared that summer, the aldermen created a Sanitary Committee composed of two persons from each of the city’s three wards who inspected the city and identified nuisances.⁸ After they had served for about two weeks and submitted their reports, the aldermen dismissed them and created a Board of Health.⁹ This Board adopted rules about inspecting ships, established a quarantine hospital, excluded importation of “all hides either dry or wet,” required all owners and proprietors of buildings on the Strand to fill watery “low places” with “clean sand,” employed a consulting physician to work with Hurlbut at the City Hospital, determined the burial sites of yellow fever victims, and competed with the alderman’s own Hospital and Health Committee in enforcing quarantine policies.¹⁰

As yellow fever disappeared in the fall, the sanitary and quarantine fervors disappeared too, though Galvestonians continued to produce garbage and wastes, and the aldermen continued to adopt ordinances. In 1857, they imposed fines ranging from \$10 to \$100 on those who violated regulations about privies, garbage or carcass disposal, offensive slops, stagnant water pools, or importation of “infected articles,” but evidence of arrests for such violations is lacking.¹¹

Stagnant water pools received much attention because Galvestonians believed that decaying matter in these pools might be the source of the miasmata that caused yellow fever. Marshy areas along the Strand were particularly smelly during summer months. In June 1857, owners of buildings on the Strand added sand to raise the level of the street about three feet, and sand was dumped in other low places so that pools of standing water would not develop. The city now exhibited “a clean and healthful appearance,” and doctors declared that Galveston would never experience another epidemic.¹² During the following two months, yellow fever claimed the lives of at least 250 Galvestonians.

Though perplexed and discouraged, some survivors still believed that refuse was the source of the miasmata that caused yellow fever, while others believed that the disease was “contagious”—transmitted by infected humans and by “things” associated with infected humans. In 1859, British observers declared that Galveston’s sanitary condition was as good as any other Gulf Coast city, but its sanitary and quarantine regulations were not enforced.¹³

Galvestonians continued producing garbage and wastes during the 1860s. When the Civil War ended in the spring of 1865, about 3,500 citizens remained in the city. By January 1866, the number had doubled to about 7,000, its prewar total.¹⁴ In 1866, a sanitary inspector for the U.S. Army reported that Galveston’s streets and cemeteries were in good condition, but its alleys and yards were filthy. The carcasses of dead animals were scattered everywhere, and the city’s slaughterhouses were “in an abominable condition.”¹⁵ Greenville Dowell, the City Hospital physician, confirmed this report: “The alleys are worse than the streets, and are the receptacles of all the filth of the house, kitchen, yard, and even often the *cloacae*. It is impossible to walk through any distance without getting your nose charged with effluvia, and often your feet filled with foecal matter of horses, cows, goats, hogs, dogs, and *dejecta hominis*. Often dead cats, dogs, hogs, and goats lie for days and weeks, with rats, mice, and old bones, fish and fowls. The yards of many of our citizens are as bad as our alleys; and I really do not believe there is a city in the world that is more neglected than ours in this respect.”¹⁶ Another epidemic of yellow fever during the summer of 1867, with its death total of more than 1,000 persons, sparked renewed interest in alleviating these conditions. By the summer of 1868, Dowell reported that “the Health of Galveston was never better, and the city is in about as clean a condition as I have ever seen it.”¹⁷

By 1870, more than 13,000 waste-producing citizens lived in Galveston. Hundreds of houses (including many alley huts) and hundreds of privies had been constructed.¹⁸ The disposal of household trash and garbage, animal carcasses and waste products, human urine and feces, and the byproducts of dairies, slaughterhouses, and fishing boats were daily challenges during the 1870s, though, Galvestonians appeared more responsive to sanitary matters than ever before. Clarke Campbell, the City Hospital physician, had installed a “dry earth closet” at the hospital and recommended the use of such closets in homes.¹⁹ Some wealthier citizens probably installed them and others probably constructed indoor facilities using water piped from outdoor cisterns.²⁰ A.H. Langholtz, police sergeant and chief health inspector, reported only

three arrests in May 1870 for violation of sanitary ordinances. "Now that the people have learned to appreciate the efficacy of sanitary measures when properly applied, it will be a comparatively easy matter to keep the City clean, and in good condition," declared Langholtz.²¹ It was not that easy.

During the summer of 1871, the aldermen gave the health physician and the health inspectors increased police powers to arrest those who refused to eliminate pools of standing water from their lots.²² Two health inspectors, each receiving \$100 per month, monitored two sanitary districts: one east of 21st Street and the other west of 21st Street. Because money for extra salaries disappeared, the city discharged these inspectors in December and added sanitary inspection to the regular duties of two policemen.²³

Throughout the 1870s, policemen were part of the roller coaster ride of transactions between the aldermen, the health physician, the police department, the superintendent of streets and alleys, the health inspectors, the draymen who carted sand to fill marshy streets and alleys, and the scavengers who collected refuse. When money was unavailable, they expected regular policemen to perform these duties. The health physician could request that particular streets and alleys be filled and resurfaced, or that refuse be collected.²⁴ The superintendent of streets and alleys then chose to honor or not honor these requests, depending on the availability of workers and money for their salaries.

In 1873, Mayor Albert Somerville claimed that the "good health of the City" was due to the work of George Peete (the health physician) and the health inspector.²⁵ Yet, when the city experienced the fiscal retrenchment that affected the entire nation later in the year, Peete's salary was reduced from \$300 to \$100 per month, the inspector was dismissed, and the number of scavenger carts was reduced to three.²⁶ Even with these cost reductions, the aldermen spent more than \$11,000 for sanitary activities during 1873.²⁷

J. D. Rankin, practitioner-editor of the *Texas Medical Journal* published in Galveston, editorialized that the "improved sanitary condition of the city" explained the absence of epidemics.²⁸ Even Peete was astonished that only 19 cases of yellow fever had appeared in the city during 1873, since many more had been reported along the Gulf Coast and in the state's interior. Like Rankin, he attributed this happy situation to the "good Sanitary Condition" of the city.²⁹ In March 1874, the aldermen restored Peete's salary to \$300 a month and hired a health inspector.³⁰

Early in 1875, the aldermen abolished the office of health inspector and assigned the tasks of inspection to two policemen. In the spring of that year, someone estimated that Galvestonians deposited 2,300,000 gallons of urine and 875 tons of feces in a year's time.³¹ No one esti-

mated how many tons of garbage and trash were piled in Galveston's streets and alleys, but it took 60 days for 50 draymen and 25 extra laborers to remove all of it.³² In early June, Mayor Robert Fulton reported that "the sanitary condition of the City is better than it has ever been before."³³

