Appendix F

ME Simpson Leak Survey Reports

M.E. SIMPSON Co., Inc.
www.mesimpson.com
3406 Enterprise Avenue
Valparaiso, IN 46383
Phone: (800) 255-1521
Fax: (888) 531-2444

January 13, 2010

Mr. Steve Davis
Vice President
Malcolm Pirnie, Inc.
8001 Irvine Center Drive, Suite 1100
Irvine, California 92618

Dear Mr. Davis,

M.E. Simpson Co., Inc. is a technical service company that offers Leak Survey Programs, Large Meter Testing and Repair Programs, Water Main Location, and Valve Exercising, Location and Computer Mapping Programs. These "Technical Services" offered by M.E. Simpson Co., Inc. are designed to aid a utility in reducing unaccounted for water and lost revenue.

M. E. Simpson Co., Inc. is pleased to submit this report of our leak detection survey for Malcolm Pirni, Inc. in the City of Huntington Beach as part of the Leak Survey Program for the Metropolitan Water District of Orange County. This survey addressed the Huntington Beach water distribution system, consisting of approximately 12 miles of water main. The report contains the results of our investigation that includes the following:

1. A DESCRIPTION OF THE AREA SURVEYED.
2. METHODOLOGY OF THE SURVEY.
3. A LIST OF LEAKS AND TYPE OF LEAK LOCATED.
4. GENERAL RECOMMENDATIONS BASED ON OUR INVESTIGATION.

DESCRIPTION OF THE AREA SURVEYED

Approximately 63,360 lineal feet were surveyed as part of the system investigation. This included all fire hydrants, all accessible mainline valves and selected services.

METHODOLOGY

Your survey was conducted using the latest state of the art leak computers, the **FLUID CONSERVATION SYSTEMS' Tri-Corr 2001** the **90/90** or **C2000** with the **MP90** preamplifier-transducer system. All of these correlators are manufactured by Fluid Conservation Systems of Milford, Ohio. These electronic instruments are microprocessor units that measure the time it takes the sound of the leak to travel from the leak to the point where the leak correlator is connected to the water line. By connecting the leak correlator to the water line at two locations, it will compute the distance from the leak to each connection point thus enabling us to determine the exact leak location. Our experienced technicians used these devices, along with the **S-30** electronically enhanced listening device, as listening equipment to survey your pipeline network. Each hydrant and accessible valve was used as listening points to identify leaks. Services, b-boxes, and hydrants were used on an as needed basis to keep the listening distances under five hundred feet (500'). All PVC style watermains were investigated via correlation. Correlation distances for PVC did not exceeding five hundred feet (500') unless listening points were unavailable. **"Pinpointing"** of the leak, as well as locating leaks that other methods fail to reveal was also done with this equipment.

Survey Results

M.E. Simpson Co., Inc. was unable to locate any discernable leaks on the Huntington Beach water distribution system. It is our opinion, at this time, that the water system is leak free.

RECOMMENDATIONS

This survey confirms that the City of Huntington Beach's water distribution system has benefited from the on-going leak survey program by a reduction in underground leakage. There is always a concern over the cost effectiveness of leak detection because of the uncertainty of the number of leaks located. While there were no leaks found on the system this year, a leak can occur at anytime and the sooner it is found the less it ends up costing the utility. It is important to remember that new leaks may occure at any time with changing weather and soil conditions. Additionally, the lack of leaks located does attest to the the high level of integrity of the pipe in the area surveyed. We would recommend that you continue to conduct a Leak Survey Program every other year on the water system. This recommendation becomes more critical as your cost of water increases.

We appreciate your cooperation and that of the utility staff who were available to answer our questions during this project. If you have any questions with the information in this report, please do not hesitate to call.

Sincerely Yours,

Michael D. Simpson
CEO
MDS/jph

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M.E. Simpson Co., Inc. is pleased to submit this report of our leak detection survey for Malcolm Pirnie, Inc. in the City of Brea as part of the Leak Survey Program for the Metropolitan Water District of Orange County. This survey addressed the Brea water distribution system, consisting of approximately 16.8 miles of water main. The report contains the results of our investigation including the following:

1. A DESCRIPTION OF THE AREA SURVEYED.
2. METHODOLOGY OF THE SURVEY
3. A LIST OF LEAKS AND TYPE OF LEAKS LOCATED
4. GENERAL RECOMMENDATIONS BASED ON OUR INVESTIGATION

DESCRIPTION OF THE AREA SURVEYED

Approximately 88,704 lineal feet were surveyed as part of the system investigation. This included all fire hydrants, accessible mainline valves and selected services.

