AGENDA ITEM C-7

CITY OF LODI
COUNCIL COMMUNICATION

TM

AGENDA TITLE: Adopt Resolution Authorizing City Manager to Execute Purchase Order and Amendment No. 1 to Professional Services Agreement with National Meter and Automation, Inc., of Santa Rosa, for Purchase of Meter Assemblies and Field Documentation ($1,800,000)

MEETING DATE: February 6, 2013

PREPARED BY: Public Works Director

RECOMMENDED ACTION: Adopt resolution authorizing City Manager to execute purchase order and Amendment No. 1 to Professional Services Agreement with National Meter and Automation, Inc., of Santa Rosa, for purchase of meter assemblies and field documentation, in the amount of $1,800,000.

BACKGROUND INFORMATION: National Meter and Automation, Inc., of Santa Rosa, is the local supplier for Badger Meter, Inc., of Milwaukee, that was approved by City Council on August 4, 2010, as the sole source provider of water meters to the Water Meter Program. Staff has negotiated the necessary terms and requirements of the water meter assemblies' procurement and related field services. Field services include the delivery of meters to the City and recordation of model, serial number, address, and location of approximately 8,200 meters to be installed with the water meter program. This purchase will cover the remaining five years of the water meter program. Appropriation for the 2013 water meter purchase is included in the Water Division budget.

Amendment No. 1 to the Professional Services Agreement with National Meter and Automation, Inc., will extend the term of the agreement to March 20, 2018.

FISCAL IMPACT: Funding is included in the Water Division budget.

FUNDING AVAILABLE: Water Capital Fund (181)

Jordan Ayers
Deputy City Manager/Internal Services Director

F. Wally Sandelin
Public Works Director

FWS/pmf
Attachment

APPROVED: Konradt Bartlam, City Manager

AMENDMENT NO. 1

National Meter and Automation, Inc.
Professional Services Agreement

THIS AMENDMENT NO. 1 TO PROFESSIONAL SERVICES AGREEMENT, is made and entered this _____ day of February, 2013, by and between the CITY OF LODI, a municipal corporation (hereinafter "CITY"), and NATIONAL METER AND AUTOMATION, INC. (hereinafter "CONSULTANT").

W I T N E S S E T H:

1. WHEREAS, CONSULTANT and CITY entered into a Professional Services Agreement (Agreement) on March 28, 2012, as set forth in Exhibit 1 (attached).

2. WHEREAS, the parties agree to extend the term of the Agreement to March 20, 2018;

NOW, THEREFORE, the parties agree to extend the term of the Agreement to March 20, 2018. All other terms and conditions will remain as set forth in the Agreement, attached to as Exhibit 1 and made a part hereof as though fully set forth herein.

IN WITNESS WHEREOF, CITY and CONSULTANT have executed this Amendment No. 1 on _____, 2013.

CITY OF LODI, a municipal corporation
Hereinabove called "CITY"

_____
KONRADT BARTLAM
City Manager

NATIONAL METER AND AUTOMATION, INC.
Hereinabove called "CONSULTANT"

_____
Name:
Title:

Attest:

_____
RANDI JOHL, City Clerk

Approved as to Form:

_____
D. STEPHEN SCHWABAUER
City Attorney

Exhibit 1

AGREEMENT FOR PROFESSIONAL SERVICES

ARTICLE 1
PARTIES AND PURPOSE

Section 1.1 Parties

THIS AGREEMENT is entered into on March 28, 2012, by and between the CITY OF LODI, a municipal corporation (hereinafter "CITY"), and NATIONAL METER AND AUTOMATION, INC. (hereinafter "CONTRACTOR").

Section 1.2 Purpose

CITY selected the CONTRACTOR to provide the services required in accordance with attached Scope of Services, Exhibit A, attached and incorporated by this reference.

CITY wishes to enter into an agreement with CONTRACTOR for purchase of water meter assemblies and related services (hereinafter "Project") as set forth in the Scope of Services attached here as Exhibit A. CONTRACTOR acknowledges that it is qualified to provide such services to CITY.

ARTICLE 2
SCOPE OF SERVICES

Section 2.1 Scope of Services

CONTRACTOR, for the benefit and at the direction of CITY, shall perform the Scope of Services as set forth in Exhibit A.

Section 2.2 Time For Commencement and Completion of Work

CONTRACTOR shall commence work pursuant to this Agreement, upon receipt of a written notice to proceed from CITY or on the date set forth in Section 2.6, whichever occurs first, and shall perform all services diligently and complete work under this Agreement based on a mutually agreed upon timeline or as otherwise designated in the Scope of Services.

CONTRACTOR shall submit to CITY such reports, diagrams, drawings and other work products as may be designated in the Scope of Services.

CONTRACTOR shall not be responsible for delays caused by the failure of CITY staff to provide required data or review documents within the appropriate time frames. The review time by CITY and any other agencies involved in the project shall not be

counted against CONTRACTOR's contract performance period. Also, any delays due to weather, vandalism, acts of God, etc., shall not be counted. CONTRACTOR shall remain in contact with reviewing agencies and make all efforts to review and return all comments.

Section 2.3 Meetings

CONTRACTOR shall attend meetings as may be set forth in the Scope of Services.

Section 2.4 Staffing

CONTRACTOR acknowledges that CITY has relied on CONTRACTOR's capabilities and on the qualifications of CONTRACTOR's principals and staff as identified in its proposal to CITY. The Scope of Services shall be performed by CONTRACTOR, unless agreed to otherwise by CITY in writing. CITY shall be notified by CONTRACTOR of any change of Project Manager and CITY is granted the right of approval of all original, additional and replacement personnel at CITY's sole discretion and shall be notified by CONTRACTOR of any changes of CONTRACTOR's project staff prior to any change.

CONTRACTOR represents it is prepared to and can perform all services within the Scope of Services (Exhibit A) and is prepared to and can perform all services specified therein. CONTRACTOR represents that it has, or will have at the time this Agreement is executed, all licenses, permits, qualifications, insurance and approvals of whatsoever nature are legally required for CONTRACTOR to practice its profession, and that CONTRACTOR shall, at its own cost and expense, keep in effect during the life of this Agreement all such licenses, permits, qualifications, insurance and approvals, and shall indemnify, defend and hold harmless CITY against any costs associated with such licenses, permits, qualifications, insurance and approvals which may be imposed against CITY under this Agreement.

Section 2.5 Subcontracts

Unless prior written approval of CITY is obtained, CONTRACTOR shall not enter into any subcontract with any other party for purposes of providing any work or services covered by this Agreement.

Section 2.6 Term

The term of this Agreement commences on March 21, 2012 and terminates upon the completion of the Scope of Services or on March 20, 2013, whichever occurs first.

ARTICLE 3
COMPENSATION

Section 3.1 Compensation

CONTRACTOR's compensation for all work under this Agreement shall conform to the provisions of the Fee Proposal, attached hereto as Exhibit B and incorporated by this reference.

CONTRACTOR shall not undertake any work beyond the scope of this Agreement unless such additional work is approved in advance and in writing by CITY.

Section 3.2 Method of Payment

CONTRACTOR shall submit invoices for completed work on a monthly basis, or as otherwise agreed, providing, without limitation, details as to amount of hours, individual performing said work, hourly rate, and indicating to what aspect of the Scope of Services said work is attributable. CONTRACTOR's compensation for all work under this Agreement shall not exceed the amount of the Fee Proposal.

Section 3.3 Costs

The Fee Proposal shall include all reimbursable costs required for the performance of the Scope of Services. Payment of additional reimbursable costs considered to be over and above those inherent in the original Scope of Services shall be approved in advanced and in writing, by CITY.

Section 3.4 Auditing

CITY reserves the right to periodically audit all charges made by CONTRACTOR to CITY for services under this Agreement. Upon request, CONTRACTOR agrees to furnish CITY, or a designated representative, with necessary information and assistance needed to conduct such an audit.

CONTRACTOR agrees that CITY or its delegate will have the right to review, obtain and copy all records pertaining to performance of this Agreement. CONTRACTOR agrees to provide CITY or its delegate with any relevant information requested and shall permit CITY or its delegate access to its premises, upon reasonable notice, during normal business hours for the purpose of interviewing employees and inspecting and copying such books, records, accounts, and other material that may be relevant to a matter under investigation for the purpose of determining compliance with this requirement. CONTRACTOR further agrees to maintain such records for a period of three (3) years after final payment under this Agreement.

ARTICLE 4
MISCELLANEOUS PROVISIONS

Section 4.1 Nondiscrimination

In performing services under this Agreement, CONTRACTOR shall not discriminate in the employment of its employees or in the engagement of any sub CONTRACTOR on the basis of race, color, religion, sex, sexual orientation, marital status, national origin, ancestry, age, or any other criteria prohibited by law.

Section 4.2 ADA Compliance

In performing services under this Agreement, CONTRACTOR shall comply with the Americans with Disabilities Act (ADA) of 1990, and all amendments thereto, as well as all applicable regulations and guidelines issued pursuant to the ADA.

Section 4.3 Indemnification and Responsibility for Damage

CONTRACTOR to the fullest extent permitted by law, shall indemnify and hold harmless CITY, its elected and appointed officials, directors, officers, employees and volunteers from and against any claims, damages, losses, and expenses (including reasonable attorney's fees), arising out of performance of the services to be performed under this Agreement, provided that any such claim, damage, loss, or expense is caused by the negligent acts, errors or omissions of CONTRACTOR, any subcontractor employed directly by CONTRACTOR, anyone directly or indirectly employed by any of them, or anyone for whose acts they may be liable, except those injuries or damages arising out of the active negligence of the City of Lodi or its officers or agents.

Section 4.4 No Personal Liability

Neither the City Council, nor any other officer or authorized assistant or agent or City employee shall be personally responsible for any liability arising under this Agreement.

Section 4.5 Responsibility of CITY

CITY shall not be held responsible for the care or protection of any material or parts of the work described in the Scope of Services prior to final acceptance by CITY, except as expressly provided herein.

Section 4.6 Insurance Requirements for CONTRACTOR

CONTRACTOR shall take out and maintain during the life of this Agreement, insurance coverage as set forth in Exhibit C attached hereto and incorporated by this reference.

Section 4.7 Successors and Assigns

CITY and CONTRACTOR each bind themselves, their partners, successors, assigns, and legal representatives to this Agreement without the written consent of the others. CONTRACTOR shall not assign or transfer any interest in this Agreement without the prior written consent of CITY. Consent to any such transfer shall be at the sole discretion of CITY.

Section 4.8 Notices

Any notice required to be given by the terms of this Agreement shall be in writing signed by an authorized representative of the sender and shall be deemed to have been given when the same is personally served or upon receipt by express or overnight delivery, postage prepaid, or three (3) days from the time of mailing if sent by first class or certified mail, postage prepaid, addressed to the respective parties as follows:

To CITY: City of Lodi
221 West Pine Street
P.O. Box 3006
Lodi, CA 95241-1910
Attn: Wally Sandelin, Public Works Director

To CONTRACTOR: National Meter and Automation, Inc.
2250 Apollo Way, Ste. 300
Santa Rosa, CA 95407
Attn: Kathy Richards

Section 4.9 Cooperation of CITY

CITY shall cooperate fully and in a timely manner in providing relevant information it has at its disposal relevant to the Scope of Services.

Section 4.10 CONTRACTOR is Not an Employee of CITY

CONTRACTOR agrees that in undertaking the duties to be performed under this Agreement, it shall act as an independent contractor for and on behalf of CITY and not an employee of CITY. CITY shall not direct the work and means for accomplishment of the services and work to be performed hereunder. CITY, however, retains the right to require that work performed by CONTRACTOR meet specific standards without regard to the manner and means of accomplishment thereof.

Section 4.11 Termination

CITY may terminate this Agreement, with or without cause, by giving CONTRACTOR at least ten (10) days written notice. Where phases are anticipated within the Scope of Services, at which an intermediate decision is required concerning whether to proceed further, CITY may terminate at the conclusion of any such phase.

Upon termination, CONTRACTOR shall be entitled to payment as set forth in the attached Exhibit B to the extent that the work has been performed. Upon termination, CONTRACTOR shall immediately suspend all work on the Project and deliver any documents or work in progress to CITY. However, CITY shall assume no liability for costs, expenses or lost profits resulting from services not completed or for contracts entered into by CONTRACTOR with third parties in reliance upon this Agreement.

Section 4.12 Confidentiality

CONTRACTOR agrees to maintain confidentiality of all work and work products produced under this Agreement, except to the extent otherwise required by law or permitted in writing by CITY. CITY agrees to maintain confidentiality of any documents owned by CONTRACTOR and clearly marked by CONTRACTOR as "Confidential" or "Proprietary", except to the extent otherwise required by law or permitted in writing by CONTRACTOR. CONTRACTOR acknowledges that CITY is subject to the California Public Records Act.

Section 4.13 Applicable Law, Jurisdiction, Severability, and Attorney's Fees

This Agreement shall be governed by the laws of the State of California. Jurisdiction of litigation arising from this Agreement shall be venued with the San Joaquin County Superior Court. If any part of this Agreement is found to conflict with applicable laws, such part shall be inoperative, null, and void insofar as it is in conflict with said laws, but the remainder of this Agreement shall be in force and effect. In the event any dispute between the parties arises under or regarding this Agreement, the prevailing party in any litigation of the dispute shall be entitled to reasonable attorney's fees from the party who does not prevail as determined by the San Joaquin County Superior Court.

Section 4.14 City Business License Requirement

CONTRACTOR acknowledges that Lodi Municipal Code Section 3.01.020 requires CONTRACTOR to have a city business license and CONTRACTOR agrees to secure such license and pay the appropriate fees prior to performing any work hereunder.

Section 4.15 Captions

The captions of the sections and subsections of this Agreement are for convenience only and shall not be deemed to be relevant in resolving any question or interpretation or intent hereunder.

Section 4.16 Integration and Modification

This Agreement represents the entire understanding of CITY and CONTRACTOR as to those matters contained herein. No prior oral or written understanding shall be of any force or effect with respect to those matters covered hereunder. This Agreement may not be modified or altered except in writing, signed by both parties.

Section 4.17 Contract Terms Prevail

All exhibits and this Agreement are intended to be construed as a single document. Should any inconsistency occur between the specific terms of this Agreement and the attached exhibits, the terms of this Agreement shall prevail.

Section 4.18 Severability

The invalidity in whole or in part of any provision of this Agreement shall not void or affect the validity of any other provision of this Agreement.

Section 4.19 Ownership of Documents

All documents, photographs, reports, analyses, audits, computer media, or other material documents or data, and working papers, whether or not in final form, which have been obtained or prepared under this Agreement, shall be deemed the property of CITY. Upon CITY's request, CONTRACTOR shall allow CITY to inspect all such documents during CONTRACTOR's regular business hours. Upon termination or completion of services under this Agreement, all information collected, work product and documents shall be delivered by CONTRACTOR to CITY within ten (10) calendar days.

CITY agrees to indemnify, defend and hold CONTRACTOR harmless from any liability resulting from CITY's use of such documents for any purpose other than the purpose for which they were intended.

Section 4.20 Authority

The undersigned hereby represent and warrant that they are authorized by the parties to execute this Agreement.

Section 4.21 Federal Transit Funding Conditions

☐ If the box at left is checked, the Federal Transit Funding conditions attached as Exhibit apply to this contract. In the event of a conflict between the terms of this contract or any of its other exhibits, and the Federal Transit Funding Conditions, the Federal Transit Funding Conditions will control.

IN WITNESS WHEREOF, CITY and CONTRACTOR have executed this Agreement as of the date first above written.

CITY OF LODI, a municipal corporation

ATTEST:

RANDI JOHL
City Clerk

KONRADT BARTLAM, City Manager

APPROVED AS TO FORM:
D. STEPHEN SCHWABAUER, City Attorney
JANICE D. MAGDICH, Deputy City Attorney

By:

CONTRACTOR:National Meter

By: Frank Millicon
Name: FRANK MILLIRON
Title: VICE PRESIDENT

Attachments:
Exhibit A – Scope of Services
Exhibit B – Fee Proposal
Exhibit C – Insurance Requirements

Funding Source:181465.1825.2150
(Business Unit & Account No.)

