

Handwritten notes:
Laredo
Sanitation
(Laredo Project)

A REPORT ON THE
LAREDO ENVIRONMENTAL SANITATION PROJECT
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The Laredo Environmental Sanitation Demonstration Project was started in Laredo in the fall of 1954 as a pilot program through the joint efforts of the Texas State Health Department, the United States Public Health Service and the City of Laredo. I know that most of you are familiar with the notable achievements that have been made throughout the world during the past 12 or 14 years in the control of vector-borne diseases. A number of cities, however, in many countries, have been and still are confronted with insect and rodent problems and the menace to public health and the economic burden that accompany them. Our own City, Laredo, was one of these. Among our many deficiencies, the original sanitary survey found 5,100 pit privies, accompanied of course, by an almost unbelievably high fly count and, of course, a subsequent high diarrhea morbidity and infant mortality.

A hard hitting, intelligent, and efficient program had to be developed and used. Laredo needed it - it needed its results - while the Communicable Disease Center of the United States Public Health Service and the Texas State Health Department needed to observe and study the organization, operation and results of a comprehensive city-wide Vector Control Program. Thus then, was born the Laredo Demonstration Project, with its primary objective being two-fold; to improve the sanitary situation in the City, and to demonstrate the control of vector-borne diseases through permanent sanitation improvements and through the supplemental use of insecticides and rodenticides.

It was realized that deficiencies in certain environmental sanitation practices were responsible for the insect and rodent problems in

Laredo. The program then was to be based on the correction of these deficiencies, supplemented by the judicious use of insecticides and rodenticides as a valuable and necessary adjunct.

The project was divided into four phases. The first activity of the project was a community-wide sanitary survey to search for deficiencies in environmental sanitation practices responsible for the propagation of flies, mosquitoes, rats and other disease carriers. The survey included information of the number, location, and sanitary condition of privies; the storage, collection, and disposal practices utilized in handling refuse, including business and organic wastes; the number, location and sanitary condition of animal shelters and poultry pens; and the disposal of animal and poultry wastes. Other information pertained to housing sanitation, with specific data on the availability of municipal water to houses, the degree of rat infestation in residential and business areas, and the location of potential mosquito producing sources.

As the field information was collected, the findings in each survey item, such as existence of privies, adequacy of refuse storage, and quality of housing sanitation were illustrated on separate City maps.

The project personnel then assembled the data on vector-borne diseases and analyzed and considered all findings pertaining to sanitation and vectors in planning a control program. The three principal problems found from the survey were diarrheal diseases, deficiencies in sewage disposal, and unsanitary refuse handling practices.

The next step then, was for the Vector Control Unit, as the project staff was now called, to develop a public relations program and present recommendations for the solution of the problems to the people through talks to civic clubs, newspaper releases, radio broadcasts, telecasts and local demonstrations. As civic leaders and the public understood

various phases of community sanitation needs, requests for action began to come from the people.

It was then we knew that the program had a good chance to succeed. We had gotten through to the people. The next step was the initiation of corrective activities.

The first step was the correction of the unsanitary refuse handling practices by establishing a sanitary landfill. Activation of the landfill, which replaced an open dump, not only improved the sanitation of refuse handling, but also effected considerable economy in municipal refuse collection and disposal. The sanitary landfill, located nearer to the City than was the open dump, eliminated an average of 16 miles in each round trip of the collection trucks. The annual saving expressed in money was equivalent to twice the initial cost of the equipment purchased for operation of the landfill. The landfill is located in a 35 acre wasteland area that lies just behind the natural banks of the Rio Grande River near the International Bridge leading to Nuevo Laredo, Mexico. Eventually, in an estimated plan of from 5 to 7 years, this landfill site will be converted into a recreational and parking area.

But Laredo needed more than a sanitary method of refuse disposal. The survey also indicated a drastic need for an improved collection program, including the procurement of properly designed collection equipment and the establishment of balance routes. The collection equipment at the time consisted of a number of delapidated, pre-war, flat-bed trucks that were ready to be scrapped, and four good Pak-Mor units of 10 and 12 cubic yard capacity.

It was imperative, of course, that new equipment be obtained and after several months of study and deliberations, \$75,000 were invested in new collection trucks.

After extensive studies, careful planning, and the acquisition of the new equipment, refuse collection routes were activated in May of 1956, and municipal officials adopted a refuse-handling ordinance at the time the collection program was activated.

