



# Yucaipa Valley Water District

12770 Second Street, Yucaipa, California 92399 Phone: (909) 797-5117

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## Notice and Agenda of a Regular Meeting of the Board of Directors

Wednesday, March 4, 2015 at 6:00 p.m.

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- I. **CALL TO ORDER** - Pledge of Allegiance
- II. **ROLL CALL**
- III. **PUBLIC COMMENTS** - At this time, members of the public may address the Board of Directors on matters within its jurisdiction. To provide comments on specific agenda items, please complete a speaker's request form and provide the completed form to the Board Secretary prior to the board meeting.
- IV. **CONSENT CALENDAR** - All matters listed under the Consent Calendar are considered by the Board of Directors to be routine and will be enacted in one motion. There will be no discussion of these items prior to the time the board considers the motion unless members of the board, the administrative staff, or the public request specific items to be discussed and/or removed from the Consent Calendar.
  - A. Minutes of Meetings
    - 1. Regular Board Meeting - February 18, 2015
    - 2. Board Workshop - February 24, 2015
- V. **BOARD REPORTS**
  - A. San Gorgonio Pass Water Resource Alliance - Technical Committee and General Meeting - February 25, 2015
  - B. Reports by Board Members
- VI. **STAFF REPORT**
- VII. **DISCUSSION ITEMS**
  - A. Authorization to Solicit Bids for the Construction of Replacement Digester Covers and Associated Piping at the Wochholz Regional Water Recycling Facility [[Director Memorandum No. 15-018 - Page 13 of 56](#)]
    - RECOMMENDED ACTION: That the Board authorizes the District staff to solicit construction bids for the replacement of existing facilities and equipment.

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Any person with a disability who requires accommodation in order to participate in this meeting should telephone Tysa Baeumel at (909) 797-5117 at least 48 hours prior to the meeting in order to make a request for a disability-related modification or accommodation.

Materials related to an item on this agenda submitted to the Board of Directors after distribution of the board meeting packet are available for public inspection during normal business hours at the District office located at 12770 Second Street, Yucaipa. Meeting material is also be available on the District's website at [www.yvwd.dst.ca.us](http://www.yvwd.dst.ca.us)

- B. Ratification of Beaumont Basin Watermaster Monitoring and Reporting Expenses and Authorization for District Staff to Approve Future Watermaster Related Costs [[Director Memorandum No. 15-019 - Page 15 of 56](#)]

RECOMMENDED ACTION: That the Board ratifies the expenses as presented and authorizes the District's Watermaster Representative to approve future Watermaster related expenses consistent with the implementation and administration of the Beaumont Basin adjudication.

**VIII. DIRECTORS COMMENTS**

**IX. ANNOUNCEMENTS**

- A. March 10, 2015 at 4:00 p.m. - Board Workshop
- B. March 18, 2015 at 6:00 p.m. - Regular Board Meeting
- C. March 24, 2015 at 4:00 p.m. - Board Workshop
- D. March 25, 2015 at 6:00 p.m. - San Gorgonio Pass Regional Water Resource Alliance at the City of Banning
- E. April 1, 2015 at 6:00 p.m. - Regular Board Meeting
- F. April 7, 2015 at 4:00 p.m. - Board Workshop
- G. April 15, 2015 at 6:00 p.m. - Regular Board Meeting
- H. April 22, 2015 at 6:00 p.m. - San Gorgonio Pass Regional Water Resource Alliance at the City of Banning
- I. April 28, 2015 at 4:00 p.m. - Board Workshop
- J. May 6, 2015 at 6:00 p.m. - Regular Board Meeting
- K. May 12, 2015 at 4:00 p.m. - Board Workshop
- L. May 20, 2015 at 6:00 p.m. - Regular Board Meeting
- M. May 26, 2015 at 4:00 p.m. - Board Workshop
- N. May 27, 2015 at 6:00 p.m. - San Gorgonio Pass Regional Water Resource Alliance at the City of Banning
- O. June 3, 2015 at 6:00 p.m. - Regular Board Meeting
- P. June 9, 2015 at 4:00 p.m. - Board Workshop
- Q. June 17, 2015 at 6:00 p.m. - Regular Board Meeting
- R. June 23, 2015 at 4:00 p.m. - Board Workshop
- S. June 24, 2015 at 6:00 p.m. - San Gorgonio Pass Regional Water Resource Alliance at the City of Banning

**X. ADJOURNMENT**

# Consent Calendar



Yucaipa Valley Water District

# MINUTES OF A REGULAR BOARD MEETING

February 18, 2015 at 6:00 P.M.

Directors Present:

Jay Bogh, Vice President  
Bruce Granlund, Director  
Tom Shalhoub, Director

Staff Present:

Joseph Zoba, General Manager  
Jack Nelson, Assistant General Manager  
Brent Anton, Engineering Manager  
Joe DeSalliers, Public Works Supervisor

Directors Absent:

Lonni Granlund, President  
Ken Munoz, Director

Consulting Staff Present:

David Wysocki, Legal Counsel

Registered Guests and Others Present:

Karen Da Silva, News Mirror  
David Duron, Customer

The regular meeting of the Board of Directors of the Yucaipa Valley Water District was called to order by Director Jay Bogh at 6:00 p.m. at the Administrative Office Building, 12770 Second Street, Yucaipa, California.

CALL TO ORDER

Director Jay Bogh led the pledge of allegiance.

FLAG SALUTE

The roll was called and Director Jay Bogh, Director Bruce Granlund, and Director Tom Shalhoub were present. Director Lonni Granlund and Director Ken Munoz were absent.

ROLL CALL

David Duron discussed an article in the Press Enterprise on February 13, 2015 titled, "Private Fishing Operators Snag Win" about the Sacramento appellate court striking down rules by the California Department of Fish and Wildlife requiring biological surveys from private lake owners.

PUBLIC COMMENTS

There were no other public comments.

Director Bruce Granlund moved to approve the consent calendar and Director Tom Shalhoub seconded the motion to approve the consent calendar.

CONSENT CALENDAR

A. Minutes of Meetings

1. Regular Board Meeting - February 4, 2015
2. Board Workshop - February 10, 2015

B. Payment of Bills

1. Approve/Ratify Invoices for Board Awarded Contracts
2. Ratify General Expenses for January 2015

The motion was approved by the following vote:

Director Jay Bogh - Yes

Director Bruce Granlund - Yes  
Director Lonni Granlund - Absent  
Director Ken Munoz - Absent  
Director Tom Shalhoub - Yes

A. Reports by Board Members

- Director Tom Shalhoub reported on the San Geronio Pass Water Agency board meeting held on February 17, 2015.
- Director Tom Shalhoub reported on the City of Calimesa council meeting held on February 17, 2015.

BOARD REPORTS

General Manager Joseph Zoba reported on the following items:

- A letter from the San Geronio Pass Water Agency dated February 12, 2015 was included in the board meeting packet regarding a proposed ad hoc meeting to discuss the "State of the Regional Water Supply". This item will be scheduled for discussion at the board workshop on February 24, 2015.
- The Yucaipa Valley Water District will be hosting a "Life after Lawns" workshop on February 28, from 9:30 a.m. to 2:30 p.m.
- The Yucaipa Valley Water District has been asked to sponsor a new microfiltration product from Pall Corporation. The cost associated with the approval by the California Department of Drinking Water would be covered by Pall Corporation. This item will be presented at a future workshop meeting.
- The Yucaipa Valley Water District has nearly completed the Refunding Revenue bonds, Series 2015A transaction. The estimated True Interest Cost is 3.104% which will result in annual savings of about \$600,000 over the next twenty years.

STAFF REPORT

DISCUSSION ITEMS:

Following a staff presentation by General Manager Joseph Zoba, Director Tom Shalhoub moved and Director Bruce Granlund seconded a motion to receive and file the unaudited financial report as presented.

The motion was approved by the following vote:

Director Jay Bogh - Yes  
Director Bruce Granlund - Yes  
Director Lonni Granlund - Absent  
Director Ken Munoz - Absent  
Director Tom Shalhoub - Yes

DM 15-015  
UNAUDITED  
FINANCIAL REPORT  
FOR THE PERIOD  
ENDING ON JANUARY  
31, 2015

Following a staff presentation by Assistant General Manager Jack Nelson, Director Bruce Granlund moved and Director Tom Shalhoub seconded a motion to deny the claim for damages.

The motion was approved by the following vote:

- Director Jay Bogh - Yes
- Director Bruce Granlund - Yes
- Director Lonni Granlund - Absent
- Director Ken Munoz - Absent
- Director Tom Shalhoub - Yes

DM 15-016  
DENIAL OF CLAIM  
RELATED TO A  
BLOCKED SEWER  
LATERAL AT 35411  
WILDWOOD CANYON  
ROAD, YUCAIPA -  
JAMES SOLLIS

Following a staff presentation by General Manager Joseph Zoba, Director Tom Shalhoub moved and Director Bruce Granlund seconded a motion to approve the policy document.

The motion was approved by the following vote:

- Director Jay Bogh - Yes
- Director Bruce Granlund - Yes
- Director Lonni Granlund - Absent
- Director Ken Munoz - Absent
- Director Tom Shalhoub - Yes

DM 15-017  
APPROVAL OF A  
POLICY RELATED TO  
DEBT MANAGEMENT  
OF THE YUCAIPA  
VALLEY WATER  
DISTRICT'S WATER  
DIVISION

There were no Director comments.

DIRECTOR  
COMMENTS

Director Jay Bogh called attention to the announcements listed on the agenda.

ANNOUNCEMENTS

The meeting was adjourned at 6:30 p.m.

Respectfully submitted,

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Joseph B. Zoba, Secretary

(Seal)

# San Gorgonio Pass Regional Water Alliance

## Wednesday, February 25, 2015 at 6:00 p.m.

Banning City Hall Council Chambers  
99 East Ramsey Street, Banning, California 92220

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1. Call to Order
2. Public Comments
3. Approval of Minutes
4. Reports
  - a. Technical Committee Report
5. Presentations
  - a. Presentation by Riverside County Fire Department Office of Emergency Services
  - b. Member Agency Profile: Morongo Band of Mission Indians
6. Discussion Regarding the Assignment of Members to the Administrative Committee
7. Future Meeting Topics
  - a. Alliance Member Agency Profile for March 2015 - San Gorgonio Pass Water Agency
  - b. Other Meeting Topics
8. Comments by Alliance Members
9. Announcements
  - a. Next Meeting Date: **Wednesday, March 25, 2015 at 6:00 pm**
10. Adjournment

# Board Reports



Yucaipa Valley Water District



# Technical Committee Meeting of the San Geronio Pass Regional Water Alliance Wednesday, February 25, 2015 at 4:30 p.m.

Banning City Hall Council Chambers  
99 East Ramsey Street, Banning, California 92220

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1. Call to Order
2. Public Comments
3. Reports from the Subcommittees of the San Geronio Pass Regional Water Resource Alliance
  - a. Recycled Water Subcommittee
  - b. Water Conservation Subcommittee
  - c. Messaging Subcommittee
4. Discussion Regarding the Development of an Alliance Website
5. Comments by Technical Committee Members
6. Announcements
  - a. Next Meeting Date: **Wednesday, March 25, 2015 at 4:30 pm**
7. Adjournment

# San Gorgonio Pass Regional Water Alliance

## Wednesday, February 25, 2015 at 6:00 p.m.

Banning City Hall Council Chambers  
99 East Ramsey Street, Banning, California 92220

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1. Call to Order
2. Public Comments
3. Approval of Minutes
4. Reports
  - a. Technical Committee Report
5. Presentations
  - a. Presentation by Riverside County Fire Department Office of Emergency Services
  - b. Member Agency Profile: Morongo Band of Mission Indians
6. Discussion Regarding the Assignment of Members to the Administrative Committee
7. Future Meeting Topics
  - a. Alliance Member Agency Profile for March 2015 - San Gorgonio Pass Water Agency
  - b. Other Meeting Topics
8. Comments by Alliance Members
9. Announcements
  - a. Next Meeting Date: **Wednesday, March 25, 2015 at 6:00 pm**
10. Adjournment

# Staff Report



Yucaipa Valley Water District

# Discussion Items



Yucaipa Valley Water District



**Date:** March 4, 2015

**Prepared By:** Joseph Zoba, General Manager  
Kevin King, Operations Manager

**Subject:** Authorization to Solicit Bids for the Construction of Replacement Digester Covers and Associated Piping at the Wochholz Regional Water Recycling Facility

**Recommendation:** That the Board authorizes the District staff to solicit construction bids for the replacement of existing facilities and equipment.

The Yucaipa Valley Water District operates and maintains four anaerobic digesters for sludge conditioning, each with a diameter of 45 feet and a side water depth of 22 feet, yielding a working capacity of approximately 262,000 gallons per digester. The digesters treat sludge drawn from both the primary clarifiers and from the dissolved air flotation thickeners. Digested sludge flows by gravity and can be stored temporarily in a sludge holding tank before being conveyed to the belt presses for dewatering. To keep the digesters functioning properly they should be cleaned every 8-10 years in order to remove the accumulated build-up of sand, grit, and other debris.