Doc ID:Water Meter Program Phase 2\PSA National Meter

CA:rev.01.2012

Exhibit A

City of Lodi

Request for Proposal
Purchase of Water Meter Assemblies and Related Services

January 7, 2011

Presented By:

NATIONAL
METER AND AUTOMATION, INC.

Kathy Richards
2250 Apollo Way #300
Santa Rosa, CA 95407
707.575.0700 office
707.481.1684 cell
707.575.3786 fax

An Authorized Badger Meter & Itron Distributor

NATIONAL
METER AND AUTOMATION, INC.

Table of Contents

Tab #	Section Name	Page #
1	Proposal in Response to the Requirements of the RFP	3
2	Cost Proposal	9
3	Leak Detection Equipment	13
4	Meter Calibration Bench Testing Equipment	19
5	Technical Briefs	22
6	Warranties	23

NATIONAL
METER AND AUTOMATION, INC.

January 7, 2011

Tom Dugan, Program Administrator
City of Lodi Public Works Department
221 West Pine Street
Lodi, CA 95240

Re: Purchase of Water Meter Assemblies and Related Services RFP Response

Mr. Dugan,

Since their inception in 1977, Itron, Inc. has become the world's leading provider of intelligent metering, data collection and utility software solutions, with nearly 8,000 utilities worldwide relying on their technology to optimize the delivery and use of energy and water.

Founded in 1905, Badger Meter, Inc. has earned an international reputation as an innovator in the development of flow measurement technologies. Badger's tremendous success is due, in part, to its distributor network.

Founded in 2004, National Meter & Automation, Inc. (NMAAI) is Badger Meter's largest distributor in the United States, as well as an authorized Itron, Inc. distributor covering California, Arizona, Nevada, Colorado and southern Wyoming. With a combined 75 years of AMR/Water Meter experience, our California branch includes knowledgeable inside and outside sales professionals along with a factory trained and certified technical support team. Just 112 miles from Lodi, CA, NMAAI has a local, fully stocked warehouse located in Santa Rosa, CA to provide optimum material availability.

Main Contact
Kathy Richards, CA Sales Manager
krichards@nmaai.com
(707) 481-1684 cell
(707) 575-0700 office
(707) 575-3786 fax
2250 Apollo Way #300
Santa Rosa, CA 95407

Corporate Office
Noel Frakes, President
nfrakes@nmaai.com
(303) 981-9330 cell
(303) 339-9100 office
(303) 649-1017 fax
7220 S. Fraser St.
Centennial, CO 80112

Technical Support
Dennis McConville
dmcconville@nmaai.com
(916) 436-6670 cell

NATIONAL
METER AND AUTOMATION, INC.

Enclosed is National Meter & Automation, Inc.'s proposal for Itron, Inc.'s premier Automated Meter Reading System in conjunction with Badger Meter's leading Water Meter technology. National Meter & Automation will work closely with the staff at the City of Lodi to seamlessly integrate meter data into the City's billing system. National Meter & Automation will also provide system implementation support and on-site training for field and office staff by a local, experienced and certified trainer.

National Meter & Automation has reviewed and will commit to the terms and conditions of the contract documents.

National Meter & Automation is pleased to present this proposal to the City of Lodi. For additional information, please contact me via cell phone at (707) 481-1684, or via email at krichards@nmaai.com.

Regards,

Kathy Richards

Kathy Richards, California Sales Manager
National Meter & Automation, Inc.

NATIONAL
METER AND AUTOMATION, INC.

Proposal in Response to the Requirements of the RFP

D. Summary of Work

- Comply.

E. Scope of Summary

1) Meter Assemblies
   A. Comply.
   B. Comply. See Tab 6 for warranties
   C. Comply. See Tab 5 for product equipment submittals.
2) Support Services
   - Comply.
3) Meter Assembly Documentation
   - Comply.
4) Meter Assembly Storage, Deliver and Transfer of Ownership
   - Comply.
5) Field Documentation
   - Comply. See Tab 2 for pricing.
6) OPTIONAL SCOPE ITEM 1: Meter Calibration Bench Testing Equipment
   - See Tab 4 for specifications and pricing.
7) OPTIONAL SCOPE ITEM 2: Leak Detection Equipment
   - See Tab 3 for specifications and pricing.

F. Meter Assembly Procurement Schedule

- Comply.

G. Deliveries of Submittals

- Comply.

H. Sales and Use Taxes

- Comply. See Tab 2 for pricing.

I. Guarantees

- Comply. See Tab 6 for warranties

J. Purchases

- Comply.

NATIONAL
METER AND AUTOMATION, INC.

K. Business License

- Comply.

L. Procurement Proposal

- Comply.

5) The Components of the Proposal shall include the following:
   A. See Tab 5 for equipment submittals.
   B. Comply. See Tab 2 for pricing.
   C. Terms and Conditions

Terms and Conditions: Meter Assemblies and Materials

Material deliveries will be coordinated between National Meter & Automation and the Installation contractor. This coordination will include the number of required meter assemblies and delivery dates.

The Contractor will request delivery of the initial order of complete meter assemblies no less than 14 days prior to the required delivery date. Thereafter, a base delivery of 500 meter assemblies will be scheduled on 7 day intervals. Larger orders in less time intervals may be arranged between the Installation Contractor and National Meter & Automation.

All equipment shall be shipped FOB to the jobsite. The Installation Contractor will arrange for receipt of materials and shall provide a forklift to offload the truck. The Installation Contractor will take possession of and responsibility for the meter assemblies at the delivery site.

National Meter & Automation will invoice the City of Lodi for materials when shipped. Included with each invoice will be an Inventory Manifest. This manifest will include all meter assembly documentation as outlined in Item 3 of this Request for Proposal. Invoices will be issued with payment terms of Net 30 days.

NATIONAL
METER AND AUTOMATION, INC.

Terms and Conditions: Field Documentation

Once each meter assembly is installed, National Meter & Automation will conduct a site visit and complete the Field Documentation as outlined in Item 5 of this Request for Proposal. Site visits will include a minimum of 1,000 locations, referred to as a Verified Group

National Meter & Automation will invoice the City of Lodi for the corresponding number of site visits completed and for which all Field Documentation has been collected and confirmed against the original Inventory Manifest at the completion of each Verified Group. Invoices will be issued with payment terms of Net 30 days.

National Meter & Automation will work with City staff as assigned for delivery of the entire Meter Installation Database at the completion of each project phase, or as requested by the City.

D. STATEMENT OF UNDERSTANDING

Statement of Understanding

National Meter & Automation will actively partner with the City of Lodi and RMC Water and Environment to ensure the successful implementation of the City of Lodi's water meter system.

As the authorized distributor for both Badger Meter, Inc. and Itron, Inc. in Northern California, National Meter & Automation will coordinate each aspect of the product from material procurement through data collection and presentment.

The process has begun with National Meter & Automation's successful negotiations with both manufacturers to ensure stable pricing through the seven phases of this project. Our pricing proposal reflects the material standards as outlined in the City of Lodi's Standards #403 and 412.

With water resource management being a primary driver in the implementation of this system, we have also included information and pricing for water loss management tools that are designed to work with the Itron system and assist the City in its efforts to manage

the integrity of the water distribution system. The Leak Sensor and Mlog online presentment tools work in conjunction with the Itron ChoiceConnect meter reading system. The Leak Sensor's constant monitoring of the distribution system helps the City identify potential system leaks while they are still relatively small, allow for repair during normal working hours and before extensive water loss or damage to the infrastructure.

National Meter & Automation's approach to the water meter implementation project will be as follows:

NMAAI will procure materials from both manufacturers, Badger Meter, Inc. and Itron, Inc. on a schedule that has been outlined with the Installation Contractor and is based on his installation schedule.

The materials will arrive in our warehouse in Santa Rosa where we will begin the assembly and documentation process. All meters shall be tested and certified at the factory prior to their shipment. Certified test results will be the starting point for our material documentation process.

The meters and encoded registers will be assembled to an Itron 100W endpoint which has been programmed to operate in a drive-by mode. The serial number of the Itron 100W endpoint, together with the meter model number, size, and other information as outlined in item 3 of the RFP titled "Meter Assembly Documentation" will be added to the certified test results completing the data base, hereafter referred to as a Shipping Manifest.

National Meter & Automation will ship the meter assemblies to a jobsite location as determined by the City and Installation Contractor. A detailed shipping schedule will be mutually agreed upon between National Meter & Automation and the Installation Contractor. For purposes of an initial estimate, these shipments will occur every 7 days with a quantity of 500 assemblies.

Scheduled shipments will be made FOB jobsite, full freight allowed. National Meter & Automation will retain ownership of materials until delivery is made at which time the Installation Contractor will take possession of and responsibility for the materials. The Installation Contractor will coordinate delivery of the materials and provide equipment for offload of the meter assemblies.

The City of Lodi will be invoiced for each shipment once the Installation Contractor has taken possession of the materials. This invoice will include a detailed description of the materials and quantities shipped, and the date and method of shipment. A Shipping Manifest (as described above) will accompany each billing invoice. There will be two hard copies and one digital copy as requested by the City in this RFP.

National Meter & Automation will work closely with the Installation Contractor throughout the entire phase of the project.

The Installation Contractor will have a list of installation sites as identified by the City. This list of sites will be identified by both APN number and physical address.

RMC Water and Environment will be working with the Installation Contractor and will be responsible for inspecting the individual meter installations.

National Meter & Automation will obtain information from the Installation Contractor regarding completed installation sites. Once an installation group of 1,000 services or greater has been completed, National Meter & Automation will conduct a site visit to each location. Using the customer data base with APN number and physical address, National Meter and Automation will complete the Field Documentation process.

The Field Documentation process will include gathering all information pertaining to that meter location including meter, encoder and endpoint serial numbers, meter model, size and GPS coordinates of the installed meter to a sub-meter accuracy.

The data gathered at each meter site will be merged with the Inventory Manifest and City's database with APN number and physical address. This process will include verifying that the serial numbers for the complete meter assembly gathered at the installation site match the serial numbers of the assemblies as they were delivered to the Installation Contractor. Any assembly whose numbers do not match will require a second site visit to confirm the information for the final assembly installed on site.

National Meter & Automation will invoice the City of Lodi for each Installation Group at the completion of the Field Documentation process. National Meter and Automation will submit the completed Field Documentation to the City of Lodi at the completion of each phase. Partial listings shall be submitted sooner at the City's request.

At the completion of each phase, National Meter & Automation will work with City staff as assigned to integrate the meter installation data into the City's Utility Billing System. Once the data has been uploaded, National Meter & Automation will perform an initial meter read and confirm that all assemblies are functioning. A field investigation and troubleshooting will be performed on any assembly that does not communicate when interrogated. Any unit that found to be faulty due to material, workmanship or design will be replaced. Any unit found to have been damaged shall be reported to the City staff as assigned for additional direction.

Should the City opt to include a city wide or selected phase implementation of the Leak Sensor technology, National Meter & Automation will collect the additional information necessary during the Field Documentation process and add that data to the Meter Installation data base.

National Meter & Automation will conduct training sessions as necessary, but not less than once during each installation phase. This training will include, but is not limited to, field installation and troubleshooting, meter reading equipment training, use of the MV-RS software, review of available reports and their value to each department, and the custom report generation process. National Meter & Automation will also assist the City with any software upgrades or other issues that may arise during the daily use of its Itron meter reading system.

Subsequent phases of this project shall be reviewed on a case by case basis. Changes in the installation methodology and data collection process shall be continually reviewed by National Meter & Automation for upgrades in technology, improved efficiencies, and additional City requirements that may arise over the duration of this project.

At which point the City wishes to change its method of collection from the drive-by mode to the ChoiceConnect Fixed Network solution, National Meter & Automation will deliver the endpoints programmed in the appropriate transmission mode. We will also work with City staff to reprogram existing endpoints from the drive-by to the fixed-network transmission mode. National Meter & Automation will also work closely with both the City of Lodi and Itron, Inc. to ensure a successful transition in data collection methods and ensure that additional training is provided as needed.

NATIONAL
METER AND AUTOMATION, INC.

Cost Proposal

*** Note 1) Meter Assembly & Documentation Pricing includes:**
Meter body, ADE register, and 100W endpoint with thru lid mounting kit
All items as described in Support Services, Items 1-4

**** Note 2) Meter Assembly & Documentation Pricing Notes:**

1. Sales Tax shown are rates in effect at time of quotation.
   Sales Tax shall be charged based on the rates in effect at time of final sale.
2. Prices quoted are firm thru November 2011.
3. Future prices quoted may be increased in proportion to the increase in the Producer Price Index for Materials for durable manufacturing as reported by the US Department of Labor. The base index shall be the October 2010 index of 189.3. Changes in prices will be no more frequent than every 12 months if necessary, and will not exceed 3%.

***** Note 3) Field Documentation Pricing Notes:**

1. Prices quoted are firm thru November 2011.
2. Future years pricing may be adjusted according to Lodi area CPI rates.

Phase 1: 2011 Meter Assembly & Documentation Pricing

Size	Model	Quantity	Unit Price	Total
3/4"	Badger Model 35	3,695	$ 194.00	$ 716,830.00
1"	Badger Model 55	5	$ 226.00	$ 1,130.00
2"	Badger Model 170	1	$ 622.00	$ 622.00
			Subtotal	$ 718,582.00
		CA Sales Tax	7.250%	$ 52,097.20
		County Sales Tax	0.500%	$ 3,592.91
		Local Sales Tax	1.000%	$ 7,185.82
			Total	$ 781,457.93

*See Note 1
** See Note 2

Phase 1: 2011 Field Documentation Pricing

Size	Quantity	Unit Price	Total
All Sizes	3,701	$ 8.00	$ 29,608.00

*** See Note 3

NATIONAL
METER AND AUTOMATION, INC.