One section of the ordinance requires all business firms and householders to provide galvanized garbage containers of 20 to 32 gallon capacity. Proof that the people supported the plan was demonstrated by the purchase of more than 10,000 new containers during the first month of the program.

Another part of the project dealt with correcting deficiencies in sewage disposal practices. The 1954 survey showed that a large percentage of families living in the low socio-economic areas had outdoor privies. When the area map showing privy locations in the City was superimposed over the map of existing sewer lines, it was seen that 75% of these privies were serving residences to which municipal sewers were readily available. The total count of the number of privies in the City in the 1954 survey was 5,100.

A way had to be found to allow the privy owner with a modest income to be able to afford connecting to the sewer line and eliminating his privy. This was considered the number one problem and unless it was solved the entire Project could fail. It was solved, through the cooperation of civic leaders; financiers, plumbers and builders. One local bank, through the efforts of one of its vice-presidents, volunteered to make available Federal FHA Title I loans to almost everyone who wanted to eliminate his privy and connect to the sewer line.

After this victory, the Vector Control Staff went to work. A system was developed through which each home owner who had a privy would be seen to have the program explained to him and obtain his agreement to install sanitary plumbing over the "Option Selection Plan." Nine

options are presented from which the owner can select the arrangements, including, in some cases the approximate expenditure for making the improvement. The inspector provides consultative assistance as to types, costs, and financing, and guides then making suitable selections. With the program under way, the second big phase of the project came into existence in full force - education.

It was decided that the best way to conduct a public health educational program in Laredo would be to go to the people themselves. In some sections of our socio-economic areas televisions and radio programs and newspaper releases would not be effective. Also, it was felt that this personal contact idea would provide much better results, so a weekly neighborhood outdoor educational meeting was started - on vacant lots, at corner grocery stores and in "blocked-off" sections of streets. These programs are one hour long and include two films, one in English and one in Spanish, concerning vectors and vector-borne diseases; a short talk by a nurse on personal hygiene, handwashing, baby care, and sanitary handling of food in the home; a short talk by a sanitarian on enteric diseases, and at the finale another talk by a member of the Vector Control Unit on privy elimination, sanitary storage of refuse, and other individual and community sanitation needs.

Continuing with the third phase of the program, legislation, new legislation on excreta disposal practices and plumbing installations was passed by the City Council. One part of this new ordinance prohibits the building of new privies and makes it compulsory for anyone living within 200 feet of a sanitary sewer line to connect to that sewer line.

The fourth phase of our Project is enforcement. Every privy owner is visited personally at least three times and at least three letters are sent to him by the Vector Control Unit asking him to eliminate his

privy. Everyone is given more than a fair chance to do it in any of nine ways, and his personal economic situation is carefully studied by members of the staff. If a person refuses to connect, a final "30 day-notice" is sent to him, after which his case is referred to the City Attorney for prosecution.

FLY AND MOSQUITO SURVEY

Perhaps the two most interesting parts of the survey, from a public health engineer's standpoint, were the fly and the mosquito surveys, made in conjunction with the overall sanitary survey.

An extensive mosquito survey in 1954 indicated that these insects are of secondary importance in Laredo as disease vectors. *Culex quinquefasciatus* and some floodwater mosquitoes, principally in the *Aedes* genus, were the most commonly found mosquitoes. The *Aedes aegypti* mosquito, urban vector of yellow fever, has not been found in Laredo for several years. Although irrigation practices are carried out in this area, no waste water was encountered and no *Culex tarsalis* larvae or adults were collected during the survey.

A fly dispersal study within the area of Laredo and Nuevo Laredo, Mexico, was particularly interesting since it involved procedures never before used in the southwestern part of the United States. With the use of several large traps, which were placed in strategic locations, 50,000 flies were caught on both sides of the river. These flies were then fed radioactive isotopes in a solution of milk and honey during a period of 24 hours. Then, half of these flies were dyed in green and the other half in red. The red flies were let loose in Nuevo Laredo and the green were set free in Laredo, Texas. Then, for the next ten days, with the use of the same traps, approximately one half million flies were captured with the intention of recapturing as many of the original 50,000

as possible. It was recognized that at least one percent of the original number would have to be recaptured in order for the experiment to be called a success.

