LOWNEY ASSOCIATES
Environmental / Geotechnical / Engineering Services

March 5, 1992
30-718-9E, MV030503

AM HOMES
577 Salmar Avenue
Campbell, California 95008

92 MAR -9 AM 9:19

RE: ANALYTICAL RESULTS, 32-ACRE HAYWARD PARCEL, HAYWARD, CALIFORNIA

Attention: Mr. Steve Delva

Gentlemen:

As you know, we have recently completed a report for the referenced site dated February 10, 1992. The purpose of this letter is to amend analytical results of slag and soil samples which were initially analyzed for metals by inductively coupled plasma (ICP) techniques.

As discussed in our report, elevated levels of arsenic, mercury, and selenium were detected in various samples analyzed by ICP. Since our discussions with several analytical laboratories indicated that ICP methods can produce inaccurate results for these select metals due to various matrix affects, we initially reanalyed one slag sample for arsenic and selenium and two soil samples for mercury using atomic absorption spectrometry (AA). These results, as presented in our report, showed a significant decrease in concentrations.

Atomic absorption is the preferred analytical method for these metals and more accurately represent metal concentrations in soil and slag at the site, in our opinion. Therefore, the majority of samples initially analyzed by ICP were reanalyzed for arsenic, mercury, and selenium using AA (EPA test methods 7060, 7470, and 7740, respectively). These results are presented below and on the attached laboratory data sheets. Results originally obtained using ICP methods are included for comparison.

SLAG ANALYSES

As shown below in Tables 1 and 2, laboratory analyses of slag samples using AA did not detect total or soluble mercury or selenium. In addition, arsenic concentrations were generally much lower than those previously detected using ICP techniques.

TABLE 1. Analytical Results of Salg Samples
for Total (TTLC) Arsenic, Mercury, and Selenium
32-Acre Hayward Parcel, Hayward, California
(Concentrations in ppm)

Metal	Slag Type A	Slag Type B	Slag Type C	Slag Type D	Slag Type E	Slag Type F	TTLC Limit
Arsenic (ICP)	59.3	<0.06	56.3	59.0	35.9	47.4	500
Arsenic (AA)	1.45	6.20	4.51	2.39	0.44	2.81	
Mercury (ICP)	13.5	<0.024	11.9	12.9	1.9	10.3	20
Mercury (AA)	<0.024	<0.024	<0.024	<0.024	<0.024	<0.024	
Selenium (ICP)	39.3	<0.06	33.6	33.6	19.8	29.8	100
Selenium (AA)	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	

TABLE 2. Analytical Results of Salg Samples for Soluble (STLC) Arsenic, Mercury, and Selenium† 32-Acre Hayward Parcel, Hayward, California
(Concentrations in ppm)

Metal	pH 7.0 Slag Type A	pH 9.0 Slag Type A	pH 1.5 Slag Type A	pH 7.0 Slag Type B	pH 9.0 Slag Type B	pH 1.5 Slag Type B	STLC Limit
Arsenic (ICP)	<0.030	0.27	2.2	NA	NA	NA	5.0
Arsenic (AA)	NA	<0.06	<0.06	<0.06	0.078	<0.06	
Mercury (ICP)	<0.010	0.13	0.52	NA	NA	NA	0.2
Mercury (AA)	<0.024	<0.024	<0.024	<0.024	<0.024	<0.024	
Selenium (ICP)	<0.150	0.16	1.2	NA	NA	NA	1.0
Selenium (AA)	NA	<0.06	<0.06	<0.06	<0.06	<0.06	

Metal	pH 7.0 Slag Type C	pH 9.0 Slag Type C	pH 1.5 Slag Type C	pH 7.0 Slag Type D	pH 9.0 Slag Type D	pH 1.5 Slag Type D	STLC Limit
Arsenic (ICP)	<0.030	0.13	2.80	<0.030	0.05	3.65	5.0
Arsenic (AA)	<0.06	0.082	0.071	<0.06	<0.06	NA	
Mercury (ICP)	<0.010	<0.010	0.71	<0.010	<0.010	0.96	0.2
Mercury (AA)	<0.024	<0.024	<0.024	<0.024	<0.024	NA	
Selenium (ICP)	<0.150	<0.150	1.64	<0.150	<0.150	2.30	1.0
Selenium (AA)	<0.06	<0.06	<0.06	<0.06	<0.06	NA	

