

EDWARDS UNDERGROUND
WATER DISTRICT

REPORT 96-02

LEAK DETECTION / LOCATION SURVEY REPORT

FOR

THE CITY OF KIRBY

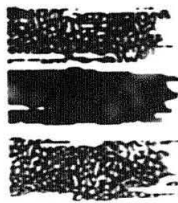
BEXAR COUNTY, TEXAS

MAY 1, 1995 - MAY 16, 1995

JUNE 6, 1995 - JUNE 30, 1995

OCTOBER 25, 1995 - DECEMBER 12, 1995





EDWARDS UNDERGROUND
WATER DISTRICT

6. 25-7.5

March 1, 1996

OFFICERS

JERRI W. MARTIN
CHAIR
HANS R. F. HELLAND
VICE CHAIRMAN
JACK R. OHLRICH
SECRETARY
GUENTER KRELLWITZ
TREASURER

Mr. Rick T. Cortes
City Manager
City of Kirby
112 Bauman
San Antonio, Texas 78219

DIRECTORS

BEXAR COUNTY

CAROL G. PATTERSON
COUNTY AREA CHAIR
GENE L. AMES, III
JO ANN S. DE HOYOS
HANS R. F. HELLAND
GUENTER KRELLWITZ
ERNEST QUIROGA

COMAL COUNTY

JACK R. OHLRICH
COUNTY AREA CHAIR
S. CRAIG HOLLMIG
KENNETH G. JAKS

HAYS COUNTY

A. KAYLENE RAY
COUNTY AREA CHAIR
HARRY BISHOP
JERRI W. MARTIN

RICK HILGNER
GENERAL MANAGER

Dear Mr. Cortes:

We are pleased to submit this final report of the leak detection survey performed on City of Kirby water distribution system. This report lists findings by separate categories for your convenience.

The Edwards Underground Water District (District) appreciates the cooperation and assistance you have provided during the survey. Special thanks to Sidney Lankford, Sr. for his attention and patience during the survey. The District hopes that the information provided herein will be beneficial to the City in identifying and targeting areas of actual water loss and potential water loss.

The District would appreciate the opportunity to recheck the remaining 47 leak sites after all repairs are completed.

This survey has demonstrated the water saving potential of the Leak Detection Program. Maintaining the best possible program is vital in order to continue the successes realized. For this reason, the District is soliciting your comments, both positive and negative, and any suggestions you may have on how to improve our program.

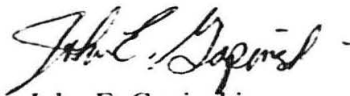
Please respond to this request candidly, as the District cannot improve on deficiencies or support positive measures without the knowledge of such conditions.



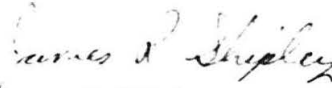
Mr. Rick T. Cortes
March 1, 1996 - Page 2

Please convey our commendations and thanks to Raul De Torro, Pedro Barrientos, Herbert Walker, and Lesly Davee for their assistance in this project. The Edwards Underground Water District sincerely appreciates your water conservation efforts. Should you require additional information regarding this report or have any water related questions, please do not hesitate to call.

Sincerely,



John E. Gapinski
Leak Detection Technician I



James R. Shipley
Leak Detection Technician II

JEG:JRS/ bmc

Enclosures

cc: Mayor Pryor Smith, City of Kirby
Sidney Lankford, Director of Public Works

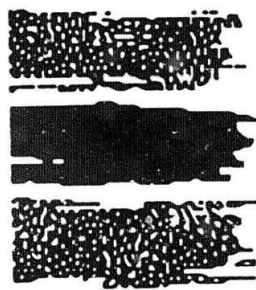
002jrs

**LEAK DETECTION / LOCATION SURVEY REPORT
FOR THE
CITY OF KIRBY
BEXAR COUNTY, TEXAS**

**May 1, 1995 -- May 16, 1995
June 6, 1995 -- June 30, 1995
October 25, 1995 -- December 12, 1995**

By

John E. Gapinski and James R. Shipley
of the
EDWARDS UNDERGROUND WATER DISTRICT
Division of Planning and Environmental Management
Leak Detection/Location Program
January, 1996



**Edwards Underground Water District
1615 N. St. Marys
P. O. Box 15830
San Antonio, Texas 78212-9030
210-222-2204**

TABLE OF CONTENTS

	<u>Page</u>
SUMMARY.....	1
DISCUSSION.....	2
RECOMMENDATIONS AND COMMENTS.....	6

APPENDICES

- A. Service Leaks
- B. Fire Hydrants Leaks
- C. Meter Box Leaks
- D. Customer Side Leaks
- E. Added To Plats
- F. Unable To Locate
- G. Repairs Needed

