

Notice and Agenda of a Meeting of the Beaumont Basin Watermaster

Wednesday, December 4, 2013 at 10:00 a.m.

Meeting Location:

Beaumont Cherry Valley Water District
560 Magnolia Avenue
Beaumont, California 92223
(951) 845-9581

Watermaster Members:

City of Banning
City of Beaumont
Beaumont Cherry Valley Water District
South Mesa Water Company
Yucaipa Valley Water District

I. Call to Order

II. Roll Call

City of Banning: Duane Burk (Alternate: Arturo Vela)

City of Beaumont: Dave Dillon (Alternate: Kyle Warsinski)

Beaumont Cherry Valley Water District: Eric Fraser (Alternate: Tony Lara)

South Mesa Water Company: George Jorritsma (Alternate: Dave Armstrong)

Yucaipa Valley Water District: Joseph Zoba (Alternate: Jack Nelson)

III. Pledge of Allegiance

IV. Public Comments At this time, members of the public may address the Beaumont Basin Watermaster on matters within its jurisdiction; however, no action or discussion may take place on any item not on the agenda. To provide comments on specific agenda items, please complete a Request to Speak form and provide that form to the Secretary prior to the commencement of the meeting.

V. Consent Calendar

A. Meeting Minutes

1. Approval of Meeting Minutes for August 7, 2013

B. Unaudited Financial Statement for the Period Ending - September 30, 2013

VI. Reports

A. Report from Engineering Consultant - Hannibal Blandon, ALDA Engineering

B. Report from Legal Counsel - Keith McCullough, Alvarado Smith

VII. Discussion Items

A. Reorganization of the Beaumont Basin Watermaster Committee - Chairman, Vice-Chairman, Secretary and Treasurer [\[Memorandum No. 13-26, Page 9 of 40\]](#)

Recommendation: That the members of the Watermaster either reaffirm the existing officers or conduct nominations for the appointment of officers of the Beaumont Basin Watermaster.

B. Adoption of the 2012 Annual Report [\[Memorandum No. 13-27, Page 10 of 40\]](#)

Recommendation: That the members of the Watermaster receive and file the 2012 Annual Report.

- C. Discussion Regarding a Revision to Task Order No. 5 with Alda, Inc. for the Preparation of the 2013 Consolidated Annual Report and Engineering Report, and Associated Consulting Services [\[Memorandum No. 13-28, Page 15 of 40\]](#)

Recommendation: That the Watermaster Committee approves the Revised Task Order No. 5 for a sum not to exceed \$72,940.

VIII. Topics for Future Meetings

- A. Other Topics

IX. Comments from the Watermaster Committee Members

X. Announcements

- A. The next regular meeting of the Beaumont Basin Watermaster is scheduled for Wednesday, February 5, 2014 at 10:00 a.m.

XI. Recess the Meeting to a Beaumont Basin Watermaster Special Project Committee

- - - - Meeting Recess - - - -

XII. Reconvene the Meeting of the Beaumont Basin Watermaster - Special Project Committee of Beaumont Cherry Valley Water District, City of Banning, Yucaipa Valley Water District, and South Mesa Mutual Water Company

- A. Status Report on the Groundwater Model Update and Redetermination of Safe Yield and Discussion Regarding Current and Projected Land Use Conditions in the Beaumont Area [\[Memorandum No. 13-29, Page 27 of 40\]](#)

XIII. Adjournment

Consent Calendar

**Record of the Minutes of the
Beaumont Basin Watermaster
October 2, 2013**

Meeting Location:

Beaumont-Cherry Valley Water District
560 Magnolia Avenue
Beaumont, CA 92223

I. Call to Order

Chairman Duane Burk called the meeting to order at 10:00 a.m.

II. Roll Call

City of Banning	Duane Burk	Present
City of Beaumont	Dave Dillon	Absent
Beaumont-Cherry Valley Water District	Eric Fraser	Present
South Mesa Water Company	George Jorritsma	Present
Yucaipa Valley Water District	Joseph Zoba	Present

Kyle Warsinski was present as the alternate representing the City of Beaumont in the absence of Member Dave Dillon. Keith McCullough was present representing legal counsel for the Watermaster.

Members of the public who registered their attendance were: Bill Dickson, John Jeter, Mary Ann Melleby, John Covington, John Ohanian, Bob Wall, Barbara Voigt, R. Morris, Fran Flanders and David Duron.

III. Pledge of Allegiance

George Jorritsma led the pledge of allegiance.

IV. Public Comments

No public comments were received at this time.

V. Consent Calendar

A. Meeting Minutes

1. Approval of Meeting Minutes August 7, 2013

B. Unaudited Financial Statement for the Period Ending – September 30, 2013

Member Eric Fraser motioned to approve the items of the consent calendar. Member George Jorritsma seconded the motion. The motion passed 4-0, with Kyle Warsinski abstaining, as a representative for the City of Beaumont was not present at the meeting.

VI. Reports

- A. Report from Engineering Consultant – Hannibal Blandon, Alda Engineering

Mr. Blandon had nothing to report at this time.

- B. Report from Legal Counsel – Thierry Montoya, Alvarado Smith

Mr. McCullough had nothing to report.

VII. Discussion Items

- A. Status Report on the Preparation of the 2012 Annual Report [Memorandum No. 13-22]

Recommendation: No recommendation.

Engineering Consultant Blandon provided an overview on the status of the report.

- B. Discussion Regarding Task Order No. 5 with Alda, Inc. for the Preparation of the 2013 Annual Report, Operating Safe Yield, and Associated Consulting Services [Memorandum No. 13-23]

Recommendation: That the Watermaster Committee approves Task Order No. 5 for a sum not to exceed \$51,980.

Member Joseph Zoba provided an overview of Task Order No. 5. Member Joseph Zoba motioned to approve Task Order No. 5; Chairman Duane Burk seconded the motion; the motion passed 5-0.