Metal	pH 7.0 Slag Type E	pH 9.0 Slag Type E	pH 1.5 Slag Type E	pH 7.0 Slag Type F	pH 9.0 Slag Type F	pH 1.5 Slag Type F	STLC Limit
Arsenic (ICP)	<0.030	<0.030	1.7	<0.030	0.51	<0.030	5.0
Arsenic (AA)	<0.06	<0.06	NA	<0.06	<0.06	<0.06	
Mercury (ICP)	<0.010	<0.010	0.69	<0.010	0.21	0.41	0.2
Mercury (AA)	<0.024	<0.024	NA	<0.024	<0.024	<0.024	
Selenium (ICP)	<0.150	<0.150	1.19	<0.150	0.47	1.13	1.0
Selenium (AA)	<0.06	<0.06	NA	<0.06	<0.06	<0.06	

† Samples were analyzed by modified STLC extraction techniques using extraction solutions with pH values of 7.0, 9.0, and 1.5 to simulate neutral conditions, actual on-site conditions, and conditions within the human digestive system, respectively.

SOIL ANLAYSES

As shown in Tables 3 and 4 below, laboratory analyses of composite soil samples collected from backhoe pits detected low levels of total arsenic and selenium. Total mercury was not detected. In addition, no soluble concentrations of these metals were detected.

TABLE 3. Laboratory Analysis of Composite Soil Samples From Backhoe Pits for Total (TTLC) Arsenic, Mercury, and Selenium, 32-Acre Hayward Parcel, Hayward, California
(concentrations in ppm)

Sample	Depth (ft.)	Arsenic ICP	Arsenic AA	Mercury ICP	Mercury AA	Selenium ICP	Selenium AA
P-1	2.5	NA	0.54	11.1	<0.024	25.0	0.20
P-2	2.5	NA	0.49	17.7	<0.024	39.8	0.23
P-3	2.0	NA	2.05	19.2	<0.024	37.3	0.90
P-4	2.0	NA	1.70	20.3	<0.024	37.8	<0.06
P-5	2.5	NA	4.97	14.1	<0.024	34.4	<0.06
P-6	3.0	NA	3.94	18.2	<0.024	41.6	<0.06
P-7	1.5	NA	<0.06	10.3	<0.024	25.0	0.09
P-8	3.0	NA	4.07	12.9	<0.024	34.4	<0.06
P-9	2.0	NA	0.29	14.1	<0.024	34.7	0.29
P-10	2.0	NA	<0.06	12.4	<0.024	32.1	<0.06
P-11	1.5	NA	0.33	8.63	<0.024	28.8	<0.06
P-12	1.5	NA	<0.06	10.8	<0.024	26.7	<0.06
TTLC Limit		500		20		100	

TABLE 4. Laboratory Analysis of Composite Soil Samples From Backhoe Pits for Soluble (STLC) Arsenic, Mercury, and Selenium†, 32-Acre Hayward Parcel, Hayward, California
(concentrations in ppm)

Sample	Depth (ft.)	pH	Arsenic ICP	Arsenic AA	Mercury ICP	Mercury AA	Selenium ICP	Selenium AA
P-1	2.5	6.83	NA	<0.06	0.19	<0.024	0.19	<0.06
P-2	2.5	7.07	NA	<0.06	0.25	<0.024	0.36	<0.06
P-3	2.0	6.82	NA	NA	0.26	<0.024	0.30	NA
P-4	2.0	7.19	NA	<0.06	0.15	<0.024	0.20	<0.06
P-5	2.5	6.96	NA	<0.06	0.11	<0.024	<0.15	<0.06
P-6	3.0	8.34	NA	<0.06	0.13	<0.024	<0.15	<0.06
P-7	1.5	7.45	NA	<0.06	0.16	<0.024	0.21	<0.06
P-8	3.0	9.13	NA	<0.06	0.17	<0.024	<0.15	<0.06
P-9	2.0	9.01	NA	<0.06	0.13	<0.024	0.21	<0.06
P-10	2.0	8.57	NA	<0.06	0.15	<0.024	0.23	<0.06
P-11	1.5	8.83	NA	<0.06	0.11	<0.024	0.17	<0.06
P-12	1.5	3.75	NA	<0.06	0.22	<0.024	0.47	<0.06
STLC Limit			5.0		0.20		1.0	

† To simulate on-site conditions, samples were analyzed by modified STLC extraction techniques using extraction solutions with pH values similar to the actual pH of each composite sample

CONCLUSIONS

Metal concentrations detected by AA were well below regulatory limits and significantly lower than concentrations previously detected using ICP techniques. Mercury was not detected in slag or soil samples above laboratory detection limits. Arsenic and selenium were detected at only very low levels which, in our opinion, represent naturally occurring background concentrations. In our opinion, the metal concentrations detected do not present a threat to human health or the environment.