METHODOLOGY

Your survey was conducted using the latest state of the art leak computers, the **FLUID CONSERVATION SYSTEMS' DigiCALL Correlating System, Accu Corr Leak Correlator, or FCS Tri-Corr 2001 Leak Correlator.** The **FCS S-30** is a tool used as an electronically enhanced listening device. All of these correlators are manufactured by Fluid Conservation Systems of Milford, Ohio. These electronic instruments are microprocessor units that measure the time it takes the sound of the leak to travel from the leak to the point where the leak Correlator is connected to the water line. By connecting the leak correlator to the water line at two locations, it will compute the distance from the leak to each connection point thus enabling us to determine the exact leak location. Our experienced technicians used these devices, along with the S30 electronically enhanced listening device or the L-Mic electronic listening device, as listening equipment to survey your pipeline network. Each hydrant and accessible valve was used as listening points to identify leaks. Selected services, b-boxes, were used on an as needed basis to keep the listening distances under five hundred feet (500'). "Pinpointing" of the leak, as well as locating leaks that other methods fail to reveal was also done with this equipment.

LEAKAGE LOCATED

All water mains within the Project area were surveyed and 1 leaks were located. These leaks have been grouped as follows: Main Line Leak - 1, Service Line Leak - 0, Fire Service Leak -0, Valve Leak - 0, Hydrant Leak - 0, Other Type Leak - 0. All of these leaks have been verbally reported to your office with these locations, so many have probably been repaired already. Following are the leak locations with an estimated GPD (Gallons Per Day) leakage potential.

Type	Location	SIZE
Main Line	Beechwood Drive & Parkcrest Way - Brea, California see enclosed diagram	79,200 GPD
1 Leaks Located	**ESTIMATED LEAKAGE TOTAL**	**79,200 GPD**

LEAK QUANTITIES

Quantifying leaks is difficult because there is not any accurate means of doing so. Pipe material, size of the leak, system pressure, soil material and water table will affect the noise that a leak makes. Small leaks under high system pressure will make more noise than a large leak under low system pressure. However, the above leaks are of sufficient noise levels that the above estimates should be very conservative. If a production price of $2.17 per thousand gallons is used, these leaks were costing your utility in excess of $171.86 per day or $62,730.36 annually. It's obvious this Leak Survey Program has proven to be cost effective. Naturally the main line leaks have the greatest potential for loss followed by service line, valves, and finally hydrants. Once leaks have been repaired, we would recommend that the Utility compare pumping rates before and after. This information will be more meaningful and accurate.

RECOMMENDATIONS

This survey confirms the City of Brea's water distribution system will benefit from this project by a reduction in underground leakage. There is always a concern over the cost effectiveness of leak detection because of the uncertainty of the number of leaks located. However, with your present cost of water and the discovery of this one leak, the cost of this 2009 leak survey will pay for itself within 1 month. It only takes a recovery of about 4,924 gallons per day on an annual basis (4,924 per day is only 3.4 gallons per minute throughout your entire water distribution system) to recover your investment. We would recommend that you conduct a Leak Survey Program every year. This recommendation becomes more critical as your cost of water increases.

We appreciate your cooperation and that of the Utility staff we were available to answer our questions during this project. If you have any questions with the information in this report, please do not hesitate to contact us.

Sincerely Yours,

Michael D. Simpson
CEO
MDS/jph

M.E. SIMPSON COMPANY, INC.

