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7 **Attorneys for Cross-defendants,**  
8 LITTLE ROCK SAND AND GRAVEL, INC.,  
9 a California Corporation;  
10 THE GEORGE AND CHARLENE LANE FAMILY TRUST;  
11 THE FRANK AND YVONNE LANE 1993 FAMILY  
12 TRUST, DATED MARCH 5, 1993, AS RESTATED  
13 JULY 20, 2000; MONTE VISTA BUILDING SITES, INC.,  
14 a California Corporation; A.V. MATERIALS, INC.,  
15 a California Corporation; A.C. WARNACK,  
16 as Trustee of the A.C. WARNACK TRUST;  
17 HOLLIDAY ROCK CO., INC.,  
18 successor in interest to  
19 LITTLEROCK AGGREGATE CO., INC. dba  
20 ANTELOPE VALLEY AGGREGATE, INC.;  
21 LITTLEROCK AGGREGATE CO., INC. dba  
22 ANTELOPE VALLEY AGGREGATE, INC.

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25 **SUPERIOR COURT OF THE STATE OF CALIFORNIA**

26 **FOR THE COUNTY OF LOS ANGELES**

27 ANTELOPE VALLEY GROUNDWATER CASES )	Judicial Council Coordination No.
28 Included Actions: )	4408
29 Los Angeles County Waterworks )	For filing purposes only:
30 District No. 40 v. Diamond )	Santa Clara County Case No.
31 Farming Co. Superior Court of )	1-05-CV-049053
32 California County of Los Angeles, )	[Assigned to the Honorable Jack
33 Case No. BC 325 201 )	Komar]
34 Los Angeles County Waterworks 2 )	DECLARATION OF DEAN BROWNING
35 District No. 40 v. Diamong )	IN LIEU OF DEPOSITION TESTIMONY
36 Farming Co. Superior court of )	FOR PHASE 4 TRIAL
37 Califronia, County of Kern, Case )	
38 No. S-1500-CV-254-348 )	

1 Wm. Bolthouse Farms, Inc. V. City )  
of Lancaster Diamong Farming Co. )  
2 V. City of Lancaster Diamond )  
Farming Co. V. Palmdale Water )  
3 Dist. Superior Court of )  
California, County of Riverside, )  
4 consolidated actions, Case No. )  
RIC 353 840, RIC 344 436, RIC 344 )  
5 668 )

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8 **DECLARATION**

9 I, Dean Browning, declare:

10 1. I am a manager at Holliday Rock Co., Inc., a party to this action. In lieu of deposition  
11 testimony for the Phase 4 trial, I am providing this declaration. Since 1999 my job  
12 responsibilities have included overseeing the High Desert area aggregate plants that are operated  
13 by Holliday Rock Co., Inc. I currently oversee the operation of Holliday Rock Co., Inc.'s rock  
14 plants that are operated on the properties Holiday Rock Co., Inc. leases from Littlerock  
15 Aggregate Co., Inc. dba Antelope Valley Aggregate, Inc. and Littlerock Sand and Gravel, Inc. in  
16 the Littlerock area of the Antelope Valley. I am familiar with the operations of both of these  
17 rock plants. This declaration applies only to the categories I have filled in. The items left blank  
18 or crossed out do not apply to me. I have personal knowledge of each fact herein and would  
testify competently thereto under oath.

19 **Property Ownership and Parcel Size**

20 2. \_\_\_\_\_ owns property that overlies the Antelope Valley Area of  
21 Adjudication as decided by this Court. The land is in \_\_\_\_\_ County and is  
22 identified by the following APN/APNs:  
23 \_\_\_\_\_  
\_\_\_\_\_

24 [If additional room is needed, please identify the APN/APNs in Exhibit A.] A true and correct

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copy of Exhibit A is attached hereto and incorporated herein.

3. \_\_\_\_\_ claims groundwater rights only as to the properties listed in Paragraph 2 and Exhibit A.

4. For each APN/APNs identified above, the total acreage by parcel is as follows:

\_\_\_\_\_  
\_\_\_\_\_

[If additional room is needed, please identify the APN/APNs and parcel size in Exhibit B.] A true and correct copy of Exhibit B is attached hereto and incorporated herein.