If you have any questions concerning our findings, please call.

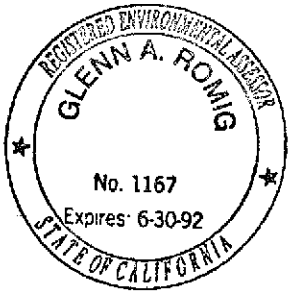
Very truly yours,

LOWNEY ASSOCIATES

Stason I. Foster

Ron L. Helm

Glenn A. Romig, P.E.



Copies: Addressee (1)
Attn: Mr. Steve Delva
CH2M Hill
Attn: Ms. Madeline Wall
ICF Kaiser Engineers
Attn: Mr. Ray Plock
Pepsi Cola Company
Attn: Mr. Paul Morici
Hayward Fire Department
Attn: Mr. Hugh Murphy
Alameda County Health Department
Attn: Mr. Ravi Arulanantham

Attachments: Laboratory results

SIF

ENVIRONMENTAL ANALYSIS REPORT

CARTER ANALYTICAL LABORATORY, INC.

590 DIVISION STREET • CAMPBELL, CA 95008 • (408) 364-3030 • FAX (408) 866-0319

ANALYSIS REPORT
FOR

Lowney Associates
405 Clyde Avenue
Mountain View, CA 94043

CONTACT: Stason Foster

DATE: 02-25-92

CHAIN OF CUSTODY ID NO: 718-9E

ORDER NO: 12261-JN P.O. NO: 718-9E

SITE DESCRIPTION: Two Hayward Parcels

SAMPLE DESCRIPTION:

Extracts
Sampled: 12-06-91
Received: 12-09-91
Analyzed: 02-22-92
Number of Samples: 6

REQUESTED ANALYSIS:

Methods: EPA 7060, EPA 7470, EPA 7740

The analyses reported are considered accurate. Should you wish further support for the reported data, submit your requirements in writing within 10 days. It is Carter Analytical Labs intent to give you complete satisfaction. Please reference the order number when communicating with us. The invoice is due and payable within 30 days from invoice date.

Hazardous Materials Certification No: 304 • Drinking Water Certification No: 953
from the
State of California • Department of Health Services

CARTER ANALYTICAL LABORTORY, INC.

590 DIVISION STREET • CAMPBELL, CA 95008 • (408) 364-3030 • FAX (408) 866-0319

Sample	Customer Label	Description
L1	A (Extract)	slag
L2	B (Extract)	slag
L3	C (Extract)	slag
L4	D (Extract)	slag
L5	E (Extract)	slag
L6	F (Extract)	slag

Metals Analysis

Metal	EPA Method	L1* (mg/Kg)	L2* (mg/Kg)	L3* (mg/Kg)	L4* (mg/Kg)	Detection Limit (mg/Kg)
Arsenic	7060	1.45	6.20	4.51	2.39	.06
Mercury	7470	LDL	LDL	LDL	LDL	.024
Selenium	7740	LDL	LDL	LDL	LDL	.06

Metal	EPA Method	L5* (mg/Kg)	L6* (mg/Kg)	Detection Limit (mg/Kg)
Arsenic	7060	0.44	2.81	.06
Mercury	7470	LDL	LDL	.024
Selenium	7740	LDL	LDL	.06

LDL indicates results were less than detection limit.