Table 1 - Dr. C. H. Wilkinson's Report about the Disposition of Nuisances during January and February of 1878

Nature of Nuisances	Remaining January	Reported Jan & Feb	Abated Jan & Feb	Remaining February
Unsanitary Water Closets	6	129	130	5
Unsanitary Streets & Alleys	11	7	7	11
Unsanitary Drains	1	0	1	0
Unsanitary Hog Pens	6	1	0	7
Unsanitary Lots	147	41	24	164
Dead Animals	0	708	708	0
Dead Fowls	0	1,787	1,787	0
Garbage per Cart Load	0	533	533	0
Slops per Barrel	0	1,450	1,450	0
Total	171	4,656	4,640	187
Source: Minutes, Galveston City Council, March 18, 1878				

In 1876, the aldermen repealed the policy of appointing policemen as health inspectors and permitted Walter Blunt, the health physician, to appoint one inspector for the entire year, and another from May to November, each at a salary of \$100 a month.³⁴ Support for inspectors was meritorious, but successful sanitation depended on the scavengers. Strangely, their contracts did not include paper trash, which could accumulate to the annoyance of all. When Blunt complained about this peculiar policy, the aldermen quickly defended "the poor unfortunate Scavenger."³⁵ Even more peculiar were conflicts about whether or not the scavengers were obligated to remove dead animals. Blunt believed that owners of property should remove them, scavengers if the owners could not be found.³⁶ In April 1877, one person observed "only a dead horse, two dead hogs, four dead chickens, one dead dog, one dead cat, and two dumpings of night parts to sweeten the atmosphere around the City Hospital at East End."³⁷ It seems especially ironic that the city could not sanitize the environment around its own hospital.

Perhaps this observer was merely testing the powers of Galveston's new Board of Health. Recommended by a committee established in December 1873 and authorized by a new city charter approved by the legislature in August 1876, the aldermen empowered a new Board of Health in March 1877.³⁸ Composed of six laymen and three physicians, this Board could adopt and enforce regulations about sanitation and quarantine.³⁹ Competing for patronage and authority, the new Board and the traditional Hospital and Health Committee engaged in recurring disputes about whether specifically hired persons or regularly employed policemen should act as health inspectors, and how many inspectors and scavengers should be employed.⁴⁰

Cary Wilkinson, the health physician, did not allow these disputes to interfere with rigorous attempts to sanitize Galveston. As demonstrated by a report for January and February of 1878 (Table 1), the system of collecting slops, garbage, and dead animals appeared to be effective, as were the unspecified methods for dealing with "unsanitary water closets." Some streets and alleys were still unacceptable, as were many lots. Such efforts to keep Galveston clean became more fervent during the summer of 1878 when yellow fever spread throughout the South, claiming more than 5,000 lives in Memphis alone.⁴¹ In September, James T. Masterson, Galveston's city attorney, gave the Board of Health the power to condemn more than twenty square blocks of unsanitary lots owned mostly by nonresidents. To avoid public auctions of their lots, all but three of the nonresidents quickly cleaned them.⁴² Galveston's sanitary policies since 1867 and the fact that Galveston did not experience a yellow fever epidemic in 1878 received national atten-

tion in an editorial in *Scientific American*. Praising "one of the cleanest cities in the United States," the writer claimed that yellow fever "would certainly lose many of its terrors if every Southern city was kept as clean as Galveston."⁴³

Though pride effervesced, no one really knew whether improved sanitation policies or quarantines had been responsible for the absence of epidemics. But no one wanted to abandon either approach. During the 1880s, Galvestonians honored all quarantine regulations and they gradually transformed their approaches to sanitation, though habits were difficult to change.⁴⁴ In 1881, for example, the Board of Health reported unsanitary alleys, but the City Council only "referred" the report to its Committee on Hospital and Health.⁴⁵ This committee did not approve the Board's request to deposit "night soil under the salt cedars on the beach" because this would prove "impracticable and obnoxious to parties living on the beach."⁴⁶

The political roller coaster ride continued. In May 1882, the Council was willing to grant \$25,000 for sanitary work if a joint committee of the Hospital and Health Committee and the Board of Health could supervise this work. The Board rejected the offer and the mayor objected to the actions of the Council. Eventually the Council appropriated \$10,000 to the Board who employed 20 draymen (at a rate of \$3.00 per day) to remove "garbage and waste material, dead dogs, cats, rats, and fowls from the streets and alleys."⁴⁷ The aldermen also authorized an expenditure of \$5,000 for draymen to obtain sand and fill low places on 20th Street between Avenues S, N, and O. After summer rains altered the landscape again, Clarke Campbell, the Board's president, requested another \$10,000 for "sanitary purposes," but the Council refused this request.⁴⁸

In 1884, the Council's Committee on Streets and Alleys began sharing responsibilities for monitoring such practices as cleaning alleys, adding sand to low places, and draining street surfaces.⁴⁹ Again patronage was an issue as each committee of Council could hire and fire employees and each committee competed for a share of the city's yearly budget. In April, Mayor Robert Fulton chastised the Committee on Streets and Alleys for extravagant spending plans that would utilize a year's budget in four or five months. He argued that dollars should be allocated equally through the entire year for a realistic system of "patch work: After one rain, a little filling and a bridge here. After another rain, a little filling and a small bridge there."⁵⁰ The Council "overrode" the mayor's "objection" and reaffirmed the hiring and firing prerogatives of committee chairs.

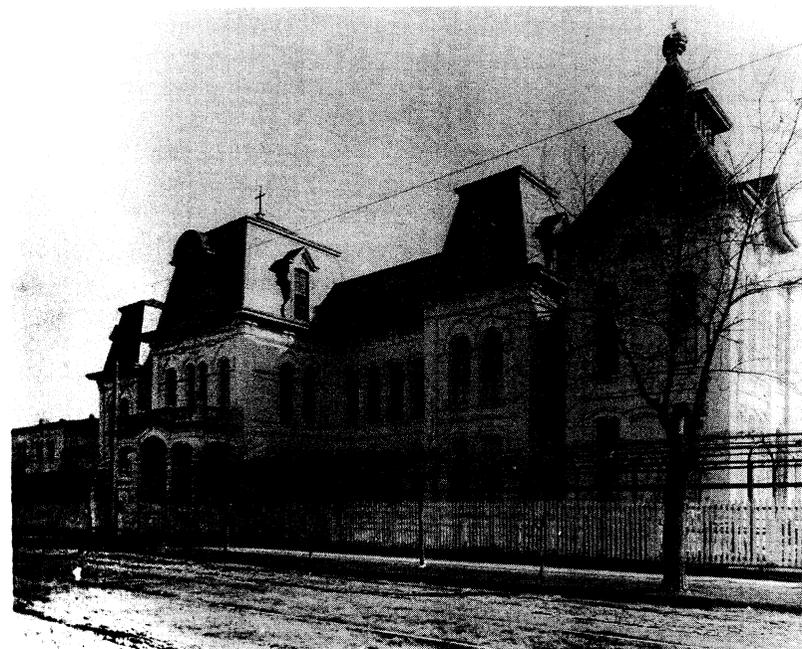
In early May, the mayor, the Council, and the Board of Health