Actually in the number caught in the recapturing process, almost two percent of the original number were recaptured. Geiger Counters were used to separate the radioactive flies from the others as each new group of flies was brought in. Then, a drop of acetone on each radioactive fly would tell the color of the fly. The result seen from this experiment was that eventhough the prevailing winds during all the days of the experiment came from the Mexican side towards Texas, with an average velocity of 27 miles an hour, for every fly that was set free in Nuevo Laredo and caught in Laredo, there were eight caught in Nuevo Laredo that had been set free on the Texas side. The conclusion was, of course, that the wind only seemed to bring highly attractive odors to the flies, and did not in any other way contribute to the migration of flies.

Another important finding was that, on both sides, cattle yard and other places having animal wastes were the principal fly attractants. An ordinance prohibiting the keeping of certain animals such as hogs, goats and donkeys, and requiring permits for maintaining large animals such as cows and horses, was then adopted.

RODENT CONTROL

In 1944 Laredo had an epidemic of typhus fever. In that year a typhus fever control program was started and, in a survey, it was found that approximately 75% of the premises in the City were rat infested. In 1954 this figure had been reduced to less than 25%.

The Environmental Sanitation Program was supplemented, for rodent control, with the extensive use of anticoagulants, chiefly warfarin and fumaran.

PRESENT SITUATION AFTER FIVE YEARS OF PROJECT

The first general environmental sanitation survey made since the original, was conducted in the fall of 1959. Five years after the Project began the total number of privies eliminated in the City (as of July 31, 1960) amounted to 3,113, with a total number of 2,330 remaining. This proved the illegal construction of approximately 340 new privies during the five year period, but of these 246 had been built where there are no extensions to the sewer lines.

A second highly significant finding was the acquisition by more than 85% of the residences of an approved galvanized covered garbage can. Below can be seen the deficiencies in four categories of the total number of homes in Laredo in 1954 and 1959.

	OF TOTAL NUMBER OF HOUSES	
	1954	1959
1. Deficient Housing	38 %	26 %
2. Privies	33 %	16 %
3. Deficiencies in Refuse Storage	83 %	40 %
4. Animals and Poultry	28 %	11 %

Another important finding was a cut from an average infant mortality due to diarrhea of 18 per year in 1954 as compared to one death in 1958 and two in 1959. (See figure II)

A direct relationship can be seen between this decrease in diarrhea and the marked decrease in the fly population in the City. The average Scudder Grill Fly Count in 1954 was 7.4 and the average count in 1959 was 2.0. This is primarily attributed to the elimination of a great per cent of the attractants found in 1954, but our fly control program has also consisted of yearly application of insecticides for short periods in the summer. The insecticides used have been DDT and malathion.