* = Extracts

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CARTER ANALYTICAL LABORATORY

A. E. Robinson

Dr. A. Edward Robinson
Laboratory Manager

J. L. Carter
QA/QC Manager

LOWNEY ASSOCIATES
CHAIN OF CUSTODY RECORD

SO# 11999-L1-L12

JOB NO.	PROJECT NAME/LOCATION
718-9E	Two Hayward Parcels

SAMPLER (S): (Signature) Debora Foster

SHIP TO:
LOWNEY ASSOCIATES
405 Clyde Avenue
Mountain View, CA 94043
415-967-2365
415-967-2785 (FAX)

	DATE	TIME	SAMPLE DESCRIPTION	NO. OF CONTAINERS	ANALYSIS REQUIRED: 17 CAM Metals (Title 22)	REMARKS
L1-2	12/6/91		A Slag	2	X	2-DAY TURNAROUND
3-4			B	2	X	
5-6			C	2	X	SAVE ALL UNUSED PORTIONS FOR POSSIBLE FUTURE ANALYSES
7-8			D	2	X	
9-10			E	2	X	
11-12			F	2	X	

Relinquished by: (Signature)	Date	Time	Received By: (Signature)	Relinquished by: (Signature)	Date	Time	Received By: (Signature)
Debora Foster	12/9/91		[signature] 12/9/91 3:45pm	Dan Turgeon	12/6/91	5:00	Deborah Richmond

Laboratory of Record:	Date	Time	Received for Laboratory By: (Signature)	Date	Time	Remarks:
CARTER LABS	12/11	3:45	[signature]	12/11	3:45	samples rec'd cold / good condition

Reling: Deborah Richmond
d/ Linda Pilhim 12/13 12:45 / Deborah Richmond 12/13 12:45

ENVIRONMENTAL ANALYSIS REPORT

CARTER ANALYTICAL LABORATORY, INC.

590 DIVISION STREET • CAMPBELL, CA 95008 • (408) 364-3030 • FAX (408) 866-0319

ANALYSIS REPORT
FOR

Lowney Associates
405 Clyde Avenue
Campbell, CA 95008

CONTACT: Stason Foster **DATE:** 02-25-92

CHAIN OF CUSTODY ID NO: 718-9E. **ORDER NO:** 12262-JN **P.O. NO:** 718-9E

SITE DESCRIPTION: Two Hayward Parcels

SAMPLE DESCRIPTION:

Extracts
Sampled: 12-19-91
Received: 12-19-91
Analyzed: 02-18-92
Number of Samples: 6

REQUESTED ANALYSIS:

Methods: EPA 7470, EPA 7740, EPA 7060

The analyses reported are considered accurate. Should you wish further support for the reported data, submit your requirements in writing within 10 days. It is Carter Analytical Labs intent to give you complete satisfaction. Please reference the order number when communicating with us. The invoice is due and payable within 30 days from invoice date.

Hazardous Materials Certification No: 304 • Drinking Water Certification No: 953
from the
State of California • Department of Health Services

CARTER ANALYTICAL LABORTORY, INC.

590 DIVISION STREET • CAMPBELL, CA 95008 • (408) 364-3030 • FAX (408) 866-0319

Sample	Customer Label	Description
L1	A	slag
L2	B	slag
L3	C	slag
L4	D	slag
L5	E	slag
L6	F	slag

Metals Analysis

		7470 Mercury (mg/L)	7740 Selenium (mg/L)	7060 Arsenic (mg/L)
L1	pH 1.5	LDL	LDL	LDL
	H_2O	LDL	~~LDL~~ NT	~~LDL~~ NT
	pH 9.	LDL	LDL	LDL
L2	pH 1.5	LDL	LDL	LDL
	H_2O	LDL	LDL	LDL
	pH 9.	LDL	LDL	0.078
L3	pH 1.5	LDL	LDL	0.071
	H_2O	LDL	LDL	LDL
	pH 9.	LDL	LDL	0.082
L4	pH 1.5	~~LDL~~ NT	~~LDL~~ NT	~~LDL~~ NT
	H_2O	LDL	LDL	LDL
	pH 9.	LDL	LDL	LDL
L5	pH 1.5	~~LDL~~ NT	~~LDL~~ NT	~~LDL~~ NT
	H_2O	LDL	LDL	LDL
	pH 9.	LDL	LDL	LDL
L6	pH 1.5	LDL	LDL	LDL
	H_2O	LDL	LDL	LDL
	pH 9.	LDL	LDL	LDL
DL:		.024	.06	.06

NT = Not Tested
LDL means results were less than detection limits.
DL = Detection limit