Projects	Construction Timeline	Summary of Work
Wastewater Treatment Plant	1976-design 1984-constr	<ul style="list-style-type: none"> <li>Construction of Digester Nos. 1 and 2 and appurtenant equipment, (e.g. heaters)</li> <li>Digester No. 1 equipped with a fixed cover and Digester No. 2 equipped with a floating cover</li> </ul>
Stage I Expansion Project	1992	<ul style="list-style-type: none"> <li>Construction of Digester Nos. 3 and 4</li> <li>Both Digester No. 3 and Digester No. 4 equipped with fixed covers</li> </ul>
Digester No. 2 Cover Modifications	1994	<ul style="list-style-type: none"> <li>Digester No. 2 cover converted from floating to fixed configuration</li> </ul>
Digester Cleaning	2004	<ul style="list-style-type: none"> <li>Digester Nos. 1-4 Cleaning</li> </ul>
Digester Coating	2005	<ul style="list-style-type: none"> <li>Digester Nos. 1-4 Coating of Cover</li> </ul>
Digester and Sludge Holding Tank Modifications Project	2005	<ul style="list-style-type: none"> <li>Digester Nos. 1-4 and Digester Holding Tank Pump Mix System installation</li> </ul>

When the digesters were last cleaned in 2005, the District staff assessed the condition of the digesters and related equipment. Based on corrosion identified at this time, the District made a decision to replace at least two covers the next time the digesters were scheduled to be cleaned.

On November 6, 2013, the Board of Directors approved a contract with RMC to assist in the cleaning and the replacement of the steel covers and piping that was previously identified as having corrosion issues.

At the board workshop on February 24, 2015, Scott Goldman outlined the proposed construction alternatives that will allow the Board of Directors to either replace either two or four digester covers. Based on the tentative bid schedule, the Board of Directors will be able to evaluate the preliminary bid results and award a construction contract at the regular meeting on May 6, 2015.

This project is categorically exempt from environmental review in accordance with the California Environmental Quality Act Guidelines Section 15301(c).



#### Financial Considerations:

Funding for this project will be funded from Sewer Division, Depreciation Reserves #03-10310.



## Director Memorandum 15-019

**Date:** March 4, 2015

**Prepared By:** Joseph Zoba, General Manager

**Subject:** Ratification of Beaumont Basin Watermaster Monitoring and Reporting Expenses and Authorization for District Staff to Approve Future Watermaster Related Costs

**Recommendation:** That the Board ratifies the expenses as presented and authorizes the District's Watermaster Representative to approve future Watermaster related expenses consistent with the implementation and administration of the Beaumont Basin adjudication.

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In January 2001, the San Timoteo Watershed Management Authority was created as a joint powers agency between the Beaumont-Cherry Valley Water District, the City of Beaumont, South Mesa Water Company and the Yucaipa Valley Water District. The parties recognized that they all had common interests in managing the water resources of the San Timoteo Watershed and the Beaumont groundwater basin.

Once formed, the San Timoteo Watershed Management Authority began a multi-phased effort to develop and implement a comprehensive water management program based on the following regional goals:

- To optimize and enhance the local water supplies;
- To protect high quality water resources; and
- To equitably distribute the benefits and costs of developing a regional management strategy.

As a result of the desire to actively manage the local water resources, the parties executed a Stipulated Judgment that provided both the authority and responsibility for the administration of adjudicated water rights within the Beaumont Groundwater Basin. The Honorable Judge Gary Tranbarger of the Superior Court of the State of California for the County of Riverside, signed the Judgment entitled "San Timoteo Watershed Management Authority, vs. City of Banning, et al.," Case No. RIC 389197, on February 4, 2004.

Pursuant to the Judgment, the Court appointed a five-member Watermaster committee consisting of representatives from the City of Banning, the City of Beaumont, the Beaumont-Cherry Valley Water District, the Yucaipa Valley Water District, and South Mesa Water Company. While the Judgment assigns the management of the Beaumont Basin to the Beaumont Basin Watermaster, the Court retains continuing jurisdiction should there be any need in the future to resolve difficult issues between the parties.

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At the Beaumont Basin Watermaster meeting on February 4, 2015, the Watermaster Committee approved the following expenses:

- The purchase of water level monitoring equipment for installation at twelve sites in the Beaumont Basin - \$16,300. (See page 3 of 34)
- The installation of water level monitoring equipment in the Beaumont Basin and the collection/reporting of water level data - \$18,490. (See page 24 of 34)
- The preparation of the 2014 Consolidated Annual Report, estimation of the basin safe yield, and update of the groundwater model, and associated engineering expenses - \$80,790. (See page 29 of 34)

The Yucaipa Valley Water District will be responsible for 20% of the costs approved by the Beaumont Basin Watermaster, or an amount of \$23,116. This expense is pre-planned as part of the District's operating budget (Account 02-5-06-57096).

The expenses associated with the Beaumont Basin Watermaster are all directly related to the implementation and administration of the Beaumont Basin adjudication. As a procedural matter, it would be advantageous to make sure the staff representative from the Yucaipa Valley Water District has the authority to directly approve any Watermaster related expense. Therefore, the District staff recommends that the Board ratifies the expenses as presented and authorizes the District's Watermaster Representative to approve future Watermaster related expenses consistent with the implementation and administration of the Beaumont Basin adjudication.

#### Financial Considerations:

For Fiscal Year 2014-15, the line item budget for the Beaumont Basin Watermaster was set at \$60,000 with \$24,005 expended to date. The additional expenses approved by the Watermaster will result in a line item expenditure of \$47,121 from the \$60,000 budgeted amount, or 78.5%.

attachments



## BEAUMONT BASIN WATERMASTER MEMORANDUM NO. 15-03

**Date:** February 4, 2015

**From:** Hannibal Blandon, ALDA

**Subject:** Purchase of Water Level Monitoring Equipment for Installation at Twelve Sites in the Beaumont Basin

**Recommendation:** That the Watermaster members approve the purchase of water level monitoring equipment for a cost not to exceed \$16,000 and authorize an equal assessment to Watermaster members to fund the expense.

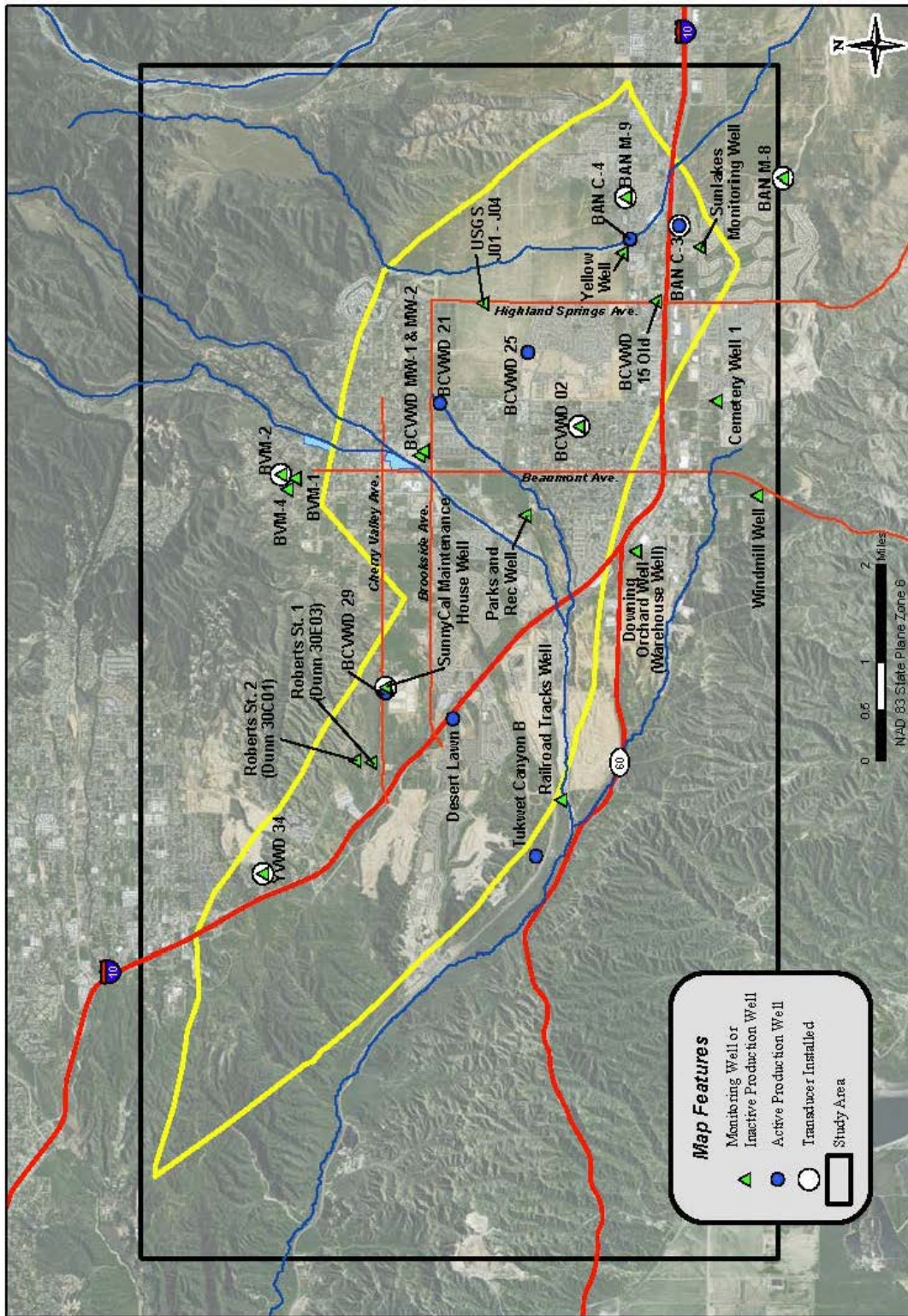
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At the Beaumont Basin Watermaster meeting on December 3, 2014, the Watermaster members authorized ALDA to assess the conditions of the monitoring wells that were used to record water levels at various locations in the groundwater basin during the period between 2007 and 2011. The objectives of the assessment were: a) identify the conditions of existing monitoring equipment, b) evaluate additional wells that could be considered for monitoring, and c) provide a construction cost estimate for consideration by the Board.

Field visits to monitoring sites were conducted in mid-January. Of the 12 probes that were initially installed, only six were found in the field. Water level data was downloaded from three of these probes as the batteries for the remaining units were totally discharged. All probes were manufactured by Solinst, a Canadian company that specializes in monitoring equipment. Additional potential sites were also visited to identify necessary improvements at each site. A total of 23 sites, including existing sites, are being considered for selection of 12 final sites. Attached is a summary of the 23 potential sites including brief descriptions of field conditions and equipment and improvements needed at each site.

Equipment costs were solicited from Solinst for 12 sites. A Solinst quote is attached along with technical documentation on the equipment to be used. The recommended equipment includes: 12 Leveloggers 3001 LT Edge with a 10 year battery, 1 Barologger, 5,600 ft of direct read cable, a direct read communication package, a water level meter, and miscellaneous equipment. Final cost of equipment will be determined upon selection of final sites and it is estimated not to exceed \$15,000.00. An additional \$1,000.00 will need to be budgeted to construct the necessary improvements at some of the final selected sites.





The following Watermaster Memorandum No. 15-04 includes the installation costs for the monitoring wells.






Potential Well Sites for Monitoring Water Levels





DRAFT



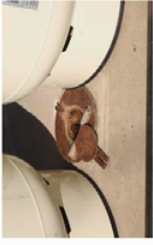

**Alda, Inc.** in association with  
 Thomas Harder & Co.  
 Environmental Consulting  
 29-Jan-15





Beaumont Basin - Potential Well Sites to Monitor Water Levels			
Well Name & Type	Comments	Photo	Materials / Repairs
<p><b>Yucaipa VWD No. 34</b> (VWD - Observation well)</p>	<p>Well has an active transducer. Data was downloaded and transducer left in place. Water level at 220 ft.</p>		<p>1.- New Levellogger Edge 3001 2.- 400 ft of Direct Read Communications Cable</p>
<p><b>Roberts Street 1 &amp; 2</b> (Private - Abandoned well)</p>	<p>Two wells off Roberts Street. Wells have been logged by SGPWA. 24" Outer casing and 12" inner casing. Needs well head cover and 2" access port.</p>		<p>1.- New Levellogger Edge 3001 2.- 400 ft of Direct Read Communications Cable 3.- Well head cover plate and lock</p>
<p><b>Tukwet Golf Course Well B</b> (Private - Being Rehabilitated)</p>	<p>Well currently being developed. It is likely that a pump will be installed in the near future to meet irrigation demands. Water levels are relatively shallow - less than 100 ft. Outside Beaumont Basin legal boundary.</p>		<p>1.- New Levellogger Edge 3001 2.- 200 ft of Direct Read Communications Cable 3.- Well head access yet to be determined depending on final configuration</p>
<p><b>Railroad Tracks Well</b> (Private - Abandoned well)</p>	<p>Well has been logged by SGPWA in the past. Access may be an issue. Shallow water level. Existing well head has a plate, but needs a 2" access port to be drilled. Outside of Beaumont Basin legal boundary.</p>		<p>1.- New Levellogger Edge 3001 2.- 200 ft of Direct Read Communications Cable 3.- Drill a 2" access port on existing well head cover plate and provide lock</p>