5. For each APN/APNs identified above \_\_\_\_\_ owned the property during the following timer period:

\_\_\_\_\_

6. The following are all individuals/entities appearing on the title for the above identified APN/APNS from Jan 1, 2000 to the present:

\_\_\_\_\_

7. For each individual/entity identified in paragraph 6 that individual/entity appeared on the title during the following time :

\_\_\_\_\_

8. \_\_\_\_\_ (declarant or party affiliated with declarant) leases property that \_\_\_\_\_ own and that overlies the Antelope Valley Area of Adjudication as decided by this court and identified by the following APNS:

\_\_\_\_\_

9. The total acreage by parcel is:

\_\_\_\_\_

10. The property is currently leased to:

\_\_\_\_\_

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11. The property was leased on the following dates:

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12. The lease provides that \_\_\_\_\_ may claim groundwater rights from the use of water on the leased property. Attached to this declaration is a true and correct copy of the lease. [If additional room is needed, please list APN/APNs, acreage by APN, Lessee by APN and dates for each Lessee by APN for each parcel in Exhibit C.] A true and correct copy of Exhibit C is attached hereto and incorporated herein.

13. \_\_\_\_\_ leases property from \_\_\_\_\_ which overlies the Antelope Valley Area of Adjudication as decided by this court and is identified by the following APNS:

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14. The total acreage by parcel is:

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15. The Lease provides that \_\_\_\_\_ may claim groundwater rights from use of water on leased property. Attached to this declaration is a true and correct copy of the lease.

[If additional room is needed, please attach APN/APNs, Name of the Lessor and acreage by APN for each parcel list in Exhibit D to this declaration.] A true and correct copy of Exhibit D is attached hereto and incorporated herein.

16. \_\_\_\_\_ claims groundwater rights only as to the leasehold interests listed in Paragraph 15 and Exhibit D.

17. \_\_\_\_\_ claims groundwater rights only as to the properties listed in Paragraph 2 and Exhibit A and as to the leasehold interests listed in Paragraph 8 and Exhibit C.

18. To the best of my knowledge, only \_\_\_\_\_ claims groundwater rights as to the leased parcel(s) identified in paragraph 15 and Exhibit D.

1                    **Water Meter Records**

2 19. On information and belief, \_\_\_\_\_ measures the  
3 groundwater production on the above referenced properties by water meters. Exhibit E contains  
4 the records for these water meters for the following years: 2008 through 2012. A true and  
5 correct copy of Exhibit E is attached hereto and incorporated herein.

6 20. Exhibit F sets forth the total yearly production amounts by metered water well on the  
7 above referenced properties for the years 2000-2004, 2011, and 2012. A true and correct copy of  
8 Exhibit F is attached hereto and incorporated herein.

9                    **State Water Project Purchases**

10 21. \_\_\_\_\_ purchases State Water Project water from a State Water  
11 Contractor for use by \_\_\_\_\_ on the properties referenced above. Exhibit G  
12 contains true and correct copies of the invoices for delivery of State Water Project Water to the  
13 properties referenced above.

14 22. Exhibit H sets forth the total yearly State Water Project water deliveries to the properties  
15 referenced above for the years 2000-2004, 2011, and 2012. A true and correct copy of Exhibit H  
16 is attached hereto and incorporated herein.

17                    **Pump Tests/ Electric Records**

18 23. In order to calculate groundwater pumped and used on the properties referenced above,  
19 \_\_\_\_\_ relied on pump tests and electric records. Exhibit I contains true and correct  
20 copies of the pump test records and electrical records for wells on the properties referenced  
21 above. The electric records attached to this declaration as Exhibit I do not include electric use on  
22 the properties referenced above for anything other than pumping groundwater.

23 24. Exhibit J sets forth the amount of total yearly groundwater that \_\_\_\_\_  
24 estimates was pumped and used on the properties referenced above for the years 2000-2004,  
2011, and 2012 based on the attached pump test records and electrical records for the wells on  
the properties referenced above. A true and correct copy of Exhibit J is attached hereto and  
incorporated herein.