ENCLOSURES TO REPORT

- A. Revised Master Water System Distribution Plats
- B. Highlighted Revised Plat With General Notes

SUMMARY

On August 25, 1993, the Edwards Underground Water District (EUWD) received a request from the City of Kirby to perform a leak detection / location survey on its water distribution system. A pre-survey conference was held April 20, 1995, at the City of Kirby Public Works Center to discuss the work to be performed. It was agreed that EUWD staff would perform sonic leak detection on all available access points and computerized leak location as needed. A final report, including any unusual system condition found and an updated master water plat would be submitted to the City at the conclusion of the survey.

John E Gapinski of EUWD began the survey on May 1, 1995. With the approval of Mr. Sidney Lankford, Sr., Public Works Director for the City of Kirby the survey was halted and restarted on three occasions. The survey was performed May 1, 1995 -- May 16, 1995, June 6, 1995 -- June 30, 1995, and October 25, 1995 -- December 12, 1995. Over the course of the survey, EUWD staff surveyed a total of 3,080 access points including 2,647 customer service connections, 122 fire hydrants, 292 main valves, and 19 other access points covering 28.18 miles of distribution main. Computer leak sound correlation was performed at one location by EUWD staff.

EUWD staff detected 104 utility side leaks and 39 customer side leaks for a total of 144 leaks. The utility side leaks included 68 service leaks, 31 meter box leaks, 1 main valve leak, 1 main leak and 3 fire hydrant leaks. EUWD staff estimates 30,661 gallons of water per day has been saved by the repair of 54 utility side leaks as of February 14, 1996. The leaks discovered during the survey range from 5,328 gallons per day to numerous small meter box leaks.

As part of the survey, EUWD staff located 57 valves of various types, 15 fire hydrants, and 3,250 feet of main not shown on the master water plats. EUWD staff were unable to locate 52 valves of various types and 6 fire hydrants shown on the master water plats. An additional 22 items were discovered to need some type of repair, cleaning, or adjustment.

DISCUSSION

A. Total Access Points Surveyed: 3,080

The following is an outline of the various access points used during the survey:

Customer Service Connections: 2,647

Main Valves: 292

Fire Hydrants: 122

Others: 19

B. Total Miles of Distribution Main Surveyed: 28.18

C. Total Leaks Detected: 143

Service line and fire hydrant leaks were located by acoustic leak detection, computer correlation of leak sounds or by visual inspection. Meter box leaks and customer side leaks were located through house to house surveying.

Service: 68

Meter Box: 31

Fire Hydrant: 3

Customer Side: 39

A detailed listing of these leaks is recorded in appendices A through D. Separate appendices are provided for each category of leak.

Valve Leaks: 1	5215 Kazen	Blow Off	Pending Repair
----------------	------------	----------	-----------------------

Main Leaks: 1	Edalyn St. At Bauman	Pending Repair
---------------	----------------------	-----------------------

D. Detected Utility Side Leaks Not Repaired, as of February 14, 1996: 50

E. Total Estimated Water Saved by Repair of Detected Utility Side Leaks In Gallons Per Day as of February 14, 1996: 30,661

Leakage estimates for main line, service line, fire hydrants, and valve leaks are based on hole size and system pressure in pressure per square inch. This information was furnished by City of Kirby personnel when EUWD was not on site at the time of repair. Totals are only recorded for leaks repaired as of February 14, 1996, with estimates.

EUWD would appreciate a list of leakage estimates for all detected leaks repaired after February 14, 1996 for the program records.

Meter Box: 749 GPD
Fire Hydrants: 1,180 GPD
Service: 28,732 GPD

Customer leaks were generally small. No attempt was made to estimate this leakage. Customers were notified by doortag or in person when possible or will be notified by City of Kirby personnel.

F. Field Survey Findings Vs. Master Water Plats.

1. Water system access points that could not be located: 58

Main Valves : 44
Blow Off Valves: 6
Fire Hydrant Valves: 1
Pressure Regulating Valves: 1
Fire Hydrants: 6

Suspected locations were surveyed by EUWD with a ferromagnetic detector to locate buried valves. When successful, these locations were marked. It is conceivable that additional valves remain unlocated within the system. All valves box lids located were painted blue.

A list of these items are included in appendix F.

2. Valves located, but not shown on plats: 57

Main Line Valves: 52
Blow Off Valves: 4
Air Relief Valves: 1

A list of these valves is included in appendix E.