Phase 2: 2012 Meter Assembly & Documentation Pricing

Size	Model	Quantity	Unit Price	Total
3/4"	Badger Model 35	2,067	$ 194.00	$ 400,998.00
1"	Badger Model 55	5	$ 226.00	$ 1,130.00
2"	Badger Model 170	1	$ 622.00	$ 622.00
			Subtotal	$ 402,750.00
		CA Sales Tax	7.250%	$ 29,199.38
		County Sales Tax	0.500%	$ 2,013.75
		Local Sales Tax	1.000%	$ 4,027.50
			Total	$ 437,990.63
				*See Note 1
				** See Note 2

Phase 2: 2012 Field Documentation Pricing

Size	Quantity	Unit Price	Total
All Sizes	2,073	$ 8.00	$ 16,584.00
			*** See Note 3

Phase 3: 2013 Meter Assembly & Documentation Pricing

Size	Model	Quantity	Unit Price	Total
3/4"	Badger Model 35	1,447	$ 194.00	$ 280,718.00
1"	Badger Model 55	5	$ 226.00	$ 1,130.00
2"	Badger Model 170	1	$ 622.00	$ 622.00
			Subtotal	$ 282,470.00
		CA Sales Tax	7.250%	$ 20,479.08
		County Sales Tax	0.500%	$ 1,412.35
		Local Sales Tax	1.000%	$ 2,824.70
			Total	$ 307,186.13
				*See Note 1
				** See Note 2

Phase 3: 2013 Field Documentation Pricing

Size	Quantity	Unit Price	Total
All Sizes	1,453	$ 8.00	$ 11,624.00
			*** See Note 3

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Phase 4: 2014 Meter Assembly & Documentation Pricing

Size	Model	Quantity	Unit Price	Total
3/4"	Badger Model 35	1,348	$ 194.00	$ 261,512.00
1"	Badger Model 55	5	$ 226.00	$ 1,130.00
2"	Badger Model 170	1	$ 622.00	$ 622.00
			Subtotal	$ 263,264.00
		CA Sales Tax	7.250%	$ 19,086.64
		County Sales Tax	0.500%	$ 1,316.32
		Local Sales Tax	1.000%	$ 2,632.64
			Total	$ 286,299.60
				*See Note 1
				** See Note 2

Phase 4: 2014 Field Documentation Pricing

Size	Quantity	Unit Price	Total
All Sizes	1,354	$ 8.00	$ 10,832.00
			*** See Note 3

Phase 5: 2015 Meter Assembly & Documentation Pricing

Size	Model	Quantity	Unit Price	Total
3/4"	Badger Model 35	868	$ 194.00	$ 168,392.00
1"	Badger Model 55	5	$ 226.00	$ 1,130.00
2"	Badger Model 170	1	$ 622.00	$ 622.00
			Subtotal	$ 170,144.00
		CA Sales Tax	7.250%	$ 12,335.44
		County Sales Tax	0.500%	$ 850.72
		Local Sales Tax	1.000%	$ 1,701.44
			Total	$ 185,031.60
				*See Note 1
				** See Note 2

Phase 5: 2015 Field Documentation Pricing

Size	Quantity	Unit Price	Total
All Sizes	874	$ 8.00	$ 6,992.00
			*** See Note 3

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Phase 6: 2016 Meter Assembly & Documentation Pricing

Size	Model	Quantity	Unit Price	Total
3/4"	Badger Model 35	921	$ 194.00	$ 178,674.00
1"	Badger Model 55	5	$ 226.00	$ 1,130.00
2"	Badger Model 170	1	$ 622.00	$ 622.00
			Subtotal	$ 180,426.00
		CA Sales Tax	7.250%	$ 13,080.89
		County Sales Tax	0.500%	$ 902.13
		Local Sales Tax	1.000%	$ 1,804.26
			Total	$ 196,213.28
				*See Note 1
				** See Note 2

Phase 6: 2016 Field Documentation Pricing

Size	Quantity	Unit Price	Total
All Sizes	927	$ 8.00	$ 7,416.00
			*** See Note 3

Phase 7: 2017 Meter Assembly & Documentation Pricing

Size	Model	Quantity	Unit Price	Total
3/4"	Badger Model 35	2,186	$ 194.00	$ 424,084.00
1"	Badger Model 55	5	$ 226.00	$ 1,130.00
2"	Badger Model 170	1	$ 622.00	$ 622.00
			Subtotal	$ 425,836.00
		CA Sales Tax	7.250%	$ 30,873.11
		County Sales Tax	0.500%	$ 2,129.18
		Local Sales Tax	1.000%	$ 4,258.36
			Total	$ 463,096.65
				*See Note 1
				** See Note 2

Phase 7: 2017 Field Documentation Pricing

Size	Quantity	Unit Price	Total
All Sizes	2,192	$ 8.00	$ 17,536.00
			*** See Note 3

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Leak Detection Equipment

*Note 1: Leak Detection Equipment Pricing

1. Sales Tax shown are rates in effect at time of quotation.
   Sales Tax shall be charged based on the rates in effect at time of final sale.
2. Prices quoted are firm thru December 31, 2013 (3 years).
3. Prices quoted may be increased by no more than 3% over the next 4 years,
   January 1, 2014 thru December 31, 2017.
4. Leak Sensor quantity is estimate (1:3).
   Final count subject to formal propagation study which factors in actual pipe materials & distances
5. Hosting Services are paid directly to Itron, Inc.

Itron DigiCorr Leak Noise Correlator

	Qty	Unit Price	Total
DigiCorr Leak Noise Correlator	1	$ 22,995.00	$ 22,995.00
CA Sales Tax		7.25%	$ 1,667.14
County Sales Tax		0.50%	$ 114.98
Local Sales Tax		1.00%	$ 229.95
		Total	**$ 25,007.06**
			*See Note 1

Itron Digital Leak Detector (DLD)

	Qty	Unit Price	Total
Digital Leak Detector (DLD)	1	$ 2,995	$ 2,995.00
CA Sales Tax		7.25%	$ 217.14
County Sales Tax		0.50%	$ 14.98
Local Sales Tax		1.00%	$ 29.95
		Total	**$3,257.06**
			*See Note 1

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Phase 1: 2011 Leak Detection Equipment

Total services included in Phase 1: 3,701
Estimated number of Leak Sensors required: 1,234

	Qty	Unit Price	Total
Upgrade - 100W single port transmitter with a 100W dual port transmitter includes Itron leak Sensor	1,234	$ 123.00	$ 151,741.00
		Subtotal	$ 151,741.00
CA Sales Tax		7.25%	$ 11,001.22
County Sales Tax		0.50%	$ 758.71
Local Sales Tax		1.00%	$ 1,517.41
		Total	$ 165,018.34
Mlog Online Hosted Services (annual)		Add:	$ 2,000.00
			*See Note 1

Phase 2: 2012 Leak Detection Equipment

Total services included in Phase 2: 2,073
Estimated number of Leak Sensors required: 691

	Qty	Unit Price	Total
Upgrade - 100W single port transmitter with a 100W dual port transmitter includes Itron leak Sensor	691	$ 123.00	$ 84,993.00
		Subtotal	$ 84,993.00
CA Sales Tax		7.25%	$ 6,161.99
County Sales Tax		0.50%	$ 424.97
Local Sales Tax		1.00%	$ 849.93
		Total	$ 92,429.89
Mlog Online Hosted Services (annual)		Add:	$ 2,500.00
			*See Note 1

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Phase 3: 2013 Leak Detection Equipment

Total services included in Phase 3: 1,447
Estimated number of Leak Sensors required: 482

	Qty	Unit Price	Total
Upgrade - 100W single port transmitter with a 100W dual port transmitter includes Itron leak Sensor	482	$ 123.00	$ 59,327.00
		Subtotal	$ 59,327.00
CA Sales Tax		7.25%	$ 4,301.21
County Sales Tax		0.50%	$ 296.64
Local Sales Tax		1.00%	$ 593.27
		Total	$ 64,518.11
Mlog Online Hosted Services (annual)		Add:	$ 2,500.00 *See Note 1

Phase 4: 2014 Leak Detection Equipment

Total services included in Phase 4: 1,348
Estimated number of Leak Sensors required: 449

	Qty	Unit Price	Total
Upgrade - 100W single port transmitter with a 100W dual port transmitter includes Itron leak Sensor	449	$ 123.00	$ 55,268.00
		Subtotal	$ 55,268.00
CA Sales Tax		7.25%	$ 4,006.93
County Sales Tax		0.50%	$ 276.34
Local Sales Tax		1.00%	$ 552.68
		Total	$ 60,103.95
Mlog Online Hosted Services (annual)		Add:	$ 2,500.00 *See Note 1

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Phase 5: 2015 Leak Detection Equipment

Total services included in Phase 5: 868
Estimated number of Leak Sensors required: 289

	Qty	Unit Price	Total
Upgrade - 100W single port transmitter with a 100W dual port transmitter includes Itron leak Sensor	289	$ 123.00	$ 35,588.00
		Subtotal	$ 35,588.00
CA Sales Tax		7.25%	$ 2,580.13
County Sales Tax		0.50%	$ 177.94
Local Sales Tax		1.00%	$ 355.88
		Total	$ 3,113.95
Mlog Online Hosted Services (annual)		Add:	$ 3,000.00 *See Note 1

Phase 6: 2016 Leak Detection Equipment

Total services included in Phase 6: 921
Estimated number of Leak Sensors required: 307

	Qty	Unit Price	Total
Upgrade - 100W single port transmitter with a 100W dual port transmitter includes Itron leak Sensor	307	$ 123.00	$ 37,761.00
		Subtotal	$ 37,761.00
CA Sales Tax		7.25%	$ 2,737.67
County Sales Tax		0.50%	$ 188.81
Local Sales Tax		1.00%	$ 377.61
		Total	$ 3,304.09
Mlog Online Hosted Services (annual)		Add:	$ 3,000.00 *See Note 1

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Phase 7: 2017 Leak Detection Equipment

Total services included in Phase 7: 2,186
Estimated number of Leak Sensors required: 729

	Qty	Unit Price	Total
Upgrade - 100W single port transmitter with a 100W dual port transmitter includes Itron leak Sensor	729	$ 123.00	$ 89,626.00
		Subtotal	$ 89,626.00
CA Sales Tax		7.25%	$ 6,497.89
County Sales Tax		0.50%	$ 448.13
Local Sales Tax		1.00%	$ 896.26
		Total	$ 7,842.28
Mlog Online Hosted Services (annual)		Add:	$ 3,500.00 *See Note 1

Description of Leak Detection Products

Leak Sensor

The Itron Leak Sensor Module is a small acoustic based device that interrogates water lines to ensure the integrity of the city's sub-surface infrastructure. The Leak Sensor is designed to be placed on the distribution side of the water meter; from there, it is able to listen out through the service line and into the larger distribution main. Strategically placed around the city, the Leak Sensor records, stores and eventually delivers all of its information through the Itron 100W Endpoint network.

Its reduced size, 24 hour listening cycle, 20-year battery life and use of the Itron 100W technology make the Leak Sensor the single most advanced and practical leak monitoring solution in the industry today.

MLog Online

MLog Online is the web based software where leak sensor information is stored. Presented on a Google map, MLog Online displays the current location of leak sensors throughout the city. MLog Online uses a three color indication system to determine the general security of the infrastructure being monitored by the leak sensors: Green represents little to no extraneous vibrations inside of the pipe, Yellow represents a higher than normal vibration

pattern within the pipe, and Red indicates the most positive indications that a leak exists somewhere in the surveyed area. When a leak is discovered and repaired, this information can be input into the software, creating a comprehensive library of maintenance information that can include dates, locations and names of leak investigators and repairers.

One of the greatest advantages to the web based software is the cloud based information storage. Through the web, Itron is able to manage all user data, essentially eliminating the need to budget additional server space. Additionally, any updates manufactured by Itron are seamlessly integrated into the software without additional charge or maintenance.

DigiCorr

The Itron DigiCorr system is one of the industry's most comprehensive digital leak correlating tools. Utilizing a similar acoustic interrogation found in the Leak Sensor, the DigiCorr is not only able determine the existence of a leak, but also the exact location of the leak. The DigiCorr utilizes ALFA™ (Automated Leak Frequency Analysis), to differentiate between the specific vibration signature of a leak and other peripheral auditory interferences. Through this technology, and the extreme sensitivity of the unit's two accelerometers, the DigiCorr can be effectively deployed to investigate miles of pipe each day.

The DigiCorr has a database of fifteen different types of pipe material (including four specific plastic and poly pipe types), and can integrate up to four different lengths in a single survey. The auto save feature ensures that previous correlations can be retrieved to study, compare, or be tweaked at the behest of new information. The DigiCorr also listens in multiple directions, meaning that a single survey is not limited by the pre-set location of each accelerometer; if a leak exists beyond the current location of the unit, that information is quickly translated to the user so that the survey can be adjusted appropriately.

DLD- Digital Leak Detector

The Itron Digital Leak Detector (DLD) is a highly advanced ground microphone. Unlike other analog units, the DLD integrates digital filtration for purer sound and more accurate leak detection. The unit's five digital filters are capable of removing extraneous environmental noises such as high winds, loud animals and even high traffic noises. Additionally, the unit digitally displays a leak score index; after building a baseline, leak investigators are able to use the score to hone in on leaks they are not capable to hearing.

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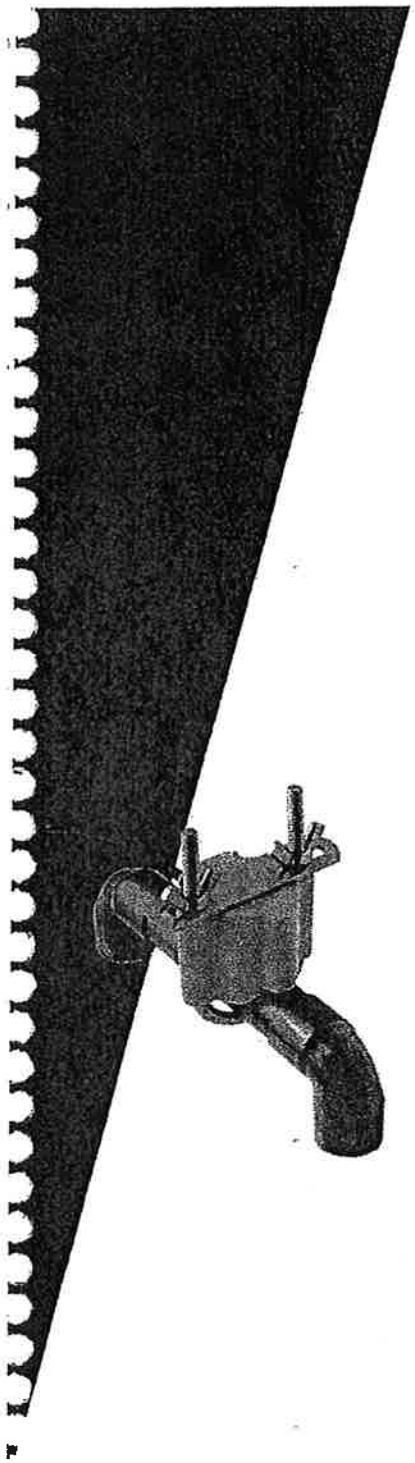
Leak Sensor



Overview

It's estimated that up to 30 percent of water pumped through distribution systems is lost to leaks. In today's conservation-driven environment, water losses – and associated pumping and treatment costs – add up quickly. Distribution leak detection, and keeping system losses minimal, are important operational concerns for water providers.

The Leak Sensor is an advanced approach to distribution system leak detection. Part of Itron's advanced metering solution, for Water SaveSource and ChoiceConnect 100, the sensor is the result of merging the water meter module with an acoustic sensor to create a single point for collecting meter data and monitoring for distribution system leaks. Leak Sensor leverages the robust network of Water SaveSource and ChoiceConnect 100. It offers unattended daily monitoring of leaks in distribution lines for proactive leak detection and timely mitigation. This reduces non-revenue water losses, associated costs and potential service disruptions caused by major leak events.

The innovation behind the Leak Sensor is a vibration sensor, amplifier, processor, and bi-directional one-wire automated meter reading (AMR) interface. Every day the acoustic sensors analyze sound patterns in its environment, detecting new, evolving and pre-existing leaks automatically. Sensors attach to endpoints and transmit vibration recordings throughout the day along with other metering information through the fixed network to the utility. An Itron web interface – mlogonline Network Leak Monitoring System – handles data interpretation and analysis of the recordings and graphically displays all sensor locations using visual maps and satellite images, highlighting the status of leak locations. An expanding database of historical information provide comprehensive condition assessment of the entire water distribution system.

Simple, affordable and technically superior, the Leak Sensor is sensible leak detection and location at optimal cost. Best of all, the Leak Sensor leverages the investment in fixed network meter data collection technology, often paying for itself within a few years.

Specifications

Benefits

The Leak Sensor delivers unprecedented leak detection capabilities including:

> Advanced acoustic leak detection monitoring and meter data collection in a compact form for easy field installation and lower cost of ownership
> Automated capture and data transmission of actual vibration recordings to the utility for advanced analysis and applications, rather than simple yes/no flags
> Historical leak detection data for interpretation, prioritization and mitigation

Techincal Specifications

Sensing

> Sensitivity: 1V/g
> Range: Up to ±300 linear feet of pipe of any size
> Bandwidth: 10Hz – 1,000Hz

Power

> Source: Powered by the Water SaveSource Endpoint or ChoiceConnect 100W

Physical/Environmental

> Operating temperature: -10° to + 50° Celsius
> Operating humidity: Up to 100% relative humidity
> Product identification: Numeric and bar-coded serial number
> Exposure rating: Sealed, waterproof and submersible IP68
> Housing: Molded glass-filled polycarbonate
> Weight: 1.5 ounces (45g)
> Dimensions: 1.2 x 1.5 (diameter) inches (3.0 x 3.8 cm)
> Installation options: Sensor is installed permanently either indoors or outdoors on the water service pipe, usually near a water meter with a u-bolt, back plate and wing nuts

About Itron Inc.