1 25. ~~Pump tests were performed on the following dates:~~

2 \_\_\_\_\_  
3 26. \_\_\_\_\_ is not producing pump test records for the following  
4 dates \_\_\_\_\_ because:  
5 \_\_\_\_\_

6 27. ~~I am not aware of any other pump tests having been performed on the properties~~  
7 ~~referenced above.~~

8 23. On January 17, 2013 Rick Koch of Southern California Edison Company performed a  
9 pump test on the pump in the pond at the Holliday Rock facility leased from Littlerock Sand and  
10 Gravel, Inc. On January 17, 2013 Rick Koch of Southern California Edison Company also  
11 performed a pump test on the pump in the pond at the Holliday Rock facility leased from  
12 Littlerock Aggregate Co., Inc. dba Antelope Valley Aggregate, Inc. Exhibit I contains true and  
13 correct copies of the pump test records identified herein. The pond pump at the Littlerock Sand  
14 and Gravel, Inc. location is referenced as the "Plmdle Sup PMP" on its pond pump test. The  
15 pond pump at the Littlerock Aggregate Co., Inc. dba Antelope Valley Aggregate, Inc. facility is  
16 referenced as the "AV Supply Pump" on its pond pump test.

17 24. The two sites are operated independently and water pumped from the two sites is not  
18 commingled. There is a freshwater pond at each facility. The pumps identified in paragraph 23  
19 are turbine booster pumps that float in their respective ponds on pontoons ("pond pumps") at  
20 each site. Groundwater is pumped from the groundwater wells at the respective sites into each  
21 site's respective freshwater pond. The groundwater is pumped into the ponds from the  
22 groundwater wells rather than directly to the rock processing plants given that the rock  
23 processing plants require more water during operation than the capacity of the respective  
24 groundwater well pumps. Each pond pump is operating at all times that its correlating rock plant  
is in operation. The water from each pond is pumped directly to its respective rock processing  
plant by means of its pond pump. The pond pumps do not operate at variable speed. They are  
either on or they are off.

1 **Pump Tests/Diesel Records**

2 28. In order to calculate groundwater pumped and used on the properties referenced above,  
3 \_\_\_\_\_ relied on pump tests and diesel fuel records. Exhibit K contains  
4 true and correct copies of the records pertaining to pump tests and diesel fuel purchases for the  
5 properties referenced above. The diesel fuel records attached to this declaration as Exhibit K do  
6 not include diesel fuel used on the properties referenced above for anything other than pumping  
7 groundwater.

8 29. Exhibit L sets forth the amounts of total yearly groundwater pumped and used on the  
9 properties referenced above for the years 2000-2004, 2011, and 2012. A true and correct copy of  
10 Exhibit L is attached hereto and incorporated herein.

11 30. Pump tests were performed on the following dates:  
12 \_\_\_\_\_  
13 \_\_\_\_\_

14 31. \_\_\_\_\_ is not producing pump test records for the following  
15 dates \_\_\_\_\_ because:  
16 \_\_\_\_\_

17 32. I am not aware of any other pump tests having been performed on the properties  
18 referenced above.

19 **Crop Duties and Irrigated Acres**

20 33. In order to calculate water use on the properties referenced above, The George and  
21 Charlene Lane Family Trust relies on the amount of acres in irrigation on the properties  
22 referenced above multiplied by the crop duty identified in the Summary Expert Report,  
23 Appendix D-3: Table 4, a true and correct copy of which is attached to this declaration as Exhibit  
24 M.

34. The total amount of irrigated acres and type of crops on the properties referenced above  
by APN for the years 2000-2004, 2011 and 2012 are described in Exhibit N. A true and correct  
copy of Exhibit N is attached hereto and incorporated herein.

1 **Other Sources of Water**

2 35. On the properties referenced above, \_\_\_\_\_ received water from sources  
3 other than groundwater pumped within the Basin or State Water Project Water. Exhibit O sets  
4 forth the source of the water and the amounts received for the years 2000-2004, 2011, and 2012.

5 **Use of Water** (Complete for each APN. If water for used for multiple purposes, identify  
6 the amount of water for each use.)

