SAN RAFAEL ROCK QUARRY AMENDED RECLAMATION PLAN AND AMENDED SURFACE MINING AND QUARRYING PERMIT

Combined Final Environmental Impact Report (FEIR)

SCH#s 2005102122 (Amended Reclamation Plan)
2007082097 (Amended Quarry Permit)

FEIR Volume III: Appendices

Prepared for:
Marin County
Community Development Agency

January 2009

ESA

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APPENDIX A

Mitigation Monitoring and Reporting Program

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APPENDIX A
Mitigation Monitoring and Reporting Program (MMRP)

Authority and Purpose

Pursuant to the California Public Resources Code, Section 21081.6 (Assembly Bill 3180), Marin County is required to implement a mitigation monitoring and reporting program for the San Rafael Rock Quarry (SRRQ) Amended Reclamation Plan (ARP) and Amended Surface Mining and Quarrying Permit (AQP). The County's monitoring program is established in the conditions of permit revision approval and as further set forth in the mitigation conditions and verification measures listed here.

The purpose of this mitigation monitoring and reporting program is to ensure compliance with and effectiveness of the mitigation measures identified in the EIR. PRC Section 21081.6 requires monitoring of mitigation measures for those impacts identified in the EIR to be significant.

County Monitoring Program Features

The County's mitigation monitoring and report program for the ARP and AQP consists of two major elements:

- A description of mitigation conditions, verifications, responsibilities, and timing for implementing and monitoring implementation of each of the mitigation measures specified in the EIR. These descriptions are presented in the text of the EIR itself, following the discussion of mitigation measures.

- A checklist to document and verify mitigation condition compliance. The checklist will be prepared prior to certification of the Final EIR.

APPENDIX B
Noise Calculations

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Calculated Ldn from long-term noise monitoring data - 28 Marin Bay Park Drive

					10 dBA	5 dBA		
			TIME	dBA	Numbers...	More Numbers...		
10/2/2006		Midnight	0 / 24	43.1	20417	204174	64565	**Leq Morning Peak Hour 7:00-10:00 a.m.**
	am	1:00	100	43.2	20893	208930	66069	**49** dBA
		2:00	200	43.3	21380	213796	67608	
		3:00	300	43.1	20417	204174	64565	**Leq Evening Peak Hour 4:00-8:00 p.m.**
		4:00	400	43.1	20417	204174	64565	**51** dBA
		5:00	500	43.1	20417	204174	64565	
		6:00	600	43.2	20893	208930	66069	**Leq Nighttime 10:00 pm-7:00 a.m. (not penalized)**
		7:00	700	47.5	56234	562341	177828	**43** dBA
		8:00	800	49.0	79433	794328	251189	
		9:00	900	51.1	128825	1288250	407380	**Leq Daytime 7:00 am-10:00 p.m.**
		10:00	1000	48.0	63096	630957	199526	**50** dBA
		11:00	1100	48.5	70795	707946	223872	
		12:00	1200	51.5	141254	1412538	446684	**Leq 24-Hour**
	pm	1:00	1300	52.6	181970	1819701	575440	**49** dBA
		2:00	1400	52.4	173780	1737801	549541	
		3:00	1500	52.4	173780	1737801	549541	**Ldn: 10 dBA penalty for noise between 10:00 p.m. ar**
		4:00	1600	53.0	199526	1995262	630957	**52** dBA
		5:00	1700	51.9	154882	1548817	489779	
		6:00	1800	50.8	120226	1202264	380189	**CNEL: 5 dBA penalty for noise between 7:00p.m. an**
		7:00	1900	46.7	46774	467735	147911	**52** dBA **and 10 dBA penalty for noise betv**
		8:00	2000	44.5	28184	281838	89125	**10:00 p.m. and 7:00 a.m.**
		9:00	2100	44.2	26303	263027	83176	
		10:00	2200	43.8	23988	239883	75858	
	pm	11:00	2300	43.1	20417	204174	64565	CNEL - Ldn 0.26081655

Calculated Ldn from long-term noise monitoring data - 28 Marin Bay Park Drive

			TIME	dBA	10 dBA Numbers...	5 dBA More Numbers...		
10/3/2006	Midnight	0 / 24		43.1	20417	204174	64565	**Leq Morning Peak Hour 7:00-10:00 a.m.**
	am	1:00	100	43.1	20417	204174	64565	**54** dBA
		2:00	200	43.1	20417	204174	64565	
		3:00	300	43.7	23442	234423	74131	**Leq Evening Peak Hour 4:00-8:00 p.m.**
		4:00	400	43.7	23442	234423	74131	**48** dBA
		5:00	500	43.1	20417	204174	64565	
		6:00	600	45.2	33113	331131	104713	**Leq Nighttime 10:00 pm-7:00 a.m. (not penalized)**
		7:00	700	51.4	138038	1380384	436516	**44** dBA
		8:00	800	55.3	338844	3388442	1071519	
		9:00	900	54.6	288403	2884032	912011	**Leq Daytime 7:00 am-10:00 p.m.**
		10:00	1000	51.4	138038	1380384	436516	**51** dBA
		11:00	1100	50.5	112202	1122018	354813	
		12:00	1200	51.1	128825	1288250	407380	**Leq 24-Hour**
	pm	1:00	1300	55.6	363078	3630781	1148154	**50** dBA
		2:00	1400	53.7	234423	2344229	741310	
		3:00	1500	47.9	61660	616595	194984	**Ldn: 10 dBA penalty for noise between 10:00 p.m. ar**
		4:00	1600	48.3	67608	676083	213796	**52** dBA
		5:00	1700	48.7	74131	741310	234423	
		6:00	1800	48.8	75858	758578	239883	**CNEL: 5 dBA penalty for noise between 7:00p.m. an**
		7:00	1900	44.0	25119	251189	79433	**53** dBA **and 10 dBA penalty for noise betv**
		8:00	2000	43.4	21878	218776	69183	**10:00 p.m. and 7:00 a.m.**
		9:00	2100	45.8	38019	380189	120226	
		10:00	2200	43.8	23988	239883	75858	
	pm	11:00	2300	43.1	20417	204174	64565	CNEL - Ldn 0.18748956

Calculated Ldn from long-term noise monitoring data - 28 Marin Bay Park Drive

			TIME	dBA	10 dBA Numbers...	5 dBA More Numbers...	
10/4/2006	Midnight	0 / 24		43.4	21878	218776	69183
	am	1:00	100	43.1	20417	204174	64565
		2:00	200	43.2	20893	208930	66069
		3:00	300	43.8	23988	239883	75858
		4:00	400	45.0	31623	316228	100000
		5:00	500	44.1	25704	257040	81283
		6:00	600	43.5	22387	223872	70795
		7:00	700	52.1	162181	1621810	512861
		8:00	800	54.8	301995	3019952	954993
		9:00	900	55.1	323594	3235937	1023293
		10:00	1000	53.5	223872	2238721	707946
		11:00	1100	51.8	151356	1513561	478630
		12:00	1200	52.9	194984	1949845	616595
	pm	1:00	1300	52.0	158489	1584893	501187
		2:00	1400	52.8	190546	1905461	602560
		3:00	1500	47.8	60256	602560	190546
		4:00	1600	48.0	63096	630957	199526
		5:00	1700	47.2	52481	524807	165959
		6:00	1800	45.9	38905	389045	123027
		7:00	1900	48.9	77625	776247	245471
		8:00	2000	52.7	186209	1862087	588844
		9:00	2100	51.2	131826	1318257	416869
		10:00	2200	51.1	128825	1288250	407380
	pm	11:00	2300	53.7	234423	2344229	741310

Leq Morning Peak Hour 7:00-10:00 a.m.
54 dBA

Leq Evening Peak Hour 4:00-8:00 p.m.
48 dBA

Leq Nighttime 10:00 pm-7:00 a.m. (not penalized)
48 dBA

Leq Daytime 7:00 am-10:00 p.m.
52 dBA

Leq 24-Hour
51 dBA

Ldn: 10 dBA penalty for noise between 10:00 p.m. ar
55 dBA

CNEL: 5 dBA penalty for noise between 7:00p.m. an
55 dBA **and 10 dBA penalty for noise betv**
10:00 p.m. and 7:00 a.m.

