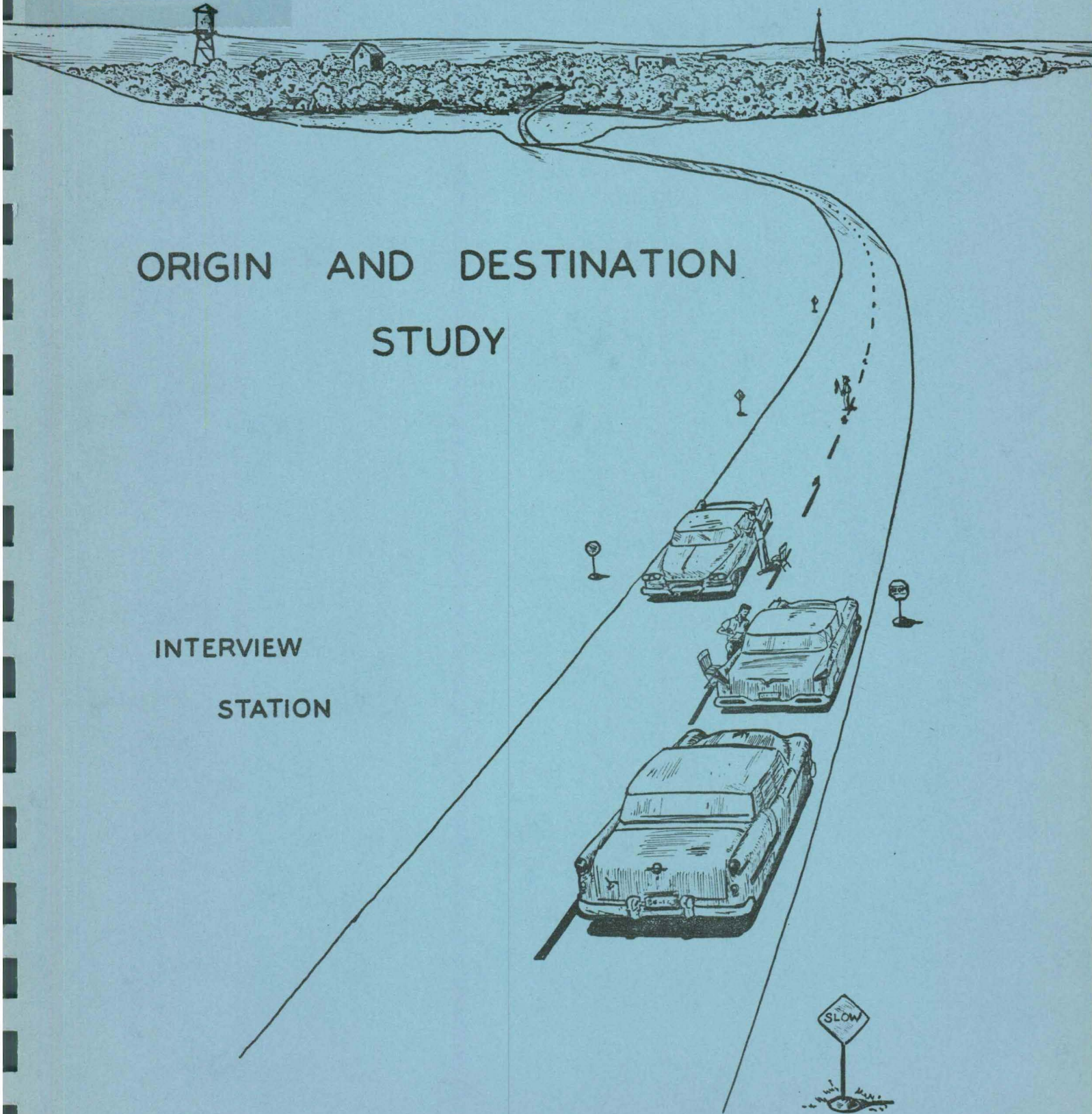


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# STORM LAKE

## ORIGIN AND DESTINATION STUDY

INTERVIEW  
STATION





Storm Lake Urban Area  
Origin and Destination  
Traffic Survey

March 1959

Prepared By  
Highway Planning Section  
Safety and Traffic Department  
Iowa State Highway Commission  
In Cooperation With the  
United States Bureau of Public Roads



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## DEFINITIONS

### Urban Area

An area including and adjacent to a municipality or other urban place of 5,000 or more population as shown by the latest available census.

### Corporation Line

A hypothetical line delimiting the municipal area and often called the City Limits.

### Urban or Corporate Area Traffic Survey

A survey of highway travel designed to collect detailed information concerning trip origins and destinations within a selected urban or corporate area.

### External Survey

A study in which trip data is obtained by interviewing motor vehicle operators intercepted at external stations.

### External Station

An interview point located on a principal rural highway which crosses the corporation or urban area line. It is always set up outside of the urban or corporate area, but as close as is practical and possible to the line delimiting this area.

### Tract

One of the several homogeneous sections into which the study area is divided.

### Central Business District (CBD)

The section containing the concentrated commercial and retail business center, in most cases, tract 001.



Trip

A one-way journey between a point of origin and a point of destination.

Origin

The stated beginning point of a single trip.

Destination

The stated terminating point of a single trip.

External Local Trip

A trip with either the point of origin or the point of destination located within the corporate limits, the performance of which trip involves travel through an external interview station.

External Through Trip

A trip with both points of origin and destination located outside the corporate limits, the performance of which trip involves travel through an external interview station and into, through, and out of the corporate or urban area.