7 36. \_\_\_\_\_ used \_\_\_\_\_ acre feet of water on APN# \_\_\_\_\_ in 2000.

8 The water was used for the following:

9 \_\_\_\_\_

10 [State the crop type and number of acres of that crop. If not used for irrigation, describe the use.  
11 In lieu of answering this question, a crop map may be attached that shows the date, crop type,  
12 irrigated acreage and parcels.]

13 37. \_\_\_\_\_ used \_\_\_\_\_ acre feet of water on APN# \_\_\_\_\_ in 2001.

14 The water was used for the following:

15 \_\_\_\_\_

16 [State the crop type and number of acres of that crop. If not used for irrigation, describe the use.  
17 In lieu of answering this question, a crop map may be attached that shows the date, crop type,  
18 irrigated acreage and parcels.]

19 38. \_\_\_\_\_ used \_\_\_\_\_ acre feet of water on APN# \_\_\_\_\_ in 2002. The

20 water was used for the following:

21 \_\_\_\_\_

22 39. \_\_\_\_\_ used \_\_\_\_\_ acre feet of water on APN# \_\_\_\_\_ in 2003. The

23 water was used for the following:

24 \_\_\_\_\_

[State the crop type and number of acres of that crop. If not used for irrigation, describe the use.  
In lieu of answering this question, a crop map may be attached that shows the date, crop type,  
irrigated acreage and parcels.]



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40. \_\_\_\_\_ used \_\_\_\_\_ acre feet of water on APN# \_\_\_\_\_ in 2004. The water was used for the following:

\_\_\_\_\_

[State the crop type and number of acres of that crop. If not used for irrigation, describe the use. In lieu of answering this question, a crop map may be attached that shows the date, crop type, irrigated acreage and parcels.]

41. \_\_\_\_\_ used \_\_\_\_\_ acre feet of water on APN# \_\_\_\_\_ in 2011. The water was used for the following:

\_\_\_\_\_

[State the crop type and number of acres of that crop. If not used for irrigation, describe the use. In lieu of answering this question, a crop map may be attached that shows the date, crop type, irrigated acreage and parcels.]

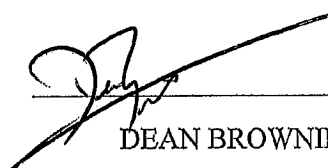
42. \_\_\_\_\_ used \_\_\_\_\_ acre feet of water on APN# \_\_\_\_\_ in 2012. The water was used for the following:

\_\_\_\_\_

[State the crop type and number of acres of that crop. If not used for irrigation, describe the use. In lieu of answering this question, a crop map may be attached that shows the date, crop type, irrigated acreage and parcels.]

43. Other than what is declared hereinabove, \_\_\_\_\_ did not produce or use water within the Antelope Valley Area of Adjudication for 2000-2004, 2011, and 2012.

I declare under penalty of perjury under the laws of the State of California that the foregoing is true and correct. Executed this 31<sup>st</sup> day of January 2013, at Little Rock, California.

  
\_\_\_\_\_  
DEAN BROWNING

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EXHIBIT "A"







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EXHIBIT "E"



EXHIBIT "G"

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EXHIBIT "H"

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EXHIBIT "I"



**Confidential/Proprietary Information**

January 18, 2013

DEAN BROWNING  
 HOLLIDAY ROCK COMPANY  
 1401 N. BENSON AVE.  
 UPLAND, CA 91786

**HYDRAULIC TEST RESULTS, Plant: AV SUPPLY PUMP**  
 Location: 7311 E AVENUE T HP: 100.0  
 Cust #: 0-000-0096 Serv. Acct. #: 032-2974-30  
 Meter: PO726-3357 Pump Ref. #: 25310

In accordance with your request, an energy efficiency test was performed on your turbine booster pump on January 17, 2013. If you have any questions regarding the results which follow, please contact RICK KOCH at (805)654-7312.