became embroiled in another controversy about whether or not the Board should receive a requested \$2,500 for removing garbage and other nuisances. In late May, the Council appropriated \$5,000 to the Board.⁵¹ Within two months the money had been spent and Council instructed the Board to dismiss all draymen employed by the Board. A week later, the Council decided that the Overseer of Streets should be the only city employee "empowered to hire and discharge all laborers and drays that may be required by the City." This decision was reaffirmed in November when the Committee on Hospital and Health unsuccessfully attempted to assign the health physician (secretary of the Board of Health) the right to employ draymen again.⁵² Five months later, in April 1885, the Council reversed its policy and permitted the health physician to employ a dozen draymen.⁵³

Significant changes occurred in the summer of 1885. The councilmen gave more money to the Board of Health, permitted the Board to hire more inspectors and draymen, legally condemned unsanitary lots, approved a request by St. Mary's Infirmary to lay a sewer pipe on Avenue D between 7th and 8th Streets and on 8th Street from Avenue D to the bay, authorized the construction of an eight-inch sewer pipe on 22nd Street with six-inch laterals into the alleys so that property owners could connect with the main pipe, exhorted these same property owners to "fill up their cesspools and privy vaults," and, in September, advertised for bids from scavengers willing to collect the city's "offal and refuse matter."⁵⁴ During that month, these workers removed about 1,300 cartloads.⁵⁵

The passage of scavenger carts, sometimes uncontrolled by drunken or careless laborers, served as smelly reminders of the problems of sanitation in a steadily growing port city. Henry Cooke, secretary of the Board of Health, admitted that the carts used for collecting urine and feces were not satisfactory. Not only were the odors offensive, but refuse would drip from the collection boxes as the carts moved through streets and alleys toward a dumping site on the east end. Though he believed that tides and water currents did remove the "night soil" properly, he suggested that the city build "garbage boats" that could be used to dump the refuse in the Gulf away from the harbor.⁵⁶ Instead of building such boats, the Council authorized Cooke to hire the draymen needed for removing garbage and the Council sanctioned the construction of sewer pipes by a private company.⁵⁷

Chartered in 1886, the Galveston Sewer Company began laying centralized pipes that collected surface drainage and human wastes (a combined system) and discharged their contents into the Galveston Bay.



St. Mary's Hospital, Galveston, was the first Catholic hospital in Texas. Opened in April 1867. St. Mary's housed a School of Nursing from 1907-1968.

Photo Courtesy of The Rosenberg Library

The company charged owners of houses and shops for connections.⁵⁸ In 1892, the Council sanctioned the company's request to lay pipes within the city for the next 50 years and promised to compel property owners to establish connections with these pipes.⁵⁹ By 1893, the company had placed cement pipes in most of the territory between Broadway and Galveston Bay from 14th to 27th street.⁶⁰ By 1899, the company had constructed more than eight miles of pipes that connected more than 430 pieces of property.⁶¹ Throughout these years, though, many businessmen and homeowners continued to rely on privies because they wished to avoid the costs of connections and because the Council did not enforce their rules about requiring such connections.⁶²

Moreover, reluctance about using private companies had bothered the consciences of those who believed that public welfare was more important than private financial gain. As early as 1892, the Council had

adopted an ordinance that permitted arbitration about prices if the city decided to purchase the Galveston Sewer Company and construct its own public system.⁶³ In 1896, Mayor A.W. Fly, a physician, and the Council launched a campaign to establish “a thorough and scientific system of sewerage” for the city.⁶⁴ The sale of \$300,000 in sewer bonds would provide the dollars needed to purchase and convert the private company into a public utility. Exclaimed Fly: “The Health of a people should always be paramount to every other consideration.”⁶⁵ Expansive social pride, public health imperatives, technical adequacy, government responsibility, and urban competition propelled the new sensibilities about sanitation exhibited by Galvestonians during the 1880s and 1890s.

Galveston became the “most advanced and sophisticated” city in Texas during these years.⁶⁶ Like waves on the island’s beaches, pride cascaded through the hearts of Galvestonians. With “forty-one millionaires” in the city by 1894, Gilded Age glory sparkled and dazzled.⁶⁷ Galvestonians rode horses and wagons across a new bridge to the mainland, watched larger boats enter a deeper harbor made possible by federally financed jetties, and rode new electric streetcars. They placed telephone calls to Houston and other cities, gawked at numerous Victorian mansions, including the homes of George Sealy, Walter Gresham, and Edward Randall, Sr., and frequented the new public buildings including the City Hall, the County Court House, the Post Office, and Customs House. Galvestonians attended concerts in the Grand Hotel and Opera House, housed visitors in the huge Beach Hotel, boarded students enrolled in the state’s only university medical school, and staged fundraisers for John Sealy Hospital and St. Mary’s Infirmary. Gilded Age Galvestonians could not tolerate the appearance of stinking, germ-laden feces floating in the streets and alleys whenever heavy rains caused privies to overflow.

When the city celebrated its 50th birthday in 1889, no major epidemic had afflicted the residents for more than 20 years, irrefutable evidence that improved sanitation and vigilant quarantine had been successful. There was no turning back. When Galvestonians elected Fly as Mayor in 1893 and again in 1895 and 1897, they believed that he was motivated by the same public health imperatives that spurred the actions of numerous late-19th-century physicians in America. Fly lobbied for a public sewer system because it was the best way to place applied bacteriology, engineering technology, and communal welfare in the same harness.⁶⁸

Technical adequacy was another issue. As Galveston’s population increased from about 22,000 to 30,000 citizens during the 1880s, privies and scavengers’ carts became more functionally inadequate.⁶⁹ To be fully



Ashley Wilson Fly, Physician and Mayor of Galveston from 1893-1899.

Photo Courtesy of The Rosenberg Library

operational, though, a centralized sewer system required a centralized waterworks. During the 1880s, the Galveston Water Company established a waterworks for the city that included 13 wells drilled on the island, 17,000 feet of water mains and pipes, and a pump house.⁷⁰ As the centralized sewer system slowly expanded during the late 1880s, businessmen and homeowners installed flush toilets, but the salty water from the wells corroded the pipes and toilets. In 1895, the year of Fly's first reelection, fresher water began flowing into the city via a 30-inch main connected to 30 artesian wells in Alta Loma, a mainland town about 17 miles from Galveston.⁷¹ A centralized system could now be technically effective.

