



EDWARDS UNDERGROUND  
WATER DISTRICT

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Report 93-04

**LEAK DETECTION SURVEY REPORT  
FOR  
SOUTHWEST TEXAS STATE UNIVERSITY  
SAN MARCOS, TEXAS**

**June 14, 1993 - June 18, 1993**



EDWARDS UNDERGROUND  
WATER DISTRICT

6.25-7.5

August 16, 1993

Mr. Dwight Sturdivant  
Southwest Texas State University  
Physical Plant  
San Marcos, Texas 78666

Dear Mr. Sturdivant:

We are pleased to submit this final report of the leak detection survey performed on the Southwest Texas State University water distribution system. A summary of findings is reported in separate categories for your convenience.

The Edwards Underground Water District (District) appreciates the cooperation and assistance you have provided during the leak detection survey. Special thanks to Mr. Doug Purgess and Mr. Jesse Gomez for their attention and patience during the survey. The District hopes that the information provided herein will be beneficial to the University in identifying and targeting areas of water loss and potential loss.

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 that have been 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.

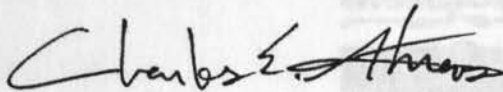
Enclosed is a water audit form. The District requests that this form be completed and returned to the District within six months after all detected leaks have been repaired. This information will assist the District in our continued assessment of the Leak Detection Program.



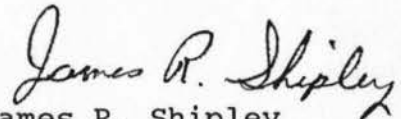
Mr. Dwight Sturdivant  
August 16, 1993 - Page 2

Should you require additional information regarding this report or have any water related questions, please do not hesitate to call.

Sincerely,



Charles E. Ahrens  
Water Resources Planner III



James R. Shipley  
Leak Detection Technician II

CEA:JRS/bmc  
Enclosures

001jrs

EDWARDS UNDERGROUND  
WATER DISTRICT

LEAK DETECTION/LOCATION SURVEY REPORT  
FOR  
SOUTHWEST TEXAS STATE UNIVERSITY  
SAN MARCOS, TEXAS  
JUNE 14, 1993 - JUNE 18, 1993

PREPARED BY:

Division of Planning and Environmental Management  
Leak Detection Program

June, 1993

## TABLE OF CONTENTS

	PAGE
SUMMARY.....	1
DISCUSSION.....	2
RECOMMENDATIONS.....	3
COMMENTS.....	4

### EDWARDS UNDERGROUND WATER DISTRICT

#### ENCLOSURES TO REPORT

- A. Revised Master Water System Distribution Plans
- B. Blank Follow-up Water Audit Forms

### LEAK DETECTION/LOCATION SURVEY REPORT FOR SOUTHWEST TEXAS STATE UNIVERSITY SAN MARCOS, TEXAS JUNE 14, 1993 - JUNE 18, 1993

PREPARED BY:

Division of Planning and Environmental Management  
Leak Detection Program

June, 1993

# SUMMARY

## TABLE OF CONTENTS

On June 1, 1993, the Edwards Underground Water District (EUSD) received a completed application form from Southwest Texas State University requesting a leak detection/location survey on its distribution system. A pre-survey conference was held June 11, 1993.	<u>PAGE</u>
SUMMARY.....	1
DISCUSSION.....	2
RECOMMENDATIONS.....	5
COMMENTS.....	6

### ENCLOSURES TO REPORT

- Revised Master Water System Distribution Plats
- Blank Follow-up Water Audit Forms

As part of the survey, EUSD noted 12 main valves and 1 fire hydrant that could not be located. Additionally, two valve stacks need repair and two are missing lids.

JRS/lac  
001jrs



## SUMMARY

On June 3, 1993, the Edwards Underground Water District (EUWD) received a completed application form from Southwest Texas State University requesting a leak detection/location survey on its water distribution system. A pre-survey conference was held June 11, 1993 at the University Physical Plant to discuss the work to be performed. It was agreed that EUWD would perform sonic leak detection on all available access points, computerized leak location as needed, record any unusual system conditions found, and submit to the University a revised master water plat with the final report.