Duplicated Through Trips (Duplicates)

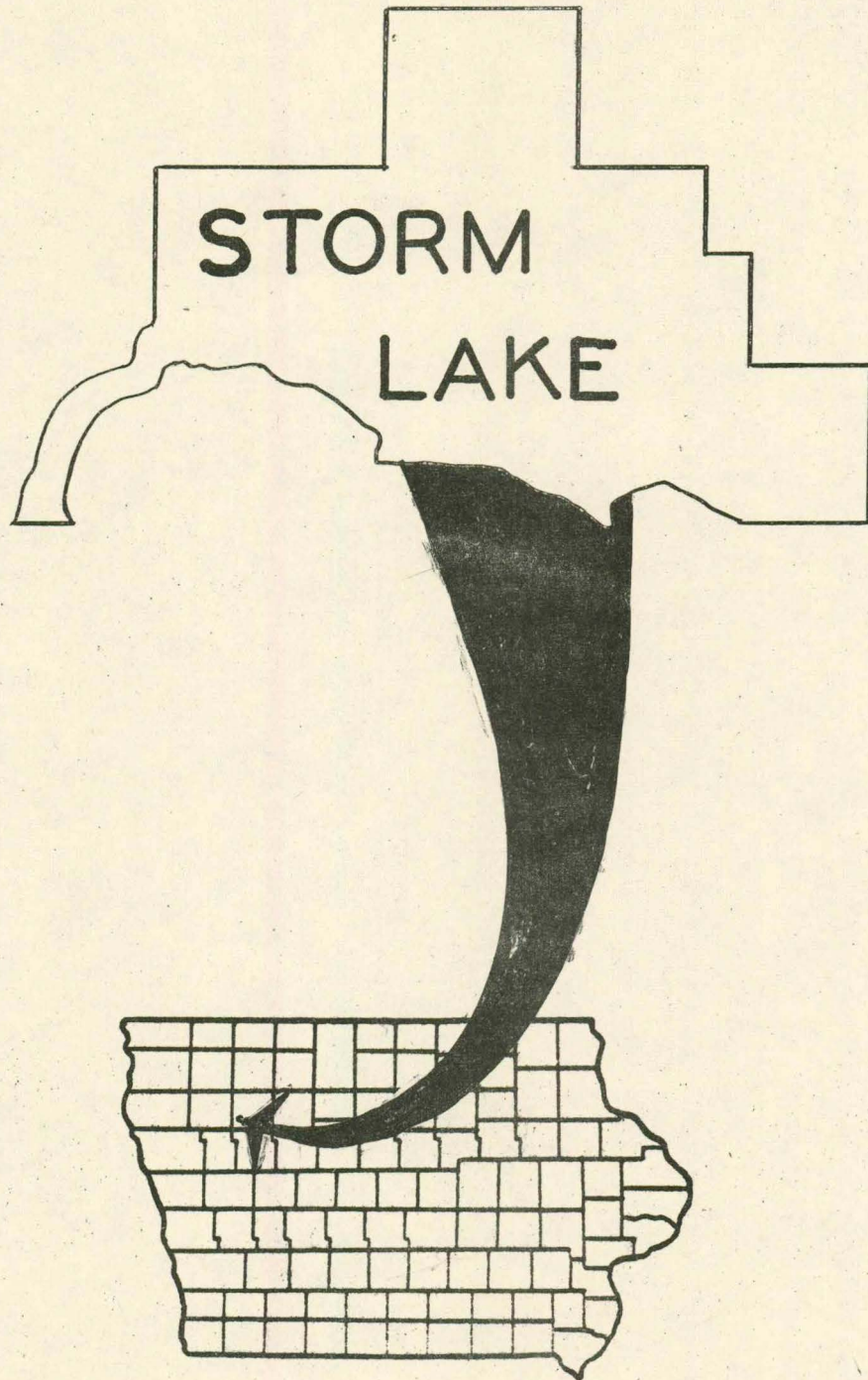
Trips traveling completely across the urban or corporate area, and thereby passing through two interview stations.

Average Weekday

This includes Monday through Friday inclusive.