Itron Inc. is a leading technology provider to the global energy and water industries. Our company is the world's leading provider of intelligent metering, data collection and utility software solutions, with nearly 8,000 utilities worldwide relying on our technology to optimize the delivery and use of energy and water. Our products include electricity, gas, water and heat meters; data collection and communication systems, including automated meter reading (AMR) and advanced metering infrastructure (AMI); meter data management and related software applications; as well as project management, installation, and consulting services. To know more, start here: www.itron.com.

Itron

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Publication 100879SP-05 5/10

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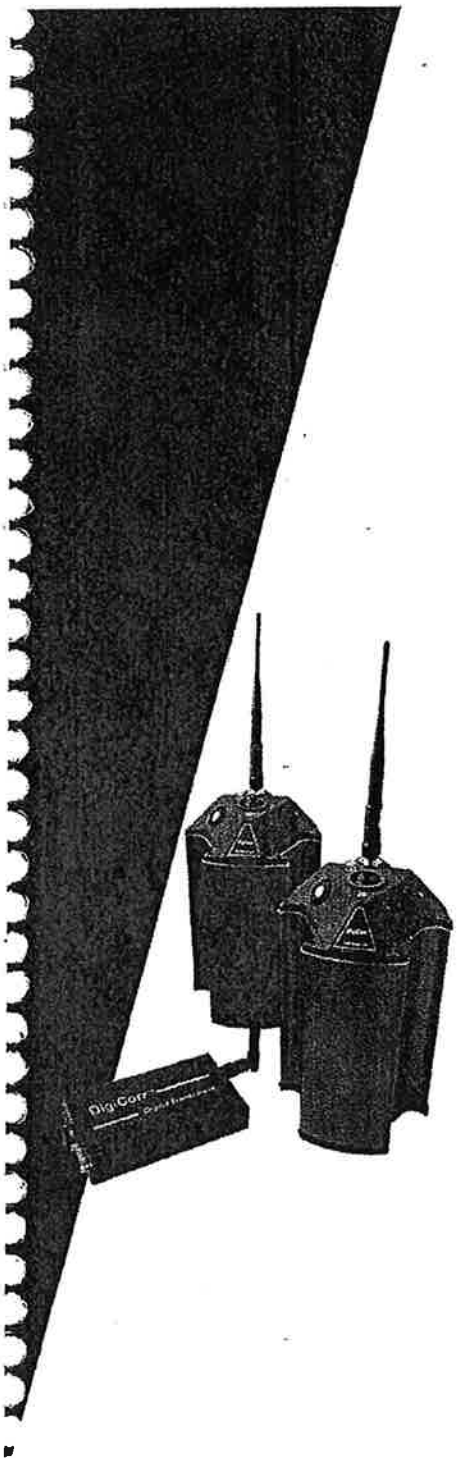


DigiCorr

Digital Leak Noise Correlator

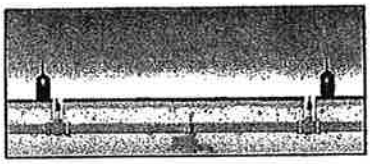
Introduction

The DigiCorr Leak Noise Correlator is the world's first and only digital correlator–uniquely designed to provide a complete solution to leakage management issues facing the modern water utility such as on demand, real-time leak pinpointing, flexible leak analysis, systematic leak surveying and the need for powerful leakage management tools. DigiCorr's patented computerized acoustic technology can accurately pinpoint pipeline leaks of all sizes within a typical error of less than three feet.

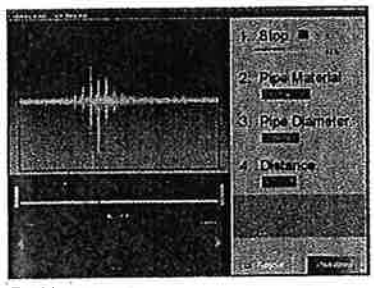
Using DigiCorr, water utilities can reduce their unaccounted-for water, realistically recovering 75 percent or more of their current leakage. By employing DigiCorr throughout their pipeline operations, utilities can increase their operational efficiency with proactive pipeline maintenance, improve their emergency management and customer satisfaction, and maximize revenues by delivering and billing for all water produced.

Smart Listening

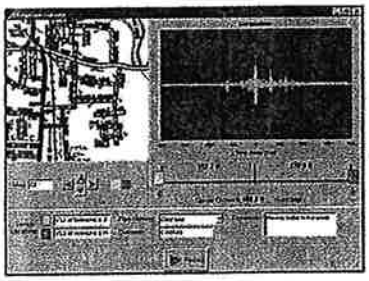
Digital correlation relies on vibration sensors that sense the turbulence from pipeline leaks. Turbulence from leaks in pressurized pipelines creates traveling pressure waves which propagate through the fluid of a buried pipeline. The velocity of the propagation depends both on the fluid and on the dimensions and material of the pipe. Digital correlation measures the difference in propagation time of the pressure wave from the leak to each sensor. The exact location of the leak source is then pinpointed using the measured time and known velocity.



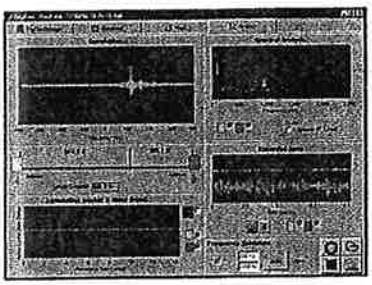
Installation



Rapid response



DigiCorr survey



Advanced analysis

How It Works

Deploy

Two Field Sensor Units (FSUs) are deployed at remote locations on the pipeline. FSUs mount non-intrusively on pipelines at long range up to one mile apart. The FSUs have precision time-keeping, processing and data storage capabilities, together with digital radio links to a rugged, portable PC. The FSUs are synchronized by radio from the PC and then make 90-second recordings. During the recording, the FSU processors independently assess the vibration signals, encode the leak sound component and save the recorded data in memory.

Retrieve & Analyze

After recording, data from the FSUs is transferred to PC via radio. Leak sources appear as peaks in the Correlation Display. DigiCorr's patented Advanced Leak Frequency Analysis (ALFA™) accurately and individually pinpoints leaks within a few seconds following data transfer. ALFA uniquely processes each recorded leak sound, eliminating analog filtering and greatly accelerating the process of pinpointing a leak. ALFA improves the leak signal-to-noise ratio enabling detection of inaudible, difficult-to-find leaks and resolves multiple leak sounds simultaneously.

If a leak is present outside the span of the sensors, DigiCorr can detect the direction of the leak. One or both sensors can then be moved and a new recording made to pinpoint the leak. In this way, a significant length of pipe, such as a 20-mile section under failing hydrostatic test, can be quickly and effectively scanned to detect and pinpoint the location of leaks.

Systematic Leak Surveying

DigiCorr integrates distribution system maps (from paper copy, graphics files, GIS) directly into the software user interface. Complete recordings are saved automatically into a survey database, together with associated map, pipe and correlation information.

Powerful Digital Processing

The difference in the digital technology used in DigiCorr versus the analog technology used in all other correlators is fundamental to DigiCorr's speed and accuracy. DigiCorr's digital technology senses leak noise significantly below the threshold of human hearing. The sound is immediately digitized at the sensor and transmitted with the quality of a CD recording.

> DigiCorr's sensitivity is approximately 30 times greater than analog technology

> True digital recording and radio transmission preserves the fine detail of the leak sound, enabling pinpointing of even the quietest, most difficult-to-find leaks

> Unique capability of saving actual acoustic data to disk, enabling replay, print and email of leak data

> Advanced signal processing such as ALFA, digital mapping and special processing for different types of pipes are only possible in a digital system

Itron

Knowledge to Shape Your Future

DLD

Digital Leak Detector

Introduction

The Itron Digital Leak Detector (DLD) is the first true digital leak detector for buried distribution pipeline management. Lightweight and easy-to-use, DLD uses dynamic range compression and digital precision to identify leaks that are undetectable with other leak detectors.

Key Features

Digital Audio Processor

> Dynamic range compression accentuates leak sounds and reduces loud noises
> Hears leaks missed by other instruments
> Precise digital filters block ambient noise
> Automatic rejection of electrical interference (60dB)
> Lightweight (< 1 lb.)
> Wearable strap or belt clip

User Interface Buttons

> LISTEN: Click on/off or press-and-hold to listen
> VOLUME: 45 dB range in 29 steps
> FILTER: Five digital filters for:
- Ground (Gnd): Hard surfaces, soil, plastic pipe
- Service (SEr): Service pipes
- Contact (Con): Valve, hydrant, service connections
- Survey (SUr): Surveying
- Open (OPn): Full listening range

High-Resolution, Waterproof Universal Sensor

> Contact microphone for meters and fittings
> Ground listening plate with quick-release sensor
> Magnetic base for hydrants and valves

Smart Volume Limiting

> Continuous, automatic volume protection
> Suppresses clicks, pops and sudden loud sounds

Automatic Leak Location

> Leak Index Score from 0 to 999 provides a visual determination when positioned over the leak

Technical specifications

Digital Audio Processor Unit

> Frequency range: 30 - 4,000Hz
> Power supply: 2 AA alkaline batteries
> Battery life: >12.5 hours continuous listening
> Display: LCD
> Protection: IP54, weatherproof, splashproof
> Weight: 15 oz (408.2 g)
> Dimensions: 5" x 3.5" x 1.5" (12.7 cm x 8.9 cm x 3.8 cm)

Universal Sensor

> High-resolution accelerometer
> Sensitivity: 20 V/g
> Resolution: 0.05 µg /√Hz
> Protection
- IP68, waterproof, fully submersible
- Shockproof to 6,000 g

Ground Microphone Unit

> Dimensions
- Height: 34" (86.36 cm)
- Disk: 4.5" (11.43 cm)

> Weight: 2 lbs (910 g) with sensor attached
> Materials:
- Rod: Anodized aluminum
- Disk: Stainless steel

Accessories

> Carrying case: Rugged, lightweight
> Probe: Stainless steel; connects to sensor

About Itron Inc.

Itron Inc. is a leading technology provider to the global energy and water industries. Our company is the world's leading provider of intelligent metering, data collection and utility software solutions, with nearly 8,000 utilities worldwide relying on our technology to optimize the delivery and use of energy and water. Our products include electricity, gas, water and heat meters; data collection and communication systems, including automated meter reading (AMR) and advanced metering infrastructure (AMI); meter data management and related software applications; as well as project management, installation, and consulting services. To know more, start here: www.itron.com

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Publication 100723SP-02 4/10

Field Sensor Units (FSU)

Pipeline Sensors

> Accelerometers
- Sensitivity: 12 V/g
- Noise: < 0.016 µg /√Hz
- Bandwidth: 1 – 4,000 Hz

> Hydrophones are available for in-flow measurements

FSU Radio Transceivers

> Noise-free digital transmission

> ISM/LAN 2.4 GHz spread spectrum, license-free worldwide, FCC/ETSI approved

> Range (line-of-sight) up to 10,000 feet (3 km)

> Two-way communication with base station radio transceiver

Data Acquisition

> Intelligent automatic gain: 10 – 80,000

> 16-bit data acquisition, 92 dB dynamic range, sampling rate = 5 kHz

Power Supply

> Intelligent power management

> Up to 32 hours battery life, rechargeable & replaceable

> Re-charger for FSUs from AC outlet or standard auto DC

Physical Characteristics

> Dimensions: 4.25" x 4" x 8" (10.8 cm x 10.2 cm x 20.3 cm)

> Weight: 6.5 lbs (3 kg)

> Rugged, metal, weatherproof enclosure

Base Station Computer

Physical Characteristics

> Rugged (impact, grit, water-resistant) computer; Pentium processor, TFT color, bright sunlight-readable screen (DigiCorr software will run on any PC using Microsoft® Windows™ with at least 32 MB RAM and 800 x 600 display resolution)

> Rugged, weather-resistant stereo headphones

Digital Radio Transceiver

> Dimensions: 5" x 3.25" x 1" (12.7 cm x 8.3 cm x 2.5 cm)

> Weight: 1 lb (0.5 kg)

> Rugged, metal, weatherproof enclosure

DigiCorr Software

> ALFA™ (Automatic Leak Frequency Analysis)

> Easy-to-use Microsoft® Windows®

> High-resolution display of correlation function, onscreen, landmarked location of detected leaks

> Correlation range: ± 880 milliseconds

> 15 types of pipe materials, including multiple sections of different pipes

> Automatic sound velocity measurement

> 16-bit stereo/mono sound playback

> Visual inspection of sound recording

> Spectral (FFT) analysis capability

> Digital filters with full manual frequency band selection available:
- High-pass: 1-2,000 Hz
- Low-pass: 10-2,500 Hz in steps of 1 Hz

> Automatic assessment of leak probability

> Elimination of spurious noise events

> Reanalysis of same data possible

> Manual selection of possible leaks from correlation function

> Data storage (any number of studies)

> Database & mapping module

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Publication 100724SP-04 08/10

NATIONAL
METER AND AUTOMATION, INC.

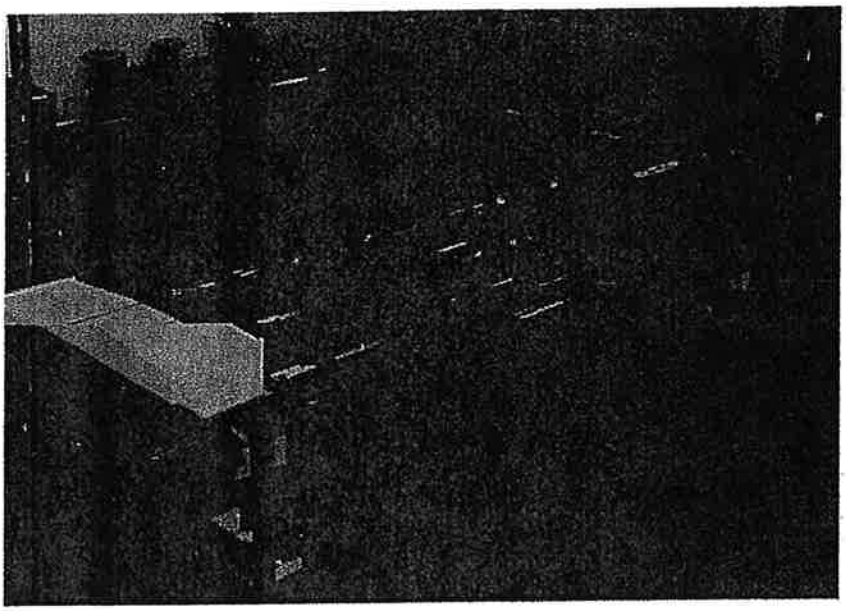
Meter Calibration Bench Testing Equipment

MARS Company Series 5-1000 Test Bench System

The Series 5-1000 Test Bench System is designed to test meters ranging from 5/8" through 2".

The proposed system Test Bench System, with the optional Gravimetrics, includes scales and a computer system (hardware, software and console) and is compliant with American Water Works Association (AWWA) standards and is traceable to NIST (National Institute of Standards and Technology) Handbook 44 specifications.

The Series 5-1000 is a double row test bench with the ability to test up to ten (10) 5/8"x1/2" through 1" meters on one side of the bench and up to five (5) 1.5" to 2" meters on the other.



Features include:

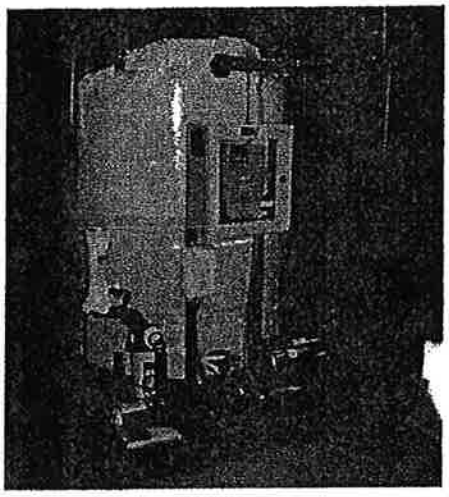
10 Gal./1 Cu.Ft. and 100 Gal./10 Cu.Ft. Stainless Steel Duplex Tank;
Three (3) precision rotometers that cover a flow range from .1 – 160 gpm;
Corrosive Protection (fusion nylon coated steel bench frame);
All meter adapters, meter and adapter gaskets, manual flow control valves, document station, electric actuated clamping device and carrier bars;
- Optional Gravimetric Weight Scale System with M3 Meter Management Software, Computer and Printer.