3. Feet of main located, but not shown on plat: 3,250'

Hoeneke Dr. at Lehman: 500'
East of Ackermann Rd. and north of Borchers Dr.: 500'
Ackermann Rd. South of Boatman Rd.: 2,050'
South of Old Seguin Rd. and west of Charles Conrad: 200'

4. Fire hydrants located, but not shown on plats: 15

A list of these fire hydrants is included in appendix E.

G. Miscellaneous Maintenance Needed

Valve Stacks Needing Raise To Grade: 9

Repair Needed: 3

Cleaning: 22

A list of these items is included in appendix G.

Numerous valve stacks were raised to grade when they were located by EUWD and City of Kirby staff. Valve stack extensions were used to adjust these valves. The addresses of these valve stacks are not included in this report.

H. Revisions To The Master Water System Distribution Plats Included With This Report

The 52" by 42", 1" = 200' Water Distribution Plat furnished by the City of Kirby has been revised to reflect what was found in the field survey. Abandoned mains and mains that were not installed have been removed from the revised plat. Valve and fire hydrant locations were changed to reflect their actual locations. Fire hydrant details were changed on the plat to differentiate fire hydrants with lead valves from fire hydrants without lead valves.

Abbreviations Used on the Revised Distribution System Plats:

UTL	--	Unable To Locate
NC	--	Needs Cleaning
RTG	--	Raise To Grade
ARV	--	Air Relief Valve
PRV	--	Pressure Regulating Valve
NR	--	Needs Repair
FHWV	--	Fire Hydrant With Valve
FH	--	Fire Hydrant Without Valve

All mains were surveyed from all available access points.

All valves located were surveyed. When direct contact could not be made, a probe rod was used.

Fire hydrants labeled as fire hydrants without lead valves are hydrants where the lead valve could not be located or does not exist.

Any item circled and highlighted in yellow on the plats indicates that it was added, could not be located, or needs repair. All items are labeled on the plats.

All mains, fire hydrants, and valves added to the plats are for access point accounting. The location and placement of these items on the plats are intended to indicate what was actually found during the field survey. Placement of main valves on the plat is the surveyor's best guess of what they control. Every effort was made to ensure the accuracy of these plats, but EUWD does not guarantee their accuracy.

RECOMMENDATIONS AND COMMENTS

- I. Accelerate rate of repairs on all known system leaks and maintain an ongoing program to locate and repair leaks that become visible or surface. Studies have generally shown that the life of a leak depends on the type of subsoil. In areas with sandy soil or limestone strata, for example, water from a leak may not surface near its source and may not surface at all. Clay soils are more likely to force water to the surface but even this is not always the case. Waters from leaks are often found to enter storm and sanitary sewers, as well as percolate down through soil.
- II. Revise master water distribution plats from “As built” plans, EUWD plats, and utilizing the knowledge and expertise of long term field employees. Master plats should show locations of all main valves, fire hydrants, blow off valves, drain or flush valves, air relief valves, and pressure regulating valves. Revised plats should be made available to field maintenance personnel for use in the operation and maintenance of the water distribution system.
- III. Implement an ongoing in-house main line valve preventive maintenance program for inspection and operation of all system valves. All distribution system valves should be located, cleaned, operated, repaired or replaced as needed on a routine basis. **All valves should be checked to verify they are in the open position. Direction the valves opens should be recorded and the valve box lids marked accordingly to facilitate future system maintenance.** The use of valve markers are recommended on valves subject to being lost or buried.

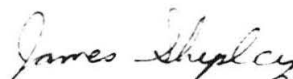
The time spent on lost, buried, or non-operational valves, and/or the flushing of fire hydrants to reduce pressure and volume as a means to effect leak repair is an additional major cause of water loss in leak repair.
- IV. Conduct a thorough evaluation of the water system’s present and future maintenance and operational requirements to determine if the existing equipment and crew size is adequate to meet the needs of a system of this size, condition, and age.
- V. Review the existing water distribution system and planned water system improvements to ensure sufficient access points are in place to facilitate future leak detection/ location surveys.