**Beaumont Basin - Potential Well Sites to Monitor Water Levels**

Well Name & Type	Comments	Photo	Materials / Repairs
<p><b>Desert Lawn Cemetery</b> (Private Production well)</p>	<p>Well is currently active and supplies lake at cemetery to meet irrigation needs. Pumps a few hours during the summer. Cemetery manager has given verbal approval. Well head has 1" access port that can be used for logger.</p>		<p>1.- New Levelogger Edge 3001 2.- 400 ft of Direct Read Communications Cable 3.- Minor modifications at existing 1" access port</p>
<p><b>BCVWD No. 29</b> (BCVWD - Production well)</p>	<p>Well had a transducer in the past, but was removed. A transducer could be installed through existing 2" sounding tube. WEI had difficulties installing transducer in the past. Static water level at about 500 ft. Well operates 18 hours during the summer months.</p>		<p>1.- New Levelogger Edge 3001 2.- 700 ft of Direct Read Communications Cable 3.- Minor modifications at existing 2" sounding tube.</p>
<p><b>Near Egg Ranch Well</b> (Private - Observation well)</p>	<p>Well sits directly north of the Egg Ranch wells 1 and 2 and east of BCVWD No. 29. Access through a private residence. 6-inch well has an existing probe with a stainless steel cable. Water level at about 500 ft.</p>		<p>1.- New Levelogger Edge 3001 2.- 700 ft of Direct Read Communications Cable 3.- Minor modifications at well head to install a well plate and lock.</p>

Beaumont Basin - Potential Well Sites to Monitor Water Levels			Materials / Repairs
Well Name & Type	Comments	Photo	
<p><b>Icon Warehouse Well</b> (Private - Observation well)</p>	<p>Well sits in warehouse parking lot near the City of Banning DP-7. Well head has been nicely constructed to install observation probe. SGPWA has manually logged well in the past. Water level at about 200 ft.</p>		<ol style="list-style-type: none"> <li>1.- New Levelogger Edge 3001</li> <li>2.- 300 ft of Direct Read Communications Cable</li> <li>3.- Minor modifications at well head to install probe hanging mechanism.</li> </ol>
<p><b>Beaumont Cherry Valley Parks and Recreation Well</b> (Public - Non Production well)</p>	<p>Well sits in Noble Creek Park on Oak Valley Road; logged by SGPWA. Well head has a 2" sounding tube. Water level at approximately 430 ft.</p>		<ol style="list-style-type: none"> <li>1.- New Levelogger Edge 3001</li> <li>2.- 600 ft of Direct Read Communications Cable</li> <li>3.- Minor modifications at well head 2" sounding tube cap.</li> </ol>
<p><b>Bonita Vista Wells 1, 2, or 3.</b> (BCVWD - Observation well)</p>	<p>These 3 wells are located north of basin boundary. Well 2 has a water level probe that was pulled and data downloaded. Probe was put back into well. Water level is about 100 ft. Well head needs a new cover plate, access port, and lock.</p>		<ol style="list-style-type: none"> <li>1.- New Levelogger Edge 3001</li> <li>2.- 200 ft of Direct Read Communications Cable</li> <li>3.- New well head cover, access port and lock are needed.</li> </ol>
<p><b>BCVWD - MW1 or MW2</b> (BCVWD - Observation well)</p>	<p>These 2 wells are located in the middle of the spreading grounds and could easily accommodate the installation of a monitoring probe. Well head cover and lock will be needed. Water level is about 500 ft.</p>		<ol style="list-style-type: none"> <li>1.- New Levelogger Edge 3001</li> <li>2.- 700 ft of Direct Read Communications Cable</li> <li>3.- New well head cover, access port and lock are needed.</li> </ol>

Beaumont Basin - Potential Well Sites to Monitor Water Levels			
Well Name & Type	Comments	Photo	Materials / Repairs
<b>Windmill Well</b> (Private - abandoned well)	Near intersection of California Avenue and Beaumont Ave. South of basin boundary. Unknown whether a probe can be lowered with existing pump in place. Pump may need to be pulled. Authorization will be needed from owner prior to commencing work.		<ol style="list-style-type: none"> <li>1.- New Levellogger Edge 3001</li> <li>2.- 400 ft of Direct Read Communications Cable</li> <li>3.- Pull well pump and modify well head plate.</li> </ol>
<b>BCVWD No. 2</b> (BCVWD -Observation well)	Well had an existing probe hung by stainless steel wire in the sounding tube. Probe was pulled to download data, but battery was not working. Water level at 453 ft		<ol style="list-style-type: none"> <li>1.- New Levellogger Edge 3001</li> <li>2.- 600 ft of Direct Read Communications Cable</li> <li>3.- Minor modifications at sounding tube cap.</li> </ol>
<b>Cemetery Well No. 1</b> (Private - Observation well)	Well is located south of Beaumont Basin legal boundary. A 1" hole will need to be drilled for the logger to be installed. Water level is at about 70 ft.		<ol style="list-style-type: none"> <li>1.- New Levellogger Edge 3001</li> <li>2.- 200 ft of Direct Read Communications Cable</li> <li>3.- Drill 1" hole in existing plate cover.</li> </ol>
<b>BCVWD No. 21</b> (BCVWD - Production well)	Well had a transducer in the past, but was removed. A transducer could be installed through existing 2" sounding tube. Static water level at about 530 ft. Well operates 18 hours during the summer months.		<ol style="list-style-type: none"> <li>1.- New Levellogger Edge 3001</li> <li>2.- 700 ft of Direct Read Communications Cable</li> <li>3.- Minor modifications at sounding tube cap.</li> </ol>

Beaumont Basin - Potential Well Sites to Monitor Water Levels			
Well Name & Type	Comments	Photo	Materials / Repairs
<b>BCVWD No. 25</b> (BCVWD - Production well)	Well had a transducer in the past, but was removed. WEI had difficulties installing probe in the past through existing 2" sounding tube. Static water level at about 500 ft. Well operates 18 hours during the summer months.		<ol style="list-style-type: none"> <li>1.- New Levellogger Edge 3001</li> <li>2.- 700 ft of Direct Read Communications Cable</li> <li>3.- Minor modifications at sounding tube cap</li> </ol>
<b>USGS J01 th J04</b> (USGS - Nested observation wells)	Well site has four observation wells at different depths. No monitoring equipment needed. Data can be accessed from USGS semi-annually.		None
<b>Yellow Well</b> (Private - Abandoned well)	Well sits in the middle of a field near intersection of Wilson Avenue and Appex Road. Water level is monitored by SGPWA and is currently at about 420 ft. Access to property would need to be authorized by private owner.		<ol style="list-style-type: none"> <li>1.- New Levellogger Edge 3001</li> <li>2.- 600 ft of Direct Read Communications Cable</li> <li>3.- 2" access port on well head plate and lock</li> </ol>
<b>Old BCVWD No. 15</b> (City of Banning owns well - Observation well)	Well sits in a Chevron gas station parking lot. Water level at approximately 500 ft. A 2" access port needs to be constructed at existing well head plate along with a locking mechanism		<ol style="list-style-type: none"> <li>1.- New Levellogger Edge 3001</li> <li>2.- 700 ft of Direct Read Communications Cable</li> <li>3.- 2" access port on well head plate and lock</li> </ol>

Beaumont Basin - Potential Well Sites to Monitor Water Levels			
Well Name & Type	Comments	Photo	Materials / Repairs
<b>Banning C-4</b> (City of Banning - Production well)	Well does not have a logger, but one could be installed through 2" sounding tube. Water level is approximately 450 ft.		1.- New Levellogger Edge 3001 2.- 600 ft of Direct Read Communications Cable 3.- Minor modifications to 2" sounding tube well cap.
<b>Banning C-3</b> (City of Banning - Production well)	Well has an existing logger, but could not be pulled. Data could not be collected at the time of visit, but may be able to be download if battery is still working. Water level at approximately 450 ft.		1.- Not a feasible site as existing logger could not be pulled. Collect data as long as battery has power, then abandon site.
<b>Sun Lakes Well</b> (Well may be owned by the City of Banning - Observation well)	Well located in driveway of Sun Lakes Private community. Triangular cover with a 2" pipe. Minor work required at access port. Water level may be 400-500 ft deep.		1.- New Levellogger Edge 3001 2.- 700 ft of Direct Read Communications Cable 3.- Minor modifications at access port cap.
<b>Banning M-8</b> (City of Banning - Production well)	Existing logger was pulled, but data could not be downloaded as battery was not working. Water level at about 350 ft. Minor modifications at 2" sounding tube cap.		1.- New Levellogger Edge 3001 2.- 500 ft of Direct Read Communications Cable 3.- Minor modifications at 2" sounding pipe cap





Quotation # Q000050372

Customer/Prospect #: 253

Date Printed: Jan-26-2015  
Quote Date: Jan-26-2015

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ALDA Inc.  
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UNITED STATES

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ALDA Inc.  
CA  
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Solinst Canada Ltd.  
35 Todd Road  
Georgetown ON L7G 4R8  
Canada  
Fax: 905-873-1992/800-516-9081  
Phone: 905-873-2255/800-661-2023

Attention: Hannibal Brandon  
909 587 9916

Attention:

email: instruments@solinst.com  
web: www.solinst.com

Quote Validity	Ship Via	Shipping Terms	Duty & Brokerage	HST	GST		State Tax		Terms
33 days	UPSG	DDP	Included	TAX.0%	GST EX		Customer remit		Net 30 OAC
Qty	Part#	Description	UOM	List Price	Disc 1	Disc 2	Net Price	Ext Price	
12.00	110183	3001 LT Levlogger Edge, M00rP100	EA	597.00	0.00	0.00	597.000	7,164.00	
1.00	110179	3001 LT Levlogger Edge, M1 JrP5	EA	310.00	0.00	0.00	310.000	310.00	
2.00	104768	3001 Direct Read Cable Assy (200ft) for the levlogger	EA	215.00	0.00	0.00	215.000	430.00	
10.00	107083	3001 Direct Read Cable Connector Assembly (to 1.200ft)	EA	75.00	0.00	0.00	75.000	750.00	
5,600.00	110391	3001 Direct Read Cable (to 1500ft - 5ft)	FT	0.70	0.00	0.00	0.700	3,920.00	
Custom Direct Read (4 X 400 ft, 4 X 600 ft, 2 X 800 ft)									
Signed Order Acceptance required									
1.00	102405	3001 SS Cable Assembly & Hooks (300ft) for the Levlogger	EA	135.00	0.00	0.00	135.000	135.00	
1.00	102403	3001 SS Cable Assembly & Hooks (200ft) for the Levlogger	EA	60.00	0.00	0.00	60.000	60.00	
6.00	110099	3001 Well Cap Assembly (2 ) for the Levlogger	EA	24.00	0.00	0.00	24.000	144.00	
1.00	107379	3001 Direct Read Comm. Package (USB) for the Levlogger	EA	390.00	0.00	0.00	390.000	390.00	
1.00	108354	3001 Levlogger Field (RS232/USB) c/w Cables	EA	614.00	0.00	0.00	614.000	614.00	
1.00	109249	102 Water Level Meter, P2/N2r1000ft (base marked)	EA	1,154.00	0.00	0.00	1,154.000	1,154.00	
0.00	110241	3001 LT Levlogger Junior Edge, M5rP13 (1 year Warranty)	EA	782.00	0.00	0.00	782.000	0.00	
0.00	110242	3001 LT Levlogger Junior Edge, M10rP30 (1 year Warranty)	EA	782.00	0.00	0.00	782.000	0.00	

RFQ: Beaumont Basin Water Level Monitoring

Sale Amount: 15,071.00  
 Order Disc( 0.0000 %): 0.00  
 Surcharge: N/A  
 Misc Charges: 0.00  
 GST: 0.00  
 HST: 0.00  
 Total Amount: 15,071.00  
 US Dollar



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Phone: 905-873-2255/800-661-2023

Attention: Hannibal Bandon  
909 587 9916

Attention:

email: instruments@solinst.com  
web: www.solinst.com

Quote Validity	Ship Via	Shipping Terms	Duty & Brokerage	HST	GST	State Tax	Terms	
33 days	UPSG	DDP	Included	TAX0%	GST EX	Customer remit	Net 30 OAC	
Qty	Part#	Description	UOM	List Price	Disc. 1	Disc. 2	Net Price	Ext Price

E&OE  
Delivery 5 Days ARO  
Freight extra unless otherwise indicated  
Please allow additional time for transit  
ALL PRICES ARE SUBJECT TO PRODUCT AVAILABILITY AT TIME OF ORDER

Sales person: Licit, Susan

SIGNATURE \_\_\_\_\_



# Levelogger Series

Model 3001 Data Sheet

## Levelogger Edge

Model 3001

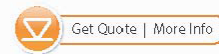
The Levelogger Edge records highly accurate groundwater and surface water level and temperature measurements. It combines a pressure sensor, temperature detector, 10-year lithium battery, and datalogger, sealed within a 7/8" x 6.25" (22 mm x 159 mm) stainless steel housing with Titanium based PVD coating.

The Levelogger Edge measures absolute pressure using a Hastelloy pressure sensor, offering excellent durability and reliability. Combined with the Titanium based PVD coating, both elements have high corrosion resistance in harsh environments, allowing stable readings in extreme pressure and temperature conditions. The Hastelloy sensor can withstand 2 times over-pressure without permanent damage.

The Levelogger Edge features a wide temperature compensated pressure range (0 to 50°C, -10 to 50°C for Barologger Edge), and rapid thermal response time. The Levelogger Edge has high resolution and an accuracy of 0.05% FS. The convenient Barologger Edge provides the easiest and most accurate method of barometric compensation.

### Applications

- Aquifer characterization: pumping tests, slug tests, etc.
- Watershed, drainage basin and recharge monitoring
- Stream gauging, lake and reservoir management
- Harbour and tidal fluctuation measurement
- Wetlands and stormwater run-off monitoring
- Water supply and tank level measurement
- Mine water and landfill leachate management
- Long-term water level monitoring in wells, surface water bodies and seawater environments



### Features

- 0.05% FS Accuracy
- Corrosion resistant Titanium based PVD coating
- Robust Hastelloy pressure sensor
- Accurate temperature compensation
- Memory for up to 120,000 readings
- Basic and advanced data compensation options

The Levelogger Edge has a battery life of 10 years based on a 1-minute sampling rate. It has FRAM memory for 40,000 sets of data points - or up to 120,000 using the compressed linear sampling option.