John E. Gapinski of EUWD began the survey on June 14, 1993, and the survey was concluded on June 18, 1993. Over the course of the survey, EUWD surveyed a total of 185 access points including 147 valves, 17 fire hydrants, 9 service connections, and 12 other access points covering 8.05 miles of distribution mains. Computer leak sound correlation was performed on 4 locations.

EUWD technicians detected a total of 8 leaks. This total included 4 main line leaks, 2 fire hydrant leaks, 1 meter box leak, and 1 valve leak. EUWD estimates 298,080 gallons of water per day has been saved by the repair of 3 detected leaks as of June 18, 1993. The leaks discovered during the survey range from 126,720 gallons per day to a small meter box leak.

As part of the survey, EUWD noted 12 main valves and 1 fire hydrant that could not be located. Additionally, two valve stacks need repair and two are missing lids.

JRS/bmc  
001jrs

- I. 4" G.I. main on Pleasant St. in front of Aquatic Bldg.: 63,840 G.P.D.
- II. 4" G.I. main on LBJ across from Taylor Murphy History Bldg.: 126,720 G.P.D.
- III. Flange leak at Home Economics Bldg.: Pending
- IV. 2" Galv. main from Aqua Sports Center to Tennis Courts: 108,000 G.P.D.

### 2. Fire Hydrant Leaks: 2

- I. South of Blanco Hall: Pending
- II. Near Friesen Aquatic Biology Bldg.: Pending

### 3. Valve Leaks: 1

- I. Combs St. at LBJ Dr.: Pending

### 4. Meter Box Leaks: 1

- I. Blanco Bldg.: Pending

## DISCUSSION

- A. Total Access Points Surveyed..... 185

The following number of access points were used during the survey:

- |                         |     |
|-------------------------|-----|
| 1. Valves:              | 147 |
| 2. Fire Hydrants:       | 17  |
| 3. Service Connections: | 9   |
| 4. Others:              | 12  |

- B. Total Miles of Distribution Main Surveyed..... 8.05

- C. Total Estimated Water Saved by Repair of Detected Leaks for Gallons per day..... 298,080

Leakage estimates for main line leaks are based on hole size and system pressure in P.S.I. This information was furnished by SWTSU personnel when EUWD was not on site at the time of repairs. Totals are only recorded for leaks repaired as of June 18, 1993 with leakage estimates.

- D. Total Leaks Detected..... 8

Main line leaks were located by computer correlation of leak sounds. Valve, fire hydrant, and meter box leaks were located through access points to access point surveying.

1. Main Line Leaks: 4

- I. 4" C.I. main on Pleasant St. in front of Music Bldg.: 63,360 G.P.D.
- II. 4" C.I. main on LBJ across from Taylor Murphy History Bldg.: 126,720 G.P.D.
- III. Flange leak at Home Economics Bldg.: Pending
- IV. 2" Galv. main from Aqua Sports Center to Tennis Courts: 108,000 G.P.D.

2. Fire Hydrant Leaks: 2

- I. South of Blanco Hall: Pending
- II. Near Freeman Aquatic Biology Bldg.: Pending