- VI. Consider ductile iron pipe for the primary main line material used for new installation and main replacement. As the production cost of water increase, the need for routine systemwide leak detection surveys will also increase. Leak sounds generated in metallic pipe are louder and have a tendency to travel further than those developed in non-metallic pipe. Ductile iron pipe has a proven history of long service life and its sound carrying characteristics for leak detection are far superior to any other type of pipe material.
- VII. Install lead valves as part of the installation on all new or replacement fire hydrants.
- VIII. Placement of well flow meters should be checked against meter manufacturer specifications for recommended straight pipe lengths both upstream and downstream of meter. All meters have limitations due to piping configurations. An improperly located or installed meter will degrade the inherent specified accuracy below an acceptable level. Meters installed in close proximity to a bend, valve, or other fitting that is likely to disturb the flow conditions at the meter could invalidate the manufacturer's meter calibration. EUWD recommends that all well meters and a percentage of large commercial meters be tested in place yearly for accuracy.
- IX. Consider connection of the following mains to improve system flow characteristics:
- 6" main on Hoeneke Dr. to the 8" main on Old Seguin Rd.
 - Main on Pfeif to the 12" main on Ackermann Rd.
 - 6" main on Hoeneke Dr. to the 6" main on Harris Rd.
 - 8" main on Crest Dr. between Gordon Cooper Dr. and Swann Ln.
 - Main on Kirby Heights to the 8" main between Old Seguin Rd. and F.M. 78
 - 8" main on Cinderella Ln. between Kirby Dr., Gaiety, and Ackermann Rd.
- X. After a thorough review of the surveyor's field notes, it is the opinion of the Edwards Underground Water District that the City of Kirby should increase its efforts towards water conservation and water leak repair. A large percentage of the utility side leaks reported to the city as early as May of 1995 are still unrepaired as of February 14, 1996. It is impossible to accurately estimate the amount of water currently being lost through leakage at the City of Kirby, but it is obvious that a substantial amount of water is being lost. With each passing day that the leaks remain unrepaired the volume of leakage continues to increase. This is an unfortunate waste of a precious resource.

- XI. The Edwards Underground Water District appreciates the active participation of Raul De Torro, Pedro Barrientos, Herbert Walker, and Lesly Davee in this survey. Their assistance contributed greatly to its success. Please convey our commendations and thanks to all the staff for their diligence in helping to conserve the Edwards Aquifer.



John E. Gapinski
Leak Detection Technician I



James R. Shipley
Leak Detection Technician II

**CITY OF KIRBY
SERVICE LINE LEAK LIST / 1995
APPENDIX A**

Page 1 of 4

<u>Line #</u>	<u>Date</u>	<u>Address</u>	<u>Loss G.P.M.</u>	<u>Date Repaired</u>	<u>Comments</u>	<u>Recheck Date</u>
1	5/2	4842 Bill Anders	1,440	5/8		5/8
2	5/3	4843 Bill Anders	360	UNK.		11/28
3	5/3	4830 Bill Anders			PENDING	
4	5/3	4810 Bill Anders			PENDING	
5	5/5	4811 Binz Englemann			PENDING	
6	5/5	4822 Binz Englemann			PENDING	
7	5/5	4831 Binz Englemann			PENDING	
8	5/11	4815 Scott Carpenter	360	UNK.		11/25
9	5/11	3114 Buzz Aldrin			PENDING	
10	5/11	2914 Buzz Aldrin			PENDING	
11	5/9	2513 Telegraph			PENDING	
12	5/11	4805 Neil Armstrong	2,880	UNK.		12/11
13	5/5	3614 Telstar	720	UNK.		12/11
14	5/5	3503 Allen Sheppard	360	UNK		12/11
15	5/9	4910 Borchert			PENDING	
16	5/9	5109 Borchert			PENDING	
17	5/9	2412 Telegraph	5,328	5/11		5/11
18	5/9	2413 Rutledge	1,440	5/16		11/28

**CITY OF KIRBY
SERVICE LINE LEAK LIST / 1995
APPENDIX A**

Page 2 of 4

<u>Line #</u>	<u>Date</u>	<u>Address</u>	<u>Loss G.P.M.</u>	<u>Date Repaired</u>	<u>Comments</u>	<u>Recheck Date</u>
19	5/11	5411 Pageland	60	UNK		11/28
20	5/11	5418 Pageland	360	12/11		12/11
21	6/27	4806 Explorer			PENDING	
22	5/11	24185 Shamrock	1,440	6/13		6/27
23	6/27	5229 Borchers			PENDING	
24	6/27	5213 Borchers			PENDING	
25	6/6	5022 Binz Englemann			PENDING	
26	6/6	5043 Binz Englemann			PENDING	
27	6/6	5202 Binz Englemann			PENDING	
28	6/7	5038 Tom Stafford	1,440	11/30		11/30
29	6/27	4850 Swann	2,880	6/29		6/29
30	6/27	2416 Telegraph	4	UNK.		11/12
31	6/30	5023 Binz Englemann			PENDING	
32	6/30	5110 Binz Englemann			PENDING	
33	6/30	5310 Binz Englemann			PENDING	
34	6/30	5338 Binz Englemann	60	11/21		11/28
35	6/30	5042 Tom Stafford			PENDING	
36	11/1	3007 Charles Conrad			PENDING	