The Levelogger Edge uses a Faraday cage design, which protects against power surges or electrical spikes caused by lightning. Its durable maintenance-free design, high accuracy and stability, make the Levelogger Edge the most reliable instrument for long-term, continuous water level recording.

### Flexible Communication

Levelogger PC Software is streamlined, making it easy to program dataloggers, and to view and compensate data, in the office or in the field. The software has useful programming options, including compressed and repeat sampling, and future start/stop. Data compensation has been simplified, and allows multiple data files to be barometrically compensated at once.

The extremely intuitive Solinst Levelogger App, and Levelogger App Interface on your in-field Leveloggers, creates a wireless system connecting your Leveloggers to your smart device. Also an option, the Leveloader Gold is a field-ready data transfer unit designed specifically for the Levelogger Series.

For remote monitoring, options include STS Telemetry Systems and RRL Remote Radio Link. In addition, Levelogger Edge Series dataloggers are SDI-12 compatible.



Fast communication and downloading speeds with a high speed Optical Reader

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© Hastelloy is a registered trademark of Haynes International Inc.

High Quality Groundwater and Surface Water Monitoring Instrumentation





# Levellogger Series

## Levellogger Setup

Programming Levelloggers is extremely intuitive. Simply connect to a PC using an Optical Reader or PC Interface Cable. All in one screen fill in your project information and sampling regime. Templates of settings can be saved for easy re-use.

The Levellogger time may be synchronized to the computer clock, or Levelloader clock. There are options for immediate start or future start and stop times. The percentage battery life remaining and the amount of free memory are indicated on the settings screen.

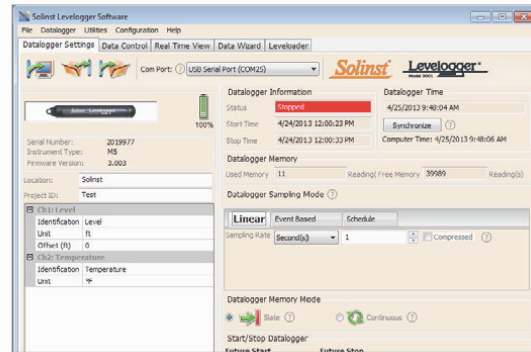
Levelloggers can also be programmed with a sampling regime and start/stop times using the Solinst Levellogger App on your smart device.

## Convenient Sampling Options

Levelloggers can be programmed with linear, event-based, or a user-selectable sampling schedule. Linear sampling can be set from 1/8 second to 99 hours. The Levellogger Edge can be programmed with compressed linear sampling, which increases memory from 40,000 to up to 120,000 readings.

Event-based sampling can be set to record when the level changes by a selected threshold. Readings are checked at the selected time interval, but only recorded in memory if the condition has been met. A default reading is taken every 24 hours if no "event" occurs.

The Schedule option allows up to 30 schedule items, each with its own sampling rate and duration. For convenience, there is an option to automatically repeat the schedule.



Levellogger Edge Settings Software Windows

## Data Download, Viewing and Export

Data is downloaded to a PC with the click of a screen icon or with the push of a button on the Levelloader. There are multiple options for downloading data, including 'Append Data' and 'All Data'. The software also allows immediate viewing of the data in graph or table format using the 'Real Time View' tab.

The level data is automatically compensated for temperature, and the temperature data is also downloaded. Barometric compensation of Levellogger data is performed using the Data Wizard, which can also be used to input manual data adjustments, elevation, offsets, density, and adjust for Barometric efficiency.

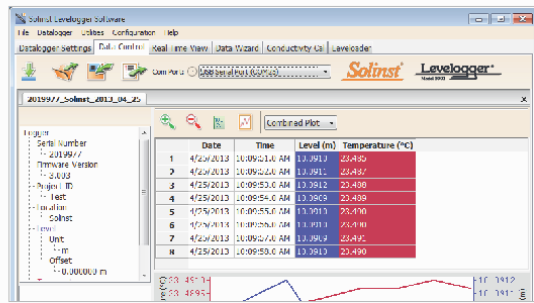
The software allows easy export of the data into a spreadsheet or database for further processing.

The Solinst Levellogger App also allows you to view and save real-time, or logged data right on your smart device.

## Helpful Utilities

The 'Self-Test Diagnostic Utility' can be used in case of an unexpected problem. It checks the functioning of the program, calibration, backup and logging memories, the pressure transducer, temperature sensor and battery voltage, as well as enabling a complete Memory Dump, if required.

A firmware upgrade will be available from time to time, to allow upgrading of the Levellogger Edge, as new features are added.



## Solinst Levellogger App & Levellogger App Interface

The Levellogger App Interface uses Bluetooth® wireless technology to connect your Levellogger to your Apple® smart device. With the Solinst Levellogger App, you can download data, view real-time data, and program your Levelloggers. Data can be e-mailed from your smart device directly to your office (see Model 3001 Solinst Levellogger App & Interface data sheet).

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High Quality Groundwater and Surface Water Monitoring Instrumentation



## Levelogger Series

### Standard Cable Deployment

Leveloggers may be suspended on a stainless steel wireline or Kevlar® cord. This is a very inexpensive method of deployment, and if in a well, allows the Levelogger to be easily locked out of sight and inaccessible. Solinst offers stainless steel wireline assemblies and Kevlar cord assemblies in a variety of lengths.

### Solinst 3001 Well Cap Assembly

The 2" Locking Well Caps are designed for both standard and Direct Read Cable deployment options.

The well cap has a convenient eyelet for suspending Leveloggers using wireline or Kevlar cord. The Well Cap insert has two openings to accommodate Direct Read Cables for both a Levelogger and Barologger. Adaptors are available to fit 4" wells.

The cap is vented to equalize atmospheric pressure in the well. It slips over the casing, and the cap can be secured using a lock with a 3/8" (9.5 mm) shackle diameter.



Levelogger 2" Locking Well Cap Installations  
(see Well Caps data sheet for more details)

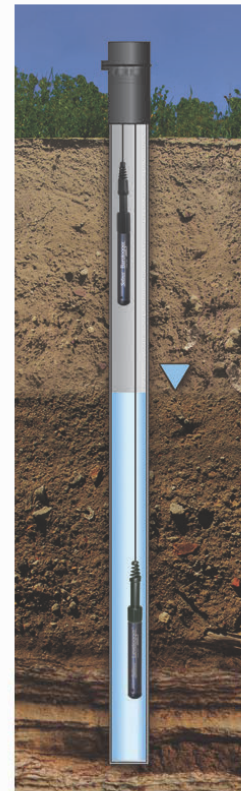
### Direct Read Cables

When it is desired to get real-time data and communicate with Leveloggers without removal from the water, they can be deployed using Direct Read Cables. This allows viewing of the data, downloading and/or programming in the field using a portable computer or Leveloader.

Leveloggers can also be connected to an SDI-12 datalogger using the Solinst SDI-12 Interface Cable attached to a Direct Read Cable.

### Cable Specifications

Direct Read Cables are available for attachment to any Levelogger in lengths up to 1500 ft. The 1/8" dia. (3.175 mm) coaxial cable has an outer polyethylene (MDPE) jacket for strength and durability. The stranded stainless steel conductor gives non-stretch accuracy.



Barologger and Levelogger  
installed in Well Using  
Direct Read Cables

### Accurate Barometric Compensation

The Levelogger Edge measures absolute pressure (water pressure + atmospheric pressure) expressed in feet, meters, centimeters, psi, kPa, or bar.

The most accurate method of obtaining changes in water level is to compensate for atmospheric pressure fluctuations using a Barologger Edge, avoiding time lag in the compensation.

The Barologger is set above high water level in one location on site. One Barologger can be used to compensate all Leveloggers in a 20 mile (30 km) radius and/or with every 1000 ft. (300 m) change in elevation.

The Levelogger Software Data Compensation Wizard automatically produces compensated data files using the synchronized data files from the Barologger and Leveloggers on site.

The Barologger Edge uses pressure algorithms based on air rather than water pressure, giving superior accuracy.

The recorded barometric information can also be very useful to help determine barometric lag and/or barometric efficiency of the monitored aquifer.

The Barologger Edge records atmospheric pressure in psi, kPa, or mbar. When compensating submerged Levelogger Edge, Gold or Junior data, Levelogger Software Version 4 can recognize the type of Levelogger and compensate using the same units found in the submerged data file (Levelogger Gold and Junior measure in feet, meters, or centimeters). This makes the Barologger Edge backwards compatible.

*Synchronize & Streamline Your  
Barometric Compensation Efforts,  
Across Your Entire Site*



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## Levellogger Series

### Levellogger Edge Specifications

<b>Level Sensor:</b>	Piezoresistive Silicon with Hastelloy Sensor
Accuracy:	± 0.05% FS (Barologger Edge: ± 0.05 kPa)
Stability of Readings:	Superior, low noise
Units of Measure:	m, cm, ft., psi, kPa, bar, °C, °F (Barologger Edge: psi, kPa, mbar, °C, °F)
Normalization:	Automatic Temperature Compensation
Temp. Comp. Range:	0° to 50°C (Barologger Edge: -10 to +50°C)
<b>Temperature Sensor:</b>	Platinum Resistance Temperature Detector (RTD)
Temp. Sensor Accuracy:	± 0.05°C
Temp. Sensor Resolution:	0.003°C
<b>Battery Life:</b>	10 Years - based on 1 reading/minute
Clock Accuracy:	± 1 minute/year (-20°C to 80°C)
Operating Temperature:	-20°C to 80°C
<b>Maximum # Readings:</b>	40,000 readings FRAM memory, or up to 120,000 using linear data compression
Memory:	Slate and Continuous
Communication:	Optical Infrared Interface. Conversion to RS-232, USB, SDI-12 Serial at 19,200 bps, 38,400 bps with USB
Size:	7/8" x 6.25" (22 mm x 159 mm)
Weight:	4.6 oz (129 grams)
Corrosion Resistance:	Titanium based PVD coating
Other Wetted Materials:	Delrin®, Viton®, 316L stainless steel, Hastelloy, Titanium based PVD coating
<b>Sampling Modes:</b>	Linear, Event & User-Selectable with Repeat Mode, Future Start, Future Stop, Real-Time View
Measurement Rates:	1/8 sec to 99 hrs
Barometric Compensation:	Software Wizard and one Barologger in local area (approx. 20 miles/30 km radius)

Models	Full Scale (FS)	Accuracy
Barologger	Air only	± 0.05 kPa
F6, M2	6.6 ft., 2 m	± 0.003 ft., 0.1 cm
F15, M5	16.4 ft., 5 m	± 0.010 ft., 0.3 cm
F30, M10	32.8 ft., 10 m	± 0.016 ft., 0.5 cm
F65, M20	65.6 ft., 20 m	± 0.032 ft., 1 cm
F100, M30	98.4 ft., 30 m	± 0.064 ft., 1.5 cm
F300, M100	328.1 ft., 100 m	± 0.164 ft., 5 cm
F600, M200	656.2 ft., 200 m	± 0.328 ft., 10 cm

**Levellogger Junior Edge:** See Levellogger Junior Edge Data Sheet.  
**Conductivity:** See Model 3001 LTC Levellogger Junior Data Sheet

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**For further information contact: Solinst Canada Ltd.**  
 Fax: +1 (905) 873-1992; (800) 516-9081 Tel: +1 (905) 873-2255; (800) 661-2023  
 35 Todd Road, Georgetown, Ontario Canada L7G 4R8  
 Web Site: [www.solinst.com](http://www.solinst.com) E-mail: [instruments@solinst.com](mailto:instruments@solinst.com)



### Leveloader Gold

The Leveloader Gold is a data transfer unit designed for use with all versions of the Solinst Levellogger, Barologger and Rainlogger. It is used to download and store multiple data files.

The 8 Mb FLASH memory stores up to 1,390,000 LT readings, 930,000 LTC readings, or 34 full Levellogger downloads. It can also be used to display data in real-time, and has optional password protection.



Simply use the connector cables for attachment to a Levellogger, or to a direct read cable, to allow downloading or reprogramming of the Levellogger settings in the field. It comes with cables for USB and RS-232 connection to a PC for data transfer (see Model 3001 Leveloader data sheet).



### STS Telemetry

The STS Telemetry System provides an economical and efficient method to send Levellogger data from the field to your desktop. Built for Levelloggers, the system combines high quality dataloggers, intuitive software, and wireless communication, to create a remote monitoring solution.

Communication options give the flexibility to suit any project. Systems are suitable for both small to large networks. STS Systems are designed to save costs by enabling the self-management of data. Alarm notification, remote firmware upgrades and diagnostic reporting make system maintenance simple (see Model 9100/9200 data sheet).

### RRL Telemetry

The inexpensive RRL Remote Radio Link is ideal for short range applications up to 20 miles or 30 km; distances can be increased by using some radios as relay stations. Ideal for creating closed-loop monitoring networks using Levelloggers (see Model 9100/9200 data sheet).



## Levelogger Deployment



**Barologger Suspended in Air**  
Typically 1 Barologger per 30 km (20 mile) radius and/or every 300 m (1000 ft.) of elevation change from well to well

**Direct Read Cable**  
Lengths up to 1500 ft. (450 m)

**Submerged Levelogger**

### Direct Read Cable Deployment

Use this method when you want direct communication via a field laptop, Leveloader Gold, or the Solinst Levelogger App while your Levelogger is downhole. Pre-program Leveloggers (Edge, Barologger, LTC or Junior) in the office using an Optical Reader. In the field use a laptop and PC Interface Cable, a Leveloader Gold, or the Solinst Levelogger App on your smart device and Levelogger App Interface, to program, view or download data.