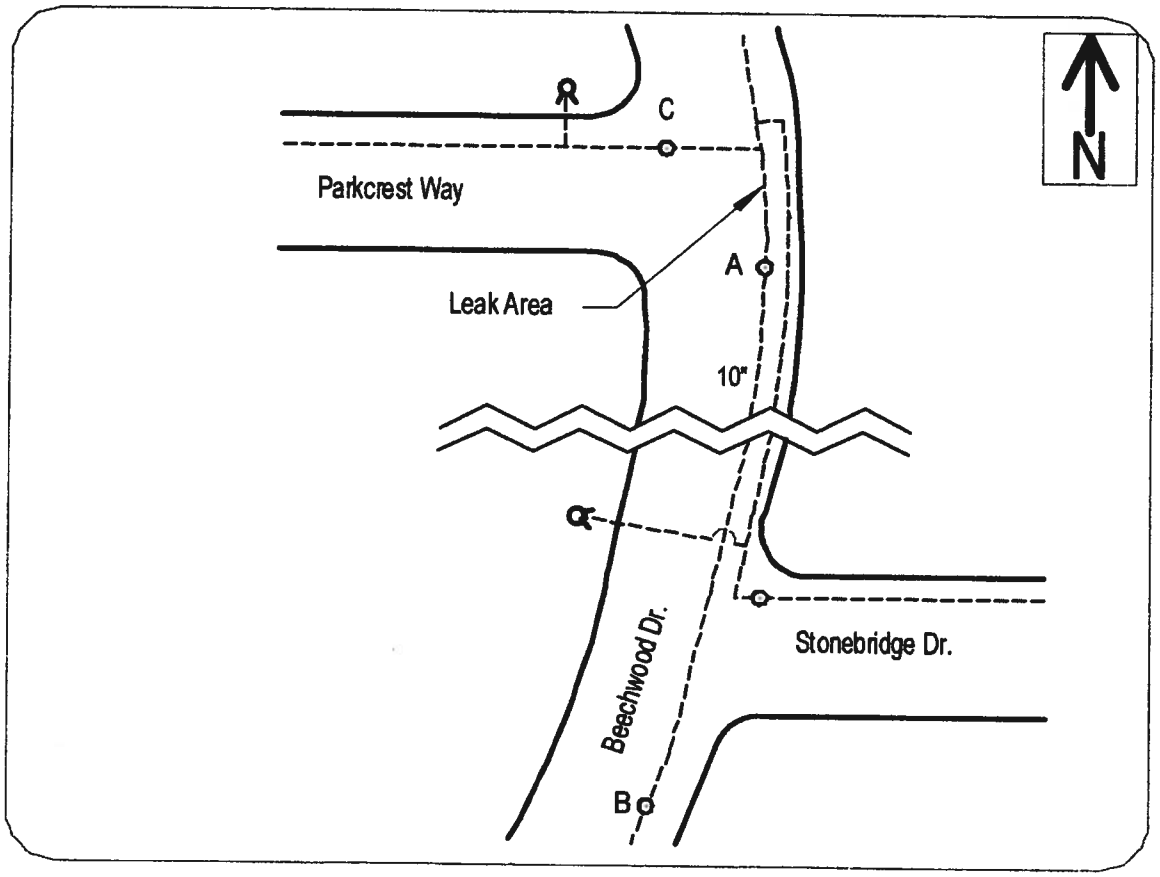
LEAK LOCATION REPORT

Client: Brea, California **Time:** 09:15 **Leak#** 01'09

Date: Saturday, December 19, 2009 **Tech:** Sandison P. & Craig V.

Address: Beechwood Drive & Parkcrest Way - Brea, California

Below is a diagram of the area surveyed for a suspect leak.



Distance: 256' from A to B / 75' from A to C

Connection point: A= Main Line Valve

Connection point: B= Main Line Valve

Connection point: C= Main Line Valve

Connection point:

Leak Location: 23' from A

Comments: This is a leak on a 10" main.

We thank you for the opportunity to work for your Utility and look forward to serving you again. If you have any questions please don't hesitate to call.

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M. E. Simpson Co., Inc. is pleased to submit this report of our leak detection survey for the City of Tustin Water Department as part of the Leak Survey Program for the Metropolitan Water District of Orange County. This survey addressed the Tustin water distribution system, consisting of approximately 5.3 miles of water main. The report contains the results of our investigation that includes the following:

1. A DESCRIPTION OF THE AREA SURVEYED.
2. METHODOLOGY OF THE SURVEY.
3. A LIST OF LEAKS AND TYPE OF LEAK LOCATED.
4. GENERAL RECOMMENDATIONS BASED ON OUR INVESTIGATION.

DESCRIPTION OF THE AREA SURVEYED

Approximately 27,984 lineal feet were surveyed as part of the system investigation. This included all fire hydrants, all accessible mainline valves and selected services.