PART I  
SUMMARY





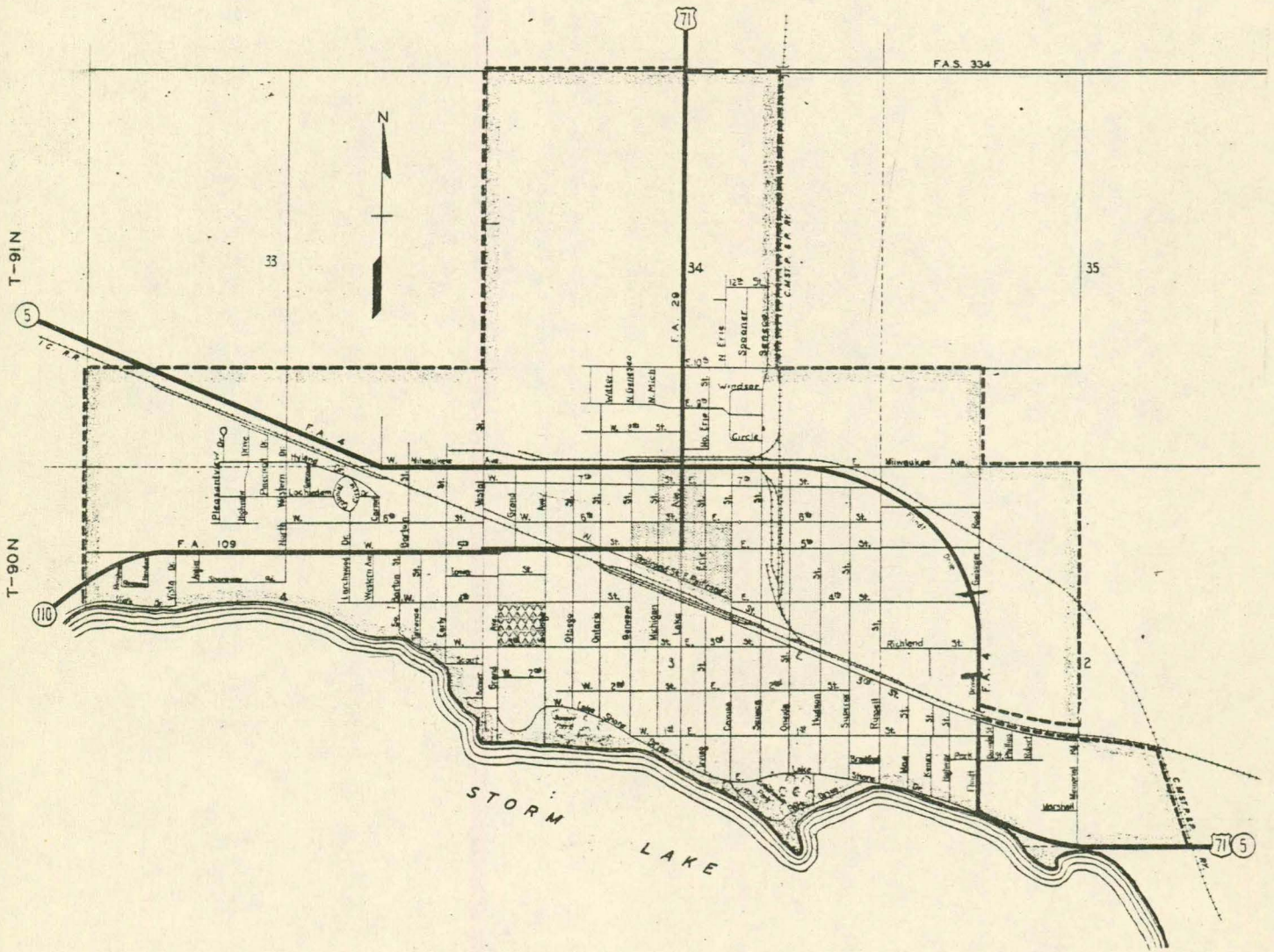
This report of the Storm Lake Urban Area Traffic Survey describes briefly the characteristics of the urban area pertinent to the local problem of highway transportation and presents and analyzes the data gathered in the survey. All trip data obtained in the survey are presented in terms of the number of trips per day. They are classified by the origins and destinations of these trips and by the areas within the city, to which and from which they were made. The only information obtained was from those trips crossing the city limits, and this was done by maintaining roadside interview stations at the entrances of the principal rural highways into the city. These trips, for which the data were obtained, may be defined as "rural trips." Knowledge of the number of "urban trips" or "intra-city trips" is not available in this external type survey.

For this particular study, information was gathered by interviewing 78.10 per cent of the average weekday traffic. After the expansion of this information it was found that for an average weekday in July 1958, a total of 8,286 trips crossed the Storm Lake city limits. Out of this total 20.54 per cent were classified as external through trips which passed via the central business district. Of all trips passing through the interview stations 32.81 per cent had termini in the central business district. However, another 20.86 per cent of the total had termini in the residential and intermediate areas between the station and the central business district. In addition to this, 25.79 per cent of the total trips passing through the interview stations had routes via and termini beyond the central business district.



PART II  
HISTORY AND CHARACTERISTICS  
STORM LAKE URBAN AREA

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A. HISTORY

In 1857 three settlers arrived in the Storm Lake area and lived for some time in a tent by the lake. The city itself was named Storm Lake by an elderly trapper who lived near the lake and experienced a severe storm there. In 1868, L. A. Clemmons settled just west of Storm Lake, planting a large orchard later known as the Clemmons Orchard. J. E. Russell established a home in the present town site the following year.

The year 1870 was marked by many important events for the rapidly growing settlement. The town was platted in July, and in August the first lots were sold. The first store opened, and a protestant church was erected. For a time it housed both the Baptist and the Methodist congregations. The Dubuque and Sioux City railroad reached the town, connecting it to Fort Dodge and Sioux City. Buena Vista County's first newspaper "The Pilot" was published on December 26 by Colonel Vestal and E. D. Young. The following year a school was started. Miss Alma L. Gates taught 15 pupils who met in private homes for the beginning sessions. The next year a small frame building was constructed and used as a school house. The new teacher was Miss Honeywell.