In search of a genuinely "scientific" system, a citizen's committee recommended that the city consult with a "competent Sanitary Engineer."⁷² In May 1896, George W. Waring, the commissioner of street cleaning for New York City and one of the country's leading sanitary engineers, visited Galveston to advise the city's leaders.⁷³ Afterwards, however, no sewer bonds were issued and no one heeded Waring's advice because there were too many clashes between private and public interests.⁷⁴

What were the rights of the Galveston Sewer Company? What were the rights of the city? In 1896 and 1897, three aldermen conducted unsuccessful negotiations to purchase the private company. Amendments to the city's charter authorized this purchase, but Waverley Smith, the city's attorney, did not believe that the city was obligated to purchase the company.⁷⁵ Smith argued that the Council had acted improperly when it authorized the private company to handle the city's sewerage. He believed that the city did not have the right to grant a franchise or license to a private corporation for the purpose of managing the city's duly authorized (via the charter granted by the state legislature) responsibility to create and maintain a sewerage system. Because this franchise was illegal, the city had no legal obligation to purchase the company.⁷⁶ On the other hand, owners and stockholders believed that the city was morally, if not legally, obligated to purchase the company if the city intended to establish a public system.⁷⁷ Councilmen and owners became entangled in a web of arbitration proceedings.⁷⁸

Galvestonians became agitated about these merry-go-round tactics.⁷⁹ Urban reputations were at stake. In the fall of 1898, a journalist interviewed William Cameron, the waterworks manager who assisted Waring in creating a sewerage system for Memphis during the 1880s.⁸⁰ The editor of the *Galveston Daily News* used the following headings for the reporter's columns: "Sewerage Made Memphis—No Town Can Grow Without Sewers—Taxpayers of Galveston Will Stand in Their Own Light if They Delay the Work."⁸¹ In February 1899, another reporter noted

that Houston had a "sewerage plant."⁸² Actually, a treatment plant was being planned then and construction did not begin until 1900.⁸³ But, the reporter's message was unmistakable: Houston had the competitive edge over Galveston. In May 1899, Sherman Gould, a sanitary engineer who had built the waterworks system in Havana, Cuba, declared that Galveston's sanitary condition lagged far behind that of other cities. "If we are not careful," exclaimed a reporter, "before many moons the people of Havana will look upon Galveston as a cesspool."⁸⁴ It was time to flush the legacy that made private gain and political patronage more important than the city's welfare.

During the following month, about 150 citizens established the Cleaner Galveston League, a group dedicated to permanent improvement in sanitizing Galveston.⁸⁵ Signs of genuine progress appeared. The Cleaner Galveston League campaigned for regular cleaning of streets and alleys and the Council authorized construction of an incinerator for disposal of the city's trash.⁸⁶ Bonds for the public sewerage system finally became available for purchase during 1899 and 1900.⁸⁷ Legal proceedings with the Galveston Sewer Company gradually came to a halt. On August 3, 1899, the 10th District Court declared that the city must purchase the company for \$93,600, but the city had not yet done this when a massive hurricane struck in September 1900.⁸⁸

The hurricane created piles of debris and mounds of decaying refuse unlike any ever experienced by humans on the Gulf Coast.⁸⁹ Gary Wilkinson, the city's health physician, and George Soper, New York City's sanitary engineer, initially guided cleanup efforts.⁹⁰ Later, Galveston's Central Relief Committee asked Edward Randall, Sr., one of the city's leading physicians, to oversee the cleanup, which, by early 1901, involved 144 men.⁹¹ Fifty-five men cleaned streets, opened gutters, and shoveled sand into 45 double-team wagons. Drivers of these wagons hauled the sand to Galveston's alleys and streets for filling and resurfacing. Drivers of 35 carts removed debris and drivers of nine carts removed garbage every day. The Council appropriated a total of \$32,500 for these sanitary efforts.⁹² Three subsequent events in 1901 directly influenced further sanitary reform in Galveston: creation of the Women's Health Protective Association (WHPA), sale of the Galveston Sewer Company, and the establishment of a new structure for city government.

More than 100 women continued the work of the Cleaner Galveston League by organizing the WHPA in the spring of 1901.⁹³ Various WHPA committees purchased a plot of ground for burial of many unidentified victims of the hurricane, obtained hundreds of signatures endorsing the Commission form of government, beautified the is-

The Women's Health Protective Association

WILL BECOME AN ESTABLISHED FACTOR IN THE

Promotion of Cleanliness, Order and Beauty in the City of Galveston.

It stands for PURE AIR AND PURE WATER; FOR CLEAN STREETS AND ALLEYS AND CLEAN CARS; FOR CLEAN PUBLIC BUILDINGS; FOR SANITARY SCHOOL HOUSES; FOR CLEAN WHARVES AND BOATS, AND FOR EFFICIENT MUNICIPAL SERVICE IN THE COLLECTION AND DISPOSAL OF WASTE.

IT UTTERS ITS PROTEST AGAINST:

- The littering of streets with papers, circulars and rubbish.
- Spitting in public places.
- The slovenly exposure of garbage.
- The use of improper receptacles for ashes and garbage.
- The mixing of papers and rubbish with ashes.
- The proximity of foul dumping grounds.
- Obstructing sidewalks with oyster shells, carts, etc., etc.

It aims to arouse civic pride; to inspire a desire for neatness; to promote a love of order; to aid all measures which conduce to health; to further the proper civic training of the young.

It desires the co-operation of all citizens, especially of all women, in its important work.

WILL NOT ALL, WILL NOT YOU, BY CARE IN LITTLE THINGS, HELP US TO KEEP OUR CITY CLEAN?

If you will, these things we ask of you:

- Do not throw paper, circulars or fruit skins on the streets.
- Do not put garbage in unsightly vessels.
- Do not put rubbish with your ashes.
- Do not expose waste longer than necessary.
- Do not place garbage, ashes, or any kind of refuse on the sidewalk.

Will you not heed these simple requests, and thus add a great supplementary force to Galveston's street cleaning service.

ANNOUNCEMENTS OF MEETINGS WILL BE GIVEN IN OUR DAILY PAPERS; ALL INTERESTED ARE INVITED TO ATTEND.