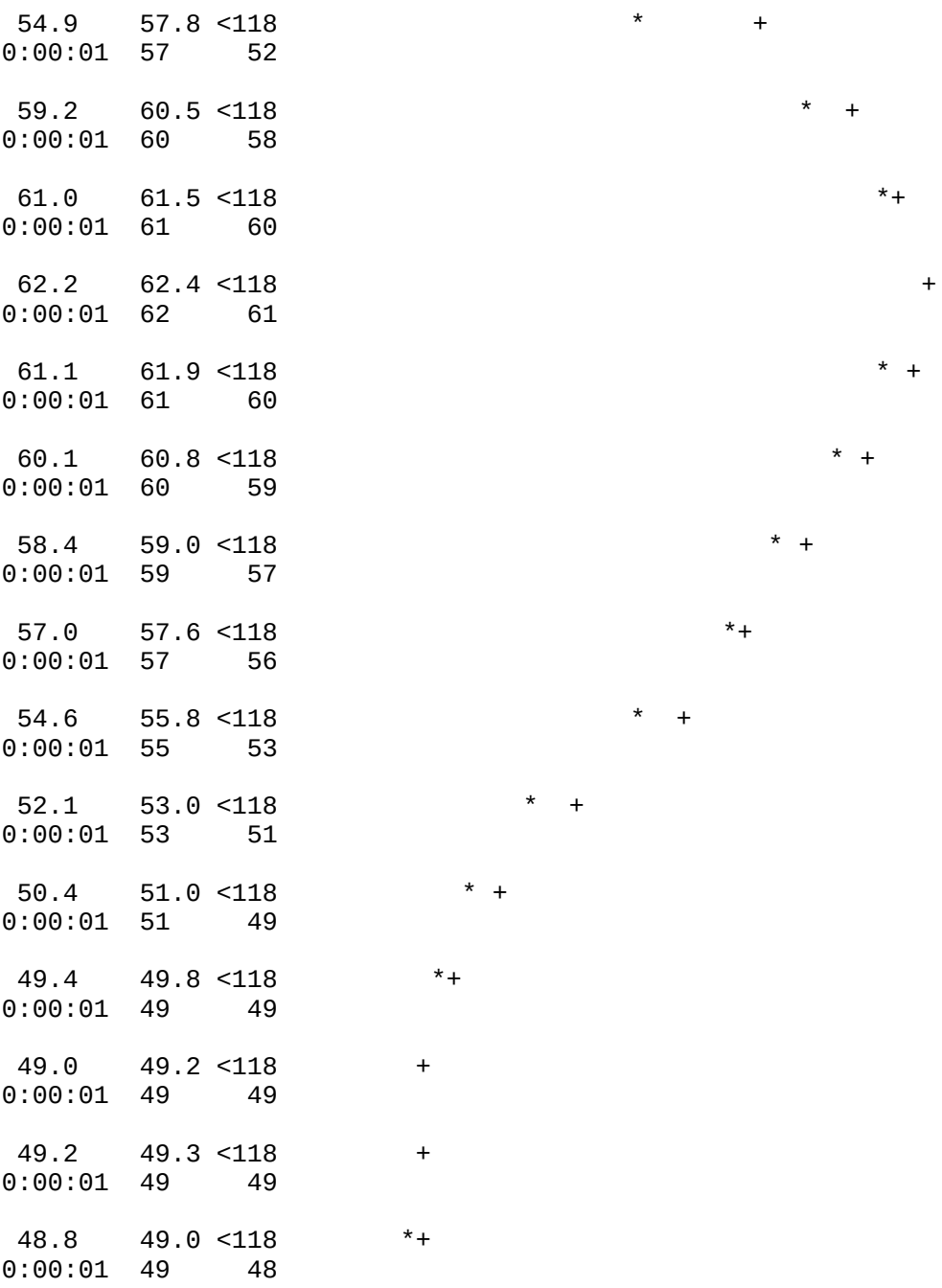
CNEL - Ldn 0.46218565

```
METROSONICS db-308 SN 2671 V2.3  3/87

CURRENT DATE: 10/12/06
CURRENT TIME: 10:30:52

_____________________________________

_____________________________________

_____________________________________

_____________________________________


CALIBRATED:   8/09/06  @   9:00:16

DISPLAY RANGE:  43.3dB TO 139.3dB

DOUBLING RATE:  3 dB

FILTER: A WGHT

RESPONSE:  SLOW

SCHEDULED RUN: OFF

   START DATE: 7/11/06
   START TIME:11:00:00
   LENGTH:    25:00:00


** OVERALL REPORT **

TEST STARTING DATE:  10/10/06
TEST STARTING TIME:  12:47:38
TEST LENGTH:     0DAYS  0:03:21

Lav    = 54.9dB
Lav  80= 43.3dB
Lav  90= 43.3dB
SEL    = 77.8dB

Lmax = 62.4dB  ON 10/10/06 @ 12:47:41
Lpk  <  118dB

TIME OVER 115dB  0D  0:00:00.00

DOSE CRITERION:  90dB

 8 HR DOSE ( 80dB CUTOFF)=  0.00%
 8 HR PROJ. DOSE ( 80dB CUTOFF)=  0.00%
 8 HR DOSE ( 90dB CUTOFF)=  0.00%
 8 HR PROJ. DOSE ( 90dB CUTOFF)=  0.00%
```

** TIME HISTORY REPORT **

MODE: CONTINUOUS
PERIOD LENGTH: 0:00:01
TIME HISTORY CUTOFF: NONE
Ln(1): 10.0% Ln(2): 90.0%

INT#	START	Lav	Lmax	Lpk
TAG#	TIME	ET	L1	L2
1	10/10/06	54.9	57.8	<118
0	12:47:38	0:00:01	57	52
2	10/10/06	59.2	60.5	<118
0	12:47:39	0:00:01	60	58
3	10/10/06	61.0	61.5	<118
0	12:47:40	0:00:01	61	60
4	10/10/06	62.2	62.4	<118
0	12:47:41	0:00:01	62	61
5	10/10/06	61.1	61.9	<118
0	12:47:42	0:00:01	61	60
6	10/10/06	60.1	60.8	<118
0	12:47:43	0:00:01	60	59
7	10/10/06	58.4	59.0	<118
0	12:47:44	0:00:01	59	57
8	10/10/06	57.0	57.6	<118
0	12:47:45	0:00:01	57	56
9	10/10/06	54.6	55.8	<118
0	12:47:46	0:00:01	55	53
10	10/10/06	52.1	53.0	<118
0	12:47:47	0:00:01	53	51
11	10/10/06	50.4	51.0	<118
0	12:47:48	0:00:01	51	49
12	10/10/06	49.4	49.8	<118
0	12:47:49	0:00:01	49	49
13	10/10/06	49.0	49.2	<118
0	12:47:50	0:00:01	49	49
14	10/10/06	49.2	49.3	<118
0	12:47:51	0:00:01	49	49
15	10/10/06	48.8	49.0	<118
0	12:47:52	0:00:01	49	48



INT# TAG#	START TIME	Lav ET	Lmax L1	Lpk L2	
16 0	10/10/06 12:47:53	48.6 0:00:01	48.7 48	<118 48	+
17 0	10/10/06 12:47:54	49.4 0:00:01	49.7 49	<118 48	+
18 0	10/10/06 12:47:55	49.5 0:00:01	49.6 49	<118 49	+
19 0	10/10/06 12:47:56	50.2 0:00:01	51.6 51	<118 49	* +
20 0	10/10/06 12:47:57	52.1 0:00:01	52.3 52	<118 51	*+
21 0	10/10/06 12:47:58	52.1 0:00:01	52.3 52	<118 51	*+
22 0	10/10/06 12:47:59	51.4 0:00:01	52.1 52	<118 50	*+
23 0	10/10/06 12:48:00	50.7 0:00:01	51.0 51	<118 50	*+
24 0	10/10/06 12:48:01	50.4 0:00:01	50.5 50	<118 50	+
25 0	10/10/06 12:48:02	50.9 0:00:01	51.2 51	<118 50	*+
26 0	10/10/06 12:48:03	50.9 0:00:01	51.2 51	<118 50	*+
27 0	10/10/06 12:48:04	50.4 0:00:01	50.7 50	<118 50	*+
28 0	10/10/06 12:48:05	49.8 0:00:01	50.1 50	<118 49	+
29 0	10/10/06 12:48:06	50.3 0:00:01	50.4 50	<118 50	+
30 0	10/10/06 12:48:07	50.5 0:00:01	50.7 50	<118 50	*+
31 0	10/10/06 12:48:08	50.1 0:00:01	50.4 50	<118 49	*+
32 0	10/10/06 12:48:09	49.6 0:00:01	49.7 49	<118 49	+
33 0	10/10/06 12:48:10	49.7 0:00:01	49.9 49	<118 49	*+

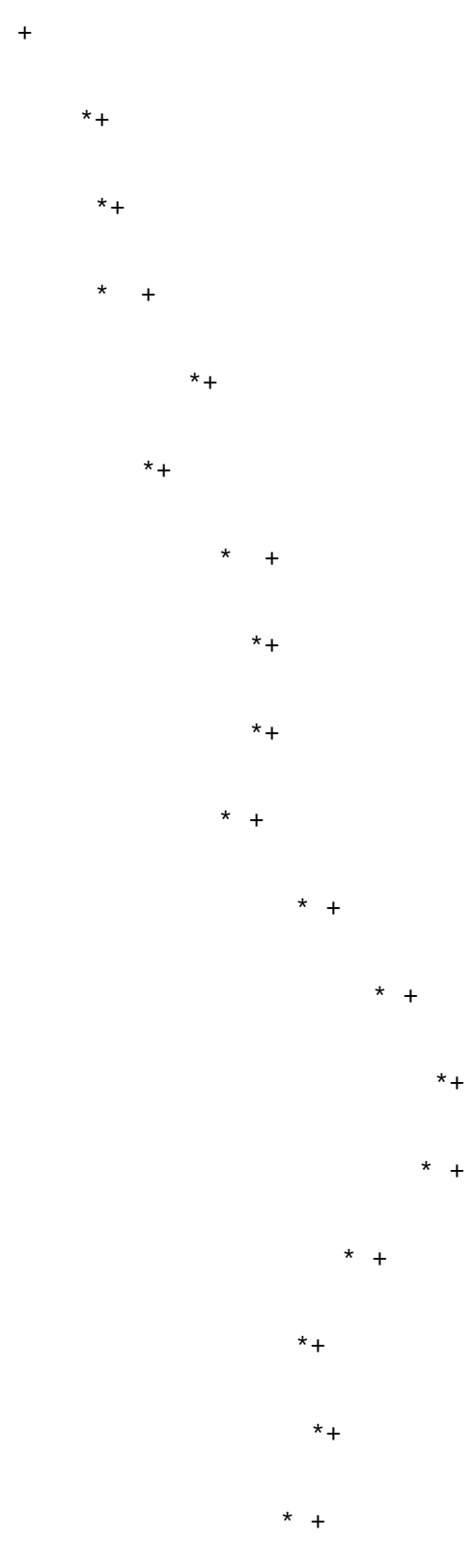
INT# TAG#	START TIME	Lav ET	Lmax L1	Lpk L2	
34 0	10/10/06 12:48:11	50.2 0:00:01	50.4 50	<118 49	+
35 0	10/10/06 12:48:12	50.5 0:00:01	51.2 51	<118 49	* +
36 0	10/10/06 12:48:13	51.0 0:00:01	51.4 51	<118 50	*+
37 0	10/10/06 12:48:14	50.1 0:00:01	50.6 50	<118 49	* +
38 0	10/10/06 12:48:15	49.4 0:00:01	49.6 49	<118 49	+
39 0	10/10/06 12:48:16	49.5 0:00:01	49.6 49	<118 49	+
40 0	10/10/06 12:48:17	49.0 0:00:01	49.3 49	<118 48	+
41 0	10/10/06 12:48:18	48.7 0:00:01	48.7 48	<118 48	+
42 0	10/10/06 12:48:19	48.2 0:00:01	48.5 48	<118 48	+
43 0	10/10/06 12:48:20	48.2 0:00:01	48.2 48	<118 48	+
44 0	10/10/06 12:48:21	48.0 0:00:01	48.2 48	<118 47	*+
45 0	10/10/06 12:48:22	47.9 0:00:01	48.1 48	<118 47	+
46 0	10/10/06 12:48:23	48.5 0:00:01	48.7 48	<118 48	*+
47 0	10/10/06 12:48:24	48.7 0:00:01	48.9 48	<118 48	+
48 0	10/10/06 12:48:25	49.0 0:00:01	49.2 49	<118 48	+
49 0	10/10/06 12:48:26	49.3 0:00:01	49.6 49	<118 49	*+
50 0	10/10/06 12:48:27	49.4 0:00:01	49.7 49	<118 49	+
51 0	10/10/06 12:48:28	49.3 0:00:01	49.6 49	<118 49	*+