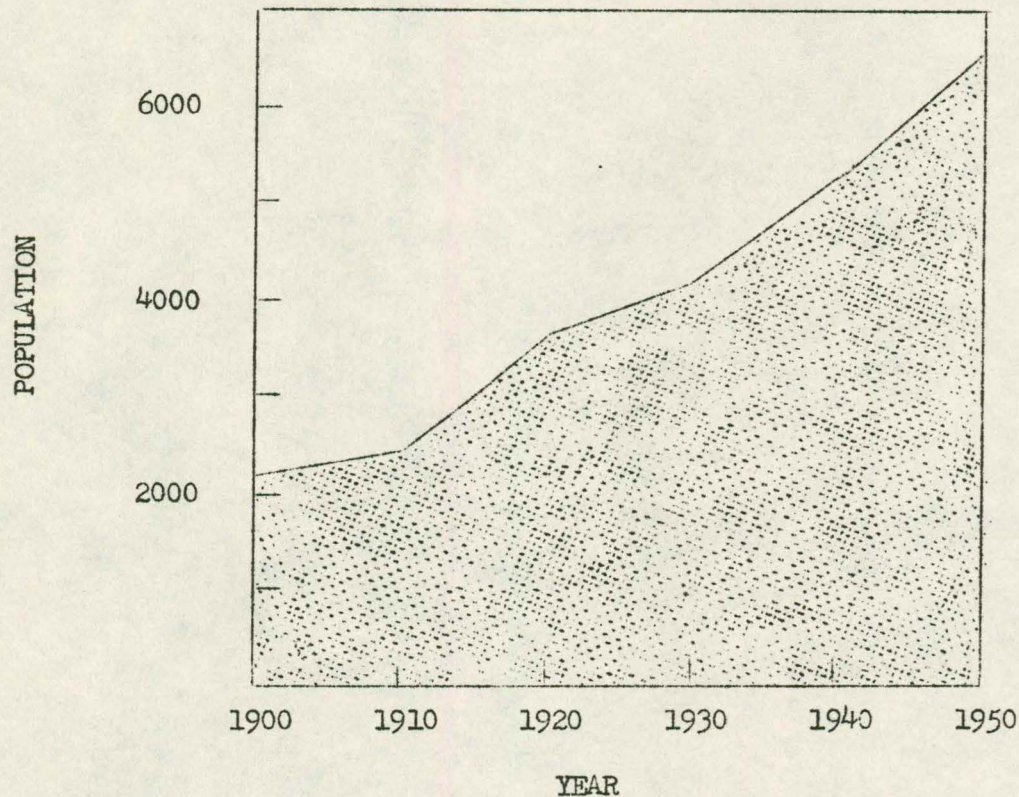
In February 1873, the town was incorporated, and S. W. Hobbs was elected mayor at the first election held March 3, 1873. Storm Lake became the county seat of Buena Vista County on October 5, 1878, and in 1891 Buena Vista College was founded there. The first telephone was installed by James F. Toy in 1893, for use in the Toy Bank located at 514 Lake Street. In 1895 a switchboard was installed serving 70 customers. Today there are 4,400 telephones in the city and immediate



rural area.

The population of Storm Lake has nearly tripled since 1900. This growth in Storm Lake is illustrated below.

STORM LAKE POPULATION TRENDS



B. CHARACTERISTICS

Storm Lake is located in the third tier of counties east of the Missouri River and the third tier of counties south of the Iowa-Minnesota border. The incorporated area is roughly rectangular and covers about two square miles. A 3,000 acre lake forms an irregular boundary along the south side of the city and provides a swimming



beach and vacation area for a number of tourists every summer.

The central business district is in the approximate center of the incorporated area. Retail sales and service firms are concentrated principally in this area with the larger industrial businesses located along railroads. The Dekalb Hybrid Seed Corn Company, Kingan Packing Company, Storm Lake Canning Company, and Vilas and Company have large plants in Storm Lake. They process agricultural products produced in the surrounding rural areas and distribute them throughout the nation.

Two railroads traverse the city. The Illinois Central crosses Storm Lake diagonally and borders the south side of the central business district. The Chicago, Milwaukee, St. Paul, and Pacific Railroad passes through the east part of the municipality. Highway Iowa No. 110 passes directly through the heart of the central business district and intersects with Iowa 5 and U.S. 71 at the north edge of the central business area.







#### A. INTRODUCTION

Part III of this report describes briefly the purposes and objectives, procedures, and findings of the Storm Lake Urban Area Traffic Survey. Summaries and illustrations of the significant data classifications are included. All information was collected during the period of July 14 to 17, 1958, inclusive. It is reported in terms of the number of trips daily on an average July weekday in 1958 and classified by trip origins and destinations.

#### B. PURPOSES AND OBJECTIVES

The purposes of this survey were to determine the origin, destination, and number of daily trips into, out of, and through the urban area. Ultimate objectives were to assemble and present, as clearly as possible, the traffic patterns and volumes as they exist. This presentation reveals the amount of street congestion which may be attributed to through highway travelers, and the exact routes by which these travelers enter and exit the urban area. It will also assist city officials and highway administrators in determining the location and type of street or highway improvements necessary to alleviate particular traffic problems.

#### C. PROCEDURES

The data for the determination of the origin and destination of all trips were gathered through roadside interviews of motor vehicle operators. These interviews were obtained at the external stations located on each rural road entrance to the city. All vehicles were stopped as they passed through the station and the motor vehicle operator was asked the purpose, origin, and destination of this par-



ticular trip. The interviewers also recorded for each vehicle, from visual inspection, other data such as the type, the place of registration, and the number of passengers.

Each interview station was operated for 16 hours starting at 6 AM and ending at 10 PM. This scheme of operation provided for coverage of all but a small portion of the trips passing through each station in the twenty-four hour day. This small portion of traffic was accounted for by portable automatic traffic recorders which were operated continuously at each station for the entire period of the survey. Factors obtained by using these recorder tapes provided means for converting all of the data to average twenty-four hour weekday values. The information gathered was then coded and punched on I.B.M. cards to expedite tabulation.