METHODOLOGY

Your survey was conducted using the latest state of the art leak computers, the **FLUID CONSERVATION SYSTEMS' Tri-Corr 2001** the **90/90** or **C2000** with the **MP90** preamplifier-transducer system. All of these correlators are manufactured by Fluid Conservation Systems of Milford, Ohio. These electronic instruments are microprocessor units that measure the time it takes the sound of the leak to travel from the leak to the point where the leak correlator is connected to the water line. By connecting the leak correlator to the water line at two locations, it will compute the distance from the leak to each connection point thus enabling us to determine the exact leak location. Our experienced technicians used these devices, along with the **S-30** electronically enhanced listening device, as listening equipment to survey your pipeline network. Each hydrant and accessible valve was used as listening points to identify leaks. Services, b-boxes, and hydrants were used on an as needed basis to keep the listening distances under five hundred feet (500'). **"Pinpointing"** of the leak, as well as locating leaks that other methods fail to reveal was also done with this equipment.

Survey Results

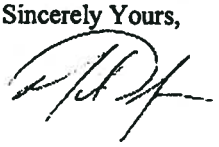
M.E. Simpson Co., Inc. was unable to locate any discernable leaks on the Tustin water distribution system. It is our opinion, at this time, that the water system is leak free in the area surveyed. There may be more leakage throughout the system if a larger scale survey is conducted in the future.

RECOMMENDATIONS

This survey confirms that the City of Tustin Water Department's water distribution system has benefited from the on-going leak survey program by a reduction in underground leakage. There is always a concern over the cost effectiveness of leak detection because of the uncertainty of the number of leaks located. While there were no leaks found on the system this year, a leak can occur at anytime and the sooner it is found the less it ends up costing the utility. It is important to remember that new leaks may occure at any time with changing weather and soil conditions. Additionally, the lack of leaks located does attest to the the high level of integrity of the pipe in the area surveyed. We would recommend that you continue to conduct a Leak Survey Program every other year on the water system. This recommendation becomes more critical as your cost of water increases.

We appreciate your cooperation and that of the utility staff who were available to answer our questions during this project. If you have any questions with the information in this report, please do not hesitate to call.

Sincerely Yours,



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M. E. Simpson Co., Inc. is pleased to submit this report of our leak detection survey for Malcolm Pirnie, Inc. in the Moulton Niguel Water District as part of the Leak Survey Program for the Metropolitan Water District of Orange County. This survey addressed the Moulton Niguel Water District's water distribution system, consisting of approximately 16.5 miles of water main. The report contains the results of our investigation that includes the following:

1. A DESCRIPTION OF THE AREA SURVEYED.
2. METHODOLOGY OF THE SURVEY.
3. A LIST OF LEAKS AND TYPE OF LEAK LOCATED.
4. GENERAL RECOMMENDATIONS BASED ON OUR INVESTIGATION.

DESCRIPTION OF THE AREA SURVEYED

Approximately 87,120 lineal feet were surveyed as part of the system investigation. This included all fire hydrants, all accessible mainline valves and selected services.

METHODOLOGY

Your survey was conducted using the latest state of the art leak computers, the **FLUID CONSERVATION SYSTEMS' Tri-Corr 2001** the **90/90** or **C2000** with the **MP90** preamplifier-transducer system. All of these correlators are manufactured by Fluid Conservation Systems of Milford, Ohio. These electronic instruments are microprocessor units that measure the time it takes the sound of the leak to travel from the leak to the point where the leak correlator is connected to the water line. By connecting the leak correlator to the water line at two locations, it will compute the distance from the leak to each connection point thus enabling us to determine the exact leak location. Our experienced technicians used these devices, along with the **S-30** electronically enhanced listening device, as listening equipment to survey your pipeline network. Each hydrant and accessible valve was used as listening points to identify leaks. Services, b-boxes, and hydrants were used on an as needed basis to keep the listening distances under five hundred feet (500'). All PVC style watermains were investigated via correlation. Correlation distances for PVC did not exceeding five hundred feet (500') unless listening points were unavailable. **"Pinpointing"** of the leak, as well as locating leaks that other methods fail to reveal was also done with this equipment.

Survey Results

M.E. Simpson Co., Inc. was unable to locate any discernable leaks on the Moulton Niguel Water District's water distribution system. It is our opinion, at this time, that the water system is leak free.