Photo Courtesy of The Rosenberg Library

land with hundreds of oleander bushes and hundreds of trees, regularly visited corner grocery stores and food shops urging proprietors to maintain cleanliness and order, placed large trash cans adjacent to the train station and several public buildings, and lobbied incessantly for the enforcement of Galveston's sanitary ordinances.⁹⁴ These ladies strove mightily to overcome what Charles Trueheart called the "chronic apathy" about sanitation "prevailing" among the "great majority" of Galvestonians.⁹⁵

Further progress in sewage disposal hinged on the sale of the Galveston Sewer Company. In December 1900, the 10th District Court ordered Mayor Walter C. Jones to pay the purchase price, but he refused to release the money because he believed that the city was being forced to buy a plant "not worth one-fifth of that amount."⁹⁶ Knowing his city was still in ruins and recognizing that its tax base was seriously compromised, Jones stubbornly protected the city's reserves.⁹⁷ But, Wilkinson and Trueheart, Wilkinson's successor as health physician, urged the councilmen to complete the transactions of the sale, which they did by April 15, 1901.⁹⁸

With charter amendments approved by the state legislature and elections in 1901 and 1903, Galvestonians governed themselves with a mayor and four commissioners.⁹⁹ They elected Herman C. Lange as the first commissioner of waterworks and sewerage, and A. P. Norman as the first commissioner of the police and fire departments. Norman pledged that he would enforce sanitary regulations if citizens reported problems.¹⁰⁰

In November 1901, the Commissioners adopted an ordinance that obligated all citizens to connect their water closets, sinks, and drains to the city's sewers. Citizens were expected to absorb the costs of making these connections and failure to do so could result in fines of "not more than fifty dollars."¹⁰¹ Some complained that they could not afford to pay these charges. Some argued that the ordinance made no sense in those areas of the city where there were broken laterals or main pipes, or no laterals or main pipes.¹⁰² Others thought it would be foolish to lay new laterals or main pipes in those areas scheduled for grade raising, one of the principal tactics planned by the Commissioners for "storm-proofing" the city.¹⁰³ Nevertheless, some arrests were made and applications for connections steadily appeared in the Waterworks office.¹⁰⁴

Beginning in 1902, the city periodically constructed new main pipes and laterals.¹⁰⁵ Many still used privies and "night soil" was still removed by hand and carted away. In March, the Commissioners adopted an ordinance that gave one scavenger company exclusive rights to collect this refuse.¹⁰⁶ More than 400 citizens signed a petition of protest to this

monopoly, including scavengers who had lost employment. Trueheart supported the ordinance because it gave the city a better way to monitor responsibility for the disposal of Galveston's "night soil." Citizens had long complained about irresponsible, drunken scavengers who dumped "night soil" along roadways and anywhere on the beach. It would now be easier to police one company, and charges for the service would be uniform for all citizens.

The Commissioners also added new surface drains as the population of the city spread westward. A 36-inch "combination vitrified sewer and drain" collected the rainwater and waste-liquids on 33rd Street, emptying into the channel at the end of that street. In the spring of 1906, workers laid a 72-inch concrete drain (with 36-inch and 30-inch laterals) on 29th Street from the Strand to the channel. Plans had been made to add a similar drain on 37th Street, which would collect wastewater from the blocks between 34th and 40th streets south to Avenue B. After this drain was completed, Valery Austin (Commissioner of Streets and Public Property) believed that the marshy areas between 27th and 40th could be filled and graded, thereby eliminating a longstanding "eyesore" in the city.¹⁰⁷

In 1908, the Commissioners allocated \$15,000 to build an incinerator for burning the city's trash. At that time, city workers were dumping "West End" trash and garbage in an area west of 45th Street on Avenue G and "East End" trash in an area north of the hospitals. Many citizens believed that an incinerator would help alleviate the ugly and dangerous circumstances associated with these dumps.¹⁰⁸ In the fall of 1911, workers constructed the incinerator on 35th Street between Mechanic and Strand. A furnace 10 feet in diameter and 30 feet high lay on a base of 24 creosoted piles augmented with reinforced concrete. A reinforced concrete chimney extended 40 feet above the entire structure that was 48-feet wide and 198-feet long. Dump carts moved along a wooden trestle driveway. Before passage into the furnace, wet garbage drained into an area that channeled wastewater to the 35th Street sewer. The incinerator could handle up to 45 tons deposited by a foreman and two laborers during a 10-hour workday. Ashes and residues were used to fill low places in the city.¹⁰⁹

A centralized sewer system and an incinerator were signs of genuine progress in Galveston, as were the concurrent efforts in constructing the seawall, raising the grade of the city, and building the new bridge to the mainland. Continued progress in sanitary reform depended on citizen support. The women of Galveston were relentless in their quest for this support. Wanting to be systematic and scientific, the WHPA and the

Galveston Commercial Association invited James P. Simonds, professor of preventive medicine at the University of Texas Medical Department, to conduct a sanitary survey of the city.¹¹⁰ Their hopes were captured in a slogan: "Galveston will soon be the cleanest city in the world."¹¹¹

Utilizing medical students as inspectors, Simonds conducted the survey in March 1913, the first of its kind in Texas. Simonds reported many problems.¹¹² Breaks in the sewer mains were not uncommon because it was difficult to stabilize pipes in the loose sand, even by using heavy pieces of timber. It was also difficult to "secure a sufficient gradient for sewers."¹¹³ The flow of sewage through the pipes was slow and workers often had to dredge the sludge from the sewer mains. This sludge was dumped on the streets and often spread into adjacent lots. Tidal water also backed into the sewer openings, thereby impeding drainage.

Developing a satisfactory centralized sewage system was difficult. Most of the houses east of 25th Street were connected to main sewers. Between 25th and 33rd streets, main pipes had been placed, but few houses were connected. There were whole blocks between Avenues D and G and 25th and 28th streets with no sewer connections. "Even where the buildings on the front of the lots in this region have sewer connections," he added, "the alley houses have none. Here the conditions are beyond expression. For in this section, the streets and alleys have been filled to grade while the lots have been at their original level. The result is that after heavy rains, the vaults fill with water and overflow, scattering the disgusting contents over the surface of the yard."¹¹⁴ Only a few main pipes had been laid west of 33rd Street.¹¹⁵

Galveston's neighborhoods were littered with rubbish and garbage. To remove this refuse, 14 drivers and carts were used during the winter months, increased to 18 during summer. Each cart could haul four loads a day, each load contained about 50 bushels. Each driver was assigned to a district and was expected to remove refuse from this district at least once a week in winter and twice a week in summer. But, the districts were usually too large for this approach to work satisfactorily. What Simonds discovered about the rubbish and garbage situation appeared to trouble him the most: "The utter lack of civic and personal pride on the part of many people, even in the so-called respectable parts of the city, is truly humiliating."¹¹⁶ He knew that some of these "respectable" people were those who still failed to observe the sanitary laws.