- C. Discussion Regarding the Draft Memorandum of Understanding with the San Geronio Pass Regional Water Alliance [Memorandum 13-24]

Recommendation: No recommendation.

Member Joseph Zoba provided an overview of the Draft Memorandum of Understanding and Chairman Duane Burk expanded some items for the Committee members to be aware of.

VIII. Topics for Future Meetings

- A. Discussion Regarding the Frequency of Preparing Engineering Reports
- B. Other Topics

IX. Comments from the Watermaster Committee Members

Member Joseph Zoba is looking for feedback regarding not inserting the Annual Report within the Committee Agenda. There is a link provided to the actual document outside of the package for the public.

X. Announcements

- A. The next regular meeting of the Beaumont Basin Watermaster is scheduled for Wednesday, December 4, 2013 at 10:00 a.m.

Chairman Duane Burk made the announcement above.

XI. Recess the Meeting to a Beaumont Basin Watermaster Special Project Committee

Chairman Duane Burk recessed the meeting to the Special Project Committee session at 10:27 a.m.

- - - - Meeting Recess - - - -

XII. Reconvene the Meeting of the Beaumont Basin Watermaster – Special Project Committee of Beaumont Cherry Valley Water District, City of Banning, Yucaipa Valley Water District, South Mesa Mutual Water Company

- A. Status Report on the Groundwater Model Update and Redetermination of Safe Yield and Discussion Regarding Current and Projected Land Use Conditions in the Beaumont Area [Memorandum No. 13-25]

The above items were discussed by the Engineering Consultants and the Committee.

XIII. Adjournment

Chairman Duane Burk adjourned the meeting at 10:51 a.m.

Duane Burk, Chairman
Beaumont Basin Watermaster

Reports

Discussion Items

BEAUMONT BASIN WATERMASTER

MEMORANDUM NO. 13-26

Date: December 4, 2013

From: Joseph Zoba, Treasurer

Subject: Reorganization of the Beaumont Basin Watermaster Committee - Chairman, Vice-Chairman, Secretary and Treasurer

Recommendation: That the members of the Watermaster either reaffirm the existing officers or conduct nominations for the appointment of officers of the Beaumont Basin Watermaster.

Reviewing the minutes of the Watermaster, it appears that the officers of the organization were appointed at the inaugural meeting of the Beaumont Basin Watermaster on February 10, 2004 and again on September 21, 2011 (Watermaster Memorandum No. 11-01). In 2011, the Watermaster Committee members expressed an interest in re-evaluating the officers on a regular basis. This agenda item provides the Watermaster Committee members with the opportunity to either reaffirm the existing officers or solicit nominations for the appointment of new officers for the organization.

The current officers are:

Chairman - Duane Burk
Vice Chairman - George Jorritsma
Secretary - Eric Fraser
Treasurer - Joseph Zoba

BEAUMONT BASIN WATERMASTER

MEMORANDUM NO. 13-27

Date: December 4, 2013

From: Joseph Zoba, Treasurer

Subject: Adoption of the 2012 Annual Report

Recommendation: That the members of the Watermaster receive and file the 2012 Annual Report.

At the Beaumont Basin Watermaster meeting on January 9, 2013, the Watermaster Committee approved Task Order No. 2 from Alda, Inc. for professional engineering services related to the preparation of the 2012 Annual Report and Operating Safe Yield.

On April 10, 2013, June 5, 2013, August 7, 2013, and October 2, 2013, Mr. Hannibal Blandon provided an overview of the 2012 Annual Report for the Beaumont Basin Watermaster and solicited comments.

A copy of the latest draft 2012 Annual Report is available at the following link:

<http://documents.yvwd.dst.ca.us/bbwm/documents/2012annualreport130927.pdf>

Beaumont Basin Watermaster – Task Order No. 2
2012 Annual Report and Operating Safe Yield

3-Jan-13

TASK OBJECTIVES

The objectives of Task No. 2 are as follows:

- A. Conduct the annual report for Calendar Year 2012
- B. Estimate the Operating Safe Yield for Calendar Year 2012

SCOPE OF SERVICES

Task 1 – Data Collection

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

- ✓ Monthly water production from member agencies
- ✓ Monthly imported water recharge by each party
- ✓ Monthly rainfall from the USGS, Army Corps, and 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
- ✓ Annual water quality from production wells from the water agencies

It should be noted that field collection of static water levels at dedicated monitoring wells and/or production wells is not part of this scope of services.

Task 2 – Preparation of Annual 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, and replenishment obligations. In addition, the report will incorporate the results of the Operating Safe Yield analysis, conducted under Task 3. The report will also include the annual independent financial reports (prepared by others) and a description of Watermaster activities and Board actions.

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, groundwater recharge and groundwater quality data for the Beaumont Basin area as a basis for determining the annual operating safe yield (OSY) of the basin for the Calendar Year 2012. The focus of the review will be groundwater level trends at the eight monitoring wells previously reported in the

Beaumont Basin Watermaster – Task Order No. 2
2012 Annual Report and Operating Safe Yield

3-Jan-13

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 – 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 5 – Meeting Attendance and Agenda Assistance

The ALDA/TH&Co team will prepare for, attend, and participate in up to six (6) Watermaster meetings in 2013. In addition, the ALDA/TH&Co team will assist in agenda preparation as required by Watermaster.

SCHEDULE

A draft of the annual report and operating safe yield will be presented to the Beaumont Basin Watermaster at the April 2013 Board meeting. Comments on the draft annual report will be addressed and presented at the June 2013 Board meeting.

COST ESTIMATE

Our estimated cost to perform the scope of work as outlined herein is estimated at \$51,800.00; this estimate is based on 414 technical and administrative hours and is summarized in the attached table by task and sub-task.