INT# TAG#	START TIME	Lav ET	Lmax L1	Lpk L2	
52 0	10/10/06 12:48:29	49.3 0:00:01	49.6 49	<118 49	*+
53 0	10/10/06 12:48:30	48.9 0:00:01	49.1 49	<118 48	*+
54 0	10/10/06 12:48:31	50.3 0:00:01	51.3 51	<118 48	* +
55 0	10/10/06 12:48:32	52.3 0:00:01	52.8 52	<118 51	*+
56 0	10/10/06 12:48:33	51.5 0:00:01	52.1 52	<118 50	*+
57 0	10/10/06 12:48:34	51.5 0:00:01	52.1 52	<118 50	*+
58 0	10/10/06 12:48:35	51.5 0:00:01	52.1 52	<118 50	*+
59 0	10/10/06 12:48:36	50.1 0:00:01	50.6 50	<118 49	* +
60 0	10/10/06 12:48:37	49.5 0:00:01	49.6 49	<118 49	+
61 0	10/10/06 12:48:38	49.2 0:00:01	49.3 49	<118 49	+
62 0	10/10/06 12:48:39	49.9 0:00:01	50.8 50	<118 49	* +
63 0	10/10/06 12:48:40	52.8 0:00:01	54.1 54	<118 51	* +
64 0	10/10/06 12:48:41	57.9 0:00:01	59.3 59	<118 54	* +
65 0	10/10/06 12:48:42	60.1 0:00:01	60.6 60	<118 59	* +
66 0	10/10/06 12:48:43	59.8 0:00:01	60.4 60	<118 59	*+
67 0	10/10/06 12:48:44	58.9 0:00:01	59.6 59	<118 58	* +
68 0	10/10/06 12:48:45	57.2 0:00:01	57.8 57	<118 56	* +
69 0	10/10/06 12:48:46	55.8 0:00:01	56.5 56	<118 55	*+

INT# TAG#	START TIME	Lav ET	Lmax L1	Lpk L2	
70 0	10/10/06 12:48:47	54.4 0:00:01	54.9 54	<118 53	*+
71 0	10/10/06 12:48:48	53.0 0:00:01	53.5 53	<118 52	*+
72 0	10/10/06 12:48:49	52.5 0:00:01	52.8 52	<118 52	*+
73 0	10/10/06 12:48:50	51.6 0:00:01	52.0 52	<118 51	*+
74 0	10/10/06 12:48:51	51.1 0:00:01	51.3 51	<118 51	+
75 0	10/10/06 12:48:52	50.4 0:00:01	50.8 50	<118 49	*+
76 0	10/10/06 12:48:53	49.5 0:00:01	49.8 49	<118 49	*+
77 0	10/10/06 12:48:54	49.3 0:00:01	49.4 49	<118 49	*+
78 0	10/10/06 12:48:55	49.0 0:00:01	49.1 49	<118 48	+
79 0	10/10/06 12:48:56	48.7 0:00:01	48.9 48	<118 48	+
80 0	10/10/06 12:48:57	48.4 0:00:01	48.5 48	<118 48	+
81 0	10/10/06 12:48:58	48.4 0:00:01	48.5 48	<118 48	+
82 0	10/10/06 12:48:59	48.6 0:00:01	48.7 48	<118 48	+
83 0	10/10/06 12:49:00	49.1 0:00:01	49.5 49	<118 48	*+
84 0	10/10/06 12:49:01	50.0 0:00:01	50.2 50	<118 49	*+
85 0	10/10/06 12:49:02	49.1 0:00:01	49.5 49	<118 48	*+
86 0	10/10/06 12:49:03	49.4 0:00:01	49.6 49	<118 49	+
87 0	10/10/06 12:49:04	50.0 0:00:01	50.2 50	<118 49	*+

INT# TAG#	START TIME	Lav ET	Lmax L1	Lpk L2	
88 0	10/10/06 12:49:05	51.1 0:00:01	52.0 <118 52	50	* +
89 0	10/10/06 12:49:06	52.1 0:00:01	52.2 <118 52	52	*+
90 0	10/10/06 12:49:07	52.0 0:00:01	52.1 <118 52	52	+
91 0	10/10/06 12:49:08	52.2 0:00:01	52.7 <118 52	51	*+
92 0	10/10/06 12:49:09	53.0 0:00:01	53.3 <118 53	52	+
93 0	10/10/06 12:49:10	55.4 0:00:01	57.1 <118 57	53	* +
94 0	10/10/06 12:49:11	57.6 0:00:01	57.8 <118 57	57	*+
95 0	10/10/06 12:49:12	57.4 0:00:01	57.5 <118 57	57	+
96 0	10/10/06 12:49:13	57.6 0:00:01	57.9 <118 57	57	*+
97 0	10/10/06 12:49:14	57.6 0:00:01	57.9 <118 57	57	*+
98 0	10/10/06 12:49:15	57.3 0:00:01	57.4 <118 57	57	*+
99 0	10/10/06 12:49:16	57.0 0:00:01	57.1 <118 57	56	+
100 0	10/10/06 12:49:17	56.8 0:00:01	57.0 <118 57	56	*+
101 0	10/10/06 12:49:18	58.0 0:00:01	58.3 <118 58	57	*+
102 0	10/10/06 12:49:19	57.6 0:00:01	58.2 <118 58	56	* +
103 0	10/10/06 12:49:20	55.1 0:00:01	56.4 <118 56	53	* +
104 0	10/10/06 12:49:21	52.3 0:00:01	53.3 <118 53	51	* +
105 0	10/10/06 12:49:22	50.7 0:00:01	51.2 <118 51	50	*+

INT# TAG#	START TIME	Lav ET	Lmax L1	Lpk L2
106	10/10/06	50.4	50.5	<118
0	12:49:23	0:00:01	50	50
107	10/10/06	51.8	52.5	<118
0	12:49:24	0:00:01	52	50
108	10/10/06	52.4	52.7	<118
0	12:49:25	0:00:01	52	52
109	10/10/06	52.3	53.4	<118
0	12:49:26	0:00:01	53	52
110	10/10/06	54.8	55.2	<118
0	12:49:27	0:00:01	55	54
111	10/10/06	53.6	54.1	<118
0	12:49:28	0:00:01	54	53
112	10/10/06	55.4	56.9	<118
0	12:49:29	0:00:01	56	53
113	10/10/06	56.5	56.8	<118
0	12:49:30	0:00:01	56	56
114	10/10/06	56.3	56.6	<118
0	12:49:31	0:00:01	56	55
115	10/10/06	55.6	56.2	<118
0	12:49:32	0:00:01	56	55
116	10/10/06	57.6	58.4	<118
0	12:49:33	0:00:01	58	56
117	10/10/06	59.7	60.3	<118
0	12:49:34	0:00:01	60	58
118	10/10/06	61.2	61.7	<118
0	12:49:35	0:00:01	61	60
119	10/10/06	60.8	61.6	<118
0	12:49:36	0:00:01	61	59
120	10/10/06	58.8	59.7	<118
0	12:49:37	0:00:01	59	57
121	10/10/06	57.7	57.9	<118
0	12:49:38	0:00:01	57	57
122	10/10/06	58.1	58.3	<118
0	12:49:39	0:00:01	58	58
123	10/10/06	57.1	57.8	<118
0	12:49:40	0:00:01	57	56



INT# TAG#	START TIME	Lav ET	Lmax L1	Lpk L2
124	10/10/06	55.6	56.2 <118	
0	12:49:41	0:00:01	56	55
125	10/10/06	56.0	56.4 <118	
0	12:49:42	0:00:01	56	55
126	10/10/06	57.6	58.1 <118	
0	12:49:43	0:00:01	58	57
127	10/10/06	58.0	58.1 <118	
0	12:49:44	0:00:01	58	57
128	10/10/06	58.8	59.1 <118	
0	12:49:45	0:00:01	59	58
129	10/10/06	58.3	58.9 <118	
0	12:49:46	0:00:01	58	57
130	10/10/06	57.0	57.4 <118	
0	12:49:47	0:00:01	57	56
131	10/10/06	55.8	56.4 <118	
0	12:49:48	0:00:01	56	55
132	10/10/06	54.3	54.8 <118	
0	12:49:49	0:00:01	54	54
133	10/10/06	54.1	54.5 <118	
0	12:49:50	0:00:01	54	53
134	10/10/06	53.1	53.4 <118	
0	12:49:51	0:00:01	53	52
135	10/10/06	52.9	53.3 <118	
0	12:49:52	0:00:01	53	52
136	10/10/06	53.3	53.9 <118	
0	12:49:53	0:00:01	53	52
137	10/10/06	51.4	52.1 <118	
0	12:49:54	0:00:01	52	50
138	10/10/06	51.0	51.1 <118	
0	12:49:55	0:00:01	51	50
139	10/10/06	50.8	51.0 <118	
0	12:49:56	0:00:01	51	50
140	10/10/06	50.8	50.9 <118	
0	12:49:57	0:00:01	50	50
141	10/10/06	51.0	51.1 <118	
0	12:49:58	0:00:01	51	50

INT# TAG#	START TIME	Lav ET	Lmax L1	Lpk L2
142 0	10/10/06 12:49:59	50.7 0:00:01	50.9 <118 50	50
143 0	10/10/06 12:50:00	50.2 0:00:01	50.3 <118 50	50
144 0	10/10/06 12:50:01	50.0 0:00:01	50.4 <118 50	49
145 0	10/10/06 12:50:02	50.4 0:00:01	50.6 <118 50	50
146 0	10/10/06 12:50:03	49.9 0:00:01	50.3 <118 50	49
147 0	10/10/06 12:50:04	50.2 0:00:01	50.5 <118 50	49
148 0	10/10/06 12:50:05	50.6 0:00:01	51.0 <118 51	50
149 0	10/10/06 12:50:06	50.6 0:00:01	50.9 <118 50	50
150 0	10/10/06 12:50:07	50.9 0:00:01	51.0 <118 51	50
151 0	10/10/06 12:50:08	51.2 0:00:01	51.6 <118 51	50
152 0	10/10/06 12:50:09	54.5 0:00:01	57.3 <118 57	51
153 0	10/10/06 12:50:10	59.0 0:00:01	60.6 <118 60	57
154 0	10/10/06 12:50:11	61.8 0:00:01	62.2 <118 62	61
155 0	10/10/06 12:50:12	62.1 0:00:01	62.2 <118 62	62
156 0	10/10/06 12:50:13	61.5 0:00:01	62.0 <118 62	61
157 0	10/10/06 12:50:14	59.8 0:00:01	60.9 <118 60	58
158 0	10/10/06 12:50:15	57.5 0:00:01	58.3 <118 58	56
159 0	10/10/06 12:50:16	56.7 0:00:01	56.9 <118 56	56