What Galveston needed, exclaimed Simonds, was "an aroused civic pride and civic conscience in every citizen."¹¹⁷ Reporters for the *Galveston Daily News* trumpeted this exclamation and the Galveston Commercial

Association printed 5,000 copies of the report for distribution throughout the city.¹¹⁸ The Commissioners adopted more ordinances about sewer services and they urged citizens to “clean” Galveston.¹¹⁹ With significant changes in their politics, policies, and practices since 1885, Galvestonians were cleaning their city better than ever. But, 75 years after the city’s incorporation, its citizens still struggled with the everlasting issues of individual rights and social responsibilities and, WHPA dreams notwithstanding, they did not live in the “cleanest city in the world.”

NOTES

¹ Charles W. Hayes, *Galveston, History of the Island and the City*, (Two volumes originally published in 1879; reprint by Jenkins Garrett Press, 1974) I: 333.

² This epidemic did prompt the Council to make a contract with Charles Stewart who constructed a tramway that permitted workmen to dump sand along the Strand and other streets, raising the grade some six to eight feet (Hayes, I:388). This eliminated some of the holes that collected water and refuse. For a concise review of Galveston’s first six years, see Kenneth W. Wheeler, *To Wear a City’s Crown: The Beginnings of Urban Growth in Texas, 1836-1865* (Cambridge, Mass.: Harvard University Press, 1968), 70-78.

³ Willis W. Pratt (ed.), *Galveston Island or, a Few Months Off the Coast of Texas: The Journal of Francis C. Sheridan 1839-1840* (Austin: University of Texas Press, 1954), 45.

⁴ Hayes, *Galveston, History of the Island and the City*, I:352, 360-362; David G. McComb, *Galveston: A History* (Austin: University of Texas Press, 1986), 68; and Earl Wesley Fornell, *The Galveston Era: The Texas Crescent on the Eve of Secession* (Austin: University of Texas Press, 1961), 35-36.

⁵ Larry Wygant, “Medicine and Public Health in Galveston, Texas: The First Century,” (Ph.D. dissertation, University of Texas Medical Branch, 1992), 43.

⁶ Wygant, “Medicine and Public Health in Galveston, Texas: The First Century,” 44-45.

⁷ Chester R. Burns, “The Development of Hospitals in Galveston During the Nineteenth Century,” *Southwestern Historical Quarterly* 97 (October 1993): 242; Unpublished Minutes, Galveston City Council, August 10, 1853. These Minutes are in a vault at the City Hall in Galveston and are hereafter cited as Minutes, GCC.

⁸ Minutes, GCC, August 6 and 10, 1853.

⁹ Minutes, GCC, August 22, 1853.

¹⁰ Minutes, GCC, August 6, 10, 13, 14, 17, 21, 22, 26, 31 and September 13 and 21, 1853. Other details are given in Wygant, “Medicine and Public Health in Galveston, Texas: The First Century,” 45-48. The epidemic began in late August with about 10 persons dying from yellow fever each day in late September. (*Galveston Daily News*, September 27, 1853. Hereafter cited as *GDN*).

¹¹ *Ordinances of the City of Galveston, 1856-7*, 74-78.

¹² *Galveston Weekly News*, August 3, 1853.

¹³ Fornell, *The Galveston Era*, 69.

¹⁴ Ellen Beasley, *The Alleys and Back Buildings of Galveston: An Architectural and Social History* (Houston: Rice University Press, 1996), 21.

¹⁵ *Flake’s Bulletin*, March 10, 1866

¹⁶ *Galveston Medical Journal* I (April 1866): 127. Cited hereafter as *GMJ*.

¹⁷ *GMJ* III (July 1868): 356. For details about the epidemic of 1867, see Anne L. Moore Buchhorn, “The Yellow Fever Epidemic of 1867 in Galveston,” (M.A. thesis, University of Houston, 1962).

¹⁸ Beasley, *The Alleys and Back Buildings of Galveston*, 21-7.

¹⁹ Minutes, GCC, December 30, 1869, and January 17, 1870.

²⁰ The self-contained systems for water supply and sewage disposal relied on hydraulic rams and simple hand pumps. For a splendid review of these systems, see Maureen Ogle, *All the Modern Conveniences: American Household Plumbing, 1849-1890* (Johns Hopkins University Press, 1996), 36-60. In Galveston, cistern makers were identified in the city directories during the 1850s (1856, 8 and 16; 1859-69, 9) and plumbers were first mentioned in the city directory for 1866-67 (p.21). Frank Harrar was listed as a plumber and gasfitter in the directories from 1868 (p.71) through 1880 (p.66). In the 1888-89 directory (p.443), five persons were listed under the heading: “Plumbers, Gas and Steam Fitters.”

²¹ Minutes, GCC, June 7, 1870.

²² *Ordinances of the City of Galveston, 1872*, 72-76.

²³ Minutes, GCC, June 30 and December 11, 1871.

²⁴ For examples, see Minutes, GCC, August 21, 1871; April 15 and August 5, 1872; August 4, 1873; April 20, 1874; and March 1, 1875. For additional comments about filling low places, draining and paving streets, and raising grade levels, see Wygant, “Medicine and Public Health in Galveston, Texas: The First Century,” 104-106.

²⁵ Minutes, GCC, March 17, 1873. Some ordinances were enforced. Fifteen of the 2,923 arrests during the fiscal year ending February 18, 1873, involved violations of health ordinances.

²⁶ Minutes, GCC, November 3, 1873.

²⁷ Minutes, GCC, December 1, 1873.

²⁸ “Mortuary of Galveston City for 1872,” *Texas Medical Journal* I (January 1873): 36. After the devastating epidemic of 1867, quarantines were rigorously enforced between 1868 and 1873. See J.N. Calloway, “An Essay on the History of Quarantine and Its Effectiveness,” *Texas Medical Journal* I (June 1873): 202.

²⁹ Minutes, GCC, November 17, 1873 and January 5, 1874.

³⁰ Minutes, GCC, March 16, 1864.

³¹ *GDN*, March 21, 1875.

³² Minutes, GCC, March 10, April 5, and April 7, 1875.

³³ Minutes, GCC, June 7, 1875.

³⁴ Minutes, GCC, May 6, 1876.

³⁵ Minutes, GCC, November 20, 1876.

³⁶ *GDN*, August 11, 1876.

³⁷ *GDN*, April 3, 1877.

³⁸ Minutes, GCC, December 1, 1873; *GDN*, February 2 and 7, 1874; March 10, 14, 19, 25, and 28, 1877; April 3 and 12, 1877; and *Ordinances of the City of Galveston To February 29, 1880*, 47-55. Also see Wygant, “Medicine and Public Health in Galveston, Texas: The First Century,” 92-94.