Beaumont Basin Watermaster – Task Order No. 2
2012 Annual Report and Operating Safe Yield

3-Jan-13

Beaumont Basin Watermaster - Task Order No. 2
Preparation of Annual Report and Operating Safe Yield

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		
Task 1 - Data Collection	16	24	32							72	\$ 9,160
Task 2 - Annual Report										178	\$ 20,040
2.1 - Pumping for metered wells	4	8								12	\$ 1,680
2.2 - Pumping for parties with non-metered wells	4	16	8							28	\$ 3,640
2.3 - Document basin activities	4	8								12	\$ 1,680
2.4 - Prepare draft report	16	16	6	20	24			16		98	\$ 9,940
2.5 - Prepare final report	4	12		4	8					28	\$ 3,100
Task 3 - Operating Safe Yield										60	\$ 7,200
3.1 - Review of data for 2011-12						8	12			20	\$ 2,360
3.2 - Preparation of OSY TMs for 2011-12	4					16	12	4	4	40	\$ 4,840
Task 4 - Rules and Regulations	16									16	\$ 2,400
Task 5 - Meeting Attendance										88	\$ 13,000
5.1 - Assistance with agenda preparation	12	8	8							28	\$ 3,760
5.2 - Attend Watermaster meetings	36					24				60	\$ 9,240
TOTALS:	116	92	54	24	32	48	24	20	4	414	\$ 51,800

Beaumont Basin Watermaster – Task Order No. 2
2012 Annual Report and Operating Safe Yield

3-Jan-13

BILLING RATES

Billing Rates for ALDA Inc. for Calendar Year 2013

<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 for Calendar Year 2013

<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. 13-28

Date: December 4, 2013

From: Joseph Zoba, Treasurer

Subject: Discussion Regarding a Revision to Task Order No. 5 with Alda, Inc. for the Preparation of the 2013 Consolidated Annual Report and Engineering Report, and Associated Consulting Services

Recommendation: That the Watermaster Committee approves the Revised Task Order No. 5 for a sum not to exceed \$72,940.

At the Beaumont Basin Watermaster meeting on August 7, 2013, the Watermaster Committee requested a proposal from Alda, Inc. for professional engineering services related to the preparation of the 2013 Annual Report and Operating Safe Yield. At the meeting on October 2, 2013, the Watermaster approved Task Order No. 5 for an amount not to exceed \$51,980.

Following the last Watermaster meeting, Anibal Blandon was asked to provide a modified proposal for the 2013 Annual Report to: (1) consolidate the annual report and engineering report (this would expand the annual report to include water quality, data collection programs and groundwater storage calculations); and (2) provide a calculation of safe yield on an annual basis to determine the overall groundwater management trends. The cost for preparing a 2013 Consolidated Annual Report and Engineering Report is \$72,940, or \$20,960 more than the amount approved for Task Order No. 5.

If the Watermaster Committee desires to prepare a consolidated Annual Report, all future annual reports would be completed in a consolidated report format to meet the requirements of the judgment and provide comprehensive information to the Watermaster Committee to better manage the Beaumont Basin.

The financial impacts associated with the proposed contract would result in a budget line item next year of approximately \$73,000 for the preparation of a consolidated annual report and engineering report. Depending on the cash flow requirements for this report, additional invoices may be sent to the Watermaster members prior to the end of the current fiscal year.

ALDA Inc.

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

November 26, 2013

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

Subject: **Beaumont Basin Watermaster – Revised Task Order No. 5
Consolidation of Annual Report and Engineering Report and
Engineering Support Services for Calendar Year 2014**

Dear Mr. Zoba:

Per our meeting earlier this month, please find attached our revised proposed scope of services and consulting fee for Task Order No. 5 under the Engineering Services contract with the Beaumont Basin Watermaster dated May 10, 2012. The proposed scope of services will a) consolidate the Annual and Engineering reports into a single document, b) determine the operating safe yield for 2013, and c) provide general consulting services in support to Watermaster activities. Elements previously presented in the Engineering Report, such as water quality, monitoring and data collection programs, and groundwater storage will be incorporated into the Annual Report.

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. 5**2013 Consolidated Annual Report and Associated Consulting Services****Nov-26, 2013**

TASK OBJECTIVES

The objectives of Task No. 5 are as follows:

- A. Consolidate the Engineering Report into the Annual Report for CY 2013
- B. Estimate the Operating Safe Yield for Calendar Year 2013
- C. 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. 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.

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.

Beaumont Basin Watermaster – Task Order No. 5

2013 Consolidated Annual Report and Associated Consulting Services

Nov-26, 2013

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 – 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 5 – Meeting Attendance and Agenda Assistance

The ALDA/TH&Co team will prepare for, attend, and participate in up to six (6) Watermaster meetings in 2014. 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 2014 Board meeting. Comments on the draft annual report will be addressed and presented at the June 2014 Board meeting. General consulting support services will be provided throughout the year.

COST ESTIMATE

Our estimated cost to perform the scope of work as outlined herein is \$72,940.00 (Seventy Two Thousand Nine Hundred Forty Dollars and 00/100); this estimate is based on 582 technical and administrative hours and is summarized in the attached table by task and sub-task. Billing rates for the 2014 Calendar Year remain the same as in 2012 and 2013 and are included at the end of this proposal.

Beaumont Basin Watermaster

Engineering Consulting Fee for Task Order No. 5

Beaumont Basin Watermaster - Task Order No. 5
Preparation of Expanded Annual Report and Operating Safe Yield for 2013 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	
Task 1 - Data Collection	18	28	44							90 \$ 11,320
Task 2 - 2013 Annual Report										324 \$ 38,420
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					4	8	8		22 \$ 2,340
2.5 - Calculate change in storage	2					4	8			14 \$ 1,660
2.6 - Evaluate groundwater quality	12	32				4	16			64 \$ 8,200
2.7 - Prepare draft report	8	32	16	20	16	8	8	12		120 \$ 13,140
2.8 - Prepare final report	4	16		8	8	4	4			44 \$ 5,000
Task 3 - Operating Safe Yield										64 \$ 7,800
3.1 - Review of data for 2012-13						8	12			20 \$ 2,360
3.2 - Preparation of OSY TMs for 2013	8					16	12	4	4	44 \$ 5,440
Task 4 - Rules and Regulations	16									16 \$ 2,400
Task 5 - Meeting Attendance										88 \$ 13,000
5.1 - Assistance with agenda preparation	12	8	8							28 \$ 3,760
5.2 - Attend Watermaster meetings	36					24				60 \$ 9,240
TOTALS:	130	156	76	28	24	72	68	24	4	582 \$ 72,940

Beaumont Basin Watermaster Billing Rates for Task Order No. 5

Billing Rates for ALDA Inc.