3. Valve Leaks: 1

- I. Concho St. at LBJ Dr.: Pending

4. Meter Box Leaks: 1

- I. Blanco Bldg.: Pending

E. Unresolved Leak Sounds

1. Butler Hall
2. Performing Arts Center
3. Art Bldg.
4. Technology I
5. Near Central Chiller Plant

F. General Maintenance Needed

1. Valve Stacks Needing Cleaning: 1

I. Women's Residence Tower

2. Valve Stacks Needing Raise to Grade: 1

I. Elliot Bldg.

3. Valve Stacks Missing Lids: 2

I. Butler Bldg.

II. Women's Residence Parking Garage  
Fire Hydrant Valve

4. Valves Needing Repair, But Not Leaking: 1

I. Technology Bldg. I

5. Valves Unable to Survey: 11

I. State St. Fire Line Valve Between LBJ Dr. and Guadalupe Dr.

II. 5" Valve to Beretta Hall

III. Valve to Beretta Hall

IV. Valve to Flowers Hall

V. Valve to Education Center on Edward Gay

VI. Valve at Science Bldg.

VII. Valve at Hines Academic Center

IX. Valve at Jackson Hall

X. 2 valves at Arnold Hall

XI. Valve at new construction site west of Academy St. near Sessions Dr.

6. Fire Hydrants Unable to Survey

I. Edward Gary at LBJ Student Center

II. New construction site west of Academy St. near Sessions

G. Revised Master Water Plats included with this report

1. Codes

Yellow indicates mains and services were surveyed from access points only.

Blue indicates mains and services were surveyed with a ground microphone and from access points.



2. Abbreviations Used on Revised Master Plats:

UTL - Unable to Locate  
UTS - Unable to Survey  
NC - Needs Cleaning  
RTG - Raise to Grade  
CCNH - Curb Cock not Holding  
FHWV - Fire Hydrant with Valve  
FH - Fire Hydrant Without Valve  
ARV - Air Relief Valve  
PCV - Pressure Control Valve

3. All mains were surveyed from all available access points. When the spacing of access points was too great to survey properly, a ground microphone was used in combination.
4. All valves located were surveyed. When direct contact could not be made on a valve, a probe rod was used.
5. Fire hydrants labeled on the plat as fire hydrants without lead valves are hydrants where the lead valve could not be located or does not exist.
6. Any item circled on the plat indicates that it was added, could not be located, or needs repair.
7. All mains, fire hydrants, water services, blow-offs, and main line valves hand drawn on the plats are for access point accounting. The location and placement of these items on the plat is intended to indicate what was actually found during the field survey. Placement of hand drawn main valves on the plat is the technicians best guess of what they control. Every effort was made to ensure the accuracy of these plats, but EUWD does not guarantee their accuracy.

JRS/bmc  
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JRS/bmc  
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## RECOMMENDATIONS

- I. Install meters on all water services, even if the consumer is not to be billed. Set reasonable and prudent usage standards for each type of water use. There is no inducement to the consumer to conserve or use water wisely when water is supplied without charge or without usage limits. The potential benefits of metering to the University are numerous:
  - A. Conservation of a precious and valuable resource.
  - B. Potential reduction in water consumption and related waste water treatment costs.
  - C. Help stretch existing supplies to meet increasing needs. This could help defer the construction of new facilities such as new wells, booster stations, storage tanks, or distribution systems upgrades.
  - D. Allows the University to identify and verify all water use and determine water system efficiency.
  - E. Gives the University the tools needed to select and implement programs to enhance efficiency, prevent loss, and foster water conservation.
- II. Consider ductile iron pipe for the primary main line material used for new installation and main replacement. As the production costs 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.

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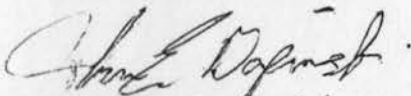
## COMMENTS

We greatly appreciate the assistance and cooperation we received from the management and staff of Southwest Texas State University. We commend your interest in water conservation and are grateful for the opportunity to survey your water system.

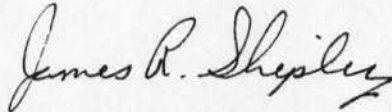
The active participation of Doug Purgess, Jesse Gomez, and the other staff members that assisted in this survey, was greatly appreciated. Their knowledge, experience, and professional work habits contributed to its success.

Your efforts and timely repair of the leaks recorded in this report have saved a significant amount of precious water. Our thanks to all the staff for their efforts in helping to conserve the Edwards Aquifer.

Sincerely,



John E. Gapinski  
Leak Detection Technician I



James R. Shipley  
Leak Detection Technician II

JEG:JRS/bmc

004jrs