³⁹ Minutes, GCC, April 16, 1877.

⁴⁰ For examples in 1877, see Minutes, GCC, April 3 and 16, September 3, October 1, November 5 and 19, December 3; and *GDN*, November 10 and 11.

⁴¹ Thomas H. Baker, “Yellowjack: The Yellow Fever Epidemic of 1878 in Memphis, Tennessee,” *Bulletin of the History of Medicine* 42 (May-June 1968): 241-264.

⁴² A summary of the story about unsanitary lots is in James B. Speer, Jr., “Pestilence and Progress: Health Reform in Galveston and Houston during the Nineteenth Century,” *Houston Review* 2 (Fall 1980): 132.

⁴³ *Scientific American* XXXIX (October 19, 1878): 241.

⁴⁴ In the spring of 1879, Governor Oran Roberts appointed Robert Rutherford of Houston as the state’s first health officer. Quarantine regulations in Texas were revised, and the state’s first quarantine stations were constructed, including one on Pelican Island across the channel from Galveston. Between 1879 and 1882, local boards of health and quarantine physicians cooperated with Rutherford in enforcing statewide quarantines along the Gulf Coast between May and November of each year. In 1883, the state assumed exclusive authority for managing quarantines. During 1884, for example, Galveston’s health physician inspected 939 ships and placed 17 in 20-day quarantines. For details, see Robert Rutherford, “History of Quarantine in the State of Texas from 1878-1888,” *Public Health Papers and Reports* XIV (1889): 125-133; *GDN*, May 19, 1879; and Larry Wygant, “The Galveston Quarantine Stations, 1853-1950,” *Texas Medicine* 82 (June 1986): 49-52

⁴⁵ Minutes, GCC, June 24, 1881.

⁴⁶ Minutes, GCC, July 18, 1881.

⁴⁷ Minutes, GCC, May 1, 3, 5, June 5, 19, July 3, and August 10, 1882.

⁴⁸ Minutes, GCC, September 4, 1882.

- ⁴⁹ Minutes, GCC, February 6, 1884 and *GDN*, September 25, 1884.
- ⁵⁰ Minutes, GCC, April 22, 1884.
- ⁵¹ Minutes, GCC, May 5, 19, and 20, 1884.
- ⁵² Minutes, GCC, August 4, 10, 18, and November 17, 1884.
- ⁵³ Minutes, GCC, April 8, 1885.
- ⁵⁴ Minutes, GCC, May 23, June 1, June 15, July 9, July 20, August 3, August 17, and September 7, 1885;
- ⁵⁵ Beasley, *The Alleys and Back Buildings of Galveston*, 37-38.
- ⁵⁶ Minutes, GCC, August 2, 1886.
- ⁵⁷ Minutes, GCC, December 6, 1886; January 3, February 2, May 2, May 23, June 20, and July 5, 1887.
- ⁵⁸ Minutes, GCC, June 1 and July 20, 1885; September 20, 1888; and *GDN*, March 31, 1888 and December 9, 1897. Many towns and cities established sewerage systems during the 1880s and 1890s (John Duffy, *The Sanitarians: A History of American Public Health* (Urbana: University of Illinois Press, 1990), 175-178. The middle and upper classes installed flush toilets, sinks, and bathtubs during these same years (Gwendolyn Wright, *Building the Dream: A Social History of Housing in America* (Cambridge: MIT Press, 1981), 102.
- ⁵⁹ Galveston City Council, Unpublished Ordinances, 1871-1891, September 18, 1889, 687-691; Unpublished Ordinances, 1891-1902, July 19, 1892, 62-63.
- ⁶⁰ *GDN*, September 30, 1893. Also see Minutes, GCC, January 5, 1893.
- ⁶¹ *GDN*, April 25, 1899.
- ⁶² *GDN*, May 24, 1899.
- ⁶³ *GDN*, December 9, 1897.
- ⁶⁴ Minutes, GCC, January 30, 1896. For more on Fly, see *The New Handbook of Texas*, 2: 1045.
- ⁶⁵ Minutes, GCC, February 1, 1897.
- ⁶⁶ McComb, *Galveston: A History*, 118.
- ⁶⁷ *GDN*, December 23, 1894.
- ⁶⁸ For succinct overviews of physician participation in the institutionalization of public health and the impact of bacteriology during these years, see Duffy, *The Sanitarians: A History of American Public Health*, 126-37, 193-207. For details about some marriages of engineering technology and city government, see Stanley K. Schultz and Clay McShane, "To Engineer the Metropolis: Sewers, Sanitation, and City Planning in Late-Nineteenth-Century America," *Journal of American History* 65 (September 1978): 389-411. For Fly's participation in the activities of Galveston's Good Government Club, which was partially successful in ushering progressive reform in city government during the 1890s, see "The City of Galveston," *The Alcalde* 3 (November 20, 1897): 6-8; and Bradley R. Rice, "The Galveston Plan of City Government by Commission: The Birth of a Progressive Idea," *Southwestern Historical Quarterly* 78 (April 1975): 368-375.
- ⁶⁹ McComb, *Galveston: A History*, 66-67.
- ⁷⁰ For some details about the waterworks, see Minutes, GCC, March 19, 1888.
- ⁷¹ Wygant, "Medicine and Public Health in Galveston, Texas: The First Century," 114-115.
- ⁷² The committee included David Hall and two physicians, J. M. Kline and Charles W. Trueheart.
- ⁷³ *GDN*, May 12, 1896. For a succinct review of Waring's work, see Martin V. Melosi, *Garbage in the Cities: Refuse, Reform, and the Environment, 1880-1980* (College Station: Texas A&M University Press, 1981), 51-78.
- ⁷⁴ Waring may have been overwhelmed by the large number of privies on the island or he may have lobbied for the abandonment of Galveston's combined system and its replacement by a system that had separate pipes for surface drainage and household wastes. He had designed a separate system for several cities, including one for Memphis after the devastating yellow fever epidemic of 1878. For his views on methods of removing human excrement and liquid household wastes, see George E. Waring, Jr., *Sewerage and Land Drainage* (New York: D. Van Nostrand Co., 1891), 294-303.
- ⁷⁵ Minutes, GCC, April 14, April 28, and June 15, 1896; *GDN*, December 9, 1897.
- ⁷⁶ *GDN*, March 29 and June 2, 1896.
- ⁷⁷ *GDN*, March 1, 1898.
- ⁷⁸ For some details, see *GDN*, August 27, 1898; February 21, March 29, April 4 and 25, and May 12, 20, 23-25, 1899.
- ⁷⁹ For a concise and candid appraisal, see "A Campaign of Sanitation," *GDN*, March 6, 1898.
- ⁸⁰ Duffy, *The Sanitarians: A History of American Public Health*, 144-146.
- ⁸¹ *GDN*, November 4, 1898.