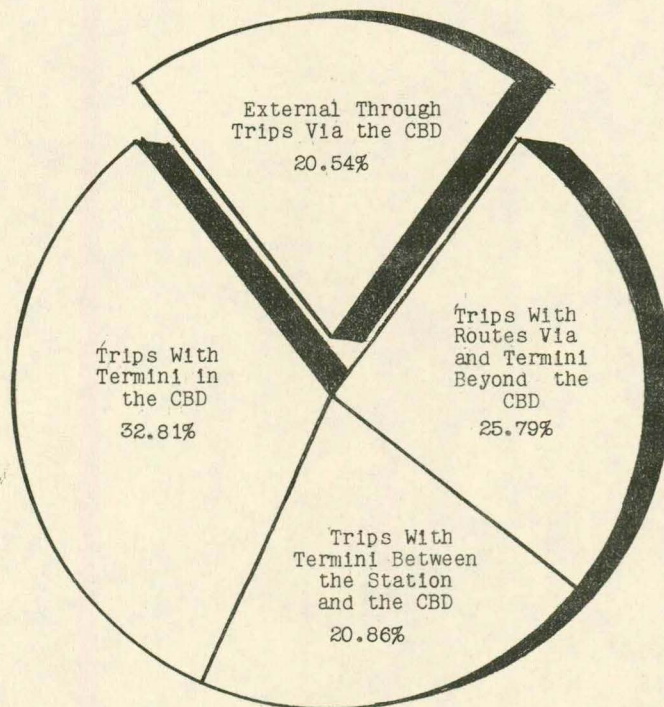
#### D. FINDINGS

Most of the significant findings of this survey have been summarized in the ensuing tables and charts. Any other combinations of related material may be found by referring to the trip tabulation sheet in the appendix.

Three traffic flow diagrams will be found in appropriate locations throughout the presentation of the findings. The first one encountered merely gives a pictorial view of the entire traffic pattern within the area. A traffic flow map depicting all external through trips will be found next, immediately following the external through trip table. The third and final flow diagram is found following the group of tables relating all of the external local trips to their termini.



The following illustration represents a net total trip summarization and percentage distribution of the termini for all trips passing through the external interview stations on an average weekday in July 1958. It should be noted that the few external through trips having termini on non-primary rural roads, as listed on the trip tabulation sheet in the appendix, are all included with the external local trips.