CARTER ANALYTICAL LABORATORY

Dr. A. Edward Robinson
Laboratory Manager

J.L. Carter
QA/C Manager

DEC-19-91 THU 15:02 LOWNEY ASSOCIATES TEL NO:415-328-6836 #302 P02

LOWNEYASSOCIATES
CHAIN OF CUSTODY RECORD

SO#12032-21-212

JOB NO.	PROJECT NAME/LOCATION	
718-9E	TWO HAYWARD PARCELS	
SAMPLER (S): (Signature) [signature]		

SHIP TO:
LOWNEY ASSOCIATES
405 Clyde Avenue
Mountain View, CA 94043
415-967-2365
415-967-2785 (FAX)

ANALYSIS REQUIRED

	DATE	TIME	SAMPLE DESCRIPTION	NO. OF CONTAINERS	17 metals STLC-pH 9.0	17 metals STLC-DI water	17 metals STLC-pH 1.5		Copper by STLC pH 9.0 pH 1.5 and DI water		Mercury pH & DI water	hold extractions	REMARKS
2	12-6-91		A 3/Aj	2	X	X	X				X		5-DAY RESPONSE TIME
4	↓		B	2					X		X		
6			C	2	X	X	X				X		
8			D	2	X	X	X				X		
10			E	2	X	X	X				X		
2	↓		F	2	X	X	X				X		

Relinquished by: (Signature)	Date	Time	Received By: (Signature)	Relinquished by: (Signature)	Date	Time	Received By: (Signature)
FAXED	12-13-91	3:45p	Deborah Richmond	Deborah Richmond	12/19/91	4:30	CLR Linda Rubin
Laboratory of Record:	**Date**	**Time**	**Received for Laboratory By: (Signature)**	**Date**	**Time**	**Remarks:**	
CARTER			Deborah Richmond	12/27	12:00	SEE ATTACHED FAX COVER SHEET	

Relinq: dR/Linda Rubin 12/27/91 @ 12:00

ENVIRONMENTAL ANALYSIS REPORT

CARTER ANALYTICAL LABORATORY, INC.

590 DIVISION STREET • CAMPBELL, CA 95008 • (408) 364-3030 • FAX (408) 866-0319

ANALYSIS REPORT
FOR

Lowney Associates
405 Clyde Avenue
Campbell, CA 95008

CONTACT: Stason Foster DATE: 02-25-92

CHAIN OF CUSTODY ID NO: 718-9E ORDER NO: 12263-JN P.O. NO: 718-9E

SITE DESCRIPTION: Two Hayward Parcels

SAMPLE DESCRIPTION:

Extracts
Sampled: 12-26-91
Received: 12-27-91
Analyzed: 02-22-92
Number of Samples: 12

REQUESTED ANALYSIS:

Methods: EPA 7470, EPA 7740, EPA 7060

The analyses reported are considered accurate. Should you wish further support for the reported data, submit your requirements in writing within 10 days. It is Carter Analytical Labs intent to give you complete satisfaction. Please reference the order number when communicating with us. The invoice is due and payable within 30 days from invoice date.

Hazardous Materials Certification No: 304 • Drinking Water Certification No: 953
from the
State of California • Department of Health Services

CARTER ANALYTICAL LABORTORY, INC.

590 DIVISION STREET • CAMPBELL, CA 95008 • (408) 364-3030 • FAX (408) 866-0319

Sample	Customer Label	Description
L1	P-1 2.5'	soil
L2	P-2 2.5'	soil
L3	P-3 2.0'	soil
L4	P-4 2.0	soil
L5	P-5 2.5'	soil
L6	P-6 3.0	soil
L7	P-7 1.5'	soil
L8	P-8 3.0'	soil
L9	P-9 2.0	soil
L10	P-10 2.0'	soil
L11	P-11 1.5'	soil
L12	P-12 1.5'	soil

Sample Preparation

The sample was prepared according to Title 22, Section 66700 STLC and/or TTLC procedures.