- ⁸² *GDN*, February 21, 1899.
- ⁸³ Five combined sewers had been built in downtown Houston during the 1870s, but less than five percent of dwellings had connections with these by 1885. In 1889, Wynkeep Kiersted, a sanitary engineer from Kansas City, visited Houston and recommended a separate system. Some separate lines were constructed but by 1899, they collected discharges from less than fifty percent of the city's area and no more than fifteen percent of the city's residents had connections to them. Early in 1899, Alexander Potter, a sanitary engineer from New York City, visited Houston and strongly recommended the construction of a sewage filtration plant. For more details, see Elizabeth O'Kane's excellent essay, "'To Lift the City Out of the Mud': Health, Sanitation and Sewerage in Houston, 1840-1920," *Houston Review* 17 (1995): 3-28.
- ⁸⁴ *GDN*, May 18, 1899. President William McKinley asked George Waring to investigate the terrible sanitary conditions in Havana. Waring contracted yellow fever while visiting Havana in October 1898 and died shortly thereafter.
- ⁸⁵ *GDN*, June 18, 1899. For specific activities in June and July, see *GDN*, June 20, 23, 27; July 1, 7, 13, 14, 18, 21, 25, and 28, 1899. For a decade, a similar Citizen's Committee had propelled many of the progressive changes in Houston.
- ⁸⁶ *GDN*, March 9 and June 18, 1899, and Minutes, GCC, October 2 and October 11, 1899; and April 16 and May 2, 1900. City officials adopted a trash ordinance that required owners of homes and businesses to remove litter and debris from adjacent sidewalks, streets, and alleys. (Minutes, GCC, March 20, 1899 and *GDN*, May 18, 1899).
- ⁸⁷ *GDN*, August 21, 25, 28; September 3, 20; and November 20 and 21, 1899; Minutes, GCC, August 21 and 28, 1899; May 21 and August 6, 1900.
- ⁸⁸ Minutes, GCC, June 19 and August 2, 1899.
- ⁸⁹ For a succinct summary, see McComb, *Galveston: A History*, 121-132. For some visual images, see the photos in John Edward Weems, *A Weekend in September* (College Station: Texas A&M University Press, 1980 reprint of 1957 edition).
- ⁹⁰ *GDN*, October 9 and 10, 1900 and Melosi, *Garbage in the Cities: Refuse, Reform, and the Environment, 1880-1980*, 86.
- ⁹¹ *GDN*, January 8, 1901.
- ⁹² *GDN*, January 10, 1901. Also see *GDN*, February 13, 1901. Fifty double teams with drivers and 40 single teams with drivers were still engaged in this work in December 1901. *GDN*, December 13, 1901.
- ⁹³ Two years earlier, a news reporter lobbied for the appointment of a woman as the city's sanitary inspector. He declared: "One woman in the sanitary department of the city is worth forty men. The women will work honestly and see that those in their employ do honest work." (*GN*, June 9, 1899). Shortly after the WHPA organized in 1901, Cary Wilkinson applauded their plans to help enforce Galveston's sanitary regulations. (*GDN*, March 25, 1901).
- ⁹⁴ *GDN*, May 22, 1904 and *The New Handbook of Texas* 6: 1056.
- ⁹⁵ *GDN*, August 22, 1903.
- ⁹⁶ Minutes, GCC, March 12, 1901.
- ⁹⁷ Jones was even more worried about how the city would pay interest on the sewer bonds. Minutes, GCC, December 10, 1900.
- ⁹⁸ *GDN*, December 16 and 31, 1900, and Minutes, GCC, December 10, 1900, March 12 and 18, and April 15, 1901. For more on Trueheart, see *The New Handbook of Texas*, 1996, 6: 577-578.
- ⁹⁹ McComb, *Galveston: A History*, 136-137; Rice, "The Galveston Plan of City Government by Commission: The Birth of a Progressive Idea," 406, and Clarence Kendall, "The City Government of Galveston," *University Record* 7 (1906-1907): 186-191.
- ¹⁰⁰ Minutes, GCC, September 29 and November 9, 1901.
- ¹⁰¹ Minutes, GCC, November 12, 1901.
- ¹⁰² A summary of the blocks without pipes and those with broken pipes was contributed by a reporter in *GDN*, November 8, 1901.
- ¹⁰³ *GDN*, June 6 and July 29, 1902.
- ¹⁰⁴ *GDN*, September 12, 1902. The total number of arrests is not known. In January 1902, only seven arrests were made for violation of any sanitary ordinances *GDN*, February 5, 1902.
- ¹⁰⁵ Minutes, GCC, September 2 and November 25, 1902; June 23, 1903; April 5, 1904; and *GDN*, August 20, 1903.
- ¹⁰⁶ *GDN*, March 26, 1902.
- ¹⁰⁷ *GDN*, April 29, 1906. This news article contains an extensive list of the other surface drains in the city.

¹⁰⁸ *GDN*, March 20, 1908. The Commissioners had also adopted an ordinance that required all homeowners and proprietors to provide a covered receptacle for trash and garbage. However, Trueheart noted that the "good people of Galveston" were "very tardy" in honoring this ordinance. (*GDN*, November 27, 1906, July 18, 1908).

¹⁰⁹ For a photo and more details, see *GDN*, October 15, 1911.

¹¹⁰ *GDN*, February 22 and March 9 and 21, 1913.

¹¹¹ *GDN*, March 11, 1913.

¹¹² J.P. Simonds, "Report of a Sanitary Survey of the City of Galveston, Texas," April 1913. A copy is in folder 8, box 10 of the Jean S. Morgan Papers in the Galveston and Texas History Center of the Rosenberg Library in Galveston. The report is cited hereafter as "Survey".

¹¹³ "Survey," 19.

¹¹⁴ "Survey," 14-15.

¹¹⁵ "Survey," 20. For some details about the sequence of pipe placement, see Minutes GCC, November 25, 1902; June 23, 1903; April 5, 1904; July 25, 1907; June 10, 1909; August 5, 1910; October 26, 1911; February 15 and June 13, 1912.

¹¹⁶ "Survey," 17.

¹¹⁷ "Survey," 30.

¹¹⁸ *GDN*, April 7 and 19, 1913.

¹¹⁹ Minutes, GCC, May 8, 1913 and December 13, 1913; and *GDN*, February 24, 1914.