INT# TAG#	START TIME	Lav ET	Lmax L1	Lpk L2	
160	10/10/06	56.4	56.8	<118	*+
0	12:50:17	0:00:01	56	55	
161	10/10/06	55.3	55.8	<118	* +
0	12:50:18	0:00:01	55	55	
162	10/10/06	55.4	55.7	<118	+
0	12:50:19	0:00:01	55	55	
163	10/10/06	55.1	55.5	<118	*+
0	12:50:20	0:00:01	55	54	
164	10/10/06	54.1	54.5	<118	*+
0	12:50:21	0:00:01	54	53	
165	10/10/06	53.0	53.4	<118	*+
0	12:50:22	0:00:01	53	52	
166	10/10/06	52.4	53.0	<118	* +
0	12:50:23	0:00:01	53	51	
167	10/10/06	51.9	52.0	<118	+
0	12:50:24	0:00:01	52	51	
168	10/10/06	52.0	52.1	<118	+
0	12:50:25	0:00:01	52	52	
169	10/10/06	53.9	56.2	<118	* +
0	12:50:26	0:00:01	56	52	
170	10/10/06	57.7	58.1	<118	*+
0	12:50:27	0:00:01	58	57	
171	10/10/06	57.9	58.1	<118	+
0	12:50:28	0:00:01	58	57	
172	10/10/06	58.9	59.4	<118	* +
0	12:50:29	0:00:01	59	58	
173	10/10/06	59.1	59.6	<118	*+
0	12:50:30	0:00:01	59	58	
174	10/10/06	59.6	60.2	<118	* +
0	12:50:31	0:00:01	60	59	
175	10/10/06	59.0	59.8	<118	* +
0	12:50:32	0:00:01	59	58	
176	10/10/06	58.3	58.5	<118	+
0	12:50:33	0:00:01	58	58	
177	10/10/06	57.1	57.8	<118	* +
0	12:50:34	0:00:01	57	56	

INT# TAG#	START TIME	Lav ET	Lmax L1	Lpk L2	
178 0	10/10/06 12:50:35	55.5 0:00:01	56.2 <118 56	54	* +
179 0	10/10/06 12:50:36	54.1 0:00:01	54.6 <118 54	53	* +
180 0	10/10/06 12:50:37	52.5 0:00:01	53.2 <118 53	51	* +
181 0	10/10/06 12:50:38	50.9 0:00:01	51.6 <118 51	50	* +
182 0	10/10/06 12:50:39	51.7 0:00:01	53.2 <118 53	50	* +
183 0	10/10/06 12:50:40	52.2 0:00:01	53.1 <118 53	51	* +
184 0	10/10/06 12:50:41	50.6 0:00:01	51.0 <118 51	50	*+
185 0	10/10/06 12:50:42	50.4 0:00:01	50.9 <118 50	49	*+
186 0	10/10/06 12:50:43	49.6 0:00:01	49.8 <118 49	49	*+
187 0	10/10/06 12:50:44	51.3 0:00:01	51.8 <118 51	49	* +
188 0	10/10/06 12:50:45	51.2 0:00:01	51.6 <118 51	50	*+
189 0	10/10/06 12:50:46	50.1 0:00:01	50.4 <118 50	50	*+
190 0	10/10/06 12:50:47	49.7 0:00:01	50.0 <118 50	49	*+
191 0	10/10/06 12:50:48	49.7 0:00:01	50.0 <118 50	49	*+
192 0	10/10/06 12:50:49	48.9 0:00:01	49.2 <118 49	48	*+
193 0	10/10/06 12:50:50	48.9 0:00:01	49.2 <118 49	48	*+
194 0	10/10/06 12:50:51	48.4 0:00:01	48.6 <118 48	48	*+
195 0	10/10/06 12:50:52	48.2 0:00:01	48.4 <118 48	48	+

INT# TAG#	START TIME	Lav ET	Lmax L1	Lpk L2	
196	10/10/06	48.5	50.2	<118	* +
0	12:50:53	0:00:01	50	47	
197	10/10/06	51.3	51.9	<118	* +
0	12:50:54	0:00:01	51	50	
198	10/10/06	50.0	50.6	<118	* +
0	12:50:55	0:00:01	50	49	
199	10/10/06	49.2	49.2	<118	+
0	12:50:56	0:00:01	49	49	
200	10/10/06	49.2	49.5	<118	*+
0	12:50:57	0:00:01	49	49	
201	10/10/06	49.9	50.2	<118	*+
0	12:50:58	0:00:01	50	49	
202	10/10/06	51.0	52.3	<118	* +
0	12:50:59	PARTIAL	52	50	

** AMPLITUDE DISTRIBUTION REPORT **

TOTAL SAMPLES = 1615

dB	SAMPLES		% OF TOTAL
47	14	*	.86
48	147	*********	9.10
49	272	*****************	16.84
50	263	****************	16.28
51	146	*********	9.04
52	138	*********	8.54
53	69	****	4.27
54	56	***	3.46
55	74	*****	4.58
56	80	*****	4.95
57	122	********	7.55
58	91	******	5.63
59	56	***	3.46
60	40	**	2.47
61	27	**	1.67
62	20	*	1.23

Ln(0.0) = 62dB
Ln(10.0) = 58dB
Ln(50.0) = 51dB
Ln(99.9) = 47dB

	NO CUTOFF	80.0dB CUTOFF	90.0dB CUTOFF
Ldod	54.0dB	43.0dB	43.0dB
Losha	53.7dB	43.0dB	43.0dB
Leq(6)	53.5dB	43.0dB	43.0dB

METROSONICS db-308 SN 2668 V2.3 3/87

CURRENT DATE: 1/11/07
CURRENT TIME: 11:05:06

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CALIBRATED: 6/27/06 @ 11:06:00

DISPLAY RANGE: 43.1dB TO 139.1dB

DOUBLING RATE: 3 dB

FILTER: A WGHT

RESPONSE: SLOW

SCHEDULED RUN: OFF

   START DATE:10/18/06
   START TIME: 0:00:00
   LENGTH: 48:00:00

** OVERALL REPORT **

TEST STARTING DATE: 12/29/06
TEST STARTING TIME: 12:16:56
TEST LENGTH: 0DAYS 0:03:41

Lav   = 45.7dB
Lav 80= 43.1dB
Lav 90= 43.1dB
SEL   = 69.0dB

Lmax = 54.6dB ON 12/29/06 @ 12:19:34
Lpk < 118dB

TIME OVER 115dB 0D 0:00:00.00

DOSE CRITERION: 90dB

 8 HR DOSE (80dB CUTOFF)= 0.00%
 8 HR PROJ. DOSE (80dB CUTOFF)= 0.00%
 8 HR DOSE (90dB CUTOFF)= 0.00%
 8 HR PROJ. DOSE (90dB CUTOFF)= 0.00%

** TIME HISTORY REPORT **

MODE: CONTINUOUS
PERIOD LENGTH: 0:01:00
TIME HISTORY CUTOFF: NONE
Ln(1): 10.0% Ln(2): 90.0%

INT# TAG#	START TIME	Lav ET	Lmax L1	Lpk L2
1 0	12/29/06 12:16:56	45.5 0:01:00	52.1 46	<118 44
2 0	12/29/06 12:17:56	45.4 0:01:00	50.3 46	<118 44
3 0	12/29/06 12:18:56	46.0 0:01:00	54.6 46	<118 44
4 0	12/29/06 12:19:56	45.8 PARTIAL	50.2 47	<118 44

** AMPLITUDE DISTRIBUTION REPORT **

TOTAL SAMPLES =   1770

dB	SAMPLES	% OF TOTAL
43	2 +	.11
44	589 **********	33.27
45	841 **********	47.51
46	200 **********	11.29
47	65 ****	3.67
48	31 **	1.75
49	18 *	1.01
50	10 *	.56
51	7 +	.39
52	3 +	.16
53	2 +	.11
54	2 +	.11

Ln(0.0) = 54dB
Ln(10.0) = 46dB
Ln(50.0) = 45dB
Ln(99.9) = 43dB

	NO CUTOFF	80.0dB CUTOFF	90.0dB CUTOFF
Ldod	45.2dB	43.0dB	43.0dB
Losha	45.1dB	43.0dB	43.0dB
Leq(6)	45.1dB	43.0dB	43.0dB

METROSONICS db-308 SN 2671 V2.3 3/87

CURRENT DATE: 8/25/06
CURRENT TIME: 11:30:43

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CALIBRATED: 8/09/06 @   9:00:16

DISPLAY RANGE: 43.3dB TO 139.3dB

DOUBLING RATE: 3 dB

FILTER: A WGHT

RESPONSE: SLOW

SCHEDULED RUN: OFF

   START DATE: 7/11/06
   START TIME:11:00:00
   LENGTH: 25:00:00

** OVERALL REPORT **

TEST STARTING DATE: 8/24/06
TEST STARTING TIME: 10:46:07
TEST LENGTH: 0DAYS 0:56:49

Lav   = 58.4dB
Lav 80= 43.3dB
Lav 90= 43.3dB
SEL   = 93.6dB

Lmax = 75.7dB ON 8/24/06 @ 10:51:00
Lpk < 118dB

TIME OVER 115dB 0D 0:00:00.00

DOSE CRITERION: 90dB

 8 HR DOSE (80dB CUTOFF)= 0.00%
 8 HR PROJ. DOSE (80dB CUTOFF)= 0.00%
 8 HR DOSE (90dB CUTOFF)= 0.00%
 8 HR PROJ. DOSE (90dB CUTOFF)= 0.00%

** TIME HISTORY REPORT **

MODE: CONTINUOUS
PERIOD LENGTH: 0:15:00
TIME HISTORY CUTOFF: NONE
Ln(1): 10.0% Ln(2): 90.0%

INT#	START	Lav	Lmax	Lpk
TAG#	TIME	ET	L1	L2
1	8/24/06	63.8	75.7	<118
0	10:46:07	PARTIAL	67	51
2	8/24/06	55.5	66.1	<118
0	11:02:52	0:15:00	59	48
3	8/24/06	55.2	59.5	<118
0	11:17:52	PARTIAL	58	49
4	8/24/06	54.6	63.4	<118
0	11:36:58	PARTIAL	56	52
5	8/24/06	50.5	57.6	<118
0	12:06:30	PARTIAL	53	45