NATIONAL
METER AND AUTOMATION, INC.

The optional Recirculation System recycles the test water used on the MARS Series 5-1000 Test Bench, maintaining volume and pressure to test all the meters at the recommended AWWA Specifications, per Table 5-3 of the current AWWA M6 Manual. The benefits provided by the Recirculation System include:

- Compliance with local, state and/or Federal laws and regulations as it reduces the chemicals released into the environment;
- An immediate reduction in consumption and water dumped to waste after each test;
- Improved customer perception as the City sets an example for water conservation practices.

The MARS Recirculation System includes a 500-Gallon polyethylene tank, supply and return pumps, all related piping, valves, VFD and chlorination system. A similar configuration is pictured below.



On-Site Start-up with MARS Personnel includes training, scale certification and installation supervision at your facility. We will allow two (2) days of bench set-up with your assistance, plus an additional day for the Recirculation System. This does not include work on main electrical power supply / components, main water supply / components or any building modifications that may be necessary. MARS Company will provide all data necessary to assist the City of Lodi and comply with all local, state and Federal standards.

NATIONAL
METER AND AUTOMATION, INC.

The pricing for the Series 5-1000 Test Bench System is as follows:

Mars Series 5-1000 Test Bench		$ 42,025.00
MUN-200 Automated Dual Stage Shutdown		$ 5,875.00
	Subtotal	$ 47,900.00
	Freight	$ 3,000.00
CA Sales Tax	7.25%	$ 3,472.75
County Sales Tax	0.50%	$ 239.50
Local Sales Tax	1.00%	$ 479.00
	Subtotal	$ 55,091.25
Installation Assistance & Training		$ 7,500.00
	Total	$ 62,591.25

The following items can be installed at the same time as the base test bench, or added at a later date:

Phase II - or Optional Equipment		
Gravimetric Weight Scale System with M3Meter management Software, Computer and Printer		$ 31,000.00
300-gallon Calibrated SS Tank w/scale		$ 7,625.00
MARS Recirculation System		$ 22,440.00
	Subtotal	$ 61,065.00
CA Sales Tax	7.25%	$ 4,427.21
County Sales Tax	0.50%	$ 305.33
Local Sales Tax	1.00%	$ 610.65
Freight		$ 2,000.00
	Total	$ 68,408.19

To purchase the complete bench and all additional Equipment as listed:

Complete Bench with All Options		$ 108,965.00
CA Sales Tax	7.25%	$ 7,899.96
County Sales Tax	0.50%	$ 544.83
Local Sales Tax	1.00%	$ 1,089.65
Freight		$ 5,000.00
Installation Assistance & Training		$ 7,500.00
	Total	$ 130,999.44

Delivery is quoted as approximately 60-90 days after receipt of order (ARO).
Payment terms: Net 30 days after delivery – Pricing Subject to review by 12/31/2011

Recordall® Cold Water Bronze Disc Meter	Size 3/4" (DN 20mm)	Technical Brief

DESCRIPTION

Badger Meter offers the Recordall Disc meter in two versions: Cast Bronze (M35 B81) and Envirobrass II (M35 EB2). The Envirobrass II version complies with NSF/ANSI Standard 61 and carry the NSF-61 mark on the housing. All components of the Envirobrass II meter, i.e., disc, chamber, housing, seals, etc., comprise the certified system.

APPLICATIONS: For use in measurement of potable cold water in residential, commercial and industrial services where flow is in one direction only.

OPERATION: Water flows through the meter's strainer and into the measuring chamber where it causes the disc to nutate. The disc, which moves freely, nutates on its own ball, guided by a thrust roller. A drive magnet transmits the motion of the disc to a follower magnet located within the permanently sealed register. The follower magnet is connected to the register gear train. The gear train reduces the disc nutations into volume totalization units displayed on the register dial face.

OPERATING PERFORMANCE: The Badger® Recordall® Disc meters meet or exceed registration accuracy for the low flow rates (95%), normal operating flow rates (100 ± 1.5%), and maximum continuous operation flow rates as specifically stated by AWWA Standard C700.

CONSTRUCTION: Badger Recordall Disc meter construction, which complies with ANSI/AWWA standard C700, consists of three basic components: meter housing, measuring chamber, and permanently sealed register. The water meter is available in bronze and Envirobrass II with externally-threaded spuds. A corrosion-resistant thermoplastic material is used for the measuring chamber.

To simplify maintenance, the register, measuring chamber, and strainer can be replaced without removing the meter housing from the installation. No change gears are required for accuracy calibration. Interchangeability of parts among like-sized meters also minimizes spare parts inventory investment. The built-in strainer has an effective straining area of twice the inlet size.

MAGNETIC DRIVE: Direct magnetic drive, through the use of high-strength magnets, provides positive, reliable and dependable register coupling for straight-reading, remote or automatic meter reading options.

SEALED REGISTER: The standard register consists of a straight-reading odometer-type totalization display, 360° test circle with center sweep hand and flow finder to detect leaks. Register gearing consists of self-lubricating thermoplastic gears to minimize friction and provides long life. Permanently sealed; dirt, moisture, tampering and lens fogging problems are eliminated. Multi-position register simplifies meter installation and reading. Generator-type remote reading and automatic meter reading systems are available for all Recordall Disc meters. (See back of sheet for additional information.) All reading options are removable from the meter without disrupting water service.

TAMPER-PROOF FEATURES: Customer removal of the register to obtain free water can be prevented when the optional tamper detection seal wire screw or TORX® tamper resistant seal screw is added to the meter. Both can be installed at the meter site or at the factory.

MAINTENANCE: Badger Recordall Disc meters are designed and manufactured to provide long-term service with minimal maintenance. When maintenance is required, it can be performed easily either at the meter installation or at any other convenient location. As an alternative to repair by the utility, Badger offers various maintenance and meter component exchange programs to fit the needs of the utility.

CONNECTIONS: Tailpieces/Unions for installations of meters on various pipe types and sizes, including misaligned pipes, are available as an option.

Model 35

SPECIFICATIONS

Typical Operating Range (100% ± 1.5%)	3/4-35 GPM (.17 to 7.9 m³/hr)
Low Flow (Min. 97%)	3/8 GPM (.085 m³/hr)
Maximum Continuous Operation	25 GPM (5.7 m³/hr)
Pressure Loss at Maximum Continuous Operation	5 PSI at 25 GPM (.37 bar at 5.7 m³/hr)
Maximum Operating Temperature	80°F (26°C)
Maximum Operating Pressure	150 PSI (10 bar)
Measuring Element	Nutating disc, positive displacement
Register Type	Straight reading, permanently sealed magnetic drive standard. Remote reading or Automatic Meter Reading units optional.
Register Capacity	10,000,000 Gallons, 1,000,000 Cubic Feet, 100,000 m³. 6 odometer wheels.
Meter Connections	Available in bronze and thermoplastic to fit 3/4" spud thread bore diameter sizes. See table below.

METER SPUD AND CONNECTION SIZES

Size Designation	x	"L" Laying Length	"B" Bore Dia.	Coupling Nut and Spud Thread	Tailpiece Pipe Thread (NPT)
3/4"	x	7½"	3/4"	1" (3/4")	3/4"
3/4"	x	9"	3/4"	1" (3/4")	3/4"
3/4" x1"	x	9"	3/4"	1¼" (1")	1"

MATERIALS

Meter Housing	Cast Bronze, Envirobrass II
Housing Bottom Plates	Bronze, Cast Iron, Envirobrass II
Measuring Chamber	Thermoplastic
Disc	Thermoplastic
Trim	Stainless Steel, Bronze
Strainer	Thermoplastic
Disc Spindle	Stainless Steel
Magnet	Ceramic
Magnet Spindle	Stainless Steel
Register Lid and Shroud	Thermoplastic, Bronze
Generator Housing	Thermoplastic

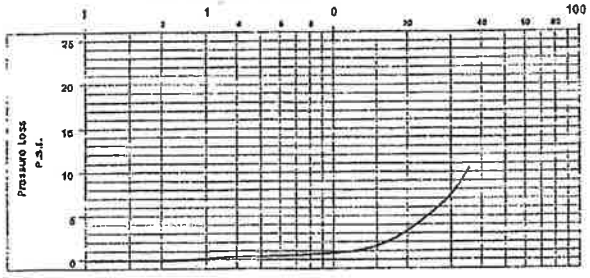
Automatic Meter Reading Systems

AMR

The Itron®, ORION® and TRACE® radio frequency systems easily integrate with all Recordall® Disc meters. All technologies provide an efficient meter data retrieval and information management system. The Itron 50W ERT®, ORION Transmitter and the TRACE Transponder all connect to the Recordall Transmitter Register (RTR®) assembly. Complete systems, including hardware and software, are available to provide a wide range of meter reading information.

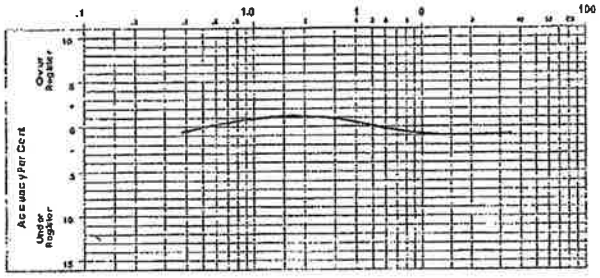
PRESSURE LOSS CHART

Rate of Flow, in Gallons per Minute



ACCURACY CHART

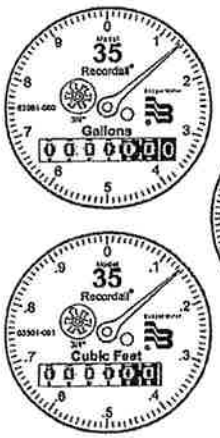
Rate of Flow, in Gallons per Minute

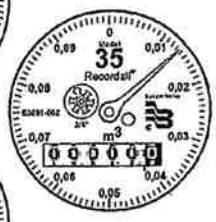


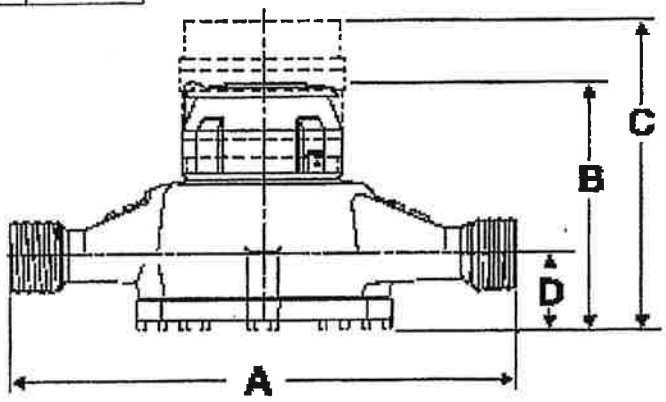
METER SIZE	METER MODEL	A LAYING LENGTH	B HEIGHT REG.	C HEIGHT GEN.	D CENTERLINE BASE	WIDTH	APPROX. SHIPPING WEIGHT
3/4" (20mm)	35	7 1/2" (190mm)	5 1/4" (133mm)	6 5/8" (168mm)	1 5/8" (41mm)	5" (127mm)	5 1/2 lb. (2.5kg)
3/4" (20mm)	35	9" (229mm)	5 1/4" (133mm)	6 5/8" (168mm)	1 5/8" (41mm)	5" (127mm)	5 3/4 lb. (2.6kg)
3/4" x 1" (20mm)	35	9" (229mm)	5 1/4" (133mm)	6 5/8" (168mm)	1 5/8" (41mm)	5" (127mm)	6 lb. (2.7kg)

Sweep Hand Registration

MODEL	GALLON	CU.FT.	CU. METER
M35	10	1	.1







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Due to continuous research, product improvements and enhancements, Badger Meter reserves the right to change product or system specifications without notice, except to the extent an outstanding bid obligation exists.

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Recordall® Cold Water Bronze Disc Meter	Size 1" (DN 25mm) Model 55	Technical Brief

DESCRIPTION

Badger Meter offers the Recordall Disc meter in Cast Bronze and a Low Lead Alloy. The Low Lead Alloy (Trade Designation: M55 LL) version complies with NSF/ANSI Standard 61 and carries the NSF-61 Mark on the housing. All components of the Low Lead Alloy meter, i.e., disc, chamber, housing, seals, etc., comprise the certified system.

APPLICATIONS: For use in measurement of potable cold water in residential, commercial and industrial services where flow is in one direction only.

OPERATION: Water flows through the meter's strainer and into the measuring chamber where it causes the disc to nutate. The disc, which moves freely, nutates on its own ball, guided by a thrust roller. A drive magnet transmits the motion of the disc to a follower magnet located within the permanently sealed register. The follower magnet is connected to the register gear train. The gear train reduces the disc nutations into volume totalization units displayed on the register dial face.

OPERATING PERFORMANCE: The Badger Recordall Disc meters meet or exceed registration accuracy for the low flow rates (95%), normal operating flow rates (100 ± 1.5%), and maximum continuous operation flow rates as specifically stated by AWWA Standard C700.

CONSTRUCTION: Badger Recordall Disc meter construction, which complies with ANSI/AWWA standard C700, consists of three basic components: meter housing, measuring chamber, and permanently sealed register. The water meter is available in bronze and Low Lead Alloy with externally-threaded spuds. A corrosion-resistant thermoplastic material is used for the measuring chamber.

To simplify maintenance, the register, measuring chamber, and strainer can be replaced without removing the meter housing from the installation. No change gears are required for accuracy calibration. Interchangeability of parts among like-sized meters also minimizes spare parts inventory investment.

MAGNETIC DRIVE: Direct magnetic drive, through the use of high-strength magnets, provides positive, reliable and dependable register coupling for straight-reading, remote or automatic meter reading options.

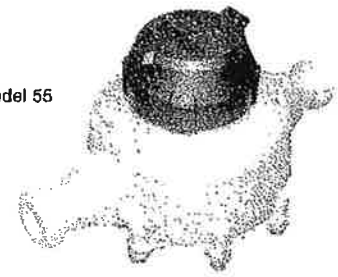
SEALED REGISTER: The standard register consists of a straight-reading odometer-type totalization display, 360° test circle with center sweep hand and flow finder to detect leaks. Register gearing consists of self-lubricating thermoplastic gears to minimize friction and provides long life. Permanently sealed; dirt, moisture, tampering and lens fogging problems are eliminated. Multi-position register simplifies meter installation and reading. Generator-type remote reading and automatic meter reading systems are available for all Recordall Disc meters. (See back of sheet for additional information.) All reading options are removable from the meter without disrupting water service.

TAMPER-PROOF FEATURES: Customer removal of the register to obtain free water can be prevented when the optional tamper detection seal wire screw or TORX® tamper resistant seal screw is added to the meter. Both can be installed at the meter site or at the factory.

MAINTENANCE: Badger Recordall Disc meters are designed and manufactured to provide long-term service with minimal maintenance. When maintenance is required, it can be performed easily either at the meter installation or at any other convenient location. As an alternative to repair by the utility, Badger offers various maintenance and meter component exchange programs to fit the needs of the utility.

CONNECTIONS: Tailpieces/Unions for installations of meters on various pipe types and sizes, including misaligned pipes, are available as an option.

Model 55



SPECIFICATIONS

Typical Operating Range (100% ± 1.5%)	1-55 GPM (.23 to 12.5 m³/hr)
Low Flow (Min. 95%)	1/2 GPM (.11 m³/hr)
Maximum Continuous Operation	40 GPM (9.1 m³/hr)
Pressure Loss at Maximum Continuous Operation	3.4 PSI at 40 GPM (.23 bar at 9.1 m³/hr)
Maximum Operating Temperature	80°F (26°C)
Maximum Operating Pressure	150 PSI (10 bar)
Measuring Element	Nutating disc, positive displacement
Register Type	Straight reading, sealed magnetic drive standard. Remote reading or Automatic Meter Reading units optional.
Register Capacity	10,000,000 Gallons, 1,000,000 Cubic Feet, 100,000 m³. 6 odometer wheels.
Meter Connections	Available in bronze and thermoplastic to fit 1" (DN 25mm) spud thread bore diameter sizes. See table below.