**Equipment**

Pump:	L & B	No: D20763
Motor:	FAIRB	No: B-9009

<b>Results</b>	<u>Test 1</u>	<u>Test 2</u>	<u>Test 3</u>
Discharge Pressure, PSI	64.5	38.0	44.7
Discharge Head, Feet	149.0	87.8	103.3
Suction Head or Lift, Feet	1.4	1.4	1.4
Total Head, Feet	150.4	89.2	104.7
Capacity, GPM	155	1,063	835
Acre Feet Pumped in 24 Hours	.685	4.698	3.691
kW Input to Motor	32.6	41.4	36.5
HP Input to Motor	43.7	55.5	48.9
Motor Load (%)	40.3	51.2	45.1
Measured Speed of Pump, RPM	1,793		
kWh per Acre Foot	1,142	212	237
Overall Plant Efficiency (%)	13.5	43.1	45.1

The above test results indicate various operating conditions of this pump. Test #1 was performed with the plant off and the water truck filling. Test #2 is the normal operating point with the plant on and the water truck drawing water. Test #3 was performed with only the plant on.

RUSS JOHNSON  
 Manager  
 Hydraulic Services



**Confidential/Proprietary Information**

January 18, 2013

DEAN BROWNING  
HOLLIDAY ROCK COMPANY  
1401 N. BENSON AVE.  
UPLAND, CA 91786

**PUMPING COST ANALYSIS,** Plant: AV SUPPLY PUMP  
Location: 7311 E AVENUE T HP: 100.0  
Cust #: 0-000-0096 Serv. Acct. #: 032-2974-30  
Meter: PO726-3357 Pump Ref. #: 25310

The following energy efficiency analysis is presented as an aid to your cost accounting. This is an estimate based on the conditions present during Edison pump test number 2 performed on January 17, 2013, billing history for the past 12 months, and your current rate of GS-2.

Assuming that water requirements will be the same as for the past year, and all operating conditions (annual hours of operation, head above, and water pumping level) will remain the same as they were at the time of the pump test, it is estimated that:

1. Overall plant efficiency can be improved from 43.1% to 69.0%.
2. This can save you up to 36,952 kWh and \$6,360.21 annually.
3. These kWh savings translate to a 16-ton decrease in CO<sub>2</sub> emissions.

	<u>Existing</u>	<u>Plant Efficiency Improved</u>	<u>Savings</u>
Total kWh	98,556	61,604	36,952
kW Input	41.4	25.9	15.5
kWh per Acre Foot	212	132	79
Acre Feet per Year	466.0		
Average Cost per kWh	\$0.17		
Average Cost per Acre Foot	\$36.41	\$22.76	\$13.65
Overall Plant Efficiency (%)	43.1	69.0	
<b>Total Annual Cost</b>	<b>\$16,963.46</b>	<b>\$10,603.25</b>	<b>\$6,360.21</b>

It is sincerely hoped that this information will prove helpful to you, and that your concerns over maintaining optimum pumping efficiency will be continued. If you have any questions regarding this report, please contact RICK KOCH at (805)654-7312.

RUSS JOHNSON  
Manager  
Hydraulic Services



**Save Energy,  
Save Money...  
Your test results show that you can!**

January 18, 2013

DEAN BROWNING  
HOLLIDAY ROCK COMPANY  
1401 N. BENSON AVE.  
UPLAND, CA 91786

**PUMPING COST ANALYSIS**, Plant: AV SUPPLY PUMP  
Location: 7311 E AVENUE T HP: 100.0  
Cust #: 0-000-0096 Serv. Acct. #: 032-2974-30  
Meter: PO726-3357 Pump Ref. #: 25310

Dear SCE Customer:

Helping California businesses save energy and money is a major goal at SCE. As you know, our Technical Specialist performed a free energy efficiency test on one or more pumps at your facility on January 17, 2013. We thank you for the opportunity to provide this service, and appreciate your interest in the performance of your pumps.

The results of test number 2, shown in the table below, indicate that the pump listed above has the potential for improved Overall Plant Efficiency (OPE), lower energy costs, and a cash incentive.