** AMPLITUDE DISTRIBUTION REPORT **

TOTAL SAMPLES = 27275

dB	SAMPLES		% OF TOTAL
44	164	*	.60
45	630	**	2.30
46	697	***	2.55
47	1202	****	4.40
48	1466	*****	5.37
49	2208	********	8.09
50	2210	********	8.10
51	2021	*******	7.40
52	2968	**********	10.88
53	3137	**********	11.50
54	2315	********	8.48
55	1554	******	5.69
56	1101	****	4.03
57	827	***	3.03
58	720	***	2.63
59	706	***	2.58
60	550	**	2.01
61	608	**	2.22
62	464	**	1.70
63	427	**	1.56
64	301	*	1.10
65	234	*	.85
66	164	*	.60
67	94	+	.34
68	99	+	.36
69	87	+	.31
70	62	+	.22
71	67	+	.24
72	105	+	.38
73	40	+	.14
74	29	+	.10
75	18	.	.06

Ln(0.0) = 75dB
Ln(10.0) = 61dB
Ln(50.0) = 53dB
Ln(99.9) = 44dB

	NO CUTOFF	80.0dB CUTOFF	90.0dB CUTOFF
Ldod	56.5dB	43.0dB	43.0dB
Losha	55.7dB	43.0dB	43.0dB
Leq(6)	55.2dB	43.0dB	43.0dB

METROSONICS db-308 SN 2671 V2.3 3/87

CURRENT DATE: 9/26/06
CURRENT TIME: 12:48:30

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CALIBRATED: 8/09/06 @   9:00:16

DISPLAY RANGE: 43.3dB TO 139.3dB

DOUBLING RATE: 3 dB

FILTER: A WGHT

RESPONSE: SLOW

SCHEDULED RUN: OFF

   START DATE: 7/11/06
   START TIME:11:00:00
   LENGTH: 25:00:00

** OVERALL REPORT **

TEST STARTING DATE: 9/26/06
TEST STARTING TIME: 10:46:07
TEST LENGTH: 0DAYS 0:48:34

Lav   = 57.8dB
Lav 80= 43.3dB
Lav 90= 43.3dB
SEL   = 92.4dB

Lmax = 74.8dB ON 9/26/06 @ 11:09:20
Lpk < 118dB

TIME OVER 115dB 0D 0:00:00.00

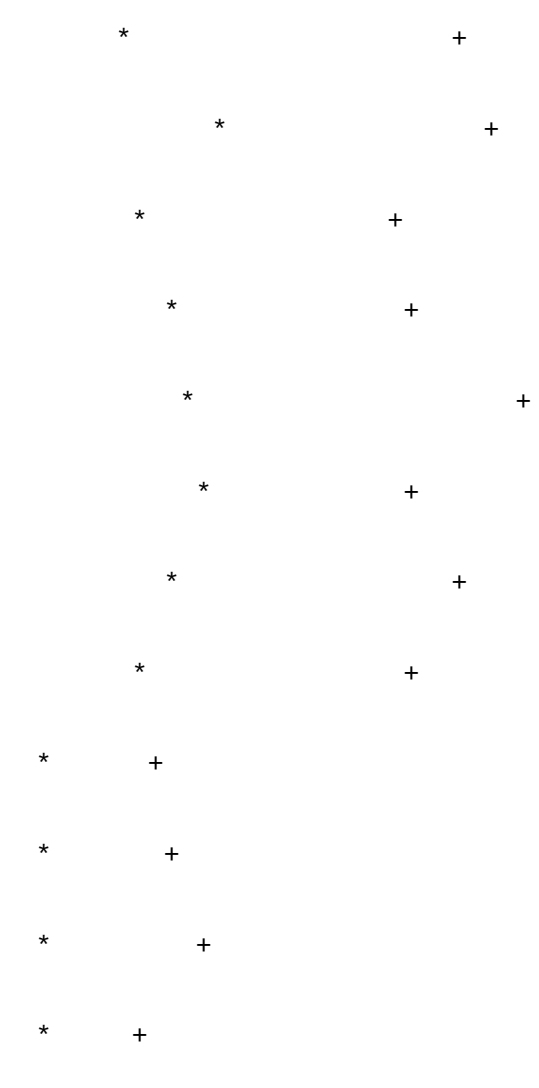
DOSE CRITERION: 90dB

 8 HR DOSE (80dB CUTOFF)= 0.00%
 8 HR PROJ. DOSE (80dB CUTOFF)= 0.00%
 8 HR DOSE (90dB CUTOFF)= 0.00%
 8 HR PROJ. DOSE (90dB CUTOFF)= 0.00%

** TIME HISTORY REPORT **

MODE: CONTINUOUS
PERIOD LENGTH: 0:05:00
TIME HISTORY CUTOFF: NONE
Ln(1): 10.0% Ln(2): 90.0%

INT# TAG#	START TIME	Lav ET	Lmax L1	Lpk L2
1 0	9/26/06 10:46:07	56.3 0:05:00	71.5 59	<118 47
2 0	9/26/06 10:51:07	60.7 0:05:00	73.1 65	<118 50
3 0	9/26/06 10:56:07	57.4 0:05:00	68.8 61	<118 49
4 0	9/26/06 11:01:07	58.9 PARTIAL	69.4 62	<118 48
5 0	9/26/06 11:07:33	59.7 0:05:00	74.8 61	<118 51
6 0	9/26/06 11:12:33	60.3 0:05:00	69.4 64	<118 51
7 0	9/26/06 11:17:33	59.0 0:05:00	71.9 60	<118 51
8 0	9/26/06 11:22:33	57.0 PARTIAL	69.2 59	<118 48
9 0	9/26/06 11:29:38	52.9 0:05:00	57.6 55	<118 50
10 0	9/26/06 11:34:38	52.7 0:05:00	58.5 55	<118 49
11 0	9/26/06 11:39:38	53.0 0:05:00	59.9 55	<118 50
12 0	9/26/06 11:44:38	53.2 PARTIAL	57.3 55	<118 51



** AMPLITUDE DISTRIBUTION REPORT **

TOTAL SAMPLES = 23314

dB	SAMPLES		% OF TOTAL
46	87	+	.37
47	442	**	1.89
48	939	****	4.02
49	1606	*******	6.88
50	2227	**********	9.55
51	2835	**********	12.16
52	2888	**********	12.38
53	2341	**********	10.04
54	1882	********	8.07
55	1456	******	6.24
56	1127	*****	4.83
57	1163	*****	4.98
58	940	****	4.03
59	786	***	3.37
60	559	**	2.39
61	369	**	1.58
62	357	**	1.53
63	316	*	1.35
64	161	*	.69
65	135	*	.57
66	167	*	.71
67	183	*	.78
68	142	*	.60
69	90	+	.38
70	39	+	.16
71	35	+	.15
72	24	+	.10
73	10	.	.04
74	8	.	.03

Ln(0.0) = 74dB
Ln(10.0) = 60dB
Ln(50.0) = 53dB
Ln(99.9) = 46dB

	NO CUTOFF	80.0dB CUTOFF	90.0dB CUTOFF
Ldod	56.3dB	43.0dB	43.0dB
Losha	55.7dB	43.0dB	43.0dB
Leq(6)	55.3dB	43.0dB	43.0dB

METROSONICS db-308 SN 2668 V2.3 3/87

CURRENT DATE: 10/12/06
CURRENT TIME: 10:41:11

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CALIBRATED: 6/27/06 @ 11:06:00

DISPLAY RANGE: 43.1dB TO 139.1dB

DOUBLING RATE: 3 dB

FILTER: A WGHT

RESPONSE: SLOW

SCHEDULED RUN: OFF

   START DATE:10/02/06
   START TIME: 1:00:00
   LENGTH: 72:00:00

** OVERALL REPORT **

TEST STARTING DATE: 10/02/06
TEST STARTING TIME: 1:00:19
TEST LENGTH: 3DAYS 0:00:00

Lav   = 49.9dB
Lav 80= 43.1dB
Lav 90= 43.1dB
SEL   =103.8dB

Lmax = 80.7dB ON 10/04/06 @ 23:33:58
Lpk < 118dB

TIME OVER 115dB 0D 0:00:00.00

DOSE CRITERION: 90dB

 8 HR DOSE (80dB CUTOFF)= 0.00%
 8 HR DOSE (90dB CUTOFF)= 0.00%

** TIME HISTORY REPORT **

MODE: CONTINUOUS
PERIOD LENGTH: 1:00:00
TIME HISTORY CUTOFF: NONE
Ln(1): 10.0% Ln(2): 90.0%

INT# / TAG#	START TIME	Lav / ET	Lmax / L1	Lpk / L2
1 / 0	10/02/06 1:00:19	43.2 1:00:00	47.7 <118 43	43
2 / 0	10/02/06 2:00:19	43.3 1:00:00	54.2 <118 43	43
3 / 0	10/02/06 3:00:19	43.1 1:00:00	43.1 <118 43	43
4 / 0	10/02/06 4:00:19	43.1 1:00:00	50.2 <118 43	43
5 / 0	10/02/06 5:00:19	43.1 1:00:00	50.7 <118 43	43
6 / 0	10/02/06 6:00:19	43.2 1:00:00	52.1 <118 43	43
7 / 0	10/02/06 7:00:19	47.5 1:00:00	59.4 <118 49	44
8 / 0	10/02/06 8:00:19	49.0 1:00:00	66.0 <118 50	45
9 / 0	10/02/06 9:00:19	51.1 1:00:00	69.7 <118 52	48
10 / 0	10/02/06 10:00:19	48.0 1:00:00	59.6 <118 50	43
11 / 0	10/02/06 11:00:19	48.5 1:00:00	56.7 <118 50	45
12 / 0	10/02/06 12:00:19	51.5 1:00:00	61.2 <118 53	49
13 / 0	10/02/06 13:00:19	52.6 1:00:00	65.1 <118 54	50
14 / 0	10/02/06 14:00:19	52.4 1:00:00	59.7 <118 54	49
15 / 0	10/02/06 15:00:19	52.4 1:00:00	64.6 <118 54	49

INT# TAG#	START TIME	Lav ET	Lmax L1	Lpk L2	
16 0	10/02/06 16:00:19	53.0 1:00:00	71.7 55	<118 49	* +
17 0	10/02/06 17:00:19	51.9 1:00:00	63.3 53	<118 49	* +
18 0	10/02/06 18:00:19	50.8 1:00:00	63.0 52	<118 48	* +
19 0	10/02/06 19:00:19	46.7 1:00:00	59.0 49	<118 43	* +
20 0	10/02/06 20:00:19	44.5 1:00:00	58.8 44	<118 43	* +
21 0	10/02/06 21:00:19	44.2 1:00:00	58.2 44	<118 43	* +
22 0	10/02/06 22:00:19	43.8 1:00:00	58.7 43	<118 43	* +
23 0	10/02/06 23:00:19	43.1 1:00:00	44.2 43	<118 43	*+
24 0	10/03/06 0:00:19	43.1 1:00:00	47.5 43	<118 43	* +
25 0	10/03/06 1:00:19	43.1 1:00:00	46.4 43	<118 43	* +
26 0	10/03/06 2:00:19	43.1 1:00:00	48.1 43	<118 43	* +
27 0	10/03/06 3:00:19	43.7 1:00:00	50.9 44	<118 43	* +
28 0	10/03/06 4:00:19	43.7 1:00:00	53.8 43	<118 43	* +
29 0	10/03/06 5:00:19	43.1 1:00:00	46.0 43	<118 43	* +
30 0	10/03/06 6:00:19	45.2 1:00:00	58.1 47	<118 43	* +
31 0	10/03/06 7:00:19	51.4 1:00:00	64.6 53	<118 47	* +
32 0	10/03/06 8:00:19	55.3 1:00:00	70.0 57	<118 47	* +
33 0	10/03/06 9:00:19	54.6 1:00:00	70.4 56	<118 47	* +