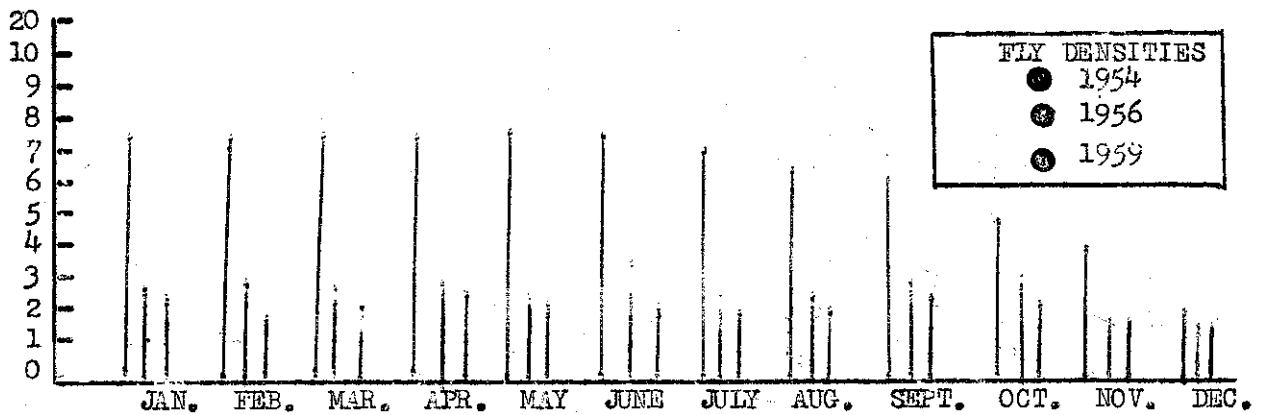
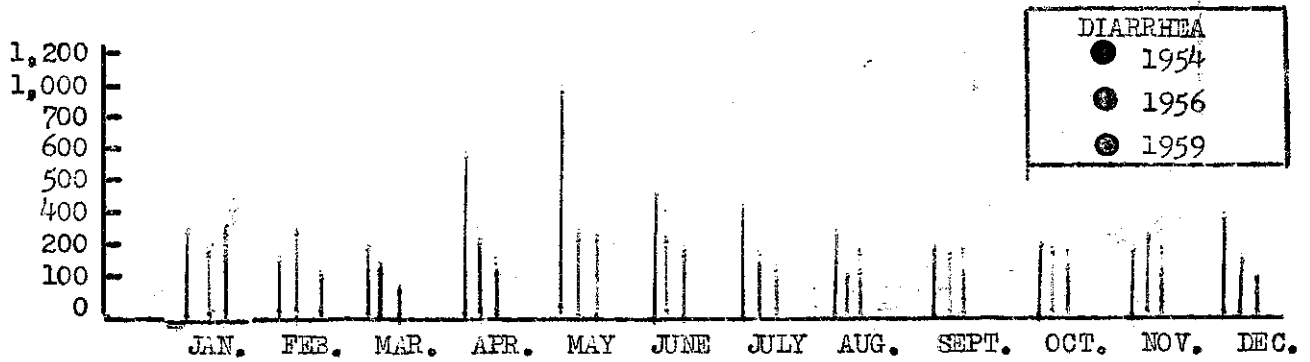
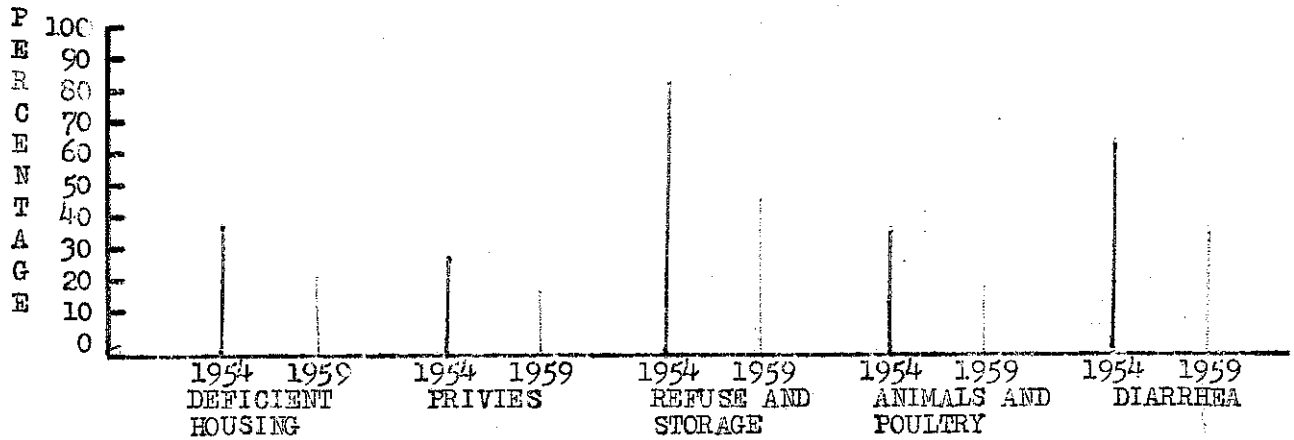
The rodent phase of the survey was conducted by the Fish and Wildlife Service, United States Department of the Interior, who have fol-

lowed the progress of the Project with great interest as they assisted city authorities during the 1944 epidemic. The results showed an almost complete absence of rats in Laredo, as rats were found only in less than one per cent of the business and residential buildings of the City. With the elimination of the rat, there has not been a single case of typhus in Laredo since 1953.

One of the chief activities of the Vector Control Unit now is to instruct others in procedures being used in the Laredo Project. Many engineers and sanitarians from India, Nepal, and Central and South America have spent from two to six weeks in Laredo learning the Project.