Billing rates for Calendar Year 2014 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 2014 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

INDEPENDENT CONTRACTOR'S TASK ORDER ISSUED TO ALDA, INC.

TASK ORDER NO. 5

Project Title: Professional Engineering Services - 2013 Annual Report, Operating Safe Yield, and Associated Consulting Services

Task Order Authorization Date: October 2, 2013

Contractor Name: Alda, Inc.
Contact: Mr. F. Anibal Blandon
Address: 5928 Vineyard Avenue
Alta Loma, California 91701
Telephone: (909) 587-99160
Fed. Tax ID #: 45-4578114

SUMMARY OF TASK ORDER:

Description	Amount	Reference
Original Contract Amount	\$51,980	Watermaster Memorandum No. 13-23

This TASK ORDER No. 5 is issued pursuant to that certain Agreement for Services by Independent Contractor between the BEAUMONT BASIN WATERMASTER ("OWNER") and ALDA, INC. (CONTRACTOR") dated May 16, 2012 (the "AGREEMENT").

The OWNER and CONTRACTOR have entered into this TASK ORDER as specifically set forth herein below, and except as specifically provided herein, the AGREEMENT shall remain in full force and effect as originally stated.

1. Tasks to be Performed & Compensation. CONTRACTOR shall provide all labor, materials and equipment to perform the following tasks as fully described in the attached Task Order No. 5 Scope of Services dated October 2, 2013.
2. Term. This Task Order shall remain in full effect until the proposed project is completed which is estimated to be by October 31, 2014.

IN WITNESS WHEREOF, the parties have executed this Task Order and the related contract documents.

Beaumont Basin Watermaster

Alda, Inc.

By: _____

By: _____

Dated: October 2, 2013

Dated: _____

Name: Duane Burk, Chairman

Name: _____

Beaumont Basin Watermaster – Task Order No. 5**2013 Annual Report, Operating Safe Yield and Associated Consulting Services****2-Oct-13****TASK OBJECTIVES**

The objectives of Task No. 5 are as follows:

- A. Conduct the annual report for Calendar Year 2013
- B. Estimate the Operating Safe Yield for Calendar Year 2013
- C. 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:

- ✓ 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

Task 2 – Preparation of Annual 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, and replenishment obligations. In addition, the report will incorporate the results of the Operating Safe Yield analysis, conducted under Task 3. The report will also include the annual independent financial reports (prepared by others) and a description of Watermaster activities and Board actions.

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.

Beaumont Basin Watermaster – Task Order No. 5

2013 Annual Report, Operating Safe Yield and Associated Consulting Services

2-Oct-13

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 – 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 5 – Meeting Attendance and Agenda Assistance

The ALDA/TH&Co team will prepare for, attend, and participate in up to six (6) Watermaster meetings in 2014. In addition, the ALDA/TH&Co team will assist in agenda preparation as required by Watermaster.

SCHEDULE

A draft of the annual report and operating safe yield will be presented to the Beaumont Basin Watermaster at the April 2014 Board meeting. Comments on the draft annual report will be addressed and presented at the June 2014 Board meeting.

COST ESTIMATE

Our estimated cost to perform the scope of work as outlined herein is estimated at \$51,980.00; this estimate is based on 412 technical and administrative hours and is summarized in the attached table by task and sub-task.

Beaumont Basin Watermaster – Task Order No. 5
2013 Annual Report, Operating Safe Yield and Associated Consulting Services **2-Oct-13**



Beaumont Basin Watermaster - Task Order No. 5
Preparation of Annual Report and Operating Safe Yield for 2013

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	
Task 1 - Data Collection	16	24	32							72 \$ 9,160
Task 2 - 2013 Annual Report										176 \$ 20,220
2.1 - Pumping for metered wells	4	8								12 \$ 1,680
2.2 - Pumping for parties with non-metered wells	4	16	8							28 \$ 3,640
2.3 - Document basin activities	4	8								12 \$ 1,680
2.4 - Prepare draft report	16	16	20	20	24					96 \$ 10,120
2.5 - Prepare final report	4	12		4	8					28 \$ 3,100
Task 3 - Operating Safe Yield										60 \$ 7,200
3.1 - Review of data for 2011-12						8	12			20 \$ 2,360
3.2 - Preparation of OSY TMs for 2011-12	4					16	12	4	4	40 \$ 4,840
Task 4 - Rules and Regulations	16									16 \$ 2,400
Task 5 - Meeting Attendance										88 \$ 13,000
5.1 - Assistance with agenda preparation	12	8	8							28 \$ 3,760
5.2 - Attend Watermaster meetings	36					24				60 \$ 9,240
TOTALS:	116	92	68	24	32	48	24	4	4	412 \$ 51,980
Thomas Harder & Co. Hours & Budget						48	24	4	4	80 \$ 10,440

Beaumont Basin Watermaster – Task Order No. 5

2013 Annual Report, Operating Safe Yield and Associated Consulting Services

2-Oct-13

BILLING RATES**Billing Rates for ALDA Inc. for Calendar Year 2014**

<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 for Calendar Year 2014

<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

Special Project Committee

BEAUMONT BASIN WATERMASTER

MEMORANDUM NO. 13-29

Date: December 4, 2013

From: Joseph Zoba, Treasurer

Subject: Status Report on the Groundwater Model Update and Redetermination of Safe Yield and Discussion Regarding Current and Projected Land Use Conditions in the Beaumont Area

Recommendation: No recommendation.