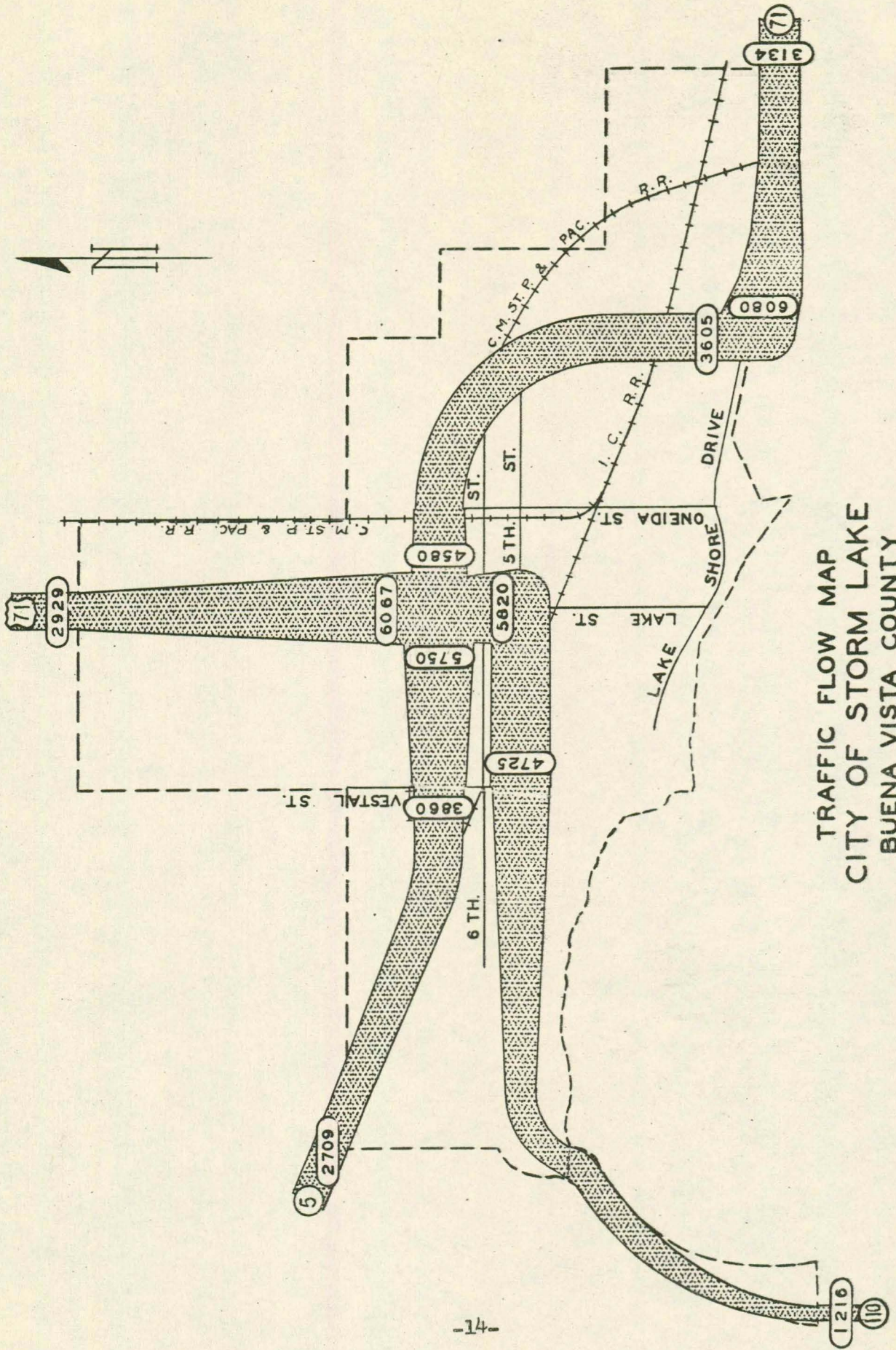


1. Traffic and Interview Summary:

By using the above explained procedures the information in the following table was obtained. The external stations are listed with the total traffic passing each station on an average July weekday 1958, the total number of interviews taken at each station, and the per cent that this interview figure is of the total traffic figure.

Table 1 Traffic Entering or Leaving the Storm Lake Urban Area by Way of the Principal Rural Road Entrances						
External Station Locations	Average Weekday Traffic July 1958				No. of Inter- views Taken	Per Cent Inter- viewed
	Passenger Cars and Pick-Ups	Single Unit Trucks	Truck Combi- nations	Total		
US 71 N	2,599	193	137	2,929	1,951	66.61
US 71 & Ia 5 SE	2,709	227	198	3,134	2,605	83.12
Ia 110 S	1,131	72	13	1,216	1,069	87.91
Ia 5 W	2,384	182	143	2,709	2,166	79.96
Total	8,823	674	491	9,988	7,791	78.00





TRAFFIC FLOW MAP  
 CITY OF STORM LAKE  
 BUENA VISTA COUNTY  
 AVERAGE WEEK DAY TRAFFIC JULY - 1958



2. External Through Trips Via  
the Central Business District:

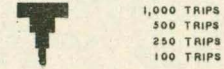
Table 2 presents a very good comparison between the total trips passing through each external station and the number or per cent of these trips which pass directly through the urban area via the central business district. This same relationship is again presented both numerically and on a percentage basis for the summation of all trips through all stations. From this presentation it is shown in the following table that 1,702 trips, or 20.54 per cent of the total trips passing through all external stations, were external through trips traveling via the central business district.

External Station Location	Total Trips Through Station	Through Trips Via The CBD	
		Number	Per Cent of Total
US 71 N	2,929	1,137	38.82
US 71 & Ia 5 SE	3,134	1,268	40.46
Ia 110 S	1,216	208	17.11
Ia 5 W	2,709	791	29.20
Less Duplicates	1,702	1,702	100.00
Total	8,286	1,702	20.54

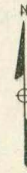


CHART NO. 1  
ORIGIN OR DESTINATION OF TRIPS  
BETWEEN PRIMARY ROAD ENTRIES  
IN THE URBAN AREA  
OF  
STORM LAKE  
JULY AVERAGE WEEKDAY TRAFFIC 1958