METER SPUD AND CONNECTION SIZES

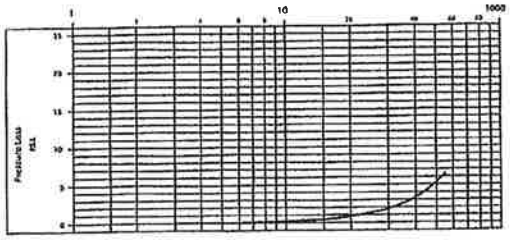
Size Designation	x	"L" Laying Length	"B" Bore Dia.	Coupling Nut and Spud Thread	Tailpiece Pipe Thread (NPT)
1"	x	10 3/4"	1"	1 1/4" (1")	1"

MATERIALS

Meter Housing	Cast Bronze, Low Lead Alloy
Housing Bottom Plates	Bronze, Cast Iron, Low Lead Alloy
Measuring Chamber	Thermoplastic
Disc	Thermoplastic
Trim	Stainless Steel, Bronze
Strainer	Thermoplastic
Disc Spindle	Thermoplastic
Magnet	Polymer Bonded
Magnet Spindle	Thermoplastic
Register Lid and Shroud	Thermoplastic, Bronze
Generator Housing	Thermoplastic

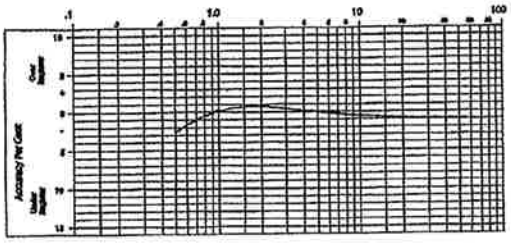
PRESSURE LOSS CHART

Rate of Flow, in Gallons per Minute



ACCURACY CHART

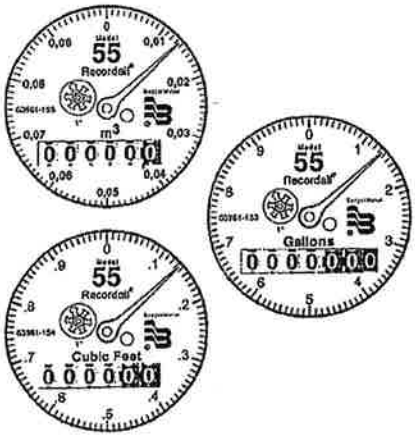
Rate of Flow, in Gallons per Minute

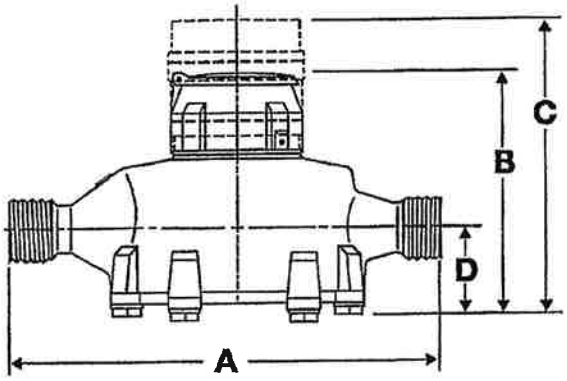


METER SIZE	METER MODEL	A LAYING LENGTH	B HEIGHT REG./RTR	B HEIGHT TO ADE	C HEIGHT GEN.	D CENTERLINE TO BASE	WIDTH	METER WEIGHT
1" (25mm)	55	10 3/4" (273mm)	6" (152mm)	6 1/2" (165mm)	7 3/8" (187mm)	2 1/32" (52mm)	6 1/4" (159mm)	8.75 lbs.

Sweep Hand Registration

MODEL	GALLON	CU.FT.	CU. METER
M55	10	1	.1





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TÜV ISO 9001

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www.badgermeter.com
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www.badgermeter.com

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Recordall® Cold Water Top Load Bronze Disc Meter	Size 2" (DN 50mm) ANSI/NSF Standard 61 Certified, Annex G	Technical Brief

DESCRIPTION

Badger Meter offers the Recordall Disc meter in Cast Bronze and a Low Lead Alloy. The Low Lead Alloy (Trade Designation: M170 LL) version complies with ANSI/NSF Standard 61, Annex G and carries the NSF-61 Mark on the housing. All components of the Low Lead Alloy meter, i.e., disc, chamber, housing, seals, etc., comprise the certified system.

APPLICATIONS: For use in measurement of potable cold water in residential, commercial and industrial services where flow is in one direction only.

OPERATION: Water flows through the meter's strainer and into the measuring chamber where it causes the disc to nutate. The disc, which moves freely, nutates on its own ball, guided by a thrust roller. A drive magnet transmits the motion of the disc to a follower magnet located within the permanently-sealed register. The follower magnet is connected to the register gear train. The gear train reduces the disc nutations into volume totalization units displayed on the register dial face.

OPERATING PERFORMANCE: The Badger Recordall Disc meters meet or exceed registration accuracy for the low flow rates (95%), normal operating flow rates (100 ± 1.5%), and maximum continuous operation flow rates as specifically stated by AWWA Standard C700.

CONSTRUCTION: Badger Recordall Disc meter construction, which complies with ANSI/AWWA standard C700, consists of three basic components: bronze meter housing, measuring chamber, and permanently, sealed register. A corrosion-resistant thermoplastic material is used for the measuring chamber.

To simplify maintenance, the register, measuring chamber, and strainer can be replaced without removing the meter housing from the installation. No change gears are required for accuracy calibration. Interchangeability of parts among like-sized meters also minimizes spare parts inventory investment. The built-in strainer has an effective straining area of twice the inlet size.

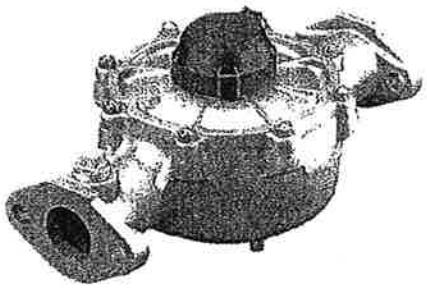
MAGNETIC DRIVE: Direct magnetic drive, through the use of high-strength magnets, provides positive, reliable and dependable register coupling for straight-reading, remote or automatic meter reading options.

SEALED REGISTER: The standard register consists of a straight-reading, odometer-type totalization display, 360° test circle with center sweep hand and flow finder to detect leaks. Register gearing consists of self-lubricating thermoplastic gears to minimize friction and provides long life. Permanently sealed; dirt, moisture, tampering and lens fogging problems are eliminated. Multi-position register simplifies meter installation and reading. Generator-type remote reading and automatic meter reading systems are available for all Recordall Disc meters. All reading options are removable from the meter without disrupting water service.

TAMPER-PROOF FEATURES: Customer removal of the register to obtain free water can be prevented when the optional tamper detection seal wire screw/or Torx® tamper seal resistant screw is added to the meter. Both can be installed at the meter site or at the factory.

MAINTENANCE: Badger Recordall Disc meters are designed and manufactured to provide long-term service with minimal maintenance. When maintenance is required, it can be performed easily either at the meter installation or at any other convenient location. As an alternative to repair by the utility, Badger offers various maintenance and meter component exchange programs to fit the needs of the utility.

CONNECTIONS: Tailpieces/Flanges for installations of meters on various pipe types and sizes, including misaligned pipes, are available as an option.



Model 170 shown with optional 1" Test Plug

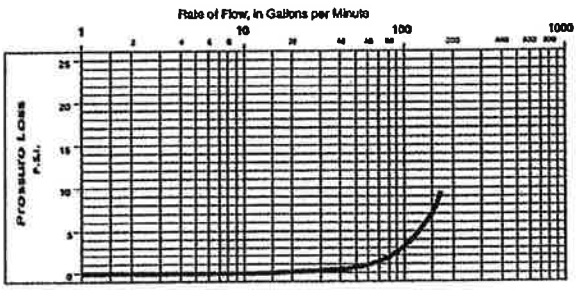
SPECIFICATIONS

Typical Operating Range (100% ± 1.5%)	2 1/2 - 170 GPM (.57 to 39 m³/hr)
Low Flow (Min. 95%)	1 1/2 GPM (.34 m³/hr)
Maximum Continuous Operation	100 GPM (23 m³/hr)
Pressure Loss at Maximum Continuous Operation	3.3 PSI at 100 GPM (.23 bar at 23 m³/hr)
Maximum Operating Temperature	80°F (26°C)
Maximum Operating Pressure	150 PSI (10 bar)
Measuring Element	Nutating disc, positive displacement
Register Type	Straight reading, permanently sealed magnetic drive standard. Remote reading or Automatic Meter Reading units optional.
Registration	100 Gallons, 10 Cubic Feet, 1 m³
Register Capacity	100,000,000 Gallons, 10,000,000 Cubic Feet, 1,000,000 m³. 6 odometer wheels.
Meter Connections	2" AWWA two bolt elliptical flange, drilled, or 2" - 11 1/2 NPT internal pipe threads.
Optional Test Plug	1" NPT test plug (TP) available on elliptical long and short versions.

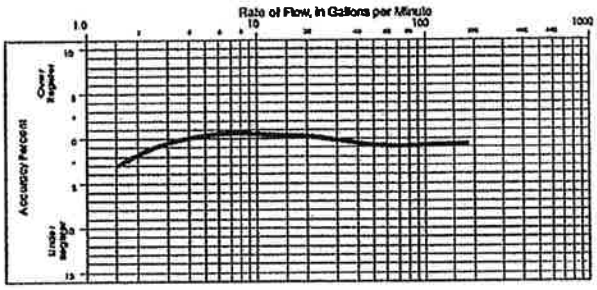
MATERIALS

Meter Housing	Cast Bronze, Low Lead Alloy
Housing Top Plates	Bronze, Low Lead Alloy
Measuring Chamber	Thermoplastic
Disc	Thermoplastic
Trim	Stainless Steel/Bronze
Strainer	Thermoplastic
Disc Spindle	Stainless Steel
Magnet	Ceramic
Magnet Spindle	Stainless Steel
Register Lid and Box	Thermoplastic or Bronze
Generator Housing	Thermoplastic

PRESSURE LOSS CHART



ACCURACY CHART

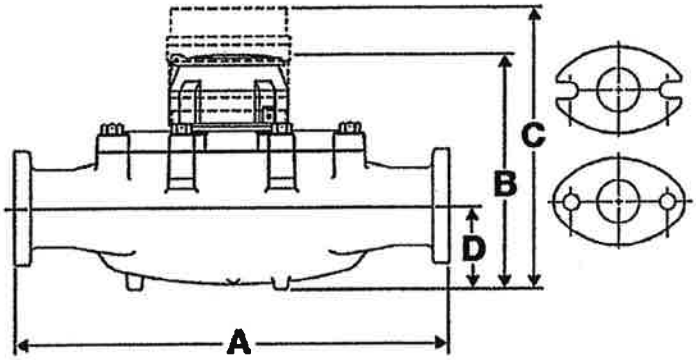


METER SIZE	METER MODEL	A LAYING LENGTH	B HEIGHT REG./RTR	C HEIGHT GEN.	D CENTERLINE BASE	WIDTH	APPROX. SHIPPING WEIGHT
2" (50mm)	170 EL, Hex. 170 EL, TP	15¼" (387mm)	8" (203mm)	9⅜" (238mm)	2⅞" (73mm)	9½" (241mm)	30 lb. (13.6kg)
2" (50mm)	170 ELL, 170 ELL, TP	17" (432mm)	8" (203mm)	9⅜" (238mm)	2⅞" (73mm)	9½" (241mm)	30 lb. (13.6kg)

EL = Elliptical ELL = Elliptical Long Hex = Hexagon, 2" - 11½ NPT Thread TP=Test Plug 1"

Sweep Hand Registration

MODEL	GALLON	CU.FT.	CU. METER
M170	100	10	1



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TORX® is a registered trademark of Camcar, Division of Textron, Inc.

Please see our website at
www.badgermeter.com
for specific contacts.

Due to continuous research, product improvements and enhancements, Badger Meter reserves the right to change product or system specifications without notice, except to the extent an outstanding contractual obligation exists.

Badger Meter
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(800) 876-3837 / Fax: (888) 371-5982
www.badgermeter.com

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Model ADE	Absolute Digital Encoder	Technical Brief

Description

Applications: The Absolute Digital Encoder (ADE®) is designed for use with all Recordall® Disc, Turbo, Compound and Fire Service meters to provide connectivity with ORION®, Badger® ERT®, BadgerTouch® and Badger Meter approved AMR technology solutions.

Electronic Resolution: Digital output from the ADE includes the option of either four, five or six dial resolution. Refer to tables on the next page for details.

Mounting: The ADE in its shroud assembly uses a bayonet mount compatible with all Recordall Disc, Turbo, Compound and Fire Series meters. The bayonet mount allows positioning of the register in any of four orientations for visual reading convenience. The ADE can be removed from the meter without disrupting water service.

Magnetic Drive: A direct-drive, high-strength magnetic coupling through the meter body to the wetted magnet provides reliable and dependable register coupling.

Local Indication: The ADE register face features a six-digit mechanical odometer wheel stack, a 360° test circle with sweep hand, and a flow finder to indicate leaks.

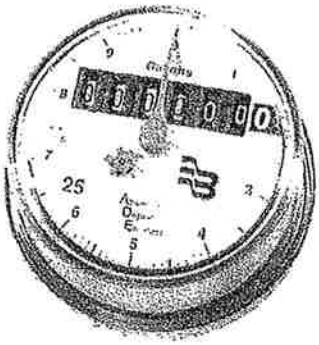
Tamper-Resistant Features: Unauthorized removal of the ADE is inhibited by a tamper resistant Torx® seal screw, provided as a standard accessory with the ADE. An optional tamper detection seal wire screw is also available.

Construction: The housing of the ADE is constructed of a strengthened glass lens top and a corrosion-resistant metal bottom. Internal construction materials are thermoplastic for long life and high reliability. The register gearing is self-lubricating thermoplastic to minimize friction and provide long, reliable life. The shroud assembly is thermoplastic.

Temperature: The operating range of the ADE is -40° C to 60° C (-40°F to 140°F). The water meter should not be subjected to temperatures below freezing.

Sealing: The ADE achieves true water resistance due to the adhesive technology used to seal the glass dome to the corrosion resistant metal bottom. Leak rates less than 10^{-6} cc/sec, as tested by a helium mass spectrometer, are comparable to a true hermetic seal. Due to this unique sealing process, the ADE exceeds all applicable requirements of AWWA Standard C707 regarding moisture intrusion.

Wire Connections: The ADE is available with either a wire lead, fully potted to prevent moisture intrusion at the connections, or with terminal screws. When provided with a wire lead, the ADE may be pre-wired at the factory to select Badger Meter-approved AMR devices, or may be furnished with a variety of lead wire lengths. Lead wire equipped ADE registers are suitable for installation in all environments, including continuously submerged water meter pits. The terminal screw version ADE features a tamper-resistant cap over the three-wire terminals. ADE registers with terminal screws are for indoor installation in protected environments, such as residential basements.