At the Beaumont Basin Watermaster meeting on December 5, 2012, the Watermaster Committee requested the attached Task Order No. 3 from Alda, Inc. for professional engineering services related to the update of the groundwater model and redetermination of safe yield.

This project has been determined to be a Special Project of the Watermaster to include only the following Watermaster Committee Members:

Beaumont Cherry Valley Water District
City of Banning
Yucaipa Valley Water District
South Mesa Mutual Water Company

Technical Memorandum

To: Mr. Hannibal Blandon
Alda Engineering

From: Thomas Harder, P.G., CH.G.
Thomas Harder & Co.

Date: 25-Nov-13

Re: Status Update on the Reevaluation of the Safe Yield of the Beaumont Basin

The purpose of this technical memorandum is to provide an update on the status of the reevaluation of the safe yield of the Beaumont Basin. The safe yield of the Beaumont Basin is being reevaluated through a detailed water balance using a combination surface and groundwater flow model. The surface water model, which has been modified from an updated United States Geological Survey model, is complete and has been incorporated into the groundwater flow model. The groundwater flow model has successfully been constructed and we are in the process of calibrating it. Model calibration has taken longer than anticipated, primarily due to hydrogeological data gaps and uncertainties in the northwest portion of the model and the timing of return flow recharge throughout the model. Although we are nearing a satisfactory calibration, additional time is necessary to further refine the calibration in order to develop the most representative safe yield estimate possible. We are confident that we will be ready to present the results of the model calibration and safe yield estimate at the next Beaumont Basin Watermaster Board meeting in February.

Thomas Harder & Co.
1260 N. Hancock St., Suite 109
Anaheim, California 92807
(714) 779-3875

Beaumont Basin Watermaster

INDEPENDENT CONTRACTOR'S TASK ORDER ISSUED TO ALDA, INC.

TASK ORDER NO. 3

Project Title: Professional Engineering Services - Groundwater Model Update and Redetermination of Safe Yield

Task Order Authorization Date: January 9, 2013

Contractor Name: Alda, Inc.
Contact: Mr. F. Anibal Blandon
Address: 5928 Vineyard Avenue
Alta Loma, California 91701
Telephone: (909) 587-99160
Fed. Tax ID #: _____

SUMMARY OF TASK ORDER:

Description	Amount	Reference
Original Contract Amount	\$229,210	Watermaster Memorandum No. 13-02

This TASK ORDER No. 3 is issued pursuant to that certain Agreement for Services by Independent Contractor between the BEAUMONT BASIN WATERMASTER ("OWNER") and ALDA, INC. (CONTRACTOR") dated May 16, 2012 (the "AGREEMENT").

The OWNER and CONTRACTOR have entered into this TASK ORDER as specifically set forth herein below, and except as specifically provided herein, the AGREEMENT shall remain in full force and effect as originally stated.

1. Tasks to be Performed & Compensation. CONTRACTOR shall provide all labor, materials and equipment to perform the following tasks as fully described in the attached Task Order No. 3 Scope of Services dated January 3, 2013 and the proposal to Provide Professional Engineering Services by the CONTRACTOR dated April 16, 2012.

2. Term. This Task Order shall remain in full effect until the proposed project is completed which is estimated to be by December 31, 2013.

IN WITNESS WHEREOF, the parties have executed this Task Order No. 3 on the date indicated below.

Beaumont Basin Watermaster

Alda, Inc.

By: _____

By: _____

Dated: January 9, 2013

Dated: _____

Name: Duane Burk, Chairman

Name: _____

Beaumont Basin Watermaster – Task Order No. 3
GW Model Update and Re-determination of Safe Yield

3-Jan-13

Task Objectives

The objectives of Task No. 3 are as follows:

- A. Update the existing surface and groundwater flow models and calibrate them through 2012
- B. Re-evaluate the Safe Yield of the Beaumont Basin in accordance to the Judgment
- C. Develop methodologies for addressing other important Watermaster functions, including recharge from recycled water discharges by the City of Beaumont, new yield, and groundwater losses from the basin.

Background and Approach

Although there are multiple methods available for estimating the safe yield of a groundwater basin, the most comprehensive evaluation is through a calibrated, distributed parameter, numerical surface and groundwater flow model. As presented at our December 2012 workshop, the analysis necessary to complete and calibrate a model provides the most complete representation of the water balance of the basin. Further, the model will provide a valuable tool to address other aspects of the Judgment including:

- ✓ New yield estimates
- ✓ Groundwater losses from the basin
- ✓ Potential changes in safe yield over time from past and future land use changes
- ✓ Optimum management of groundwater resources from planned operation
- ✓ Identification of data gaps

Fortunately, a surface and groundwater flow model has already been developed for the Beaumont Basin and is available for use. The United States Geological Survey (USGS) developed a surface and groundwater flow model for the Beaumont Basin and published the results in 2006.¹ This model was developed using the USGS code MODFLOW, a three-dimensional numerical finite difference modeling code. The model is public domain, encompasses the entire Beaumont Basin and simulates hydrological and hydrogeological conditions from 1927 through 2003.

Although the existing model provides a good basis for evaluating groundwater resources in the Beaumont Basin, it will need to be updated and refined for the purpose of re-determining the safe yield of the basin. The following updates/refinements are necessary:

¹ Rewis, D.L., Christensen, A.H., Matti, J.C., Hevesi, J.A., Nishikawa, T., Martin, P., 2006. *Geology, Ground-Water Hydrology, Geochemistry, and Ground-Water Simulation of the Beaumont and Banning Storage Units, San Geronio Pass Area, Riverside County, California*. USGS Scientific Investigations Report 2006-5026.