The Direct Read Communication Package from Solinst includes an Optical Reader, PC Interface Cable and Levelogger Software & User Guide CD.



The Solinst 2" Lockable Well Cap has openings for two Direct Read Cables and an opening for other monitoring equipment, such as a Water Level Meter.



Levelogger App Interface connected to a Direct Read Cable provides a wireless connection between the Levelogger and the Solinst Levelogger App on your smart device.



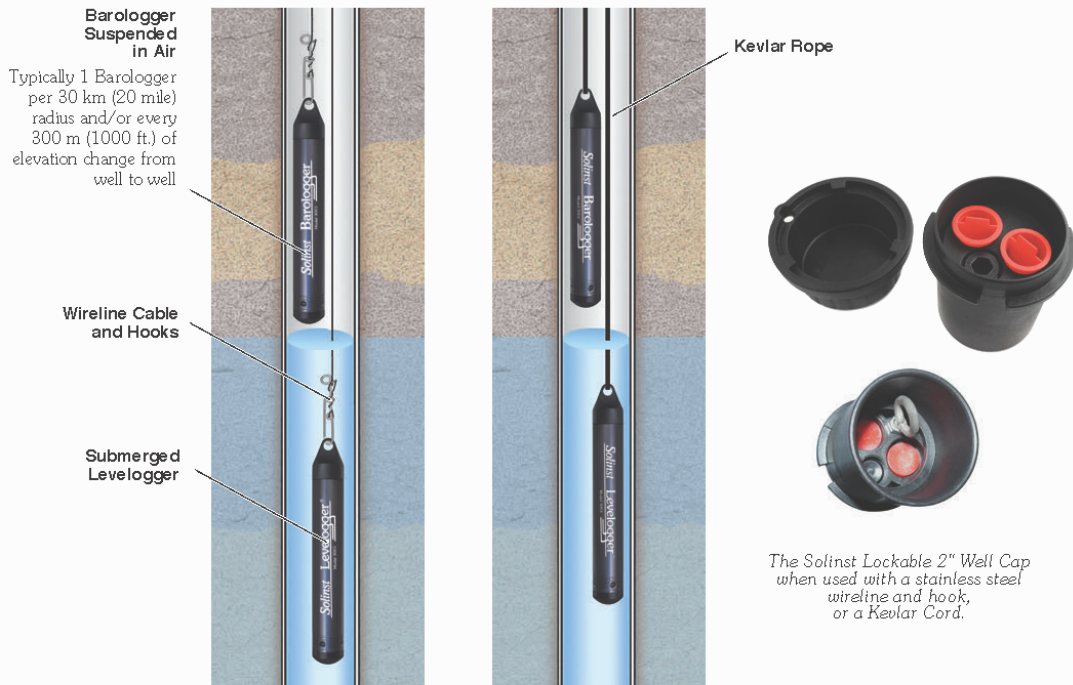
Leveloader connected to a Direct Read Cable using a DRC Interface Cable.

High Quality Groundwater and Surface Water Monitoring Instrumentation





## Levelogger Deployment



### Wireline/Rope Deployment

Use this method when you wish to minimize up front costs, and pre-program Leveloggers (Edge, Barologger, LTC or Junior) in the office. Lower into the well, suspended on wireline or Kevlar cord from a 2" or 4" Well Cap. To retrieve data or re-program, remove the Levelogger from the well and use an Optical Reader attached to a portable or office computer.

### Standard Communication

Use a USB Optical Reader connected to your laptop or desktop PC, to program as many Leveloggers as required. **The Standard Communication Package** from Solinst includes an Optical Reader and Levelogger Software & User Guide CD.

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**For further information contact: Solinst Canada Ltd.**  
 Fax: +1 (905) 873-1992; (800) 516-9081 Tel: +1 (905) 873-2255; (800) 661-2023  
 35 Todd Road, Georgetown, Ontario Canada L7C 4R8  
 Web Site: [www.solinst.com](http://www.solinst.com) E-mail: [instruments@solinst.com](mailto:instruments@solinst.com)





# SOLINST TECHNICAL BULLETIN

## Ensuring Proper Use and Maintenance of Leveloggers

### Knowing What to Expect

As with any groundwater or surface water monitoring project, you should determine the best instruments to use, and how to maintain those instruments, based on the monitoring environment specific to your application.

When using Leveloggers, this means selecting the appropriate pressure range, ensuring the monitoring temperatures are within the instruments specifications, making sure the wetted materials are compatible with your site's chemistry, and determining the proper deployment method.

A maintenance schedule and precautionary measures should be determined early on, especially if you suspect your monitoring environment to be harsh on the instrument sensors.

### Selecting the Proper Levellogger

Leveloggers are available in a variety of pressure ranges, from F6/M2 to F600/M200, which can withstand submergence from 6 feet (2 meters) to 600 feet (200 meters), respectively. The Levellogger Edge can withstand 2 times overpressure, but outside the stated pressure range, accuracy is not guaranteed. Using outside the overpressure range can damage the sensor.

A temperature detector is used to accurately compensate for temperature changes, within the range of 0 to +50°C for the Levellogger Edge. The Levellogger will record temperature in its thermal range of -20 to +80°C, but outside the compensation range, readings will be less accurate. Using beyond the thermal range can damage the unit.

Levellogger data sheets provide a list of wetted materials to help check for chemical compatibility with the monitored water. Before deploying your Levellogger, you can also check the chemical compatibility of your instrument's wetted materials, by obtaining a sample of the water you will be monitoring in, and measuring the chemicals of concern for your site.



Solinst has various documents to help determine the best deployment method for your Levellogger, including the Levellogger User Guide and Technical Bulletins found on the Solinst website.

*Continued overleaf...*

Placing your Levellogger in that water for a closely monitored test period, although actual expected pressure and temperature conditions may not be emulated, will give you a good idea of how your Levellogger will react and perform in the chemical environment. This type of test can be done with any instrument, including pumps, water level meters, etc.

### Scheduling Maintenance

If you are not sure how your Leveloggers are going to perform in, and/or react to your monitoring environment, it is recommended to schedule staged site inspections to physically check your units and their function periodically during the monitoring term.

**If you do not check your site regularly, you will not know how the monitoring environment is affecting your instruments.** The photos below show different types of biofouling that can occur. Biofouling, sediment accumulation, or corrosion on a pressure sensor or conductivity cell can compromise the accuracy of their measurements.



Photo Credit: Tom Shinskey, The Lou's Berger Group

It is also recommended to take manual water level measurements each time you inspect your Levellogger. These manual water level measurements can be used to compare to Levellogger readings to ensure the Levellogger is performing as it should. If your readings appear to be inaccurate, it may be a sign that your Levellogger needs to be cleaned. All sensors experience some long-term drift from their original calibrated state, but not routinely performing maintenance checks and cleaning, can lead to accelerated sensor degradation.

Determining how frequent your site visits should be, is again based on your monitoring environment - specifically water quality. In good quality freshwater, such as a municipal production well, inspecting a Levellogger and taking manual measurements may just be done seasonally; actually cleaning the Levellogger may only be needed annually. While, in harsher environments, such as at contaminated sites, inspections and cleaning should be more frequent. **Your ongoing maintenance schedule will be based on your own experience and knowledge of the monitoring site, and based on the results of your staged site inspections.**

High Quality Groundwater and Surface Water Monitoring Instrumentation



## Ensuring Proper Use and Maintenance of Leveloggers

### Preventative Maintenance

If you are familiar with the conditions of your monitoring site, and know you are going to require extra corrosion-resistance, biofouling protection, or protection from ice accumulation, there are precautionary steps that can be taken.

Although the Levelogger Edge has a corrosion-resistant titanium based PVD coating and a Hastelloy pressure sensor diaphragm, in extremely corrosive environments, you can further protect the Levelogger using a balloon filled with deionized water or tap water. As pressure changes, the fluid encasing the loggers will transmit the pressure differential to the logger's pressure transducer, without exposing it to corrosive conditions.

Solinst offers a Biofoul Screen that can be used to protect the Levelogger against biofouling. The Delrin copper-coiled screen naturally reduces biofouling. The Biofoul Screen simply slips onto the sensor end of the Levelogger where it is held in place with its compression fitting. It allows water to freely enter the pressure transducer inlets, and/or conductivity cell.



*The Levelogger on the right was protected using a Biofoul Screen, while the Levelogger on the left was deployed unprotected and shows signs of biofouling on the sensor end.*

To avoid icing, the easiest method is to lower the Levelogger to a point in the water column below the frost line or ice formation depth. In shallow streams, wetlands or ponds where icing/freezing may penetrate to the bottom, install the Levelogger in a vented stilling well imbedded into the bottom of the water body beyond the frost line. Alternatively, place the Levelogger inside, rubber balloons filled with a non-toxic, non-corrosive anti-freeze solution or saltwater solution. The antifreeze solution will protect the Levelogger from ice expansion; yet transmit any pressure and temperature fluctuations.

Printed in Canada: October 17, 2013

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### Maintaining Leveloggers

Generally, cleaning your Levelogger consists of rinsing and using a mild, non-residual, non-abrasive, household cleaner with a very soft plastic bristled brush. Do not insert any object through the pressure transducer inlets at the sensor end of the Levelogger.

Some cases may require specific maintenance:

#### Hard Water

Hard water can result in the precipitation of calcium and magnesium deposits on the Levelogger body and pressure transducer. These deposits can be dissolved using a diluted solution ( $\leq 10\%$ ) of acetic or phosphoric acid. Commercially available products designed for household use can also be used.

#### Suspended Solids

High suspended solid loads may block the pressure transducer inlets or clog the internal pressure cell. To minimize this, Leveloggers should be placed in areas with higher flow. Simply rinse the Levelogger inlets to remove any particles.

#### Bacteriological or Chemical Fouling

Sessile bacteria, other microorganisms, barnacles, mussels and algae can buildup on the Levelogger body, as well as the sensors. Chemical deposits can also be a result of electrical charge differential between the Levelogger and the monitored liquid. Both forms of fouling can be removed by soaking in a diluted ( $\leq 10\%$ ) solution of sulfuric acid. Hard-to-remove deposits may require several hours of soaking.

#### LTC Conductivity Pins

LTC conductivity pins are platinum-coated; therefore, they should not be roughly cleaned or touched with any metal. They can be cleaned with a soft bristle brush, Q-Tip, or cloth. Almost any diluted ( $\leq 10\%$ ) acid solution can be used. Soaking time should be monitored and kept to a minimum.

#### O-Ring Damage

There are o-rings on Levelogger optical ends and in the Levelogger caps, which are designed to prevent leaks. Depending on your application, you may be unscrewing the caps and/or direct read cables from the Levelogger optical end more frequently. This could result in damage to the o-rings. These o-rings should be inspected regularly and replaced as required (contact Solinst for replacements).

#### Storage Tips

Before storing Leveloggers for any extended period, they should be stopped from recording (using Levelogger Software), cleaned as described above, and stored with the cap on to protect the optical eyes and to prevent unnecessary battery drainage.

High Quality Groundwater and Surface Water Monitoring Instrumentation

**Solinst**<sup>®</sup>

Solinst Canada Ltd., 35 Todd Road, Georgetown, ON L7G 4R8  
Tel: +1 (905) 873-2255; (800) 661-2023 Fax: +1 (905) 873-1992; (800) 516-9081  
Visit our website: [www.solinst.com](http://www.solinst.com) E-mail: [instruments@solinst.com](mailto:instruments@solinst.com)

# SOLINST TECHNICAL BULLETIN

## Understanding Pressure Sensor Drift

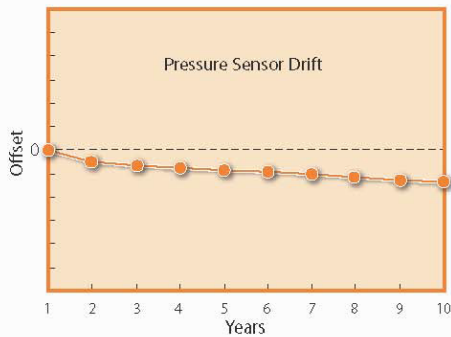


### Pressure Sensor Drift

All pressure transducers - no matter what they are made of, how expensive they are, or how accurate - are susceptible to sensor drift over time. Pressure sensor drift is a gradual degradation of the sensor and other components that can make readings offset from the original calibrated state.

Based on their intended application, sensors are engineered from various materials. When exposed to certain conditions, the sensors will respond differently depending on the physical properties of the materials chosen.

Every sensor will undergo some expansion and contraction when subject to pressure and temperature cycles. Pressure change frequency and amplitude, temperature extremes, material responses and environmental changes are all factors contributing to drift. The magnitude a sensor will drift varies with actual usage and the conditions it is exposed to.



Example of Pressure Sensor Drift from the Calibrated Zero Point Over Time

### Pressure Sensor Calibration

It is important to note that manufacturers test and calibrate their sensors in closed environments to achieve desired specifications and a zero point. Some manufacturers provide a value for the expected drift or long term stability, but these numbers are still based on use in very stable environments, making them somewhat irrelevant in normal use.

### Solinst Levelloggers

Solinst Levelloggers are water level data loggers that use an absolute pressure sensor to detect the depth (or pressure) of water above the logger. For the Levellogger Edge, Solinst chose to use a Hastelloy pressure sensor because of durability, long term stability, accuracy, and corrosion resistance.