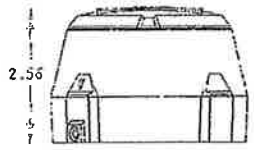


Specifications

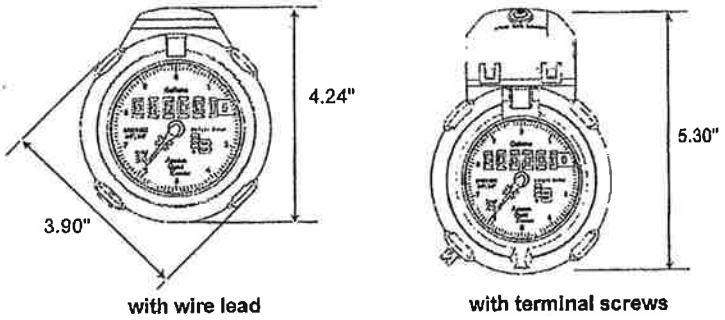
Transmitter/Register	Straight reading, permanently sealed, magnetic drive
Unit of Measure	U.S. Gallons, Cubic Feet, Cubic Meters, clearly identified on register face
Number Wheels	Six with 3/16-inch high numerals
Test Circle	360° circle with ten major increments with ten divisions each
Weight	11 Ounces
Humidity	0% to 100% condensing when equipped with potted lead wire, 0% to 95% non-condensing with screw-terminal wire connections
Temperature	-5° F to 120° F (-20° C to 49° C)
Signal Output	Industry Standard ASCII Format
Visual Resolution	1/100th of Test Circle
Electronic Resolution	Four-, five- or six-dial resolution
Signal Type	Two-wire asynchronous for Touch Solutions
Power Source	External

Electrical: The electronic circuitry is designed to provide immunity to electrical surges and transients per IEC801-2, IEC801-4 Severity Level 4. Operation of the ADE is dependent on the wire length limitations of connected AMR equipment.

Operating Characteristics: The digital reading obtained by an AMR device is sensed directly from the position of the ADE register's odometer using internal LED light paths to determine the exact position of each number wheel. This technology eliminates electromechanical contacts that could wear out, and provides greater long-term performance.



Side View Dimensional Drawing



Top View Dimensional Drawing

Measurement Resolution: The minimum electronic resolution of the ADE is as noted below (6 Dial Reading). To verify the correct resolution for your application, contact Badger Meter Customer Service.

RECORDALL® Disc Series	Size	6 Dial Resolution Gallons	6 Dial Resolution Cubic Feet (Ft^3)	6 Dial Resolution Cubic Meters (m^3)
M25	5/8"	10	1	0.1
M25	3/4"	10	1	0.1
M35	3/4"	10	1	0.1
M40	1"	10	1	0.1
M55	1"	10	1	0.1
M70	1"	10	1	0.1
M120	1 1/2"	100	10	1
M170	2"	100	10	1

RECORDALL Turbo Series	6 Dial Resolution Gallons	6 Dial Resolution Cubic Feet (Ft^3)	6 Dial Resolution Cubic Meters (m^3)
1 1/2"	100	10	1
2"	100	10	1
3"	100	10	1
4"	100	10	1
6"	1000	100	10
8"	1000	100	10
10"	1000	100	10
12"	10000	1000	10
16"	10000	1000	10
20"	10000	10000	10

Fire Service Meters	6 Dial Resolution Gallons	6 Dial Resolution Cubic Feet (Ft^3)	6 Dial Resolution Cubic Meters (m^3)
3"	100	10	1
4"	100	10	1
6"	1000	100	10
8"	1000	100	10
10"	1000	100	10

RECORDALL Compound Series	6 Dial Resolution Gallons	6 Dial Resolution Cubic Feet (Ft^3)	6 Dial Resolution Cubic Meters (m^3)
2" High Side (Turbine)	100	10	1
2" Low Side (PD)	10	1	0.1
3" High Side (Turbine)	100	10	1
3" Low Side (PD)	10	1	0.1
4" High Side (Turbine)	100	10	1
4" Low Side (PD)	10	1	0.1
6" High Side (Turbine)	1000	100	10
6" Low Side (PD)	10	1	0.1

Resolution stated as individual high and low readings.

⚠CAUTION

The ADE should only be connected to a Badger Meter, Inc. approved product. Connection to an unapproved product will void the ADE warranty.

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All other trademarks appearing in this document are the property of their respective entities.

Due to continuous research, product improvements and enhancements, Badger Meter reserves the right to change product or system specifications without notice, except to the extent an outstanding contractual obligation exists.

Please see our Web site at
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Itron

Knowledge to Shape Your Future

100 Series

Water Endpoint

Introduction

The 100 Series water endpoint is the latest addition to Itron's portfolio of advanced water metering devices. Featuring a compact design, industry-leading battery life and technology designed to adapt and grow with your business, the 100 Series can help you streamline your operations and maximize your resources today and into the future.

100 Series endpoints are available in two housing designs, supporting both water pit and remote installations. These endpoints offer advanced meter data collection designed specifically for the collection systems of Itron's ChoiceConnect™ solution, including mobile collection and fixed network systems. 100 Series endpoints differentiate themselves from other devices on the market by providing true two-way communications capabilities. Engineered from the ground up to leverage the benefits of ChoiceConnect, 100 Series devices enable easy migration from mobile to fixed network operations as your business needs evolve. And with ChoiceConnect's™ complementary technology, mobile and fixed network systems can be mixed-and-matched to ensure maximum efficiency and reliability in both high- and low-density meter populations.

Water meter compatibility

The 100 Series water endpoint is compatible with industry-leading water meters from Itron—as well as those from manufacturers such as Badger, Elster AMCO, Hersey, Metron Farnier, Neptune and Sensus—enabling water utilities to consolidate all their water meters under a single reading system. Powered by advanced lithium battery technology, the endpoint is designed for greater than 20 years of battery life. Battery life is reduced if mobile hard-to-read mode is activated.

Data logging

The 100 Series water endpoint stores 40 days of hourly consumption information, offering the advantages of a fixed network system and the capabilities of a mobile system. This data is available in four basic packets and readable with the fixed network system as well as mobile:

> Any reading within the last 40 days
> A set of 24 consecutive hourly intervals
> A set of 40 daily intervals
> A set of 40 days of hourly intervals

Ease of installation

The 100 Series water endpoint includes integral mounting adapters to install the device below compatible meter pit lids, by mounting directly to the meter body or using a standard-dimension fiberglass rod. A shelf-mount adapter is available for use with lids that contain a recessed cavity on the underside of the pit. Additionally, a remote antenna is available for through-lid installations (for lids utilizing a 1.75-inch hole). Both models can also be screw-fastened to flat surfaces. The compact design of the 100 Series endpoint, coupled with an optional in-line register cable connector (pit version only), make installations up to 25 feet from the water meter quick and easy.

The encoder version does not require any programming—it automatically detects the register type within one hour of being connected. 100 Series devices do not require a FCC license.

Leak management

Water loss management is critical to any water utility's success. 100 Series water endpoints connect to Itron's advanced acoustic leak sensors. These sensors collect and analyze sound patterns in their environment to detect new, evolving and pre-existing leaks automatically with web based application mlogonline. Leak sensor technology coupled with the endpoint's internal metered leak logic and the option to use data from groups of 100 Series devices (District Metering) provide the utility with a highly accurate picture of the overall health of the water distribution system.

100W specifications

Superior performance

The 100 Series water endpoints utilize 50 radio channels randomly, selecting one channel for each data message. This multi-channel approach delivers higher read integrity over competing products by reducing the effect of interfering signals from other radio frequency (RF) signals in the area.

Reliability

100 Series water endpoints feature a circuit assembly and battery pack that are fully encapsulated within a specially-formulated potting material to completely protect internal components from water, contaminants, corrosion, rough handling and temperature cycling. With their straight forward design, 100 Series devices use substantially fewer components than most competing products, resulting in greater reliability. The advanced, integrated antenna operates effectively in a wide range of meter box installations; the design and use of the optional remote pit antenna protects 100 Series water endpoints from lawn mowers, vehicle traffic and other environmental hazards. The 100W is backed by a 20 year limited warranty which starts at time of shipment.

Lower cost of ownership

100 Series devices feature industry-leading battery life, ensuring your automated meter reading (AMR) investment achieves substantially better financial returns than competing products with batteries that typically last only ten or twelve years. Additionally, with advancements in leak reverse flow (encoder version only) and tamper detection, 100 Series water endpoints necessitate fewer field investigations and substantially lower expenditures for installation, meter reading, customer service and field service. And with a low battery alarm, these endpoints help utilities better plan and manage the replacement of units in the field.

Functional

> Power Source: Two "A" cell lithium batteries warranted for 20 years
> Maximum meter register pulse frequency (pulse version only): 4 Hertz
> Operating temperature: -40°F to +158°F (-40°C to +70°C)
> Storage temperature: -40°C to + 75°C for maximum of 1,000 hours
> Humidity limits: 0 to 100% (submersible)
> Maximum register cable dimension: 300 feet with Itron-approved cable and splice connectors
> Meter compatibility: See Water Endpoint Meter Compatibility Guide (PUB-0063-002)

Transmission parameters

> Data message: Multiple RF channel transmissions of meter register value, cut cable and or communication error tamper(s), reverse flow (encoder version only) and system leak status messages, as well as low battery indicator is transmitted every nine seconds in mobile mode. In fixed network mode all this information plus the last 8 time synchronized consumption intervals is transmitted every five minutes. Also during fixed network mode, our standard consumption message and communication flags are transmitted every minute to allow for contingency reads
> Transmitter frequencies: 910 – 920 MHz (Low Power) in mobile mode. 910 – 920 MHz (High Power) in fixed network & mobile hard-to-read modes

Approved reading devices

> Network system: Itron Fixed Network 100 Series CCU and Data Repeaters (full two-way communication capability)
> Drive-by system: Itron Mobile Collection System* and Mobile Collector Lite*
> Walk-by system: Itron FC200SR* and FC300SR handheld computers

Approved programming device

> FC200SR with Field Deployment Manager (FDM) version 1.0 or higher software
> FC300 SRead with Field Deployment Manager (FDM) version 1.0 or higher software

Dimensions

> Height: 4.5 inches
> Maximum diameter:
- Lower: 3.90 inches
- Upper: Approx. 1.70 inches
> Weight: Approx. 9.6 oz.
> Endpoint cable length without in-line connector: 5 feet and 20 inches (for register direct mounting)
> In-line connector register cables: 5 feet and 25 feet

Mounting options

> Custom-fastener slots for future attachment to OEM mounting adapters
> Rod-mount using standard 1/2-inch fiberglass rod or similar products
> Pit lid shelf-mount using snap-on shelf mounting adapter
> Wall-mount to suitable backing material with user-supplied mounting screws
> Through meter pit/box lids with optional remote pit antenna for 1.75-inch diameter holes up to 2.5-inch maximum lid thickness

Regulatory and standards

> FCC Part 15.247
> Industry Canada #210, Section 6.2.2(o)

**Hardware/Software upgrades/updates may be required*

About Itron Inc. *Itron Inc. is a leading technology provider to the global energy and water industries. Our company is the world's leading provider of intelligent metering, data collection and utility software solutions, with nearly 8,000 utilities worldwide relying on our technology to optimize the delivery and use of energy and water. Our products include electricity, gas, water and heat meters; data collection and communication systems, including automated meter reading (AMR) and advanced metering infrastructure (AMI); meter data management and related software applications; as well as project management, installation, and consulting services. To know more, start here: www.itron.com*

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Publication 101020SP-02 06/10

NATIONAL
METER AND AUTOMATION, INC.

Warranties

Itron

100W Series Water Endpoints (Including battery)	Full warranty consistent with the warranty terms in the Agreement for the first 10 years from shipment. For warranty claims in years 11 through 15, Itron's sole obligation will be to provide Customer with a discount on replacement product equal to 50 percent of its then-current list price for the replacement product. For warranty claims in years 16 through 20, Itron's sole obligation will be to provide Customer with a discount on replacement product equal to 25 percent of its then-current list price for the replacement product.
Leak Sensor	Full warranty consistent with the warranty terms in the Agreement for the first 10 years from shipment. For warranty claims in years 11 through 15, Itron's sole obligation will be to provide Customer with a discount on replacement product equal to 50 percent of its then-current list price for the replacement product. For warranty claims in years 16 through 20, Itron's sole obligation will be to provide Customer with a discount on replacement product equal to 25 percent of its then-current list price for the replacement product.
Digital Leak Detector	14 months from shipment
DigiCorr Leak Correlator	14 months from shipment

Badger Meter

This warranty shall apply to all Recordall® Non-Leaded Bronze Disc Meters, models LP through 170 when used to measure potable water; and the registers, generators, and encoders used with these meters (collectively "Product"), sold on or after September 1, 2007. This warranty is extended only to utilities, municipalities, other commercial users and authorized Badger Meter, Inc. ("Badger®") distributors, hereafter referred to as "Customer" and does NOT apply to consumers.

Badger warrants Product to be free from defects in materials and workmanship appearing within the earlier of the following time-frames:

Twenty (20) years after installation; or twenty (20) years and six (6) months after shipment from Badger.

Twenty-five (25) years after installation; or twenty-five (25) years and six (6) months after shipment from Badger.

Ten (10) years after installation; or ten (10) years and six (6) months after shipment from Badger.

Five (5) years after installation; or five (5) years and six (6) months after shipment from Badger.

Fifteen (15) years after installation; or fifteen (15) years and six (6) months after shipment from Badger.

One (1) year after installation; or one (1) year and six (6) months after shipment from Badger.

The meter product will meet or exceed new meter accuracy standards set forth in AWWA Standard C700-02 for the following periods:

Model LP Recordall 5/8" and 5/8" x 3/4"
Five (5) years from date of shipment or registration of 750,000 gallons, whichever occurs first.

Model 25 Recordall 5/8" and 5/8" x 3/4"
Five (5) years from date of shipment or registration of 750,000 gallons, whichever occurs first.

Model 35 Recordall 3/4"
Five (5) years from date of shipment or registration of 750,000 gallons, whichever occurs first.

Model 55 Recordall 1"
Five (5) years from date of shipment or registration of 1,000,000 gallons, whichever occurs first.

Model 70 Recordall 1"
Five (5) years from date of shipment or registration of 1,100,000 gallons, whichever occurs first.

Model 120 Recordall 1-1/2"
Two (2) years from date of shipment or registration of 1,600,000 gallons, whichever occurs first.

Model 170 Recordall 2"
Two (2) years from date of shipment or registration of 2,100,000 gallons, whichever occurs first.

The meter product will meet or exceed repaired meter accuracy standards set forth in AWWA Manual M-6, Chapter 5 (1999) Table 5.3 for the following periods:

Model LP Recordall 5/8" and 5/8" x 3/4"
Fifteen (15) years from date of shipment or registration of 2,500,000 gallons, whichever occurs first, with a 20 gpm safe maximum operating capacity and a 10 gpm maximum rate for continuous operation.

Model 25 Recordall 5/8" and 5/8" x 3/4"
Fifteen (15) years from date of shipment or registration of 2,500,000 gallons, whichever occurs first, with a 25 gpm safe maximum operating capacity and a 15 gpm maximum rate for continuous operation.

Model 35 Recordall 3/4"
Fifteen (15) years from date of shipment or registration of 2,500,000 gallons, whichever occurs first, with a 35 gpm safe maximum operating capacity and a 25 gpm maximum rate for continuous operation.

Model 55 Recordall 1"
Fifteen (15) years from date of shipment or registration of 3,000,000 gallons, whichever occurs first, with a 55 gpm safe maximum operating capacity and a 40 gpm maximum rate for continuous operation.

Model 70 Recordall 1"
Fifteen (15) years from date of shipment or registration of 3,250,000 gallons, whichever occurs first, with a 70 gpm safe maximum operating capacity and a 50 gpm maximum rate for continuous operation.

Model 120 Recordall 1-1/2"
Fifteen (15) years from date of shipment or registration of 5,600,000 gallons, whichever occurs first, with a 120 gpm safe maximum operating capacity and a 80 gpm maximum rate for continuous operation.

Model 170 Recordall 2"
Fifteen (15) years from date of shipment or registration of 10,400,000 gallons, whichever occurs first, with a 170 gpm safe maximum operating capacity and a 100 gpm maximum rate for continuous operation.

BADGER METER EXTENDED LOW FLOW METER ACCURACY

Badger Meter further warrants the meter product to meet or exceed the following extended low flow accuracies in excess of AWWA standard:

Model LP Recordall 5/8" and 5/8" x 3/4"
Badger warrants Product low flow accuracy of 98.5% at a rate of 1/4 gpm and low flow accuracy of 95.0% at a rate of 1/8 gpm for five (5) years from date of shipment or registration of 675,000 gallons, whichever occurs first.