	Projected Incentive, Energy, and Cost Savings			
	<u>Existing</u>	<u>Improved</u>	<u>Savings</u>	<u>Cash Incentive</u>
Total kWh	98,556	61,604	36,952	\$2,956.17
kW Input	41.4	25.9	15.5	
kW on-peak activity factor *			10.1	\$1,008.95
Acre Feet per Year	466.0			
kWh per Acre Foot	212	132	79	
Average Cost per Acre Foot	\$36.41	\$22.76	\$13.65	
Overall Plant Efficiency (%)	43.1	69.0		
<b>Annual Total</b>	<b>\$16,963.46</b>	<b>\$10,603.25</b>	<b>\$6,360.21</b>	<b>\$3,965.12</b>

(\*The kW on-peak activity factor represents how the kW impacts the SCE system during on-peak periods as determined by SCE's agricultural and water pumping customers' average load profiles. By improving efficiency, your expected kW savings is 15.5 kW, and the savings used for incentive calculations is 65% of 15.5, or 10.1 kW.)

Case studies have shown that repairing, retrofitting, or replacing inefficient pumps can save energy and money, and may even help you avoid serious operational problems. For your business, this could mean the following:

- **Improved Plant Efficiency:** Your OPE can be improved from 43.1% to 69.0%.
- **Lower Energy Costs:** Based on the test data, your past energy usage, and your current rate of GS-2, we estimate that you may save up to 36,952 kWh annually (which translates to a 16-ton decrease in CO<sub>2</sub> emissions). This may result in energy cost savings of \$6,360.21.
- **Cash Incentive:** Through the retrofit and installation of more energy-efficient equipment, you have the potential to receive an incentive of \$0.08 per kWh and \$100 per on-peak activity factored kW reduced, courtesy of SCE's Customized Efficiency Program. Based on your estimated kWh and kW, you would be eligible for a Potential Cash Incentive of \$3,965.12, capped at 50% of your project cost. (See contract for details.)

If you are interested in an incentive for this pump, please contact EDWARD AREVALO at (626)633-7157 to complete a project application. All applicants must receive a written approval authorization before implementing any project; failure to comply will result in forfeiture of incentive funding.

We encourage you to review your results and take advantage of SCE's energy efficiency expertise and incentives. Visit [www.sce.com/rebatesandsavings](http://www.sce.com/rebatesandsavings), or give us a call and let us know how we can be of further service to you.

Sincerely,

Southern California Edison



**Confidential/Proprietary Information**

January 18, 2013

DEAN BROWNING  
HOLLIDAY ROCK COMPANY  
1401 N. BENSON AVE.  
UPLAND, CA 91786

**HYDRAULIC TEST RESULTS**, Plant: PLMDLE SUP PMP  
Location: 7747 E AVENUE T HP: 100.0  
Cust #: 0-000-0096 Serv. Acct. #: 011-4080-74  
Meter: V349R-147 Pump Ref. #: 25311

In accordance with your request, an energy efficiency test was performed on your turbine booster pump on January 17, 2013. If you have any questions regarding the results which follow, please contact RICK KOCH at (805)654-7312.

<b>Equipment</b>		
Pump:	L & B	No: D23049
Motor:	GE	No: HNJ803118

**Results**

Discharge Pressure, PSI	
Discharge Head, Feet	
Suction Head or Lift, Feet	4.5
Total Head, Feet	
Capacity, GPM	1,235
Acre Feet Pumped in 24 Hours	5.459
kW Input to Motor	92.0
HP Input to Motor	123.4
Motor Load (%)	113.7
Measured Speed of Pump, RPM	1,782
<b>kWh per Acre Foot</b>	<b>405</b>
<b>Overall Plant Efficiency (%)</b>	

The pump could not be shutdown at the time of the test. Therefore, An overall pump efficiency was not determined because the total head was undetermined.

RUSS JOHNSON  
Manager  
Hydraulic Services



Confidential/Proprietary Information

January 18, 2013

DEAN BROWNING  
HOLLIDAY ROCK COMPANY  
1401 N. BENSON AVE.  
UPLAND, CA 91786

**PUMPING COST ANALYSIS,** Plant: PLMDLE SUP PMP  
Location: 7747 E AVENUE T HP: 100.0  
Cust #: 0-000-0096 Serv. Acct. #: 011-4080-74  
Meter: V349R-147 Pump Ref. #: 25311

The following energy efficiency analysis is presented as an aid to your cost accounting. This is an estimate based on the conditions present during the Edison pump test performed on January 17, 2013, billing history for the past 12 months, and your current rate of TGS3-CPP.