**CITY OF KIRBY
SERVICE LINE LEAK LIST / 1995
APPENDIX A**

Page 3 of 4

<u>Line #</u>	<u>Date</u>	<u>Address</u>	<u>Loss G.P.M.</u>	<u>Date Repaired</u>	<u>Comments</u>	<u>Recheck Date</u>
37	11/1	5030 Gorden Cooper			PENDING	
38	11/1	2815 Fred Haise			PENDING	
39	11/1	5214 Gorden Cooper			PENDING	
40	11/1	5238 Gorden Cooper			PENDING	
41	11/1	5227 Tom Stafford			PENDING	
42	11/1	5102 Tom Stafford	1,440	12/14		2/14
43	11/8	5134 Tom Stafford			PENDING	
44	1/22	5023 Cinderella			PENDING	
45	11/15	5111 Starfire	720	1/3		2/14
46	11/28	4846 Bill Anders			PENDING	
47	11/14	4718 Swann	360	11/14		11/28
48	5/2	4830 Scott Carpenter			PENDING	
49	5/2	4803 Scott Carpenter			PENDING	
50	5/2	3102 Buzz Aldrin			PENDING	
51	5/5	4802 Cinderella			PENDING	
52	5/4	4834 Featherock			PENDING	
53	5/11	5418 Sir Roberts	1,440	12/28		2/14
54	6/6	5054 Binz Englemann	360	12/8		12/11

**CITY OF KIRBY
SERVICE LINE LEAK LIST / 1995
APPENDIX A**

Page 4 of 4

<u>Line #</u>	<u>Date</u>	<u>Address</u>	<u>Loss G.P.M.</u>	<u>Date Repaired</u>	<u>Comments</u>	<u>Recheck Date</u>
55	6/6	5055 Binz Englemann	720	12/8		
56	12/11	2107 Ackermann	2,880	11/4		11/6
57	12/12	5106 Kazen			PENDING	
58	11/4	4206 Ackermann	1,440	11/4		11/6
59	12/11	4402 Hoeneke			PENDING	
60	12/11	4319 Hoeneke			PENDING	
61	12/11	4310 Hoeneke			PENDING	
62	12/8	4323 Lehman			PENDING	
63	12/8	2021 Hickory Hill			PENDING	
64	12/8	2019 Hickory Hill			PENDING	
65	12/11	1009 Hickory Hill			PENDING	
66	12/1	802 Hickory Hill			PENDING	
67	5/11	5426 Pageland	240	12/11		12/11
68	11/14	2008 Hickory Hill			PENDING	

**CITY OF KIRBY
FIRE HYDRANT LEAK LIST / 1995
APPENDIX B**

Page 1 of 1

<u>Line #</u>	<u>Date</u>	<u>Address</u>	<u>Loss G.P.M.</u>	<u>Date Repaired</u>	<u>Comments</u>	<u>Recheck Date</u>
1	12/1	3703 Vinecrest	360	12/1	Flushed and Resealed	12/1
2	12/1	4210 Ackermann	100	11/16		2/14
3	12/1	Ackermann south of Binz Englemann	720	12/1	Flushed and Resealed	12/1

**CITY OF KIRBY
METER LEAK LIST / 1995
APPENDIX C**

Page 1 of 2

<u>Line #</u>	<u>Date</u>	<u>Address</u>	<u>Loss G.P.M.</u>	<u>Date Repaired</u>	<u>Recheck Date</u>
1	5/1	4842 Cobb Valley	9	5/1	5/1
2	5/1	4874 Cobb Valley	25	5/1	5/1
3	5/1	4846 Cobb Valley	17	5/1	5/1
4	5/1	4810 Aspenwood	17	5/1	5/1
5	<u>5/1</u>	4803 Aspenwood	9	5/1	5/1
6	5/1	4802 Aspenwood	17	5/1	5/1
7	5/1	2610 Buzz Aldrin	9	5/1	5/1
8	5/3	2915 Allen Sheppard	9	UNK	
9	5/3	4818 Bill Anders	9	5/3	5/3
10	5/5	4802 Binz Englemann	17	5/5	5/5
11	5/9	4823 Featherock	17	UNK.	
12	5/11	4834 Michael Collins	2	5/11	5/11
13	5/11	4814 Neil Armstrong	2	5/11	5/11
14	5/5	3719 Charles Conrad	240	UNK.	10/25
15	5/9	5010 Borchers	25	UNK.	
16	5/9	2421 Telegraph	25	5/9	5/9
17	6/7	5038 Gorden Cooper	9	6/7	6/7
18	6/30	5334 Binz Englemann	25	6/30	6/30
19	11/8	5126 Tom Stafford	17	12/12	2/14