Sample		Mercury 7470 (mg/L)	Selenium 7740 (mg/L)	Arsenic 7060 (mg/L)
L1	TTLC	LDL	0.20	0.54
	STLC	LDL	LDL	LDL
L2	TTLC	LDL	0.23	0.49
	STLC	LDL	LDL	LDL
L3	TTLC	LDL	0.9	2.05
	STLC	LDL	~~LDL~~ NT *	~~LDL~~ NT
L4	TTLC	LDL	LDL	1.70
	STLC	LDL	LDL	LDL
L5	TTLC	LDL	LDL	4.97
	STLC	LDL	LDL	LDL
L6	TTLC	LDL	LDL	3.94
	STLC	LDL	LDL	LDL
L7	TTLC	LDL	0.09	LDL
	STLC	LDL	LDL	LDL
L8	TTLC	LDL	LDL	4.07
	STLC	LDL	LDL	LDL

* NT NOT TESTED

Environmental Data

Order 12263
Project No. 718-9E

Sample	Customer Label	Description
L1	P-1 2.5'	soil
L2	P-2 2.5'	soil
L3	P-3 2.0'	soil
L4	P-4 2.0	soil
L5	P-5 2.5'	soil
L6	P-6 3.0	soil
L7	P-7 1.5'	soil
L8	P-8 3.0'	soil
L9	P-9 2.0	soil
L10	P-10 2.0'	soil
L11	P-11 1.5'	soil
L12	P-12 1.5'	soil

Sample	Mercury 7470 (mg/L)	Selenium 7740 (mg/L)	Arsenic 7060 (mg/L)
L9 TTLC	LDL	0.29	0.29
STLC	LDL	LDL	LDL
L10 TTLC	LDL	LDL	LDL
STLC	LDL	LDL	LDL
L11 TTLC	LDL	LDL	0.33
STLC	LDL	LDL	LDL
L12 TTLC	LDL	LDL	LDL
STLC	LDL	LDL	LDL
Detection Limit:	0.024	0.06	0.06
STLC Regulatory Level:	0.2	1.0	5.0
TTLC Regulatory Level:	20.	100.	500.

LDL means results were less than detection limits.

CARTER ANALYTICAL LABORATORY

Dr. A. Edward Robinson
Laboratory Manager

J.L. Carter
QA/QC Manager

LOWNEY ASSOCIATES
CHAIN OF CUSTODY RECORD

SO#12073-41-L48

JOB NO.	PROJECT NAME/LOCATION
718-9E	Two Hayward Parcels

AMPLER (S): (Signature) Jason Foster

	DATE	TIME	SAMPLE DESCRIPTION	NO. OF CON-TAINERS	pH	TOTAL Copper, Lead, Zinc Standard TTLC - Title 22 EPA 6010	Soluble Metals as Noted Below Copper, Lead, Zinc, Modified STLC - Title 22 Using solution of pH of soil EPA 6010	REMARKS
L41	12/26/91		P-1 2.5' Soil	4	X	X	X	Composite - Extraction solution must be of similar pH to that of the soil for STLC
L25 L28			P-2 2.5'	4	X	X	X	
L29 L15			P-3 2.0'	4	X	X	X	
L12 L13			P-4 2.0'	4	X	X	X	
L16 L17			P-5 2.5'	4	X	X	X	
L20 L21			P-6 3.0'	4	X	X	X	
L24 L25			P-7 1.5'	4	X	X	X	Save all samples
L28 L29			P-8 3.0'	4	X	X	X	
L32 L33			P-9 2.0'	4	X	X	X	
L36 L37			P-10 2.0'	4	X	X	X	
L40 L41			P-11 1.5'	4	X	X	X	
L44 L45			P-12 1.5'	4	X	X	X	
L48								STANDARD TURNAROUND

Relinquished by: (Signature)	Date	Time	Received by: (Signature)	Relinquished by: (Signature)	Date	Time	Received By: (Signature)
Jason Foster	12/27	1:15 PM	12/27/91 1:15pm	Ian Turgeon	12/27/91	2:30	Deborah Richmond
Laboratory of Record: CARTER LABS	Date 12/31	Time 11:30	Received for Laboratory by: (Signature)	Date 12/31	Time 11:30	Remarks: FOR Soluble Metals: USE EXTRACTION SOLUTION WITH A pH SIMILAR TO THAT OF THE SOIL SAMPLE. (STANDARD 48hr EXTRACTION)	

Relinq: Deborah Richmond

ANALYSIS REQUIRED

SHIP TO:

LOWNEY ASSOCIATES
405 Clyde Avenue
Mountain View, CA 94043
415-967-2365
415-967-2785 (FAX)