Hastelloy pressure sensors are more tolerant when it comes to being over-pressurized. Other sensors, such as ceramic sensors, tend to be more brittle and can shatter when they experience over-pressurization, ice accumulation, or water hammer effects.

### Correcting for Drift

Factory re-calibration can be attempted to correct for drift, but may not be required. Regular "field zero readings" will serve to eliminate the effects of drift on pressure sensor readings.

The best recommendation is to compare barometrically compensated Levellogger data with a manually measured water level value (depth to water using a Model 101 or 102 Water Level Meter, or a staff gauge depending on your application).

By routinely taking manual water level measurements, and comparing these readings to those recorded by the Levellogger at the same time, an offset value can be determined. This offset value can then be used to correct future Levellogger readings.

If using a depth to water measurement for comparison, the deployment depth of the Levellogger, minus the manual depth to water measurement, should equal the compensated Levellogger reading. If not, the difference between the two readings is the offset value, or calculated sensor drift.

© Solinst is a registered trademark of Solinst Canada Ltd

High Quality Groundwater and Surface Water Monitoring Instrumentation



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 Tel: +1 (905) 873-2255; (800) 661-2023 Fax: +1 (905) 873-1992; (800) 516-9081  
 Visit our website: [www.solinst.com](http://www.solinst.com) E-mail: [instruments@solinst.com](mailto:instruments@solinst.com)



## Leveloader Gold

For Use with Model 3001

### Leveloader Gold Model 3001

The Leveloader™ Gold is a field-ready, backwards compatible data transfer unit designed for use with all versions of the Solinst Levelogger®, Rainlogger and Barologger. It is used to download, store and transfer multiple data files, using 8 Mb of non-volatile FLASH memory.

The Leveloader Gold has a rugged, water-resistant, ergonomic exterior and stores up to 1,390,000 LT readings, 930,000 LTC readings or 34 full Levelogger downloads. Stored data can be scrolled through before transfer to a PC. The Leveloader Gold can also be used to display data in real-time, which is ideally suited for conducting conventional pumping tests.



### Field Friendly

Field-located Leveloggers can be reprogrammed on site with a 'future start' or 'start now' option. For convenience, up to 10 personalized settings files can be pre-programmed in the Levelogger PC Software at the office and transferred to the Leveloader Gold for use in the field. These settings files each store a customized sampling regime, instrument location, and identification. The Leveloader Gold can be synchronized to your PC clock. In turn you can synchronize Levelogger times to the Leveloader time, to maintain consistency between field-deployed Leveloggers.

The Leveloader Gold also displays useful information on battery life, memory levels and firmware versions for both the Leveloader itself and the attached Levelogger. As with the Levelogger, the Leveloader Gold has upgradeable firmware, which allows future improvements to be added to older units. Users can download and install any future improvement to the onboard software, free of charge. For security, there is password protection built into the Leveloader, which can prevent unauthorized changes to the Levelogger settings, logging sessions or stored data.

### Transferring Data

The Leveloader Gold eliminates the need for a laptop or PDA. The Leveloader uses proprietary software and hardware, which is dedicated to the Levelogger Series of dataloggers. In the field, it can perform almost all the functions the user can do with a desktop computer and the Levelogger Software.

The Leveloader Gold comes with sturdy cables for USB and RS232 connection to a PC, a cable for direct connection to a Levelogger and a cable for connection to a Direct Read Cable of a Levelogger deployed in the water. On return to the PC, the Levelogger Software allows downloading of individual files or all files at the same time.

### Advantages

- Real-Time View option
- Robust, water-resistant, ergonomic exterior
- 8 Mb non-volatile FLASH memory
- Holds over 1.3 million readings
- Stores 10 personalized logging setups

### Features

- Dedicated to Leveloggers
- Backwards compatible
- Solinst designed hardware and software
- Free upgradeable firmware
- High accuracy real-time clock
- Easy-read screen



### Levelogger App & Interface

A smart alternative to the Leveloader Gold, is the Levelogger App Interface that uses Bluetooth® wireless technology to connect all Levelogger Series products to your Apple® smart device using the Solinst Levelogger App (see Model 3001 Solinst Levelogger App & Interface data sheet).



®Apple, the Apple logo, and iPhone, are trademarks of Apple Inc., registered in the U.S. and other countries. iPad mini is a trademark of Apple Inc. App Store is a service mark of Apple Inc. The Bluetooth® word mark and logos are registered trademarks owned by Bluetooth SIG, Inc. and any use of such marks by Solinst Canada Ltd. is under license.





*High Quality Groundwater and Surface Water Monitoring Instrumentation*

**Solinst Canada Ltd.**

35 Todd Road  
Georgetown, ON  
Canada L7G 4R8

Tel: (905) 873-2255; (800) 661-2023  
Fax: (905) 873-1992; (800) 516-9081

E-mail: [instruments@solinst.com](mailto:instruments@solinst.com)  
Web Site: [www.solinst.com](http://www.solinst.com)

## ***Limited Warranty***

Solinst Canada Ltd. (Solinst) hereby warrants to the user, subject to the conditions outlined herein, that all standard products manufactured by Solinst, will be free of defects in workmanship and materials for a period of three years from the date of shipment from Solinst, with the exception of the 3001 Levellogger® Junior Series, Power Reels, Telemetry Systems (9100 & 9200), 401 Waterloo Multilevel Systems and 403 CMT Multilevel Systems, which have limited warranties of one year.

Solinst warrants to repair or, at its option, replace any such defective equipment determined to its satisfaction to have a defect in workmanship or original material, upon return of such defective equipment to Solinst with all shipping charges prepaid by the user, provided that written notice and an explanation of the claimed defect is promptly submitted to Solinst.

In no event shall Solinst be liable for any direct, indirect, consequential or special damages, abuse, acts of third parties, environmental conditions, force of nature, or for installation, adjustment or other expenses which may arise in connection with such defective equipment. Further, this warranty shall not apply to damage to the equipment caused by incorrect installation, usage, storage, alteration or inadequate care.

This warranty does not apply to parts, assemblies or devices not manufactured by Solinst which are covered by other manufacturers' warranties. There are no warranties except as specifically provided in writing herein.

March 1, 2012

\* Solinst and Levellogger are registered trademarks of Solinst Canada Ltd.

## BEAUMONT BASIN WATERMASTER MEMORANDUM NO. 15-04

**Date:** February 4, 2015

**From:** Hannibal Blandon, ALDA

**Subject:** Task Order No. 6 with ALDA for the Installation of Water Level Monitoring Equipment in the Beaumont Basin, Collection of Water Level Data, and Reporting to Watermaster Committee

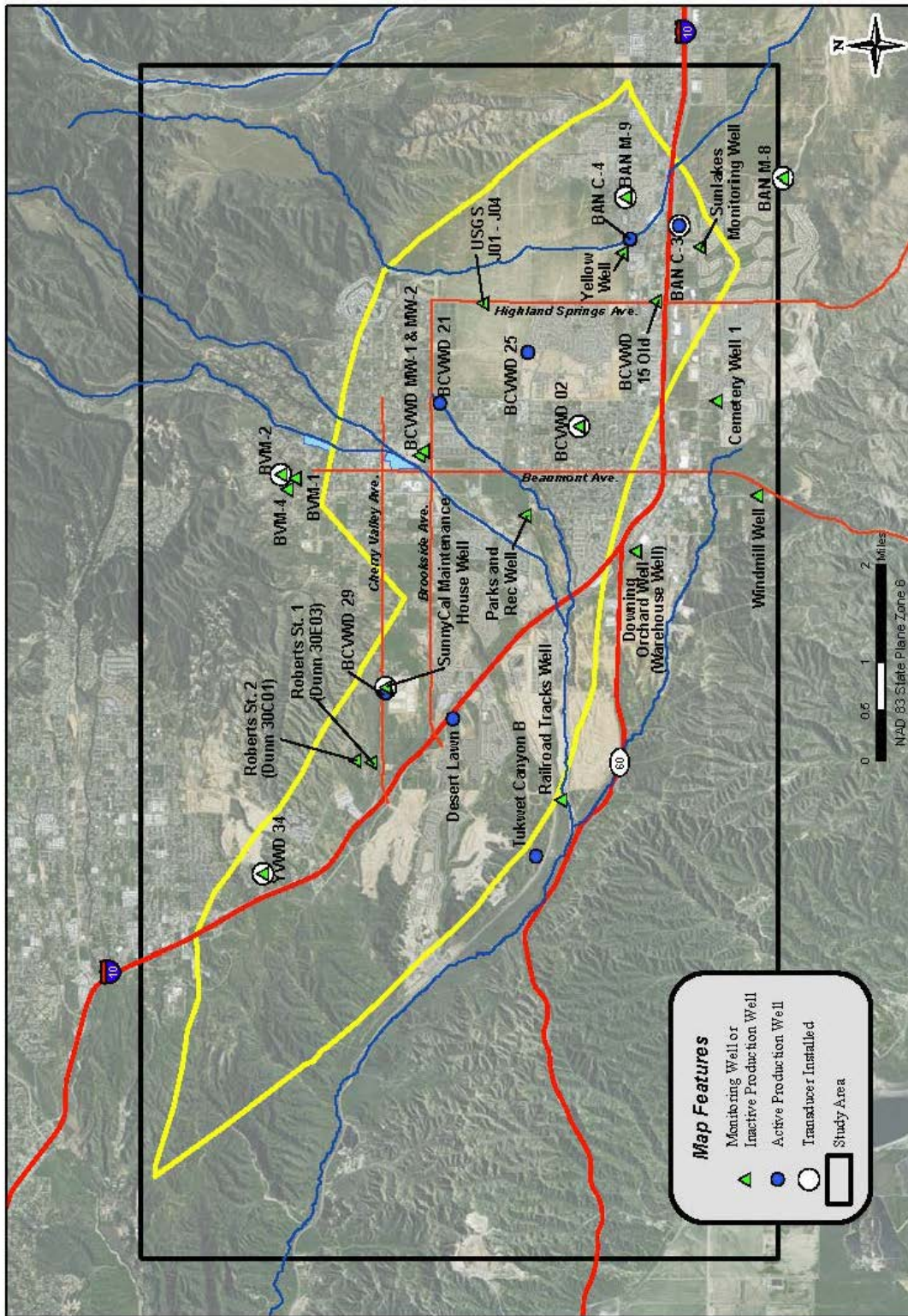
**Recommendation:** That the Watermaster members approve Task Order No. 6 for a sum not to exceed \$18,490.00 and authorize an equal assessment to Watermaster members to fund the expense.

---

This agenda item is directly related to Watermaster Memorandum No. 15-03 considered earlier during the meeting.

In order to install the groundwater level monitoring equipment at twelve selected sites, to maintain and collect the information, and to report water level trends at the regular Watermaster Committee meetings the Watermaster should also consider approving Task Order No. 6 with ALDA.

The financial impacts associated with the proposed contract would result in a budget line item of approximately \$18,500.00 and will require a direct assessment be levied upon the Watermaster members in equal amounts.



Potential Well Sites for Monitoring Water Levels

DRAFT

**Alda, Inc.** in association with  
 Thomas Harder & Co.  
 Environmental Consulting  
 29-Jan-15

# ALDA Inc.

5928 Vineyard Avenue  
Alta Loma, CA 91701  
Tel: (909) 587-9916  
Fax: (909) 498-0423

January 30, 2015

Joseph B. Zoba, General Manager  
Yucaipa Valley Water District  
12770 Second Street  
Yucaipa, California 92399

Subject: **Beaumont Basin Watermaster – Task Order No. 6  
Installation and Maintenance of Water Level Monitoring Equipment**

Dear Mr. Zoba:

Please find attached our proposed scope of services and consulting fee for Task Order No. 6 under the Engineering Services contract with the Beaumont Basin Watermaster dated May 10, 2012. The proposed scope of services includes a) coordination of equipment purchase and authorization from private owners, b) installation of monitoring equipment at 12 selected sites, c) operations and maintenance of equipment, and d) reporting to Watermaster Committee.

We welcome your thorough review of our proposed scope services. Should you have any questions on our proposed services or need further information, please contact us at 909-587-9916 during normal business hours.

Very truly yours

ALDA Inc.



F. Anibal Blandon, P.E.  
Principal



Beaumont Basin Watermaster – Task Order No. 6  
2015 Consolidated Annual Report and Associated Consulting Services

Jan 30, 2015

## TASK OBJECTIVES

The objectives of Task No. 7 are as follows:

- A. Install Groundwater Level Monitoring Equipment at 12 Sites
- B. Conduct Operations and Maintenance of Equipment
- C. Report Water Level Conditions to Watermaster Committee

## SCOPE OF SERVICES

### Task 1 – Selection of Final Sites and Equipment Acquisition

The ALDA/TH&Co team will select the final 12 monitoring sites for installation of water level monitoring equipment. Selection of the final sites will be based on a number of parameters including location within the basin, distance to pumping wells, accessibility to site, and on-site improvements requirement amongst others. As part of this effort, the ALDA/TH&Co team will contact property owners as applicable to obtain authorization for installation of monitoring equipment. Upon selection of final sites, a list of equipment will be developed and presented to Watermaster for ordering of the equipment.

Estimated Hours: 8 Hours  
Estimated Cost: \$1,140.00

### Task 2 – Installation of Monitoring Equipment

The ALDA/TH&Co team will install water level probes at each of the selected sites and one barologger probe at one site to record barometric pressure. Required modifications at some of the well head sites, such as installation of plates, locks, measurement ports, etc., will be coordinated by the ALDA/TH&Co team to make sure all sites operate adequately and the monitoring equipment is secured.