**CITY OF KIRBY
METER LEAK LIST / 1995
APPENDIX C**

Page 2 of 2

<u>Line #</u>	<u>Date</u>	<u>Address</u>	<u>Loss G.P.M.</u>	<u>Date Repaired</u>	<u>Recheck Date</u>
20	11/8	5111 Tom Stafford	18	11/8	11/8
21	11/8	5110 Tom Stafford	9	11/8	11/8
22	11/8	5030 Frank Borman		PENDING	
23	11/22	5258 Crown		PENDING	
24	11/22	5406 Eclipse	17		2/14
25	12/12	5110 Kazen		PENDING	
26	12/12	5210 Kazen		PENDING	
27	12/11	5107 Starfire	25	12/11	12/11
28	12/11	307 Gaiety	17	12/11	12/11
29	12/8	4311 Hickory Hill	43	12/8	12/8
30	12/11	1010 Hickory Hill	60	UNK.	
31	12/11	231 Hedwig	60	UNK.	

**CITY OF KIRBY
CUSTOMER SIDE LEAK LIST / 1995
APPENDIX D**

Page 1 of 3

<u>Line #</u>	<u>Date</u>	<u>Address</u>
1	5/1	4819 Corian Oak
2	5/2	4827 Cobb Valley
3	5/2	4870 Cobb Valley
4	5/3	4854 Blue Spruce
5	5/2	4802 Bill Anders
6	5/5	4811 Binz Englemann
7	5/9	2402 French Sea
8	5/11	4834 Neil Armstrong
9	5/9	5113 Swnn Ln.
10	5/9	2429 Telegraph
11	5/11	5309 Swann Ln.
12	6/6	4807 Cinderella
13	6/7	5038 Tom Stafford
14	6/6	5038 Gorden Cooper
15	6/30	5210 Binz Englemann
16	6/30	5214 Binz Englemann
17	6/30	5011 Tom Stafford
18	11/8	5103 Tom Stafford

**CITY OF KIRBY
CUSTOMER SIDE LEAK LIST / 1995
APPENDIX D**

Page 2 of 3

<u>Line #</u>	<u>Date</u>	<u>Address</u>
19	11/22	5003 Ed White
20	11/8	5027 Frank Borman
21	11/8	5027 John Young
22	11/11	4851 Featherrock
23	11/22	5026 Cinderella
24	11/22	5138 Cinderella
25	11/8	3611 Diadem
26	11/9	3815 Petry
27	12/12	5114 Kazen
28	12/12	5126 Kazen
29	12/12	5130 Kazen
30	12/12	5211 Kazen
31	12/11	3723 Hauck
32	12/11	5402 Cinderella
33	12/11	306 Gaiety
34	12/11	4545 Hoeneke
35	12/11	4423 Hoeneke
36	12/8	1021 Hickory Hill
37	12/11	1008 Hickory Hill

**CITY OF KIRBY
CUSTOMER SIDE LEAK LIST / 1995
APPENDIX D**

Page 3 of 3

<u>Line #</u>	<u>Date</u>	<u>Address</u>
38	12/11	901 Hickory Hill
39	12/11	815 Hickory Hill

**CITY OF KIRBY
ADDED TO PLATS / 1995
APPENDIX E**

Page 1 of 4

<u>Line #</u>	<u>Address</u>	<u>Added</u>	<u>Number Added</u>
1	415 Edalyn St.	Fire Hydrant With Valve	1
2	Ackermann Rd. north of Borchers Dr.	Fire Hydrant With Valve	1
3	403 Edalyn St.	Valve	1
4	Kirby Dr. at Old Seguin Rd.	Valves	2
5	Hoeneke Dr. at Lehman	500' of Main 1 Fire Hydrant With Valve 1 Blow Off	2
6	East of Ackermann and north of Borchers Dr.	500' of Main Valve	1
7	601 Edalyn St.	Fire Hydrant With Valve 1 Valve	2
8	Ackermann Rd. south of Boatman Rd.	3 Valves 1 Fire Hydrant With Valve 2,050' of Main	4
9	Hedwig St. At Bauman	Valves	2
10	Ackermann Rd. at Hedwig St.	Fire Hydrant With Valve	1
11	F.M. 78 at Gibbs Sprawl Rd.	Valves	2
12	Buzz Aldrin north of Blue Spruce	Valve	1
13	4810 Ackermann Rd.	Fire Hydrant With Valve Valve	2
14	F.M. 78 east of Gibbs Sprawl Rd.	Air Relief Valve	1
15	Aspenwood at Allen Sheppard	Valve	1