Model 25 Recordall 5/8" and 5/8" x 3/4"
Badger warrants Product low flow accuracy of 98.5% at a rate of 1/4 gpm and low flow accuracy of 95.0% at a rate of 1/8 gpm for five (5) years from date of shipment or registration of 675,000 gallons, whichever occurs first.

Model 35 Recordall 3/4"
Badger warrants Product low flow accuracy of 97% at a rate of 3/8 gpm for five (5) years from date of shipment or registration of 675,000 gallons, whichever occurs first.

Model 55 Recordall 1"
Badger warrants Product low flow accuracy of 95% at a rate of 1/2 gpm for three (3) years from date of shipment or registration of 575,000 gallons, whichever occurs first.

Model 70 Recordall 1"
Badger warrants Product low flow accuracy of 95% at a rate of 3/4 gpm for three (3) years from date of shipment or registration of 1,100,000 gallons, whichever occurs first.

Model 120 Recordall 1-1/2"
Badger warrants Product low flow accuracy of 95% at a rate of 1 1/4 gpm for two (2) years from date of shipment or registration of 1,440,000 gallons, whichever occurs first.

Model 170 Recordall 2"
Badger warrants Product low flow accuracy of 95% at a rate of 1 1/2 gpm for two (2) years from date of shipment or registration of 1,890,000 gallons, whichever occurs first.

PRODUCT RETURNS

Any Product proved to Badger's satisfaction to have failed the foregoing warranties will, at Badger's option, be repaired or replaced without charge to the Customer. Badger's obligation hereunder shall be limited to such repair and replacement and shall be conditioned upon Badger's receiving written notice of any alleged defect within ten (10) days after its discovery. This exclusive remedy shall not be deemed to have failed its essential purpose so long as Badger is willing and able to replace defective products or issue a credit to purchaser within a reasonable time of proof to Badger that a defect is involved. Product returns must be shipped by the Customer prepaid F.O.B. to the nearest Badger factory or distribution center. The Customer shall be responsible for all direct and indirect costs associated with removing original product and reinstalling the repaired or replacement Product.

LIMITS OF LIABILITY

This warranty shall not apply to Product repaired or altered by any party other than Badger. The foregoing warranty applies only to the extent that the Product is installed, serviced and operated strictly in accordance with AWWA Standard C700-02 and AWWA M6 Manual. The warranty shall not apply and shall be void with respect to Product exposed to conditions other than those detailed in Badger Product technical literature and Installation and Operation Manuals (IOMs), or which have been subject to vandalism, negligence, accident, acts of God, improper installation, operation or repair, alteration, or other circumstances which are beyond Badger's reasonable control. With respect to Product not manufactured by Badger, the warranty obligations of Badger shall in all respects conform and be limited to the warranty extended to Badger by the supplier.

THE FOREGOING WARRANTIES ARE EXCLUSIVE AND IN LIEU OF ALL OTHER EXPRESS AND IMPLIED WARRANTIES WHATSOEVER, INCLUDING BUT NOT LIMITED TO IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE (except warranties of title).

Any description of the Product, whether in writing or made orally by Badger or Badger's agents, specifications, samples, models, bulletins, drawings, diagrams, engineering sheets or similar materials used in connection with any Customer's order are for the sole purpose of identifying the Product and shall not be construed as an express warranty. Any suggestions by Badger or Badger's agents regarding use, application, or suitability of the Product shall not be construed as an express warranty unless confirmed to be such in writing by Badger.

Exclusion of Consequential Damages and Disclaimer of Other Liability. Badger's liability with respect to breaches of the foregoing warranty shall be limited as stated herein. Badger's liability shall in no event exceed the contract price. **BADGER SHALL NOT BE SUBJECT TO AND DISCLAIMS: (1) ANY OTHER OBLIGATIONS OR LIABILITIES ARISING OUT OF BREACH OF CONTRACT OR OF WARRANTY, (2) ANY OBLIGATIONS WHATSOEVER ARISING FROM TORT CLAIMS (INCLUDING NEGLIGENCE AND STRICT LIABILITY) OR ARISING UNDER OTHER THEORIES OF LAW WITH RESPECT TO PRODUCTS SOLD OR SERVICES RENDERED BY BADGER, OR ANY UNDERTAKINGS, ACTS OR OMISSIONS RELATING THERETO, AND (3) ALL CONSEQUENTIAL, INCIDENTAL, AND CONTINGENT DAMAGES WHATSOEVER.**

Due to continuous research, product improvements and enhancements, Badger Meter reserves the right to change product or system specifications without notice, except to the extent an outstanding contractual obligation exists.

ADE®, Recordall®, RTR® and Badger® are registered trademarks of Badger Meter, Inc.

Badger Meter ®

This warranty shall apply to the Absolute Digital Encoder (ADE®) ("Product"), sold on or after August 1, 2006. The warranty is extended only to utilities, municipalities, other commercial users, and authorized Badger Meter, Inc. ("Badger®") distributors, hereinafter referred to as "Customer", and does NOT apply to consumers.

Badger warrants the Product to be free from defects in materials and workmanship appearing within the earlier of either: Ten (10) years after installation; or ten (10) years and six (6) months after shipment from Badger.

Any Product proved to Badger's satisfaction to have failed the foregoing warranties will, at Badger's option, be repaired or replaced without charge to the Customer. Badger's obligation hereunder shall be limited to such repair and replacement and shall be conditioned upon Badger's receiving written notice of any alleged defect within ten (10) days after its discovery. This exclusive remedy shall not be deemed to have failed its essential purpose so long as Badger is willing and able to replace defective Products to Customer within a reasonable time after receipt of proof that a defect is involved. Product returns must be shipped by the Customer prepaid F.O.B. to the nearest Badger factory or distribution center. The Customer shall be responsible for all direct and indirect costs associated with removing original product and reinstalling the repaired or replacement Product.

This warranty shall not apply to Product repaired or altered by any party other than Badger. The foregoing warranty applies only to the extent that the Product is installed, serviced and operated strictly in accordance with Badger's instructions. The warranty shall not apply and shall be void with respect to Product exposed to conditions other than those detailed in Product technical literature and Installation and Operation Manuals (IOMs), or which have been subject to vandalism, negligence, accident, acts of God, improper installation, operation or repair, alteration, or other circumstances which are beyond Badger's reasonable control. With respect to equipment and parts not manufactured by Badger, the warranty obligations of Badger shall in all respects conform and be limited to the warranty extended to Badger by the supplier.

THE FOREGOING WARRANTIES ARE EXCLUSIVE AND IN LIEU OF ALL OTHER EXPRESS AND IMPLIED WARRANTIES WHATSOEVER, INCLUDING BUT NOT LIMITED TO IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE (except warranties of title).

Any description of the Product, whether in writing or made orally by Badger or Badger's agents, specifications, samples, models, bulletins, drawings, diagrams, engineering sheets or similar materials used in connection with any Customer's order are for the sole purpose of identifying the Product and shall not be construed as an express warranty. Any suggestions by Badger or Badger's agents regarding use, application, or suitability of the Product shall not be construed as an express warranty unless confirmed to be such in writing by Badger.

Exclusion of Consequential Damages and Disclaimer of Other Liability. Badger's liability with respect to breaches of the foregoing warranty shall be limited as stated herein. Badger's liability shall in no event exceed the contract price. **BADGER SHALL NOT BE SUBJECT TO AND DISCLAIMS: (1) ANY OTHER OBLIGATIONS OR LIABILITIES ARISING OUT OF BREACH OF CONTRACT OR OF WARRANTY, (2) ANY OBLIGATIONS WHATSOEVER ARISING FROM TORT CLAIMS (INCLUDING NEGLIGENCE AND STRICT LIABILITY) OR ARISING UNDER OTHER THEORIES OF LAW WITH RESPECT TO PRODUCTS SOLD OR SERVICES RENDERED BY BADGER, OR ANY UNDERTAKINGS, ACTS OR OMISSIONS RELATING THERETO, AND (3) ALL CONSEQUENTIAL, INCIDENTAL, AND CONTINGENT DAMAGES WHATSOEVER.**

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Badger Meter Inc., 4545 W. Brown Deer Road, P.O. Box 245036 Milwaukee, Wisconsin 53224-9536

NATIONAL
METER AND AUTOMATION, INC.

City of Lodi
WMP Meter Procurement Proposal
Addendum #1: Clarifications

1) Section L5- Terms and Conditions: Meter Assemblies and Material

"Page 4 of the National Meter Proposal, second paragraph under "Terms and Conditions: Meter Assemblies and Materials": National Meter states that a "base delivery of 500 meter assemblies will be scheduled on 7 day intervals." A "base load" of a set quantity at a set interval should not be assumed by National Meter. Smaller or larger delivery increments may be required, and National Meter and Automation is responsible for coordinating precise delivery schedules with the Installation Contractor. The City's RFP established 500 unit lots delivered every 7 days as the maximum rate for meter deliveries to the Installation Contractor as a basis for bids. This delivery schedule should not be considered as a constant 'base load.' "

Reply: Agreed. Meter deliveries will be scheduled with the Installation Contractor. This delivery schedule will not be considered as a constant "base load".

2) Cost Proposal

"The benchmark date for the Producer Price Index has been proposed as October 2010. No basis has been proposed for the Consumer Price Index. National Meter should provide the benchmark date for the local CPI as the basis for future price increases. Also, National Meter should provide the specific CPI index (e.g. the formal name of the proposed, local index or region) that will be used."

Reply: CPI Index is based on the US Department of Labor, Bureau of Labor Statistics, as of December 31, 2010, Sacramento Area.

3) ERT Mounting Options

"The City has determined that existing meter box lids will not be replaced under the WMP. Existing meter box installations account for only a fraction of the total meter installations, but will not be compatible with the lid-mounted encoder- receiver-transmitter- (ERT) units previously specified by the City and proposed by National Meter. Instead, pit mounted ERT's will be required at these locations. The Installation Contractor will be responsible for specifying the quantity of pit mounted ERTs and providing this information to National Meter. Prior to awarding the water meter procurement contract to National Meter, the City should verify with National Meter that partially substituting pit mount ERTs for lid-mount ERTs does not cause a price change."

Reply: Substituting pit mount (under lid) ERTs for Lid Mount ERTS will *reduce* the net price for the meter and ERT assembly by $2.00.

Exhibit B

2012 NATIONAL METER PRICE CALCULATION

Size	Quantity	Unit Price	
¾"	2,322	$194	$450,468.00
1"	25	$226	$5,650.00
2"	25	$622	$15,550.00
	2,372	Subtotal	$471,668.00
CA Sales Tax (7.25%)			$34,196.00
County Sales Tax (0.5%)			$2,358.34
		Total	$508,222.34
Field Documentation	2,372	$8	$18,976.00
		GRAND TOTAL	$527,198.34

EXHIBIT C

Insurance Requirements for Contractor The Contractor shall take out and maintain during the life of this contract, insurance coverage as listed below. These insurance policies shall protect the Contractor and any subcontractor performing work covered by this contract from claims for damages for personal injury, including accidental death, as well as from claims for property damages, which may arise from Contractor's operations under this contract, whether such operations be by Contractor or by any subcontractor or by anyone directly or indirectly employed by either of them, and the amount of such insurance shall be as follows:

1. COMPREHENSIVE GENERAL LIABILITY

   $2,000,000 Ea. Occurrence

   $2,000,000 Aggregate

2. COMPREHENSIVE AUTOMOBILE LIABILITY

   $1,000,000 Bodily Injury - Ea. Person
   $1,000,000 Bodily Injury - Ea. Occurrence

   $1,000,000 Property Damage - Ea. Occurrence

NOTE: Contractor agrees and stipulates that any insurance coverage provided to the City of Lodi shall provide for a claims period following termination of coverage which is at least consistent with the claims period or statutes of limitations found in the California Tort Claims Act (California Government Code Section 810 et seq.).

NOTE: (1) The street address of the **CITY OF LODI** must be shown along with (a) and (b) above: 221 West Pine Street, Lodi, California, 95241-1910; (2) The insurance certificate must state, on its face or as an endorsement, a description of the project that it is insuring.

A copy of the certificate of insurance with the following endorsements shall be furnished to the City:

(a) Additional Named Insured Endorsement
Such insurance as is afforded by this policy shall also apply to the City of Lodi, its elected and appointed Boards, Commissions, Officers, Agents, Employees, and Volunteers as additional named insureds.

(This endorsement shall be on a form furnished to the City and shall be included with Contractor's policies.)

(b) Primary Insurance Endorsement
Such insurance as is afforded by the endorsement for the Additional Insureds shall apply as primary insurance. Any other insurance maintained by the City of Lodi or its officers and employees shall be excess only and not contributing with the insurance afforded by this endorsement.

(c) Severability of Interest Clause
The term "insured" is used severally and not collectively, but the inclusion herein of more than one insured shall not operate to increase the limit of the company's liability.

(d) Notice of Cancellation or Change in Coverage Endorsement
This policy may not be canceled nor the coverage reduced by the company without 30 days' prior written notice of such cancellation or reduction in coverage to the Risk Manager, City of Lodi, 221 W. Pine St., Lodi, CA 95240.

Compensation Insurance The Contractor shall take out and maintain during the life of this contract, Worker's Compensation Insurance for all of Contractor's employees employed at the site of the project and, if any work is sublet, Contractor shall require the subcontractor similarly to provide Worker's Compensation Insurance for all of the latter's employees unless such employees are covered by the protection afforded by the Contractor. In case any class of employees engaged in hazardous work under this contract at the site of the project is not protected under the Worker's Compensation Statute, the Contractor shall provide and shall cause each subcontractor to provide insurance for the protection of said employees. This policy may not be canceled nor the coverage reduced by the company without 30 days' prior written notice of such cancellation or reduction in coverage to the Risk Manager, City of Lodi, 221 W. Pine St., Lodi, CA 95240. A Waiver of Subrogation against the City of Lodi is required.

NOTE: No contract agreement will be signed nor will **any** work begin on a project until the proper insurance certificate is received by the City.

RESOLUTION NO. 2013-07

A RESOLUTION OF THE LODI CITY COUNCIL AUTHORIZING CITY MANAGER TO EXECUTE PURCHASE ORDER AND AMENDMENT NO. 1 TO PROFESSIONAL SERVICES AGREEMENT WITH NATIONAL METER AND AUTOMATION, INC., FOR PURCHASE OF METER ASSEMBLIES AND FIELD DOCUMENTATION

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WHEREAS, National Meter and Automation, Inc., of Santa Rosa, is the local supplier for Badger Meter, Inc., of Milwaukee, that was approved by City Council on August 4, 2010, as the sole source provider of water meters to the Water Meter Program; and

WHEREAS, staff has negotiated the necessary terms and requirements of the water meter assemblies' procurement and related field services, including the delivery of meters to the City and recordation of model, serial number, address, and location of approximately 8,200 meters to be installed with the water meter program; and

WHEREAS, this purchase will cover the remaining five years of the water meter program; and

WHEREAS, Amendment No. 1 to the Professional Services Agreement with National Meter and Automation, Inc., will extend the term of the agreement to March 20, 2018.

NOW, THEREFORE, BE IT RESOLVED that the Lodi City Council does hereby authorize the City Manager to execute a purchase order and Amendment No. 1 to the Professional Services Agreement with National Meter and Automation, Inc., of Santa Rosa, California, for purchase of water meter assemblies and field documentation, in the amount of $1,800,000.

Dated: February 6, 2013

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I hereby certify that Resolution No. 2013-07 was passed and adopted by the City Council of the City of Lodi in a regular meeting held February 6, 2013, by the following vote:

AYES: COUNCIL MEMBERS – Hansen, Johnson, Katzakian, Mounce, and Mayor Nakanishi

NOES: COUNCIL MEMBERS – None

ABSENT: COUNCIL MEMBERS – None

ABSTAIN: COUNCIL MEMBERS – None

RANDI JOHL
City Clerk