Beaumont Basin Watermaster – Task Order No. 3
GW Model Update and Re-determination of Safe Yield

3-Jan-13

- ✓ The existing model simulates hydrological and hydrogeological conditions through 2003. The model will need to be updated with pumping, recharge and other data from 2003 through 2012.
- ✓ The grid in the USGS model consists of approximate 820-ft squares. While this grid spacing met the objectives of the USGS for a regional analysis of groundwater recharge and flow characteristics, it will be necessary to refine the grid to provide better resolution for simulating groundwater pumping, artificial recharge, return flow recharge, stream bed infiltration and other processes. We are recommending 200-ft grid cells throughout the model area.
- ✓ Pumping and recharge stresses in the current USGS model are varied on an annual basis. While this met the USGS's original objectives for the model, it will be necessary to create monthly stress periods for the latter parts of the transient model calibration in order to simulate seasonal changes in recharge and pumping. Based on our review of available data, it is proposed to maintain annual stress periods from 1927 through 1999 and create monthly stress periods from 2000 to 2012.
- ✓ Finally, it would be beneficial to reevaluate some of the simplifying land use and hydrogeological assumptions that were incorporated into the existing model. We are proposing to vary land use over time (the existing model does not). We are also proposing to reevaluate aquifer parameters in the model area (the existing model uses one specific yield value for the entire model area).

Regardless of these necessary changes, updating and refining the existing model tool will save both time and money over developing a new model.

Our recommended approach to updating the USGS model includes the following main tasks:

1. Obtain and Compile Data to Update the Model
2. Update and Refine the Existing USGS Groundwater Flow Model
3. Update and Refine the Existing USGS Surface Water Model
4. Calibrate the Surface and Groundwater Flow Model through December 2012
5. Reevaluate the Safe Yield of the Beaumont Basin Using the Calibrated Model
6. Prepare a Report Summarizing the Findings

In addition, we have included a task to develop the methodologies for addressing other important Watermaster functions, including recharge from recycled water discharges by the City of Beaumont, new yield resulting from surface water capture and recharge, and groundwater losses from the basin. As part of this task, we will contact the administrative staff for other groundwater basins in Southern California to obtain information related to their methodologies used for addressing these issues.

Beaumont Basin Watermaster – Task Order No. 3
GW Model Update and Re-determination of Safe Yield

3-Jan-13

SCOPE OF WORK

Task 1 – Obtain and Compile Data

The first task will be to obtain and compile the data necessary to refine and update the USGS model. The specific types of data to be compiled will include:

- ✓ Geological Data
 - Reports and studies on faults in the Beaumont Basin
 - Detailed borehole lithologic logs
 - Driller's logs
 - Geophysical logs
 - Surficial soil type maps
- ✓ Hydrogeological Data
 - Pumping test data/aquifer parameters (transmissivity, hydraulic conductivity, and storativity/specific yield)
 - Groundwater levels
- ✓ Basin Operational Data
 - Groundwater production
 - Artificial recharge
 - Imported water deliveries
 - Wastewater treatment plant inflows/outflows
- ✓ Surface Water Hydrological Data
 - Precipitation
 - Evapotranspiration
 - Stream flow
- ✓ Land Use Data
 - Land use/land cover maps
 - Crop data
 - Satellite imagery

Sources of data will include online databases, previous Beaumont Basin Annual Reports, and the various agencies in the basin. Letter requests for this information will be forwarded to all applicable agencies. It will also be necessary to send a request for driller's logs to the California Department of Water Resources (CDWR). Where possible, data will be obtained in electronic format as database or spreadsheet files. Maps and aerial coverage will be obtained as Geographic Information System (GIS) files to expedite the analysis. The budget for this task includes two trips to the Beaumont area to assist local agencies, as necessary, to obtain the data, reports and maps.

Task 2 – Refine the Groundwater Flow Model**Subtask 2.1 Model Grid and Boundary Conditions**

It is recommended to refine the model grid spacing from the current 820-ft square cells to 200-ft square grid cells throughout the model area. In refining the grids, it will be necessary to adjust boundary conditions to accommodate the refined grid spacing. In addition, given that most of the model edge is constructed of General Head Boundaries, it will be necessary to update the reference head in these areas from 2003 through 2012. The ALDA/TH&Co team will refine the grid spacing, adjust the boundary conditions to accommodate the new grid spacing, and update the reference heads at the boundary.

Subtask 2.2 Update Calibration Target Well Hydrographs

Groundwater levels for wells used as calibration targets in the USGS model will be updated from 2003 through 2012. This will include updates to the groundwater level hydrographs for up to 12 wells.

Subtask 2.3 Update Aquifer Properties

Although the USGS model already has spatially distributed aquifer properties (hydraulic conductivity and specific yield), data has been collected since 2003 that can be used to refine the previous distribution (e.g. BCVWD Wells 24, 25 and 26 have been drilled and tested since 2003 and the Noble Creek Recharge Basins have gone into service providing information). Utilizing new data from Task 1, the ALDA/TH&Co team will update, as appropriate, the hydraulic conductivity distribution in the model.

In addition, the USGS model uses simplifying assumptions with respect to the specific yield characteristics of the aquifer sediments (it uses one value for the model). Specific yield is a measure of the ability of sediments to take water into storage or release water from storage. A representative specific yield distribution is important in developing a reliable safe yield estimate for the basin. Other studies have provided specific yield distribution but the bases for the results have not been available to review. Accordingly, it is proposed to reevaluate the specific yield distribution within the Beaumont Basin. This will be conducted through an analysis of detailed borehole lithologic logs, driller's logs, and geophysical logs.

Subtask 2.4 Evaluate Fault Characteristics

The Beaumont Basin is bounded by faults, which act as barriers to groundwater flow. There has been uncertainty as to the amount of groundwater that flows across the faults and into the basin, particularly along the Banning Fault on the north side of the basin. The amount of flow that enters the basin affects the safe yield. Multiple studies have been conducted in the past to understand groundwater flow across the faults. The ALDA/TH&Co team will review these studies as well as recent data collected by the USGS. Any new findings will be incorporated into the model.

It is noted that this task consists of a "paper" study only and no additional field work to investigate the faults is proposed. In the event that the study identifies areas and methods for

Beaumont Basin Watermaster – Task Order No. 3
GW Model Update and Re-determination of Safe Yield

3-Jan-13

further investigation, they will be specified in the summary report for potential investigation at a later time.