In addition, groundwater level at each site will be determined to calibrate the monitoring probes individually.

Estimated Hours: 48 Hours  
Estimated Cost: \$5,400.00  
Other Direct Cost: \$1,000.00

### Task 3 – Operations and Maintenance of Selected Sites

The ALDA/TH&Co team will visit the selected sites every two months to download the collected data and to check that the probes are working as intended. In addition, probes will be calibrated twice a year. Close coordination with member agencies and selected private parties will be required to gain access to the sites during each visit. A total of five visits to each site is anticipated during Calendar Year 2015.

Estimated Hours: 84 Hours  
Estimated Cost: \$9,240.00

Beaumont Basin Watermaster – Task Order No. 6  
2015 Consolidated Annual Report and Associated Consulting Services

Jan 30, 2015

**Task 4 – Reporting to Watermaster**

The information collected at the selected sites will be tabulated and presented at the Watermaster Committee meetings as a regular agenda item. In addition, water level histograms will be prepared and incorporated into the annual report.

Estimated Hours: 12 Hours

Estimated Cost: \$1,710.00

**COST ESTIMATE**

Our estimated cost to perform the scope of work as outlined herein is \$18,490.00 (Eighteen Thousand Four Hundred Ninety Dollars and 00/100); this estimate is based on 152 technical and administrative hours and an estimated \$1,000.00 (One Thousand Dollars) in other direct cost to make modifications to existing sites. Services will be billed on a time and material basis up to the approved limit and according to the billing rates below.

**Billing Rates for ALDA Inc.**

Billing rates for Calendar Year 2015 are as follows:

<u>Position</u>	<u>Hourly Rate</u>
Project Manager	\$150.00
Project Engineer	\$135.00
Staff Engineer	\$110.00
Graphics / Designer Drafter	\$ 90.00
Drafter	\$ 75.00
Clerical	\$ 65.00

**Billing Rates for Thomas Harder and Company**

Billing rates for Calendar Year 2015 are as follows:

<u>Position</u>	<u>Hourly Rate</u>
Principal Hydro-geologist	\$160.00
Staff Hydro-geologist	\$ 90.00
Field Technician	\$ 70.00
Graphics	\$ 85.00
Clerical	\$ 65.00
Expert Witness	\$320.00

## BEAUMONT BASIN WATERMASTER MEMORANDUM NO. 15-05

**Date:** February 4, 2015

**From:** Hannibal Blandon, ALDA

**Subject:** Task Order No. 7 with ALDA for the Preparation of the 2014 Consolidated Annual Report, Estimate of the Basin Safe Yield, Update of the Groundwater Model, and Associated Consulting Services

**Recommendation:** That the Watermaster Committee approves Task Order No. 7 for a sum not to exceed \$80,790 and authorize an equal assessment to Watermaster members to fund the expense.

---

A new task order is necessary to authorize ALDA Inc. to provide technical support services to the Watermaster Committee during Calendar Year 2015.

The proposed scope of services for Task Order No. 7, consistent with previously years, provides for the preparation of the 2014 Consolidated Annual Report, estimate of the 2014 Safe Yield of the Beaumont Basin, and Associated Consulting Services in support to Watermaster activities. In addition, this task order incorporates the annual update of the groundwater model to 2014 hydrologic conditions.

The financial impacts associated with the proposed contract would result in a budget line item of approximately \$81,000.00.

# ALDA Inc.

5928 Vineyard Avenue  
Alta Loma, CA 91701  
Tel: (909) 587-9916  
Fax: (909) 498-0423

January 30, 2015

Joseph B. Zoba, General Manager  
Yucaipa Valley Water District  
12770 Second Street  
Yucaipa, California 92399

Subject: **Beaumont Basin Watermaster – Task Order No. 7  
Engineering Support Services for Calendar Year 2015**

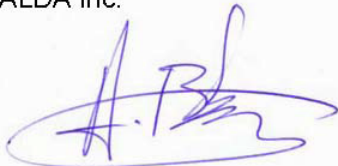
Dear Mr. Zoba:

Please find attached our proposed scope of services and consulting fee for Task Order No. 7 under the Engineering Services contract with the Beaumont Basin Watermaster dated May 10, 2012. The proposed scope of services includes a) prepare the consolidated Annual Report for 2014, b) estimate of the operating safe yield for 2014, c) update the groundwater model to include 2014 hydrologic data, and d) provide general consulting services in support to Watermaster activities.

We welcome your thorough review of our proposed scope services. Should you have any questions on our proposed services or need further information, please contact us at 909-587-9916 during normal business hours.

Very truly yours

ALDA Inc.



F. Anibal Blandon, P.E.  
Principal

**Beaumont Basin Watermaster – Task Order No. 7**

2015 Consolidated Annual Report and Associated Consulting Services

Jan 30, 2015

**TASK OBJECTIVES**

The objectives of Task No. 7 are as follows:

- A. Prepare the consolidated Annual Report for CY 2014
- B. Estimate the Operating Safe Yield for Calendar Year 2014
- C. Update Groundwater Model to Include 2014 Hydrologic Data
- D. Provide general consulting support services

**SCOPE OF SERVICES****Task 1 – Data Collection**

The ALDA/TH&Co team will collect, compile, and tabulate the following data:

- ✓ Climate and hydrologic information
- ✓ Monitoring and data collection programs
- ✓ Monthly water production from member agencies
- ✓ Monthly imported water recharge by each party
- ✓ Monthly rainfall from the USGS, Army Corps, and/or National Weather Service
- ✓ Monthly static groundwater levels at dedicated monitoring wells and selected production wells from the water agencies
- ✓ Monthly deliveries of imported water, groundwater from other basins, and surface water diversions from various water agencies
- ✓ Semi-annual static groundwater levels from production wells
- ✓ Water quality information as documented in the California Department of Public Health database.

**Task 2 – Preparation of Expanded Annual Report**

The expanded annual report will consolidate the topics discussed in previous annual reports and those included in the bi-annual Engineering Report. The ALDA/TH&Co team will prepare a draft and a final annual report documenting the operations of the Beaumont Basin Watermaster. This includes water levels, water transfers between agencies, water production, assessment of basin conditions, carryovers, replenishment obligations and water quality conditions throughout the basin. In addition, the report will incorporate the results of the Operating Safe Yield analysis, conducted under Task 3 and long term hydrographs from selected wells in the basin. The report will also include the annual independent financial reports (prepared by others) and a description of Watermaster activities and Board actions.

With regards to water quality, the analysis will focus on nitrate, TDS, and some trace metals. In addition, the report will document current water quality concentrations in relation to current Federal and State Drinking Water Standards.

**Beaumont Basin Watermaster – Task Order No. 7**

2015 Consolidated Annual Report and Associated Consulting Services

Jan 30, 2015

Ten color copies of the draft and final annual reports will be provided along with a digital file of the report. In addition, an editable database will be provided that includes all supporting information for the annual report.

**Task 3 – Annual Determination of the Operating Safe Yield**

The ALDA/TH&Co team will review groundwater levels, groundwater production, and groundwater recharge data for the Beaumont Basin area as a basis for determining the annual operating safe yield (OSY) of the basin for the Calendar Year 2013. The focus of the review will be groundwater level trends at the eight monitoring wells previously reported in the annual reports. Groundwater level trends will be evaluated in the context of groundwater production and basin and artificial recharge in order to make a determination of OSY.

The ALDA/TH&Co team will generate an Annual OSY Technical Memorandum (TM) that summarizes the analysis and provides a recommended OSY for the upcoming year. The TM will be suitable for incorporation into the Annual Report.

**Task 4 – Update Groundwater Model to 2014 Conditions**

The ALDA/TH&Co team will prepare and input the 2013 and 2014 groundwater levels, groundwater production, and artificial recharge into the groundwater flow model for analysis. The model will be run with the updated data and the results analyzed to validate the calibration. The budget for this task assumes that additional calibration will not be necessary.

**Task 5 – Review of Rules and Regulations**

The ALDA/TH&Co team will review the existing Rules and Regulations annually to determine whether it reflects current policies/practices and will make recommendations that will be documented as part of the annual report.

**Task 6 – Meeting Attendance and Agenda Assistance**

The ALDA/TH&Co team will prepare for, attend, and participate in up to six (6) Watermaster meetings in 2015. In addition, the ALDA/TH&Co team will assist in agenda preparation as required by Watermaster.

**SCHEDULE**

A draft of the expanded annual report and operating safe yield will be presented to the Beaumont Basin Watermaster at the April 2015 Board meeting. Comments on the draft annual report will be addressed and presented at the June 2015 Board meeting. General consulting support services will be provided throughout the year.

**Beaumont Basin Watermaster – Task Order No. 7**  
**2015 Consolidated Annual Report and Associated Consulting Services**

**Jan 30, 2015**

**COST ESTIMATE**

Our estimated cost to perform the scope of work as outlined herein is \$80,790.00 (Eighty Thousand Seven Hundred Ninety Dollars and 00/100); this estimate is based on 644 technical and administrative hours and is summarized in the attached table by task and sub-task. Billing rates for the 2015 Calendar Year remain the same since 2012 and are included at the end of this proposal.

**Beaumont Basin Watermaster**  
**Engineering Consulting Fee for Task Order No. 7**

Beaumont Basin Watermaster - Task Order No. 7  
 Preparation of Expanded Annual Report and Operating Safe Yield for 2014 and General Support Services

Task / Subtask	ALDA Inc.					Thomas Harder & Co.				Total Hours	Cost (\$)
	Project Manager	Project Engineer	Staff Engineer	Graphics	Clerical	Principal Hydro-geologist	Staff Hydro-geologist	Graphics	Clerical		
<b>Task 1 - Data Collection</b>	18	28	44							90	\$ 11,320
<b>Task 2 - 2013 Annual Report</b>										328	\$ 39,190
2.1 - Document pumping for metered wells	4	16								20	\$ 2,760
2.2 - Document pumping for unmetered wells	4	8	8							20	\$ 2,560
2.3 - Document basin activities	4	16								20	\$ 2,760
2.4 - Develop groundwater contour maps	2					2	8	2		14	\$ 1,510
2.5 - Calculate change in storage	2					4	16	8		30	\$ 3,060
2.6 - Evaluate groundwater quality	16	32								48	\$ 6,720
2.7 - Incorporate long-term hydrographs	2	8								10	\$ 1,380
2.8 - Prepare draft report	8	32	16	20	16	8	8	12		120	\$ 13,140
2.9 - Prepare final report	6	16		8	8	4	4			46	\$ 5,300
<b>Task 3 - Operating Safe Yield</b>										66	\$ 7,560
3.1 - Review of data for 2013-14						2	20			22	\$ 2,120
3.2 - Preparation of OSY TMs for 2014	8					16	12	4	4	44	\$ 5,440
<b>Task 4 - Update Groundwater Model to 2014</b>	8	12				6	18			44	\$ 5,400
<b>Task 5 - Rules and Regulations</b>	16									16	\$ 2,400
<b>Task 6 - Meeting Attendance</b>										100	\$ 14,920
6.1 - Assistance with agenda preparation	24	8	8			12				52	\$ 7,480
6.2 - Attend Watermaster meetings	24					24				48	\$ 7,440
<b>TOTALS:</b>	<b>146</b>	<b>176</b>	<b>76</b>	<b>28</b>	<b>24</b>	<b>78</b>	<b>66</b>	<b>26</b>	<b>4</b>	<b>644</b>	<b>\$ 80,790</b>

Beaumont Basin Watermaster – Task Order No. 7  
 2015 Consolidated Annual Report and Associated Consulting Services

Jan 30, 2015

**Beaumont Basin Watermaster**  
**Billing Rates for Task Order No. 7**

**Billing Rates for ALDA Inc.**

Billing rates for Calendar Year 2015 are as follows:

<u>Position</u>	<u>Hourly Rate</u>
Project Manager	\$150.00
Project Engineer	\$135.00
Staff Engineer	\$110.00
Graphics / Designer Drafter	\$ 90.00
Drafter	\$ 75.00
Clerical	\$ 65.00

**Billing Rates for Thomas Harder and Company**

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Principal Hydro-geologist	\$160.00
Staff Hydro-geologist	\$ 90.00
Field Technician	\$ 70.00
Graphics	\$ 85.00
Clerical	\$ 65.00
Expert Witness	\$320.00



# Director Comments



Yucaipa Valley Water District



## FACTS ABOUT THE YUCAIPA VALLEY WATER DISTRICT

**Service Area Size:** 40 square miles (sphere of influence is 68 square miles)

**Elevation Change:** 3,140 foot elevation change (from 2,044 to 5,184 feet)

**Number of Employees:** 5 elected board members  
57 full time employees

**Operating Budget:** Water Division - \$13,072,750  
Sewer Division - \$11,689,000  
Recycled Water Division - \$433,500  
Total Annual Budget - \$25,195,250

**Number of Services:** 12,206 water connections serving 16,843 units  
13,492 sewer connections serving 20,312 units  
62 recycled water connections

**Water System:** 215 miles of drinking water pipelines  
27 reservoirs - 34 million gallons of storage capacity  
18 pressure zones  
12,000 ac-ft annual water demand (3.9 billion gallons)  
Two water filtration facilities:  
- 1 mgd at Oak Glen Surface Water Filtration Facility  
- 12 mgd at Yucaipa Valley Regional Water Filtration Facility

**Sewer System:** 8.0 million gallon treatment capacity - current flow at 4.0 mgd  
205 miles of sewer mainlines  
5 sewer lift stations  
4,500 ac-ft annual recycled water prod. (1.46 billion gallons)

**Recycled Water:** 22 miles of recycled water pipelines  
5 reservoirs - 12 million gallons of storage  
1,200 ac-ft annual recycled demand (0.4 billion gallons)

**Brine Disposal:** 2.2 million gallon desalination facility at sewer treatment plant  
1.108 million gallons of Inland Empire Brine Line capacity  
0.295 million gallons of treatment capacity in Orange County



## THE MEASUREMENT OF WATER PURITY

**One part per hundred** is generally represented by the percent (%).  
This is equivalent to about fifteen minutes out of one day.