**CITY OF KIRBY
ADDED TO PLATS / 1995
APPENDIX E**

Page 2 of 4

<u>Line #</u>	<u>Address</u>	<u>Added</u>	<u>Number Added</u>
16	Cobb Valley at Allen Sheppard	Valve	1
17	4914 Borchers Dr.	Valve	1
18	2835 Rod Schaffe	Fire Hydrant With Valve	1
19	Borchers Dr. at Telgraph Dr.	Valves	2
20	Borchers Dr. at Scottsman Dr.	Valve	1
21	3503 Charles Conrad	Valve	1
22	Charles Conrad at Binz Englemann Rd.	Valve	1
23	Charles Conrad at Walt Schirra	1 Fire Hydrant With Valve 2 Valves	3
24	283 Van Braune Dr.	Fire Hydrant With Valve	1
25	Peppermint Ln. at Gaiety Ln.	Valves	2
26	Peppermint Ln. at Ackermann Rd.	Valve	1
27	Telstar Dr. south of Explorer Dr.	Blow Off Valve	1
28	5146 Gorden Cooper	Fire Hydrant With Valve	1
29	Hoeneke Dr. at Old Seguin Rd.	Fire Hydrant With Valve	1
30	119 Gaiety	Valve	1
31	203 Gaiety	1 Fire Hydrant With Valve 1 Valve	2

**CITY OF KIRBY
ADDED TO PLATS / 1995
APPENDIX E**

Page 3 of 4

<u>Line #</u>	<u>Address</u>	<u>Added</u>	<u>Number Added</u>
32	239 Gaiety	1 Fire Hydrant With Valve 1 Valve	2
33	5030 Old Seguin Rd.	Fire Hydrant With Valve	1
34	219 Gaiety	Valve	1
35	Vinecrest Dr. at Peppermint Ln.	Valve	1
36	Vinecrest Dr. south of Velvet Ln.	Valves	2
37	Vinecrest Dr. between Peppermint Ln. and Starcrest	Valve	1
38	Vinecrest Dr. south of Starfire	Valve	1
39	Vinecrest Dr. south of Eclipse Ln.	Valve	1
40	Vinecrest Dr. at Redding Dr.	Valves	2
41	Kirby Dr. at Cinderella Ln.	Valves	2
42	Kirby Dr. between Velvet Ln. and Eclipse Ln.	Valves	2
43	Kirby Dr. between Velvet Ln. and Daffodil Ln.	Valves	2
44	Kirby Dr. between Daffodil Ln. and Starfire	Valves	2
45	Between Starfire Ln. , Daffodil Ln., and Vinecrest Dr.	Valve	1
46	Between Starfire Ln., Daffodil Ln., and Kirby Dr.	Valves	2

**CITY OF KIRBY
ADDED TO PLATS / 1995
APPENDIX E**

Page 4 of 4

<u>Line #</u>	<u>Address</u>	<u>Added</u>	<u>Number Added</u>
47	Borchers Dr. at Deer Grove Ln.	Valves	2
48	Kirby Heights	Blow Off Valve	1
49	South of Old Seguin Rd. and west of Charles Conrad	200' Main 1 Blow Off Valve	1

**CITY OF KIRBY
UNABLE TO LOCATE / 1995
APPENDIX F**

Page 1 of 3

<u>Line #</u>	<u>Address</u>	<u>Type</u>	<u>Number</u>
1	Kirby Dr. at Old Seguin Rd.	Valve	1
2	Telstar Dr.	Blow Off	1
3	5631 Old Seguin Rd.	Valve	1
4	Rutledge	Blow Off	1
5	Scottsman Dr.	Blow Off	1
6	Hoeneke Dr. at Hickory Hills Dr.	Valve	1
7	F.M. 78 east of Ackermann Rd.	Valve	1
8	Hedwig Dr. at Gibbs Sprawl Rd.	Valves	2
9	Roseville	Blow Off	1
10	Old Seguin Rd. west of Hoeneke Dr.	Valves	3
11	Behind Kirby Jr. High at F.M. 78	Valve	1
12	Scott Carpenter at Allen Sheppard	Valve	1
13	Buzz Aldrin at Allen Sheppard	Valve	1
14	Blue Spruce at Buzz Aldrin	Valve	1
15	Corian Oak Dr. at Buzz Aldrin	Valve	1
16	Swann Ln. at Buzz Aldrin	Valve	1
17	Ed White Dr.	Blow Off	1
18	Buzz Aldrin at Cinderella Dr.	Valve	1
19	Buzz Aldrin at Neil Armstrong	Valve	1