Task 3 – Refine the Surface Water Model

Surface water flow was addressed by the USGS using a precipitation/runoff model code called Infil v.3. The original model was calibrated through 2003 and will need to be updated through December 2012. In addition, there are a number of refinements necessary for the purpose of safe yield determination. The updated USGS model is constructed with a single land use designation through time. Given that land use in the Beaumont area has changed significantly in the last 40 years and given that these changes affect return flow and, therefore, the safe yield, it is proposed to incorporate land use changes into the model. It is also recommended to reevaluate the return flow assumptions for the various land use conditions for the model.

Subtask 3.1 Land Use Evaluation

The ALDA/TH&Co team will generate land use distribution maps for up to seven representative time periods since 1970. Electronic versions of land use maps are available for 1990, 1993, 2000, and 2006. The ALDA/TH&Co team will generate two additional land use maps representative of 1970s land use conditions, 1980s land use conditions and a recent time period (since 2006). Return flow values will be assigned to each of the land use conditions based on the analysis in Subtask 3.2 below.

Subtask 3.2 Return Flow Analysis

There are multiple sources of return flow to the groundwater system in the Basin, including agricultural irrigation, individual septic systems, and municipal irrigation (e.g. homeowner lawns and golf courses). The ALDA/TH&Co team will evaluate return flow over time in conjunction with the land use changes determined from Subtask 3.1. For example, agricultural irrigation return flow will be assigned values consistent with the crop type and irrigation efficiency. Return flow from septic systems and municipal irrigation will be evaluated with respect to water delivery records and, if necessary, pumping records, which provide an indication of the amount of water used on each parcel, consistent with its land use.

For this purpose of this task, it is assumed that the billing system used by the BCVWD identifies individual accounts in the Cherry Valley area by street address of the parcel served and assessor parcel number (APN).

Subtask 3.3 Update Stream Flow Records

Stream flow data for stream gages that will be used as calibration targets in the USGS model will be updated from 2003 through 2012. For cost estimating purposes, daily stream records will be updated for up to three stream gages.

Subtask 3.4 Analysis of Return Flow from Wastewater Discharge

The City of Beaumont operates a wastewater treatment plant in the southern part of the Beaumont Basin. Recycled water from the treatment plant is discharged into Cooper's Creek where a portion of it infiltrates into the subsurface. While most of the stream channel is located outside the Beaumont Basin, a portion of the channel extends over the adjudicated basin. Any infiltration in the channel segment that overlies the Beaumont Basin would become recharge in the Beaumont Basin, thus contributing to the safe yield.

The purpose of this subtask is to estimate the amount of recharge attributable to infiltration of discharge runoff from the wastewater treatment plant. As part of the analysis, the ALDA/TH&Co team will evaluate the previous method for estimating recharge to the Beaumont Basin from wastewater treatment plant discharge and determine if changes are necessary.

Task 4 – Update Surface Water Model Input Files

The ALDA/TH&Co team will update the Infil v.4 input files with daily precipitation and air temperature data from 2009 through 2012. Where necessary, historical precipitation data for the 102 weather stations used in the USGS model will be refined based on Doppler radar data (available since 2002) which will provide a more accurate spatial precipitation distribution.

Task 5 – Calibrate the Surface Water Model

The surface water model will be calibrated using the history-matching technique whereby model input parameters will be adjusted until model-generated stream flow at selected calibration points provide an acceptable match with measured stream flow.

Task 6 – Update Groundwater Flow Model Input Files

Pumping and recharge stresses in the current USGS model are varied on an annual basis. While this met the USGS's original objectives for the model, it will be necessary to create monthly stress periods for the latter parts of the transient model calibration in order to simulate seasonal changes in recharge and pumping. Based on our review of available data, it is proposed to maintain annual stress periods from 1927 through 1999 and create monthly stress periods from 2000 to 2012.

Monthly input files will be created for groundwater production and artificial recharge for the period January 2000 through December 2012. The cost estimate assumes creation of monthly input files for approximately 42 wells, two artificial recharge facilities (SGPWA spreading ponds and the Noble Creek artificial recharge facility), and recycled water discharges by the City of Beaumont.

Monthly areal recharge, mountain-front recharge, and return-flow recharge will be input for the same time period (January 2003 through December 2012) based on output from the surface water model. In addition, stream channel flow output from the surface water model will be

incorporated into the Stream Flow Routing package in the MODFLOW groundwater model to simulate recharge within unlined stream channels.

Task 7 – Calibrate Groundwater Model and Perform Sensitivity Analysis

The groundwater flow model will be calibrated using the history-matching technique whereby model input parameters will be adjusted until model-generated groundwater levels provide an acceptable match with measured groundwater levels. During calibration, the ALDA/TH&Co team will perform a sensitivity analysis to test the effects of varying certain model parameters on calibration. The results of the sensitivity analysis will be plotted on graphs and presented in the summary report described in Task 9. The final model calibration will also be presented in Task 9.

Task 8 – Analysis of Safe Yield

The ALDA/TH&Co team will use the updated and calibrated groundwater flow model to re-determine the safe yield of the Beaumont Basin. The analysis will involve a predictive simulation using the model to assess the combination of artificial recharge and pumping that result in stable groundwater levels over a 30-yr period of time (i.e. no net change in groundwater storage). Preliminarily, it is proposed to conduct the simulation using an average hydrology developed from a 40-yr base period. Land use will be maintained at 2012 conditions. Initial groundwater production and artificial recharge will be input based on planned pumping and recharge rates. The ALDA/TH&Co team will then adjust pumping and recharge in order to achieve equilibrium within the basin. The safe yield will be estimated from the water budget that results in long-term hydrologic equilibrium within the basin.