INT# TAG#	START TIME	Lav ET	Lmax L1	Lpk L2
34	10/03/06	51.4	60.5	<118
0	10:00:19	1:00:00	54	47
35	10/03/06	50.5	63.0	<118
0	11:00:19	1:00:00	52	47
36	10/03/06	51.1	64.2	<118
0	12:00:19	1:00:00	52	47
37	10/03/06	55.6	66.3	<118
0	13:00:19	1:00:00	57	52
38	10/03/06	53.7	69.8	<118
0	14:00:19	1:00:00	55	47
39	10/03/06	47.9	57.4	<118
0	15:00:19	1:00:00	50	44
40	10/03/06	48.3	63.9	<118
0	16:00:19	1:00:00	50	45
41	10/03/06	48.7	74.0	<118
0	17:00:19	1:00:00	50	43
42	10/03/06	48.8	74.6	<118
0	18:00:19	1:00:00	47	43
43	10/03/06	44.0	60.5	<118
0	19:00:19	1:00:00	43	43
44	10/03/06	43.4	55.8	<118
0	20:00:19	1:00:00	43	43
45	10/03/06	45.8	68.1	<118
0	21:00:19	1:00:00	44	43
46	10/03/06	43.8	59.3	<118
0	22:00:19	1:00:00	43	43
47	10/03/06	43.1	43.9	<118
0	23:00:19	1:00:00	43	43
48	10/04/06	43.4	49.0	<118
0	0:00:19	1:00:00	43	43
49	10/04/06	43.1	46.5	<118
0	1:00:19	1:00:00	43	43
50	10/04/06	43.2	53.4	<118
0	2:00:19	1:00:00	43	43
51	10/04/06	43.8	58.4	<118
0	3:00:19	1:00:00	43	43

INT# TAG#	START TIME	Lav ET	Lmax L1	Lpk L2	
52 0	10/04/06 4:00:19	45.0 1:00:00	59.2 44	<118 43	* +
53 0	10/04/06 5:00:19	44.1 1:00:00	63.1 44	<118 43	* +
54 0	10/04/06 6:00:19	43.5 1:00:00	53.0 44	<118 43	* +
55 0	10/04/06 7:00:19	52.1 1:00:00	63.5 54	<118 46	* +
56 0	10/04/06 8:00:19	54.8 1:00:00	65.9 56	<118 52	* +
57 0	10/04/06 9:00:19	55.1 1:00:00	67.8 57	<118 51	* +
58 0	10/04/06 10:00:19	53.5 1:00:00	62.0 55	<118 50	* +
59 0	10/04/06 11:00:19	51.8 1:00:00	61.3 54	<118 47	* +
60 0	10/04/06 12:00:19	52.9 1:00:00	65.2 55	<118 48	* +
61 0	10/04/06 13:00:19	52.0 1:00:00	64.5 54	<118 48	* +
62 0	10/04/06 14:00:19	52.8 1:00:00	69.4 55	<118 46	* +
63 0	10/04/06 15:00:19	47.8 1:00:00	69.8 50	<118 43	* +
64 0	10/04/06 16:00:19	48.0 1:00:00	62.2 50	<118 43	* +
65 0	10/04/06 17:00:19	47.2 1:00:00	61.4 49	<118 43	* +
66 0	10/04/06 18:00:19	45.9 1:00:00	59.7 47	<118 43	* +
67 0	10/04/06 19:00:19	48.9 1:00:00	68.2 50	<118 44	* +
68 0	10/04/06 20:00:19	52.7 1:00:00	69.6 55	<118 46	* +
69 0	10/04/06 21:00:19	51.2 1:00:00	69.9 54	<118 45	* +

INT# TAG#	START TIME	Lav ET	Lmax L1	Lpk L2	
70	10/04/06	51.1	69.7	<118	* +
0	22:00:19	1:00:00	53	45	
71	10/04/06	53.7	80.7	<118	* +
0	23:00:19	1:00:00	55	43	
72	10/05/06	43.2	52.5	<118	* +
0	0:00:19	PARTIAL	43	43	

** AMPLITUDE DISTRIBUTION REPORT **

TOTAL SAMPLES = 2073600

dB	SAMPLES		% OF TOTAL
43	896949	**********	43.25
44	70321	***	3.39
45	80333	****	3.87
46	91006	****	4.38
47	113253	*****	5.46
48	114107	******	5.50
49	124770	******	6.01
50	133258	******	6.42
51	119774	******	5.77
52	94547	*****	4.55
53	79220	****	3.82
54	57008	***	2.74
55	36269	**	1.74
56	25692	*	1.23
57	14629	*	.70
58	7441	+	.35
59	4898	+	.23
60	2960	+	.14
61	1740	.	.08
62	1226	.	.05
63	1164	.	.05
64	872	.	.04
65	592	.	.02
66	456	.	.02
67	434	.	.02
68	372	.	.01
69	211	.	.01
70	32		.00
71	20		.00
72	11		.00
73	16		.00
74	8		.00
75	2		.00
76	2		.00
77	2		.00
78	1		.00
79	2		.00
80	2		.00

Ln(0.0) = 80dB
Ln(10.0) = 53dB
Ln(50.0) = 45dB
Ln(99.9) = 43dB

	NO CUTOFF	80.0dB CUTOFF	90.0dB CUTOFF
Ldod	48.6dB	43.0dB	43.0dB
Losha	48.2dB	43.0dB	43.0dB
Leq(6)	47.9dB	43.0dB	43.0dB

APPENDIX C
Air Quality Calculations

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Calculations for Table 4.2-5: Existing Emissions of Criteria Air Pollutants From Quarry Operations

Onsite Fugitive Dust Emissions

Fugitive Dust Emissions
Existing Conditions

Trucks on Unpaved Surfaces

Operating Assumptions

Haul road length =	0.25 mile	5,441	tons/day	
Trucks/day =	125	3,023	cy/day	
VMT =	31.3 miles/day	1,414,667	tons/year	
Days/year	260 days	785,926	cy/year	2080

Calculated Emission Factor for travel on unpaved roads
F = 2.1*(G/12)*(H/30)*[(I/3)^0.7]*[(J/4)^0.5]*[(365-K)/365]

G = silt content :Mining Haul Road, 8%
H = Mean vehicle speed, 15 mph
I = Mean vehicle weight, 33 tons unloded per cat 735 web site , 69 tons when loaded
J = Mean # of wheels, 6
K = Mean # of days with rain above 0.01 inches, 66

Loaded Emission Factor = 6.31 pounds pm10/vmt
Unloaded Emission Factor = 3.76 pounds pm10/vmt

	PM10		PM2.5		Silica	
	Uncontrollec	Controlled	Uncontrolled	Controlled	Uncontrolle	Controlled
Unpaved Fugitive Emissions (pounds/day)	315	94	47	14	177	53
Unpaved Fugitive Emissions (tons/year)	40.9	12	6	2	23	7
Unpaved Fugitive Emissions (pounds/year)	81,805	24,542	12271	3681	45,901	13,770
Unpaved Fugitive Emissions (pounds/year) for HR/	3,506	1052	526	158	1,967	590

Fugitive PM10 emissions from material handling

E = [0.00112*({[G/5]^1.3}/{[H/2]^1.4})]*[I]

G = Mean wind speed in miles per hour, 13 mph
H = Moisture Content of soil, 2.0 (dry) 2.0 (dry)
I = lbs of material handled
J = 2,000 (conversion factor, lbs to tons)

	PM10		PM2.5		Silica	
	Uncontrollec	Controlled	Uncontrolled	Controlled	Uncontrolle	Controlled
Phase 1 Material Handling Fugitive Emissions (pounds/day)	21.10	6	3	1	12	4
Phase 1 Material Handling Fugitive Emissions (tons/year)	2.74	1	0	0	2	0
Phase 1 Material Handling Fugitive Emissions (pounds/year)	5,487	1,646	823	247	3,079	924
Phase 1 Material Handling Fugitive Emissions (pounds/year) for HR	235.2	71	35	11	132	40

Blasting

E = 0.000014 (A)^1.5 from AP-42 11.9

E= PM30 emissions
A = horizontal area

PM -10 emissions = 0.52 x E

From 8/24/06 blast chart : two areas of adjacent benches with shots 15' apart
Approx area = 6750 sf

E=	7.76 pounds of TSP/blast		
PM10 =	**4.04 pounds/blast**		
	606 pounds/year	150 blasts/year	
PM2.5 =	**0.61 pounds/blast**		
	91 pounds/year		
Silica	2.27 **pounds/blast**		
	14.6 pounds/year		

Hourly	Antimony	2.70E-06	Annual	Antimony	1.74E-05
Hourly	Arsenic	2.75E-05	Annual	Arsenic	1.76E-04
Hourly	Barium	2.83E-03	Annual	Barium	1.82E-02
Hourly	Beryllium	4.84E-06	Annual	Beryllium	3.11E-05
Hourly	Cadmium	0.00E+00	Annual	Cadmium	0.00E+00
Hourly	Chromium	6.46E-05	Annual	Chromium	4.15E-04
Hourly	Cobalt	8.88E-05	Annual	Cobalt	5.71E-04
Hourly	Copper	5.25E-05	Annual	Copper	3.37E-04
Hourly	Lead	9.69E-05	Annual	Lead	6.23E-04
Hourly	Mercury	1.70E-05	Annual	Mercury	1.09E-04
Hourly	Molybdenum	3.51E-06	Annual	Molybdenun	2.26E-05
Hourly	Nickel	1.09E-04	Annual	Nickel	7.01E-04
Hourly	Selenium	2.42E-06	Annual	Selenium	1.56E-05
Hourly	Silver	0.00E+00	Annual	Silver	0.00E+00
Hourly	Thallium	0.00E+00	Annual	Thallium	0.00E+00
Hourly	Vanadium	1.17E-04	Annual	Vanadium	7.53E-04
Hourly	Zinc	2.42E-04	Annual	Zinc	1.56E-03