	<u>Existing</u>
Total kWh	263,124
kW Input	92.0
kWh per Acre Foot	405
Acre Feet per Year	650.4
Average Cost per kWh	\$0.18
Average Cost per Acre Foot	\$71.38
<hr/>	
Total Annual Cost	<b>\$46,422.97</b>

It is sincerely hoped that this information will prove helpful to you, and that your concerns over maintaining optimum pumping efficiency will be continued. If you have any questions regarding this report, please contact RICK KOCH at (805)654-7312.

RUSS JOHNSON  
Manager  
Hydraulic Services

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**Appendix D-3: Table 4**  
**Applied Crop Water Duties and Irrigation Efficiency Values**  
 (DU = 80%)  
**Antelope Valley Area of Adjudication**

Crop	ET <sub>c</sub> <sup>1</sup> (in)	P <sub>e</sub> <sup>2</sup> (in)	ET <sub>AW</sub> <sup>3</sup> (in)	DU <sup>4</sup> (%)	AW <sub>c</sub> <sup>5</sup> (in)	AW <sub>er</sub> <sup>6</sup> (in)	AW <sub>pr</sub> <sup>7</sup> (in)	AW <sub>T</sub> <sup>8</sup> (in)	AW <sub>T</sub> <sup>8</sup> (ft)	E <sub>ir</sub> <sup>9</sup> (%)
Alfalfa	62.10	1.77	60.33	80	76.42	0	2.0	77.42	6.5	81
Carrots	27.47	0.00	27.47	80	34.33	6	6.5	48.83	3.9	85
Grain	22.94	1.42	21.52	80	26.90	0	4.0	30.90	2.6	83
Melons/Squash	23.91	0.00	23.91	80	29.88	0	4.0	33.88	2.8	82
Onions	37.67	0.00	37.67	80	46.96	3	4.0	53.96	4.5	83
Orchard (Deciduous)	47.38	0.00	47.38	80	59.22	0	0.0	59.22	4.9	80
Pasture	66.19	1.77	64.42	80	80.53	0	0.0	80.53	6.7	80
Potatoes	24.02	0.00	24.02	80	30.03	0	4.0	34.03	2.8	82
Silage	27.31	0.00	27.31	80	34.14	0	4.0	38.14	3.2	82
Sugar Beets	40.55	0.00	40.55	80	50.68	0	4.0	54.68	4.6	81
Vineyard (Grapes)	35.33	0.00	35.33	80	44.16	0	0.0	44.16	3.7	80

<sup>1</sup> ET<sub>c</sub> = K<sub>c</sub> \* ET<sub>o</sub>, where ET<sub>o</sub> = average ET<sub>o</sub> for specified periods, based on data from Victorville CIMIS Station, 1994-2003; K<sub>c</sub> values from Univ. California Cooperative Extension  
<sup>2</sup> P<sub>e</sub> = effective precipitation offsetting ET<sub>c</sub>, up to 1/2 of the average precipitation, in Dec., - Feb., inclusive.  
<sup>3</sup> ET<sub>AW</sub> = evapotranspiration of applied water = ET<sub>c</sub> - P<sub>e</sub>  
<sup>4</sup> DU = irrigation distribution uniformity  
<sup>5</sup> AW<sub>c</sub> = applied water for crop requirement = ET<sub>AW</sub> + DU  
<sup>6</sup> AW<sub>er</sub> = applied water for erosion control  
<sup>7</sup> AW<sub>pr</sub> = applied water for field preparation and pre-irrigation  
<sup>8</sup> AW<sub>T</sub> = applied crop water duty = AW<sub>c</sub> + AW<sub>er</sub> + AW<sub>pr</sub>  
<sup>9</sup> E<sub>ir</sub> = overall irrigation efficiency for beneficial uses = (ET<sub>AW</sub> + AW<sub>er</sub> + AW<sub>pr</sub>) / AW<sub>T</sub>

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