RECOMMENDATIONS

This survey confirms that the Moulton Niguel's water distribution system has benefited from the on-going leak survey program by a reduction in underground leakage. There is always a concern over the cost effectiveness of leak detection because of the uncertainty of the number of leaks located. While there were no leaks found on the system this year, a leak can occur at anytime and the sooner it is found the less it ends up costing the utility. It is important to remember that new leaks may occure at any time with changing weather and soil conditions. Additionally, the lack of leaks located does attest to the the high level of integrity of the pipe in the area surveyed. We would recommend that you continue to conduct a Leak Survey Program every other year on the water system. This recommendation becomes more critical as your cost of water increases.

We appreciate your cooperation and that of the utility staff who were available to answer our questions during this project. If you have any questions with the information in this report, please do not hesitate to call.

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M.E. Simpson Co., Inc. is pleased to submit this report of our leak detection survey for Malcolm Pirnie, Inc. in the Laguna Beach County Water District as part of the Leak Survey Program for the Metropolitan Water District of Orange County. This survey addressed the Laguna Beach County water distribution system, consisting of approximately 6.5 miles of water main. The report contains the results of our investigation including the following:

1. A DESCRIPTION OF THE AREA SURVEYED.
2. METHODOLOGY OF THE SURVEY
3. A LIST OF LEAKS AND TYPE OF LEAKS LOCATED
4. GENERAL RECOMMENDATIONS BASED ON OUR INVESTIGATION

DESCRIPTION OF THE AREA SURVEYED

Approximately 34,320 lineal feet were surveyed as part of the system investigation. This included all fire hydrants, accessible mainline valves and selected services.

METHODOLOGY

Your survey was conducted using the latest state of the art leak computers, the **FLUID CONSERVATION SYSTEMS' DigiCALL Correlating System, Accu Corr Leak Correlator, or FCS Tri-Corr 2001 Leak Correlator.** The **FCS S-30** is a tool used as an electronically enhanced listening device. All of these correlators are manufactured by Fluid Conservation Systems of Milford, Ohio. These electronic instruments are microprocessor units that measure the time it takes the sound of the leak to travel from the leak to the point where the leak Correlator is connected to the water line. By connecting the leak correlator to the water line at two locations, it will compute the distance from the leak to each connection point thus enabling us to determine the exact leak location. Our experienced technicians used these devices, along with the S30 electronically enhanced listening device or the L-Mic electronic listening device, as listening equipment to survey your pipeline network. Each hydrant and accessible valve was used as listening points to identify leaks. Selected services, b-boxes, were used on an as needed basis to keep the listening distances under five hundred feet (500'). "Pinpointing" of the leak, as well as locating leaks that other methods fail to reveal was also done with this equipment.

LEAKAGE LOCATED

All water mains within the Project area were surveyed and 1 leaks were located. These leaks have been grouped as follows: Main Line Leak - 0, Service Line Leak - 0, Fire Service Leak -0, Valve Leak - 0, Hydrant Leak - 1, Other Type Leak - 0. All of these leaks have been verbally reported to your office with these locations, so many have probably been repaired already. Following are the leak locations with an estimated GPD (Gallons Per Day) leakage potential.

Type	Location	SIZE
Hydrant (visible)	49 La Costa Court - Laguna Beach, California see enclosed diagram	1,440 GPD
1 Leaks Located	**ESTIMATED LEAKAGE TOTAL**	**1,440 GPD**

LEAK QUANTITIES

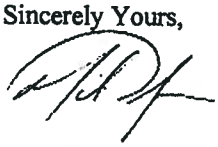
Quantifying leaks is difficult because there is not any accurate means of doing so. Pipe material, size of the leak, system pressure, soil material and water table will affect the noise that a leak makes. Small leaks under high system pressure will make more noise than a large leak under low system pressure. However, the above leaks are of sufficient noise levels that the above estimates should be very conservative. If a production price of $4.40 per thousand gallons is used, these leaks were costing your utility in excess of $3.34 per day or $2,312.64 annually. It's obvious this Leak Survey Program has proven to be cost effective. Naturally the main line leaks have the greatest potential for loss followed by service line, valves, and finally hydrants. Once leaks have been repaired, we would recommend that the Utility compare pumping rates before and after. This information will be more meaningful and accurate.

RECOMMENDATIONS

This survey confirms the Laguna Beach County Water District's water distribution system will benefit from this project by a reduction in underground leakage. There is always a concern over the cost effectiveness of leak detection because of the uncertainty of the number of leaks located. However, with your present cost of water and the discovery of this 1 leak, the cost of this 2009 leak survey will pay for itself within 20 months. It only takes a recovery of about 2,428 gallons per day on an annual basis (2,428 per day is only 1.7 gallons per minute throughout your entire water distribution system) to recover your investment. We would recommend that you conduct a Leak Survey Program every year. This recommendation becomes more critical as your cost of water increases.