Hourly	Antimony	7.91E-06	Annual	Antimony	3.02E-05
Hourly	Arsenic	8.02E-05	Annual	Arsenic	3.07E-04
Hourly	Barium	8.26E-03	Annual	Barium	3.16E-02
Hourly	Beryllium	1.42E-05	Annual	Beryllium	5.41E-05
Hourly	Cadmium	0.00E+00	Annual	Cadmium	0.00E+00
Hourly	Chromium	1.89E-04	Annual	Chromium	7.21E-04
Hourly	Cobalt	2.60E-04	Annual	Cobalt	9.92E-04
Hourly	Copper	1.53E-04	Annual	Copper	5.86E-04
Hourly	Lead	2.83E-04	Annual	Lead	1.08E-03
Hourly	Mercury	4.96E-05	Annual	Mercury	1.89E-04
Hourly	Molybdenun	1.03E-05	Annual	Molybdenun	3.92E-05
Hourly	Nickel	3.19E-04	Annual	Nickel	1.22E-03
Hourly	Selenium	7.08E-06	Annual	Selenium	2.70E-05
Hourly	Silver	0.00E+00	Annual	Silver	0.00E+00
Hourly	Thallium	0.00E+00	Annual	Thallium	0.00E+00
Hourly	Vanadium	3.42E-04	Annual	Vanadium	1.31E-03
Hourly	Zinc	7.08E-04	Annual	Zinc	2.70E-03

Hourly	Antimony	5.30E-07	Annual	Antimony	2.03E-06
Hourly	Arsenic	5.38E-06	Annual	Arsenic	2.06E-05
Hourly	Barium	5.54E-04	Annual	Barium	2.12E-03
Hourly	Beryllium	9.50E-07	Annual	Beryllium	3.63E-06
Hourly	Cadmium	0.00E+00	Annual	Cadmium	0.00E+00
Hourly	Chromium	1.27E-05	Annual	Chromium	4.84E-05
Hourly	Cobalt	1.74E-05	Annual	Cobalt	6.65E-05
Hourly	Copper	1.03E-05	Annual	Copper	3.93E-05
Hourly	Lead	1.90E-05	Annual	Lead	7.26E-05
Hourly	Mercury	3.32E-06	Annual	Mercury	1.27E-05
Hourly	Molybdenun	6.89E-07	Annual	Molybdenun	2.63E-06
Hourly	Nickel	2.14E-05	Annual	Nickel	8.16E-05
Hourly	Selenium	4.75E-07	Annual	Selenium	1.81E-06
Hourly	Silver	0.00E+00	Annual	Silver	0.00E+00
Hourly	Thallium	0.00E+00	Annual	Thallium	0.00E+00
Hourly	Vanadium	2.30E-05	Annual	Vanadium	8.77E-05
Hourly	Zinc	4.75E-05	Annual	Zinc	1.81E-04

Fugitive Dust Emissions
Project as Proposed

Trucks on Unpaved Surfaces

Operating Assumptions

Haul road length =	0.25	mile	6,529	tons/day	
Trucks/day =	125		3,627	cy/day	
VMT =	31.3	miles/day	1,697,600	tons/year	
Days/year	260	days	943,111	cy/year	2080

Calculated Emission Factor for travel on unpaved roads
F = 2.1*(G/12)*(H/30)*[(I/3)^0.7]*[(J/4)^0.5]*[(365-K)/365]

G = silt content :Mining Haul Road, 8%
H = Mean vehicle speed, 15 mph
I = Mean vehicle weight, 33 tons unloded per cat 735 web site , 69 tons when loaded
J = Mean # of wheels, 6
K = Mean # of days with rain above 0.01 inches, 66

Loaded Emission Factor = 6.31 pounds pm10/vmt
Unloaded Emission Factor = 3.76 pounds pm10/vmt

	PM10		PM2.5		Silica	
	Uncontrolled	Controlled	Uncontrolled	Controlled	Uncontrolle	Controlled
Unpaved Fugitive Emissions (pounds/day)	315	94	47	14	177	53
Unpaved Fugitive Emissions (tons/year)	40.9	12	6	2	23	7
Unpaved Fugitive Emissions (pounds/year)	81,805	24,542	12271	3681	45,901	13,770
Unpaved Fugitive Emissions (pounds/year) for HRA	19,867	5960	2980	894	11,147	3,344

Fugitive PM10 emissions from material handling

E = [0.00112*({[G/5]^1.3}/{[H/2]^1.4})]*[I]

G = Mean wind speed in miles per hour, 13 mph
H = Moisture Content of soil, 2.0 (dry) 2.0 (dry)
I = lbs of material handled
J = 2,000 (conversion factor, lbs to tons)

	PM10		PM2.5		Silica	
	Uncontrolled	Controlled	Uncontrolled	Controlled	Uncontrolle	Controlled
Phase 1 Material Handling Fugitive Emissions (pounds/day)	25.32	8	4	1	14	4
Phase 1 Material Handling Fugitive Emissions (tons/year)	3.29	1	0	0	2	1
Phase 1 Material Handling Fugitive Emissions (pounds/year)	6,584	1,975	988	296	3,695	1,108
Phase 1 Material Handling Fugitive Emissions (pounds/year) for HRA	1,599	480	240	72	897	269

Blasting

E = 0.000014 (A)^1.5 from AP-42 11.9

E= PM30 emissions
A = horizontal area

PM -10 emissions = 0.52 x E

From 8/24/06 blast chart : two areas of adjacent benches with shots 15' apart
Approx area = 6750 sf

E=	7.76	pounds of TSP/blast	
PM10 =	**4.04**	**pounds/blast**	
	176	pounds/year	180 blasts/year
PM2.5 =	**0.61**	**pounds/blast**	
	26	pounds/year	
Silica	2.27	**pounds/blast**	
	99.0	pounds/year	

Hourly	Antimony	2.70E-06	Annual	Antimony	2.87E-05
Hourly	Arsenic	2.75E-05	Annual	Arsenic	2.91E-04
Hourly	Barium	2.83E-03	Annual	Barium	3.00E-02
Hourly	Beryllium	4.84E-06	Annual	Beryllium	5.14E-05
Hourly	Cadmium	0.00E+00	Annual	Cadmium	0.00E+00
Hourly	Chromium	6.46E-05	Annual	Chromium	6.86E-04
Hourly	Cobalt	8.88E-05	Annual	Cobalt	9.43E-04
Hourly	Copper	5.25E-05	Annual	Copper	5.57E-04
Hourly	Lead	9.69E-05	Annual	Lead	1.03E-03
Hourly	Mercury	1.70E-05	Annual	Mercury	1.80E-04
Hourly	Molybdenum	3.51E-06	Annual	Molybdenum	3.73E-05
Hourly	Nickel	1.09E-04	Annual	Nickel	1.16E-03
Hourly	Selenium	2.42E-06	Annual	Selenium	2.57E-05
Hourly	Silver	0.00E+00	Annual	Silver	0.00E+00
Hourly	Thallium	0.00E+00	Annual	Thallium	0.00E+00
Hourly	Vanadium	1.17E-04	Annual	Vanadium	1.24E-03
Hourly	Zinc	2.42E-04	Annual	Zinc	2.57E-03

Hourly	Antimony	7.91E-06	Annual	Antimony	9.70E-04
Hourly	Arsenic	8.02E-05	Annual	Arsenic	9.84E-03
Hourly	Barium	8.26E-03	Annual	Barium	1.01E+00
Hourly	Beryllium	1.42E-05	Annual	Beryllium	1.74E-03
Hourly	Cadmium	0.00E+00	Annual	Cadmium	0.00E+00
Hourly	Chromium	1.89E-04	Annual	Chromium	2.32E-02
Hourly	Cobalt	2.60E-04	Annual	Cobalt	3.18E-02
Hourly	Copper	1.53E-04	Annual	Copper	1.88E-02
Hourly	Lead	2.83E-04	Annual	Lead	3.47E-02
Hourly	Mercury	4.96E-05	Annual	Mercury	6.08E-03
Hourly	Molybdenun	1.03E-05	Annual	Molybdenun	1.26E-03
Hourly	Nickel	3.19E-04	Annual	Nickel	3.91E-02
Hourly	Selenium	7.08E-06	Annual	Selenium	8.68E-04
Hourly	Silver	0.00E+00	Annual	Silver	0.00E+00
Hourly	Thallium	0.00E+00	Annual	Thallium	0.00E+00
Hourly	Vanadium	3.42E-04	Annual	Vanadium	4.20E-02
Hourly	Zinc	7.08E-04	Annual	Zinc	8.68E-02

Hourly	Antimony	6.36E-07	Annual	Antimony	7.81E-05
Hourly	Arsenic	6.46E-06	Annual	Arsenic	7.92E-04
Hourly	Barium	6.65E-04	Annual	Barium	8.16E-02
Hourly	Beryllium	1.14E-06	Annual	Beryllium	1.40E-04
Hourly	Cadmium	0.00E+00	Annual	Cadmium	0.00E+00
Hourly	Chromium	1.52E-05	Annual	Chromium	1.86E-03
Hourly	Cobalt	2.09E-05	Annual	Cobalt	2.56E-03
Hourly	Copper	1.23E-05	Annual	Copper	1.51E-03
Hourly	Lead	2.28E-05	Annual	Lead	2.80E-03
Hourly	Mercury	3.99E-06	Annual	Mercury	4.89E-04
Hourly	Molybdenun	8.26E-07	Annual	Molybdenun	1.01E-04
Hourly	Nickel	2.56E-05	Annual	Nickel	3.15E-03
Hourly	Selenium	5.70E-07	Annual	Selenium	6.99E-05
Hourly	Silver	0.00E+00	Annual	Silver	0.00E+00
Hourly	Thallium	0.00E+00	Annual	Thallium	0.00E+00
Hourly	Vanadium	2.75E-05	Annual	Vanadium	3.38E-03
Hourly	Zinc	5.70E-05	Annual	Zinc	6.99E-03

Fugitive Dust Emissions
Mitigated: Limited to 1982 Production levels

Trucks on Unpaved Surfaces

Operating Assumptions

Haul road length =	0.25 mile	5,441	tons/day	
Trucks/day =	125	3,023	cy/day	
VMT =	31.3 miles/day	1,414,667	tons/year	
Days/year	260 days	785,926	cy/year	2080

Calculated Emission Factor for travel on unpaved roads
F = 2.1*(G/12)*(H/30)*[(I/3)^0.7]*[(J/4)^0.5]*[(365-K)/365]