Task 9 – Prepare a Report on the Safe Yield of the Beaumont Basin

The results of the safe yield analysis using the calibrated groundwater flow model will be summarized in a report. The report will include:

- ✓ A background and purpose for the analysis
- ✓ A description of the original USGS model
- ✓ A description of the sources of data used to refine and update the USGS model
- ✓ A description of the hydrogeologic setting and updated conceptual model
- ✓ A description of the refined numerical model
- ✓ Results of the updated model calibration and sensitivity analyses
- ✓ A description of the methodology and assumptions used to analyze the safe yield of the basin using the model
- ✓ Results of the safe yield analysis
- ✓ Identification of data gaps for future collection and analysis

Beaumont Basin Watermaster – Task Order No. 3
GW Model Update and Re-determination of Safe Yield

3-Jan-13

The report will include maps showing the model area, hydrogeologic setting, wells and recharge basins, boundary conditions, input parameter distribution and model analysis results. Supporting data and information will be provided in appendices as appropriate.

The budget for this task includes development and submittal of one draft version of the safe yield report for review and comment (ten hard copies with electronic files). Upon incorporation of comments, the ALDA/TH&Co team will generate one final version of the report (ten hard copies with electronic files).

Task 10 – Develop Methodologies for Addressing Recycled Water Recharge, Groundwater Losses and New Yield

The ALDA/TH&Co team will use the updated surface and groundwater models as the basis for developing methodologies to be used by the Beaumont Basin Watermaster in evaluating a) groundwater recharge credits resulting from the recycled water discharges by the City of Beaumont, b) New Yield that may result from the implementation of new surface water diversion and recharge projects, and c) potential groundwater losses resulting from the implementation of various groundwater recharge projects.

In addition, the ALDA/TH&Co team will contact the watermaster administrative staff for other groundwater basins in Southern California to obtain information related to their methodologies for addressing the above mentioned issues; up to three groundwater basin watermasters will be contacted by our team.

Task 11 – Project Management and Meetings

During the course of preparing the groundwater flow model, it is recommended to have meetings/workshops to provide model progress updates, present the methodology and assumptions for re-determining the safe yield, and present preliminary results of the analyses. The workshops will provide a forum for answering questions and obtaining feedback on assumptions. The budget for this task assumes four meetings/workshops in Beaumont between the time the scope of work is approved and the time the final report is submitted. Overall project management activities are also included as part of the budget for this task.

SCHEDULE

The attached Figure 1 shows the proposed schedule to perform Tasks 1 through 11 of this scope of work. The schedule assumes that all necessary data for developing the model can be obtained by the end of March, 2013. Based on this schedule, a draft report on the safe yield of the Beaumont Basin would be submitted to the Watermaster Board in October 2013.

COST ESTIMATE

Our estimated cost to perform the scope of work as outlined herein is estimated at \$229,210.00; this estimate is based on 2,032 technical and administrative hours and is summarized in the attached table by task and sub-task.

Beaumont Basin Watermaster – Task Order No. 3
GW Model Update and Re-determination of Safe Yield

3-Jan-13

Beaumont Basin Watermaster - Task Order No. 3
Update of the USGS Beaumont Basin Model and Re-Determine the Safe Yield of the Basin

Task	Description	Project Manager	Hydro-geologist	Project Engineer	Staff Engineer	Staff Geologist	Graphics	Clerical	Total Hours	Total Cost
Task 1 - Obtain and Compile Data										
		0	10	24	0	92	0	6	132	\$ 13,510
Task 2 - Refine the Groundwater Model										
2.1	Refine Model Grid and Boundary Conditions	2	12	0	0	80	0	0	94	\$ 9,420
2.2	Update Hydrographs (assume 12)	0	2	0	0	48	0	0	50	\$ 4,640
2.3	Acquifer Properties									
	Transmissivity and Hydraulic Conductivity	2	4	0	0	24	0	0	30	\$ 3,100
	Specific Yield Distribution Analysis	2	18	0	0	120	0	0	140	\$ 13,980
2.4	Evaluation of Fault Characteristics	0	20	0	0	8	0	0	28	\$ 3,920
Task 3 - Refine the Surface Water Model										
3.1	Land Use Evaluation	0	18	0	40	80	0	0	138	\$ 14,480
3.2	Refine Return Flow Factors - Land Use	4	24	24	40	8	0	0	100	\$ 12,800
3.3	Update Stream Flow Records	2	2	0	0	24	0	0	28	\$ 2,780
3.4	Return Flow from Waste Water Discharge	2	6	24	24	16	0	0	72	\$ 8,580
Task 4 - Update Surface Water Model Input Files										
		0	6	0	0	80	0	0	86	\$ 8,160
Task 5 - Calibrate Surface Water Model										
		4	32	12	0	40	0	0	88	\$ 10,940
Task 6 - Update Groundwater Model Input Files										
		0	22	12	12	140	0	0	186	\$ 19,060
Task 7 - GW Model Calibration & Sensitivity Analysis										
		4	60	16	0	96	0	0	176	\$ 21,000
Task 8 - Analysis of Safe Yield										
		0	60	24	0	120	0	0	204	\$ 23,640
Task 9 - Prepare Safe Yield Report										
		4	60	16	16	72	60	16	244	\$ 26,740
Task 10 - Development of Methodologies										
	Recycled Water Recharge	4	6	24	8	0	4	0	46	\$ 6,020
	Groundwater Losses	4	6	24	8	0	4	0	46	\$ 6,020
	New Yield	4	6	24	8	0	4	0	46	\$ 6,020
Task 11 - Project Management and Meetings										
		32	42	16	0	8	0	0	98	\$ 14,400
TOTALS:		70	416	240	156	1056	72	22	2032	\$ 229,210

Beaumont Basin Watermaster – Task Order No. 3
GW Model Update and Re-determination of Safe Yield

3-Jan-13

BILLING RATES

Billing Rates for ALDA Inc. for Calendar Year 2013

<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 for Calendar Year 2013

<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

FIGURE 1

Proposed Schedule to Update the USGS Beaumont Basin Groundwater Model and Re-Determine the Safe Yield of the Basin

[illegible]