We appreciate your cooperation and that of the Utility staff we were available to answer our questions during this project. If you have any questions with the information in this report, please do not hesitate to contact us.

Sincerely Yours,



Michael D. Simpson
CEO
MDS/jph

M.E. SIMPSON COMPANY, INC.

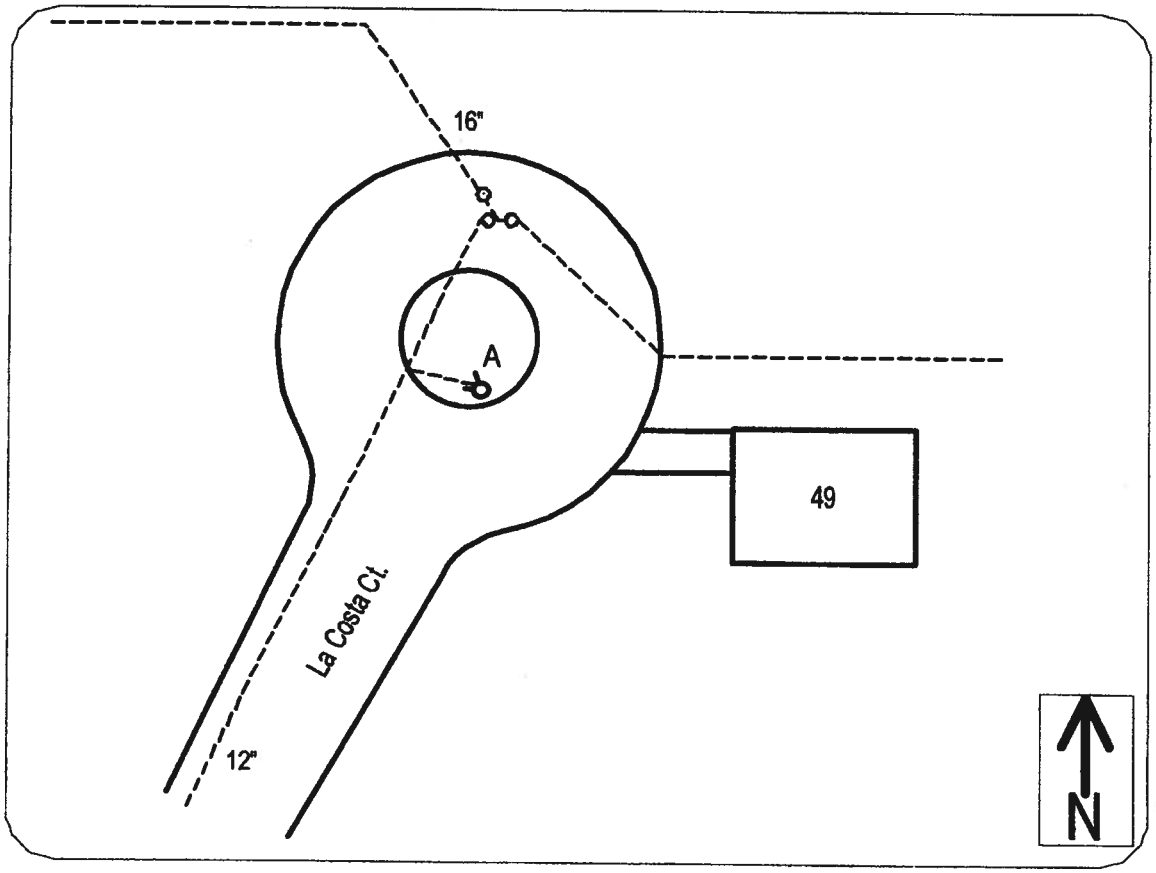
LEAK LOCATION REPORT

Client: Laguna Beach, California **Time:** 10:00 **Leak#** 02'09

Date: Wednesday, December 09, 2009 **Tech:** Sandison P. & Craig V.

Address: 49 La Costa Court - Laguna Beach, California

Below is a diagram of the area surveyed for a suspect leak.



Distance: 0' from A

Connection point: A= Hydrant #6 60/8

Connection point:

Connection point:

Connection point:

Leak Location: 0' from A

Comments: This is a visible hydrant leak.