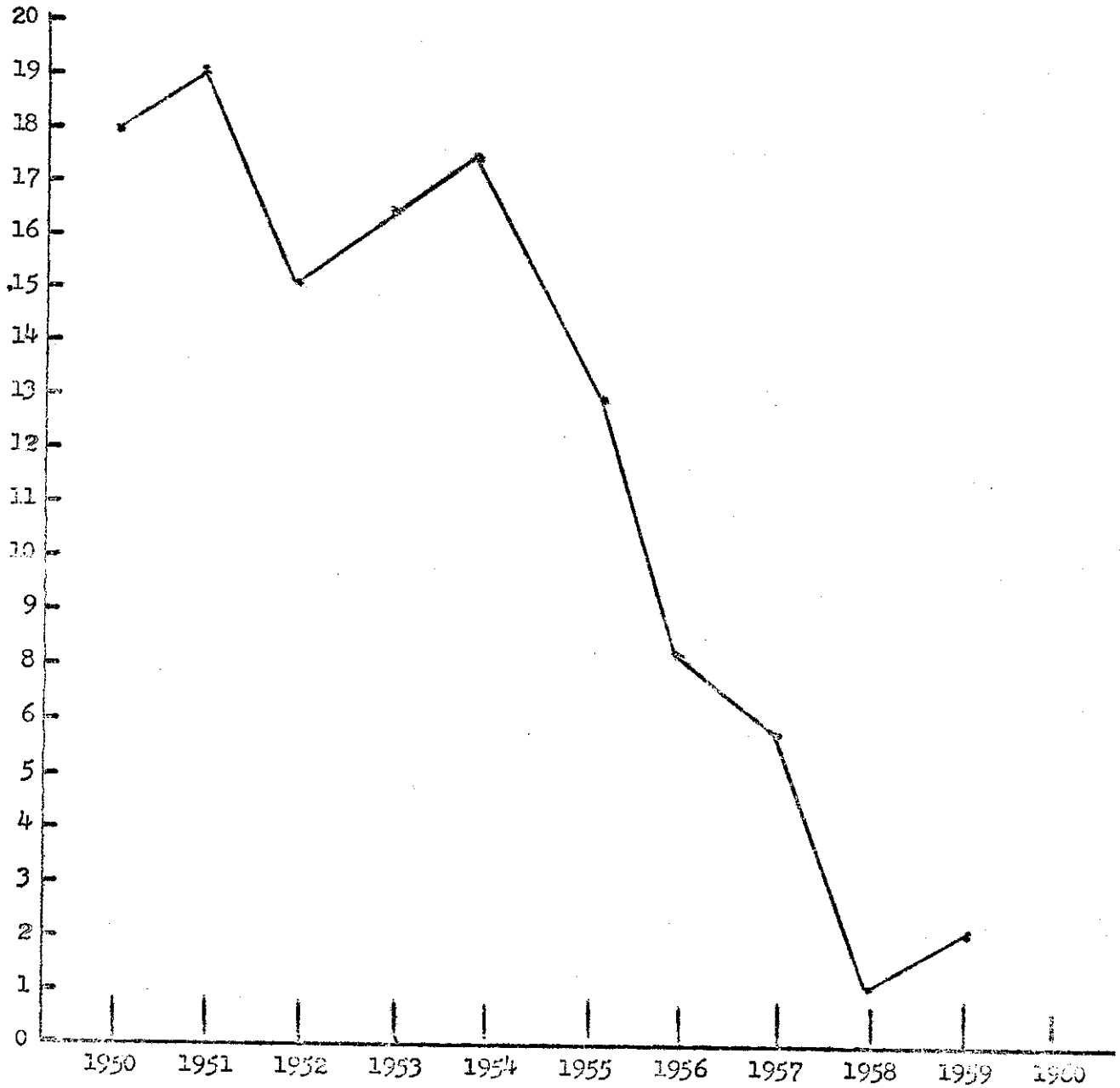
Laredo's Vector Control Demonstration Project owes its continuing success, in large measure, to the excellent team work among municipal departments. The thorough planning, coordinated and well-timed execution, and the public acceptance and support point to a long-range program with even greater sanitation and public health benefits to Laredo in the future.

**DEFICIENCIES IN ENVIRONMENTAL SANITATION
CATEGORIES IN PERCENTAGE AND DIARRHEA / 1000**



INFANT MORTALITY DUE TO DIARRHEA

Fig. II



LAREDO-WEBB CO. HEALTH DEPT.
VECTOR CONTROL UNIT
300 Arkansas Ave. - RA 2-3481