**CITY OF KIRBY
UNABLE TO LOCATE / 1995
APPENDIX F**

Page 2 of 3

<u>Line #</u>	<u>Address</u>	<u>Type</u>	<u>Number</u>
20	Buzz Aldrin at Michael Collins	Valve	1
21	4834 Neil Armstrong	Valve	1
22	Wheatland Dr. at Crest Dr.	2 Valves	2
23	Old Seguin Rd. at F.M. 78	Fire Hydrant	1
24	Threadway Dr. at Wheatland Dr.	Valve	1
25	Rutledge at Wheatland Dr.	Valve	1
26	Scottsman Dr. at Swann Ln.	Valve	1
27	Roseville at Wheatland Dr.	Valve	1
28	Boatman Rd. At Wheatland Dr.	Valve	1
29	Pageland Dr. at Theodor Dr.	Valve	1
30	Pageland Dr. at Blue Jay Dr.	Valves	2
31	Rod Schaffe Dr.	Blow Off	1
32	Thomas Paine Dr. at Charles Conrad	Valves	2
33	Walt Schirra at Charles Conrad	Valve	1
34	5042 Gorden Cooper	Valve	1
35	Gorden Cooper at Van Bruane Dr.	Valves	2
36	Crest Dr. at Tom Stafford Dr.	Valves	2
37	Cinderella Ln. at Gaiety	Valve	1
38	5226 Gorden Cooper	Fire Hydrant Valve	1

**CITY OF KIRBY
UNABLE TO LOCATE / 1995
APPENDIX F**

Page 3 of 3

<u>Line #</u>	<u>Address</u>	<u>Type</u>	<u>Number</u>
39	Kirby Dr. at Autumn Ln.	Valve	1
40	Diadem Dr. at Cinderella Ln.	Valve	1
41	Vinecrest Dr. between Peppermint Ln. and Starfire Ln.	Valves	2
42	Vinecrest Dr. at Vinecrest Circle	Valve	1
43	Jaenke St. between Hedwig St. and Old Seguin Rd.	Fire Hydrant	1
44	4414 Ackermann Rd.	Fire Hydrant	1
45	Binz Englemann Rd. at Allen Sheppard	Fire Hydrant	1
46	4834 Michael Collins	Fire Hydrant	1
47	Old Seguin Rd. at Edalyn St.	Fire Hydrant	1
48	Kirby Dr. between Vinecrest Dr. and Autumn Ln.	Pressure Regulating Valve	1
49	Featherock Dr. between Deer Grove and French Sea Dr.	Valve	1

**CITY OF KIRBY
REPAIRS OR CLEANING NEEDED / 1995
APPENDIX G**

Page 1 of 2

<u>Line #</u>	<u>Address</u>	<u>Type</u>	<u>Needed</u>
1	Edalyn St. at Bauman	Valve	Raise To Grade
2	Charles Conrad at Frank Borman	Valve	Raise To Grade
3	Binz Englemann at James Lowell	Valve	Raise To Grade
4	283 Van Braune Dr.	Fire Hydrant Valve	Raise To Grade
5	Peppermint Ln. at Gaiety	2 Valves	Raise To Grade
6	Old Seguin Rd. at Vinecrest Dr.	Fire Hydrant Valve	Raise To Grade
7	2843 Rod Schaffe Dr.	Blow Off Valve	Raise To Grade
8	Between Peppermint Ln. and Starfire Ln.	Fire Hydrant Valve	Raise To Grade
9	Fox Cross Dr. at Crest Dr.	Valve Stack	Repair
10	4842 Swann Ln.	Fire Hydrant Valve Stack	Repair
11	5022 Thomas Paine Dr.	Blow Off Valve	Repair
12	4742 Swann Ln.	Fire Hydrant Valve	Cleaning
13	Binz Englemann Rd. at Buzz Aldrin	2 Valves	Cleaning
14	4770 Swann Ln.	Valve	Cleaning
15	5102 Gorden Cooper	Valve	Cleaning
16	2835 Rod Schaffe	Fire Hydrant Valve	Cleaning
17	Borchers Dr. at Deer Grove Dr.	Fire Hydrant Valve	Cleaning
18	3302 Ackermann Rd.	Fire Hydrant	Cleaning
19	619 Edalyn St.	Fire Hydrant	Cleaning

**CITY OF KIRBY
REPAIRS OR CLEANING NEEDED / 1995
APPENDIX G**

Page 2 of 2

<u>Line #</u>	<u>Address</u>	<u>Type</u>	<u>Needed</u>
20	601 Edalyn St.	Fire Hydrant	Cleaning