We thank you for the opportunity to work for your Utility and look forward to serving you again. If you have any questions please don't hesitate to call.

M.E. SIMPSON COMPANY, INC.

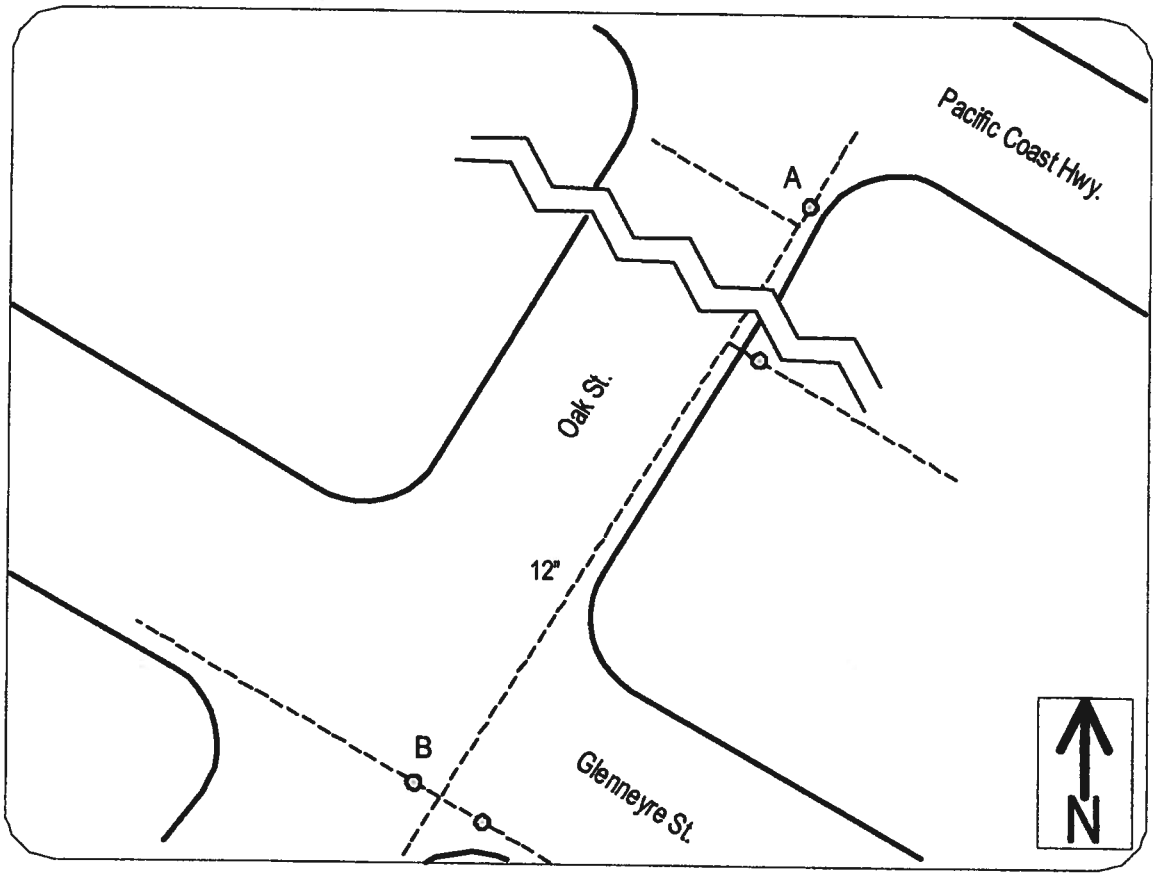
LEAK LOCATION REPORT

Client: Laguna Beach, California **Time:** 08:00 **Leak#** 01'09

Date: Wednesday, December 09, 2009 **Tech:** Sandison P. & Craig V.

Address: Oak Street - Between Glenneyre Street & Pacific Coast Highway - Laguna Beach, California

Below is a diagram of the area surveyed for a suspect leak.



Distance: 258' from A to B

Connection point: A= Main Line Valve

Connection point: B= Main Line Valve

Connection point:

Connection point:

Leak Location: There were no leaks pinpointed in this area.

Comments: After correlation we listened to area connection points but did not detect any leak noise.

We thank you for the opportunity to work for your Utility and look forward to serving you again. If you have any questions please don't hesitate to call.