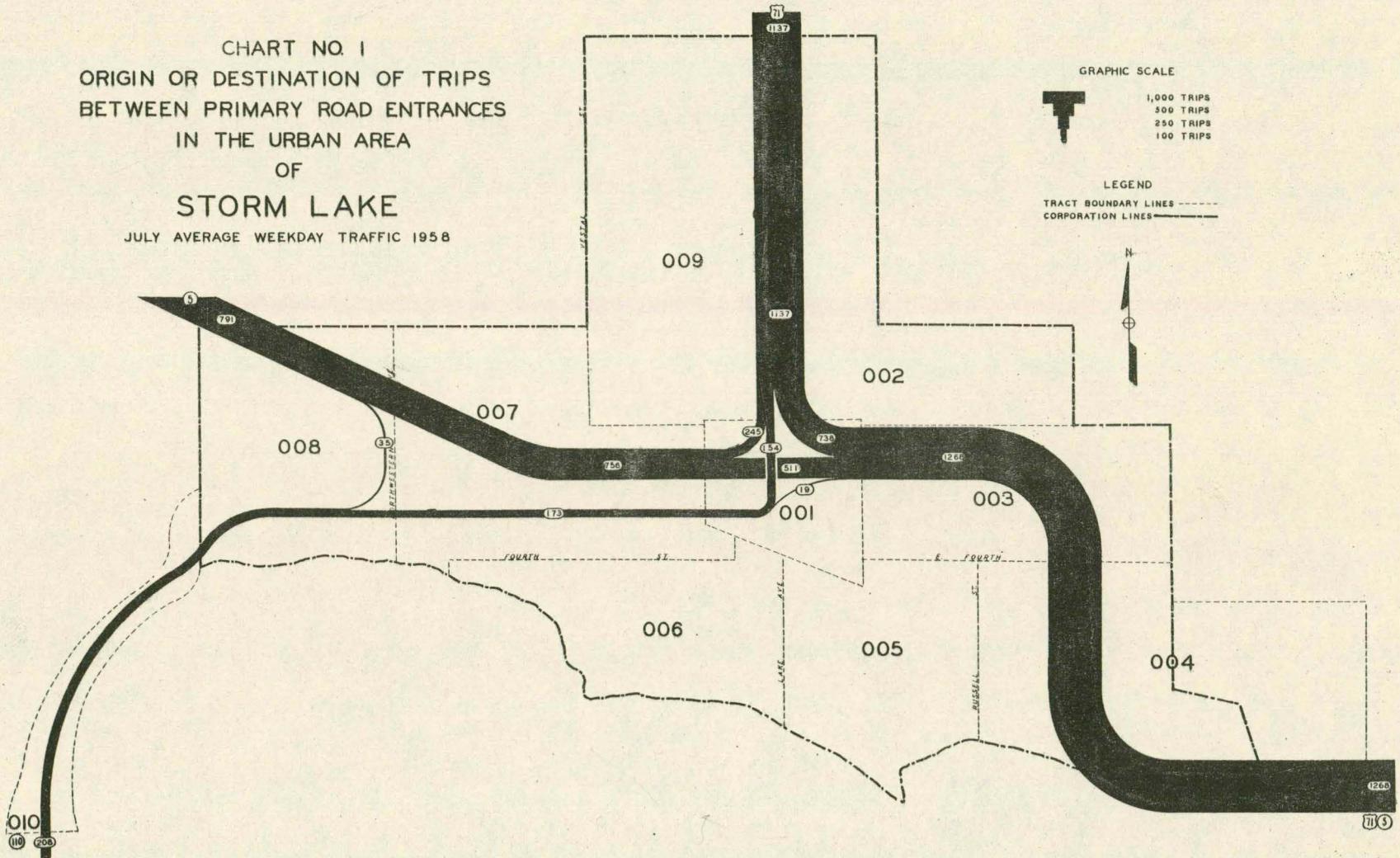
GRAPHIC SCALE



LEGEND  
TRACT BOUNDARY LINES - - - - -  
CORPORATION LINES \_\_\_\_\_



-16-





3. Trips Through Each Station With  
Termini in the Central Business District:

Table 3 compares the total trips passing through each station with the percentage of these respective trips having termini in the central business district. It also relates the total of all trips passing through all of the stations to the number of these same trips having termini in the central business district. On this relative basis 32.81 per cent of the total trips passing through all external stations had termini as explained above.

Table 3 Trips Through Each Station With Termini in the Central Business District on an Average Weekday in July 1958			
External Station Location	Total Trips Through Station	Termini in the CBD	
		Number	Per Cent of Total
US 71 N	2,929	798	27.24
US 71 & Ia 5 SE	3,134	752	23.99
Ia 110 S	1,216	445	36.59
Ia 5 W	2,709	724	26.72
Less Duplicates	1,702	---	----
Total	8,286	2,719	32.81



4. Trips Through Each Station With Termini  
Between the Station and the Central Business District:

The information contained in Table 4 reveals a comparison of the total trips passing through each station and the percentage of these trips having termini in the residential and intermediate areas between that station and the central business district. In addition to this, the summation of the total trips passing through all of the external stations is compared to the percentage of these total trips having termini as explained above. These comparisons are pointed out both numerically and on a percentage basis. As can be seen from the table, 1,728 trips, or 20.86 per cent of the total trips passing through all of the external stations, had termini in the residential and intermediate areas between the stations and the central business district.

External Station Location	Total Trips Through Station	Termini Between Station and CBD	
		Number	Per Cent of Total
US 71 N	2,929	156	5.33
US 71 & Ia 5 SE	3,134	849	27.09
Ia 110 S	1,216	294	24.18
Ia 5 W	2,709	429	15.84
Less Duplicates	1,702	----	-----
Total	8,286	1,728	20.86



5. Trips Through Each Station With Routes Via  
and Termini Beyond the Central Business District:

In Table 5 a comparison is made between the total trips passing through each external station and the number and percentage of these trips which pass directly through and have their termini beyond the central business district. It can also be seen from the following table that 2,137 trips, or 25.79 per cent of all trips passing through all stations, go directly via the central business district and have their termini beyond it.

Table 5 Trips Through Each Station With Routes Via and Termini Beyond the Central Business District on an Average Weekday in July 1958			
External Station Location	Total Trips Through Station	Route Via-Termini Beyond CBD	
		Number	Per Cent of Total
US 71 N	2,929	838	28.61
US 71 & Ia 5 SE	3,134	265	8.46
Ia 110 S	1,216	269	22.12
Ia 5 W	2,709	765	28.24
Less Duplicates	1,702	---	-----
Total	8,286	2,137	25.79