**One part per thousand** denotes one part per 1000 parts.  
This is equivalent to about one and a half minutes out of one day.

**One part per million (ppm)** denotes one part per 1,000,000 parts.  
This is equivalent to about 32 seconds out of a year.

**One part per billion (ppb)** denotes one part per 1,000,000,000 parts.  
This is equivalent to about three seconds out of a century.

**One part per trillion (ppt)** denotes one part per 1,000,000,000,000 parts.  
This is equivalent to about three seconds out of every hundred thousand years.

**One part per quadrillion (ppq)** denotes one part per 1,000,000,000,000,000 parts.  
This is equivalent to about two and a half minutes out of the age of the Earth (4.5 billion years).





## GLOSSARY OF COMMONLY USED TERMS

Every profession has specialized terms which generally evolve to facilitate communication between individuals. The routine use of these terms tends to exclude those who are unfamiliar with the particular specialized language of the group. Sometimes jargon can create communication cause difficulties where professionals in related fields use different terms for the same phenomena.

Below are commonly used water terms and abbreviations with commonly used definitions. If there is any discrepancy in definitions, the District's Regulations Governing Water Service is the final and binding definition.

**Acre Foot of Water** - The volume of water (325,850 gallons, or 43,560 cubic feet) that would cover an area of one acre to a depth of 1 foot.

**Activated Sludge Process** – A secondary biological sewer treatment process where bacteria reproduce at a high rate with the introduction of excess air or oxygen, and consume dissolved nutrients in the wastewater.

**Annual Water Quality Report** - The document is prepared annually and provides information on water quality, constituents in the water, compliance with drinking water standards and educational material on tap water. It is also referred to as a Consumer Confidence Report (CCR).

**Aquifer** - The natural underground area with layers of porous, water-bearing materials (sand, gravel) capable of yielding a supply of water; see Groundwater basin.

**Backflow** - The reversal of water's normal direction of flow. When water passes through a water meter into a home or business it should not reverse flow back into the water mainline.

**Best Management Practices (BMPs)** - Methods or techniques found to be the most effective and practical means in achieving an objective. Often used in the context of water conservation.

**Biochemical Oxygen Demand (BOD)** – The amount of oxygen used when organic matter undergoes decomposition by microorganisms. Testing for BOD is done to assess the amount of organic matter in water.

**Biosolids** – Biosolids are nutrient rich organic and highly treated solid materials produced by the sewer treatment process. This high-quality product can be used as a soil amendment on farm land or further processed as an earth-like product for commercial and home gardens to improve and maintain fertile soil and stimulate plant growth.

**Catch Basin** – A chamber usually built at the curb line of a street, which conveys surface water for discharge into a storm sewer.

**Capital Improvement Program (CIP)** – Projects for repair, rehabilitation, and replacement of assets. Also includes treatment improvements, additional capacity, and projects for the support facilities.

**Collector Sewer** – The first element of a wastewater collection system used to collect and carry wastewater from one or more building sewer laterals to a main sewer.

**Coliform Bacteria** – A group of bacteria found in the intestines of humans and other animals, but also occasionally found elsewhere and is generally used as an indicator of sewage pollution.

**Combined Sewer Overflow** – The portion of flow from a combined sewer system, which discharges into a water body from an outfall located upstream of a wastewater treatment plant, usually during wet weather conditions.

**Combined Sewer System**– Generally older sewer systems designed to convey both sewage and storm water into one pipe to a wastewater treatment plant.

**Conjunctive Use** - The coordinated management of surface water and groundwater supplies to maximize the yield of the overall water resource. Active conjunctive use uses artificial recharge, where surface water is intentionally percolated or injected into aquifers for later use. Passive conjunctive use is to simply rely on surface water in wet years and use groundwater in dry years.

**Consumer Confidence Report (CCR)** - see Annual Water Quality Report.

**Cross-Connection** - The actual or potential connection between a potable water supply and a non-potable source, where it is possible for a contaminant to enter the drinking water supply.

**Disinfection By-Products (DBPs)** - The category of compounds formed when disinfectants in water systems react with natural organic matter present in the source water supplies. Different disinfectants produce different types or amounts of disinfection byproducts. Disinfection byproducts for which regulations have been established have been identified in drinking water, including trihalomethanes, haloacetic acids, bromate, and chlorite

**Drought** - a period of below average rainfall causing water supply shortages.

**Dry Weather Flow** – Flow in a sanitary sewer during periods of dry weather in which the sanitary sewer is under minimum influence of inflow and infiltration.

**Fire Flow** - The ability to have a sufficient quantity of water available to the distribution system to be delivered through fire hydrants or private fire sprinkler systems.

**Gallons per Capita per Day (GPCD)** - A measurement of the average number of gallons of water use by the number of people served each day in a water system. The calculation is made by dividing the total gallons of water used each day by the total number of people using the water system.

**Groundwater Basin** - An underground body of water or aquifer defined by physical boundaries.

**Groundwater Recharge** - The process of placing water in an aquifer. Can be a naturally occurring process or artificially enhanced.

**Hard Water** - Water having a high concentration of minerals, typically calcium and magnesium ions.

**Hydrologic Cycle** - The process of evaporation of water into the air and its return to earth in the form of precipitation (rain or snow). This process also includes transpiration from plants, percolation into the ground, groundwater movement, and runoff into rivers, streams and the ocean; see Water cycle.

**Infiltration** – Water other than sewage that enters a sewer system and/or building laterals from the ground through defective pipes, pipe joints, connections, or manholes. Infiltration does not include inflow. See *Inflow*.

**Inflow** - Water other than sewage that enters a sewer system and building sewer from sources such as roof vents, yard drains, area drains, foundation drains, drains from springs and swampy areas, manhole covers, cross connections between storm drains and sanitary sewers, catch basins, cooling towers, storm waters, surface runoff, street wash waters, or drainage. Inflow does not include infiltration. See *Infiltration*.

**Inflow / Infiltration (I/I)** – The total quantity of water from both inflow and infiltration.

**Mains, Distribution** - A network of pipelines that delivers water (drinking water or recycled water) from transmission mains to residential and commercial properties, usually pipe diameters of 4" to 16".

**Mains, Transmission** - A system of pipelines that deliver water (drinking water or recycled water) from a source of supply the distribution mains, usually pipe diameters of greater than 16".

**Meter** - A device capable of measuring, in either gallons or cubic feet, a quantity of water delivered by the District to a service connection.

**Overdraft** - The pumping of water from a groundwater basin or aquifer in excess of the supply flowing into the basin. This pumping results in a depletion of the groundwater in the basin which has a net effect of lowering the levels of water in the aquifer.

**Peak Flow** – The maximum flow that occurs over a specific length of time (e.g., daily, hourly, instantaneously).

**Pipeline** - Connected piping that carries water, oil or other liquids. See Mains, Distribution and Mains, Transmission.

**Point of Responsibility, Metered Service** - The connection point at the outlet side of a water meter where a landowner's responsibility for all conditions, maintenance, repairs, use and replacement of water service facilities begins, and the District's responsibility ends.

**Potable Water** - Water that is used for human consumption and regulated by the California Department of Public Health.

**Pressure Reducing Valve** - A device used to reduce the pressure in a domestic water system when the water pressure exceeds desirable levels.

**Pump Station** - A drinking water or recycled water facility where pumps are used to push water up to a higher elevation or different location.

**Reservoir** - A water storage facility where water is stored to be used at a later time for peak demands or emergencies such as fire suppression. Drinking water and recycled water systems will typically use concrete or steel reservoirs. The State Water Project system considers lakes, such as Shasta Lake and Folsom Lake to be water storage reservoirs.

**Runoff** - Water that travels downward over the earth's surface due to the force of gravity. It includes water running in streams as well as over land.

**Sanitary Sewer System** - Sewer collection system designed to carry sewage, consisting of domestic, commercial, and industrial wastewater. This type of system is not designed nor intended to carry water from rainfall, snowmelt, or groundwater sources. See *Combined Sewer System*.

**Sanitary Sewer Overflow** – Overflow from a sanitary sewer system caused when total wastewater flow exceeds the capacity of the system. See *Combined Sewer Overflow*.

**Santa Ana River Interceptor (SARI) Line** – A regional brine line designed to convey 30 million gallons per day of non-reclaimable wastewater from the upper Santa Ana River basin to the sewer treatment plant operated by Orange County Sanitation District.

**Secondary Treatment** – Biological sewer treatment, particularly the activated-sludge process, where bacteria and other microorganisms consume dissolved nutrients in wastewater.

**Supervisory Control and Data Acquisition (SCADA)** - A computerized system which provides the ability to remotely monitor and control water system facilities such as reservoirs, pumps and other elements of water delivery.

**Service Connection** - The water piping system connecting a customer's system with a District water main beginning at the outlet side of the point of responsibility, including all plumbing and equipment located on a parcel required for the District's provision of water service to that parcel.

**Sludge** – Untreated solid material created by the treatment of sewage.

**Smart Irrigation Controller** - A device that automatically adjusts the time and frequency which water is applied to landscaping based on real-time weather such as rainfall, wind, temperature and humidity.

**Special District** - A political subdivision of a state established to provide a public services, such as water supply or sanitation, within a specific geographic area.

**Surface Water** - Water found in lakes, streams, rivers, oceans or reservoirs behind dams.

**Total Suspended Solids (TSS)** – The amount of solids floating and in suspension in water or sewage.

**Transpiration** - The process by which water vapor is released into the atmosphere by living plants.

**Trickling Filter** – A biological secondary treatment process in which bacteria and other microorganisms, growing as slime on the surface of rocks or plastic media, consume nutrients in primary treated sewage as it trickles over them.

**Underground Service Alert (USA)** - A free service that notifies utilities such as water, telephone, cable and sewer companies of pending excavations within the area (dial 8-1-1 at least 2 working days before you dig).

**Urban Runoff** - Water from city streets and domestic properties that typically carries pollutants into the storm drains, rivers, lakes, and oceans.

**Valve** - A device that regulates, directs or controls the flow of water by opening, closing or partially obstructing various passageways.

**Wastewater** – Any water that enters the sanitary sewer.

**Water Banking** - The practice of actively storing or exchanging in-lieu surface water supplies in available groundwater basin storage space for later extraction and use by the storing party or for sale or exchange to a third party. Water may be banked as an independent operation or as part of a conjunctive use program.

**Water cycle** - The continuous movement water from the earth's surface to the atmosphere and back again; see Hydrologic cycle.

**Water Pressure** - Pressure created by the weight and elevation of water and/or generated by pumps that deliver water to the tap.

**Water Service Line** - The pipeline that delivers potable water to a residence or business from the District's water system. Typically the water service line is a 1" to 1½" diameter pipe for residential properties.

**Watershed** - A region or land area that contributes to the drainage or catchment area above a specific point on a stream or river.

**Water Table** - The upper surface of the zone of saturation of groundwater in an unconfined aquifer.

**Water Transfer** - A transaction, in which a holder of a water right or entitlement voluntarily sells/exchanges to a willing buyer the right to use all or a portion of the water under that water right or entitlement.

**Water Well** - A hole drilled into the ground to tap an underground water aquifer.

**Wetlands** - Lands which are fully saturated or under water at least part of the year, like seasonal vernal pools or swamps.

**Wet Weather Flow** – Dry weather flow combined with stormwater introduced into a combined sewer system, and dry weather flow combined with infiltration/inflow into a separate sewer system.





## COMMONLY USED ABBREVIATIONS

<b>AQMD</b>	Air Quality Management District
<b>BOD</b>	Biochemical Oxygen Demand
<b>CARB</b>	California Air Resources Board
<b>CCTV</b>	Closed Circuit Television
<b>CWA</b>	Clean Water Act
<b>EIR</b>	Environmental Impact Report
<b>EPA</b>	U.S. Environmental Protection Agency
<b>FOG</b>	Fats, Oils, and Grease
<b>GPD</b>	Gallons per day
<b>MGD</b>	Million gallons per day
<b>O &amp; M</b>	Operations and Maintenance
<b>OSHA</b>	Occupational Safety and Health Administration
<b>POTW</b>	Publicly Owned Treatment Works
<b>PPM</b>	Parts per million
<b>RWQCB</b>	Regional Water Quality Control Board
<b>SARI</b>	Santa Ana River Inceptor
<b>SAWPA</b>	Santa Ana Watershed Project Authority
<b>SBVMWD</b>	San Bernardino Valley Municipal Water District
<b>SCADA</b>	Supervisory Control and Data Acquisition system
<b>SSMP</b>	Sanitary Sewer Management Plan
<b>SSO</b>	Sanitary Sewer Overflow
<b>SWRCB</b>	State Water Resources Control Board
<b>TDS</b>	Total Dissolved Solids
<b>TMDL</b>	Total Maximum Daily Load
<b>TSS</b>	Total Suspended Solids
<b>WDR</b>	Waste Discharge Requirements
<b>YVWD</b>	Yucaipa Valley Water District