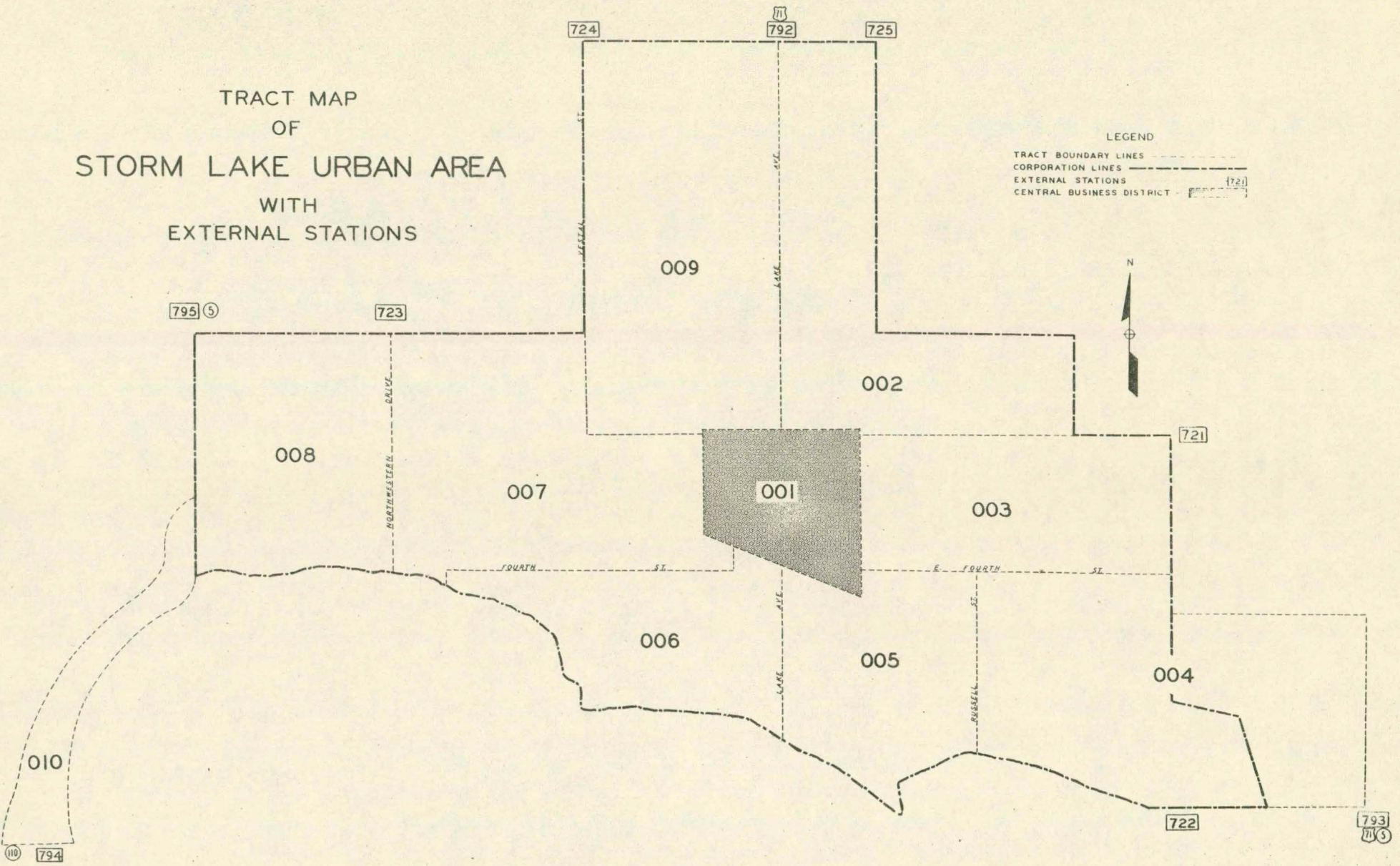


A P P E N D I X



TRACT MAP  
OF  
STORM LAKE URBAN AREA  
WITH  
EXTERNAL STATIONS

LEGEND  
TRACT BOUNDARY LINES - - - - -  
CORPORATION LINES - - - - -  
EXTERNAL STATIONS (721)  
CENTRAL BUSINESS DISTRICT - - - - -





1958 Storm Lake Origin and Destination  
 Total Trips Through Stations Located on Primary's  
 U.S. 71N., U.S. 71 & Ia. 5SE., Ia. 110S., Ia. 5W.,  
 Average Weekday Traffic in July

		Storm Lake Urban Area										External Area							External Total	GRAND TOTAL				
		Central Business District	Northeast	East	Southeast	South	Southwest	West-Central	West	Northwest	West Shore	Storm Lake Total	U.S. 71 N.	U.S. 71 & Ia. 5 S.E.	Ia. 110 S.	Ia. 5 West	Loc. Rd. E.	E. Shore Rd.			Loc. Rd. NW.	Loc. Rd. N.	Loc. Rd. NE.	
TRACT	Trip Origin	001	002	003	004	005	006	007	008	009	010	Storm Lake Total	792	793	794	795	721	722			723	724	725	
TRACT	Trip Origin	Trip Destination																						
Storm Lake Urban Area	001 Central Business District												388	334	228	357							1307	1307
	002 Northeast												29	25	8	25							87	87
	003 East												46	59	24	62							191	191
	004 Southeast												126	162	34	115							437	437
	005 South												35	67	41	58							201	201
	006 Southwest												86	95	45	89							315	315
	007 West-Central												60	83	52	87							282	282
	008 West												50	36	47	86							219	219
	009 Northwest												53	21	16	43							133	133
	010 West Shore														1	7	3						11	11
	Storm Lake Total												873	883	502	925							3183	3183
External Area	792 U.S. 71 North	410	41	50	143	56	78	54	35	29	2	898		374	83	127		6			2	592	1490	
	793 U.S. 71 & Ia. 5 S.E.	418	29	60	167	76	82	68	40	16		956	364		10	242		18				634	1590	
	794 Ia. 110 South	217	7	30	49	33	52	39	49	22	3	501	71	9		15		3				98	599	
	795 Ia. 5 West	367	25	71	131	65	83	95	89	26		952	118	269	20			33					440	1392
	721 Local Road West																							
	722 East Shore Road												11	9	2	8							30	30
	723 Local Road Northwest																							
	724 Local Road North																							
	725 Local Road Northeast													2									2	2
	External Total	1412	102	211	490	230	295	256	213	93	5	3307	566	661	115	392		60			2	1796	5103	
	GRAND TOTAL	1412	102	211	490	230	295	256	213	93	5	3307	1439	1544	617	1317		60			2	4979	8286	



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