G = silt content :Mining Haul Road, 8%
H = Mean vehicle speed, 15 mph
I = Mean vehicle weight, 33 tons unloded per cat 735 web site , 69 tons when loaded
J = Mean # of wheels, 6
K = Mean # of days with rain above 0.01 inches, 66

Loaded Emission Factor = 6.31 pounds pm10/vmt
Unloaded Emission Factor = 3.76 pounds pm10/vmt

	PM10		PM2.5		Silica	
	Uncontrolled	Controlled	Uncontrolled	Controlled	Uncontrolled	Controlled
Unpaved Fugitive Emissions (pounds/day)	315	94	47	14	177	53
Unpaved Fugitive Emissions (tons/year)	40.9	12	6	2	23	7
Unpaved Fugitive Emissions (pounds/year)	81,805	24,542	12271	3681	45,901	13,770
Unpaved Fugitive Emissions (pounds/year) for HRA	19,867	5960	2980	894	11,147	3,344

Fugitive PM10 emissions from material handling

E = [0.00112*({[G/5]^1.3}/{[H/2]^1.4})]*[I]

G = Mean wind speed in miles per hour, 13 mph
H = Moisture Content of soil, 2.0 (dry) 2.0 (dry)
I = lbs of material handled
J = 2,000 (conversion factor, lbs to tons)

	PM10		PM2.5		Silica	
	Uncontrolled	Controlled	Uncontrolled	Controlled	Uncontrolled	Controlled
Phase 1 Material Handling Fugitive Emissions (pounds/day)	21.10	6	3	1	12	4
Phase 1 Material Handling Fugitive Emissions (tons/year)	2.74	1	0	0	2	0
Phase 1 Material Handling Fugitive Emissions (pounds/year)	5,487	1,646	823	247	3,079	924
Phase 1 Material Handling Fugitive Emissions (pounds/year) for HRA	1,333	400	200	60	748	224

Blasting

E = 0.000014 (A)^1.5 from AP-42 11.9

E= PM30 emissions
A = horizontal area

PM -10 emissions = 0.52 x E

From 8/24/06 blast chart : two areas of adjacent benches with shots 15' apart
Approx area = 6750 sf

E= 7.76 pounds of TSP/blast
PM10 = 4.04 pounds/blast
147 pounds/year 150 blasts/year
PM2.5 = 0.61 pounds/blast
22 pounds/year
Silica 2.27 **pounds/blast**
82.5 pounds/year

Hourly	Antimony	2.70E-06	Annual	Antimony	2.39E-05
Hourly	Arsenic	2.75E-05	Annual	Arsenic	2.43E-04
Hourly	Barium	2.83E-03	Annual	Barium	2.50E-02
Hourly	Beryllium	4.84E-06	Annual	Beryllium	4.29E-05
Hourly	Cadmium	0.00E+00	Annual	Cadmium	0.00E+00
Hourly	Chromium	6.46E-05	Annual	Chromium	5.71E-04
Hourly	Cobalt	8.88E-05	Annual	Cobalt	7.86E-04
Hourly	Copper	5.25E-05	Annual	Copper	4.64E-04
Hourly	Lead	9.69E-05	Annual	Lead	8.57E-04
Hourly	Mercury	1.70E-05	Annual	Mercury	1.50E-04
Hourly	Molybdenum	3.51E-06	Annual	Molybdenum	3.11E-05
Hourly	Nickel	1.09E-04	Annual	Nickel	9.64E-04
Hourly	Selenium	2.42E-06	Annual	Selenium	2.14E-05
Hourly	Silver	0.00E+00	Annual	Silver	0.00E+00
Hourly	Thallium	0.00E+00	Annual	Thallium	0.00E+00
Hourly	Vanadium	1.17E-04	Annual	Vanadium	1.04E-03
Hourly	Zinc	2.42E-04	Annual	Zinc	2.14E-03

Hourly	Antimony	7.91E-06	Annual	Antimony	9.70E-04
Hourly	Arsenic	8.02E-05	Annual	Arsenic	9.84E-03
Hourly	Barium	8.26E-03	Annual	Barium	1.01E+00
Hourly	Beryllium	1.42E-05	Annual	Beryllium	1.74E-03
Hourly	Cadmium	0.00E+00	Annual	Cadmium	0.00E+00
Hourly	Chromium	1.89E-04	Annual	Chromium	2.32E-02
Hourly	Cobalt	2.60E-04	Annual	Cobalt	3.18E-02
Hourly	Copper	1.53E-04	Annual	Copper	1.88E-02
Hourly	Lead	2.83E-04	Annual	Lead	3.47E-02
Hourly	Mercury	4.96E-05	Annual	Mercury	6.08E-03
Hourly	Molybdenum	1.03E-05	Annual	Molybdenum	1.26E-03
Hourly	Nickel	3.19E-04	Annual	Nickel	3.91E-02
Hourly	Selenium	7.08E-06	Annual	Selenium	8.68E-04
Hourly	Silver	0.00E+00	Annual	Silver	0.00E+00
Hourly	Thallium	0.00E+00	Annual	Thallium	0.00E+00
Hourly	Vanadium	3.42E-04	Annual	Vanadium	4.20E-02
Hourly	Zinc	7.08E-04	Annual	Zinc	8.68E-02

Hourly	Antimony	5.30E-07	Annual	Antimony	6.50E-05
Hourly	Arsenic	5.38E-06	Annual	Arsenic	6.60E-04
Hourly	Barium	5.54E-04	Annual	Barium	6.80E-02
Hourly	Beryllium	9.50E-07	Annual	Beryllium	1.17E-04
Hourly	Cadmium	0.00E+00	Annual	Cadmium	0.00E+00
Hourly	Chromium	1.27E-05	Annual	Chromium	1.55E-03
Hourly	Cobalt	1.74E-05	Annual	Cobalt	2.14E-03
Hourly	Copper	1.03E-05	Annual	Copper	1.26E-03
Hourly	Lead	1.90E-05	Annual	Lead	2.33E-03
Hourly	Mercury	3.32E-06	Annual	Mercury	4.08E-04
Hourly	Molybdenum	6.89E-07	Annual	Molybdenum	8.45E-05
Hourly	Nickel	2.14E-05	Annual	Nickel	2.62E-03
Hourly	Selenium	4.75E-07	Annual	Selenium	5.83E-05
Hourly	Silver	0.00E+00	Annual	Silver	0.00E+00
Hourly	Thallium	0.00E+00	Annual	Thallium	0.00E+00
Hourly	Vanadium	2.30E-05	Annual	Vanadium	2.82E-03
Hourly	Zinc	4.75E-05	Annual	Zinc	5.83E-03

Calculations for
Table 4.2-5: Existing Emissions of Criteria Air Pollutants From Quarry Operations

Criteria and GHG Emission Calculations Summaries

SUMMARY OF EXISTING AND PROPOSED CRITERIA POLLUTANT AND GHG EMISSIONS FROM SAN RAFAEL ROCK QUARRY

Existing			lb/day					tons/year	
	ROG	CO	NOx	PM10	SO2	CO2	N2O	CH4	
BRCKKILN	7.1	157	45.7	114	87.5	9,536			
ASPHALT	12.8	104	20.8	3.4	2.7				
GEN	0.0	11136.0	59	31.7	3.9	1		2.57	
ASPSILO	12.6	2.1		1.7					
BLAST				4.0					
Aggregate				50.9					
Quarry	11.6	53	132	5.1	0.1	2,287	0.03	0.22	
Unpaved Roads				94.4					
Haul Truck/Employee	48.8	254	761	32.0	0.8	13,384	-	0.35	
Barges	9.6	101	897	22.3	45,082	21,840	1,371.6	69.89	
Total	**102**	**11,806**	**1,916**	**359**	**45,177**	**47,048**	**1,372**	**73.0**	

Proposed			lb/day					tons/year	
	ROG	CO	NOx	PM10	SO2		CO2	N2O	CH4
BRCKKILN	7.1	157	45.7	113.7	87.5	Same	9,536		
ASPHALT	12.8	104	20.8	3.4	2.7	Same			
GEN	0.0	11136.0	59	31.7	3.9	Same	1		3
ASPSILO	12.6	2.1		1.7		Same			
BLAST				4.0		Same			
Aggregate				59.8		117%			
Quarry	13.8	61	158	6.1	0.2	120%	2,705	0	0
Unpaved Roads				94.4		Same			
Haul Truck/Employee	48.8	254	761	32.0	0.8	Same	13,384	-	0
Barges	12.9	136	1,208	30.0	60,726	135%	39,627	2,489	127
Total	**108**	**11,849**	**2,253**	**377**	**60,821**	118%	**65,252**	**2,489**	**130**
Difference	6	43	**337**	18			139%	181%	178%
Threshold	80	550	80	80					

SUMMARY OF EXISTING AND PROPOSED CRITERIA POLLUTANT AND GHG EMISSIONS FROM SAN RAFAEL ROCK QUARRY WITH USE OF BIODIESEL 20 IN ALL ROLLING STOCK

Existing			lb/day					tons/year	
	ROG	CO	NOx	PM10	SO2	CO2	N2O	CH4	
BRCKKILN	7.1	157	45.7	114	87.5	9,536			
ASPHALT	12.8	104	20.8	3.4	2.7				
GEN	0.0	11136.0	59	31.7	3.9	1		2.57	
ASPSILO	12.6	2.1		1.7					
BLAST				4.0					
Aggregate				50.9					
Quarry	11.6	53	132	5.1	0.1	2,287	0.03	0.22	
Unpaved Roads				94.4					
Haul Truck/Employee	48.8	254	761	32.0	0.8	13,384	-	0.35	
Barges	9.6	101	897	22.3	45,082	21,840	1,371.6	69.89	
Total	**102**	**11,806**	**1,916**	**359**	**45,177**	**47,048**	**1,372**	**73.0**	

Proposed			lb/day					tons/year	
	ROG	CO	NOx	PM10	SO2	CO2	N2O	CH4	
BRCKKILN	7.1	157	45.7	113.7	87.5	Same 9,536			
ASPHALT	12.8	104	20.8	3.4	2.7	Same			
GEN	0.0	11136.0	59	31.7	3.9	Same 1		3	
ASPSILO	12.6	2.1		1.7		Same			
BLAST				4.0		Same			
Aggregate				59.8		117%			
Quarry	8.0	46	167	4.3	0.2	127% 2,705	0	0	
Unpaved Roads				94.4		Same			
Haul Truck/Employee	48.8	254	761	32.0	0.8	Same 13,384	-	0	
Barges	12.9	136	1,208	30.0	60,726	135% 39,627	2,489	127	
Total	**102**	**11,835**	**2,262**	**375**	**60,821**	118% **65,252**	**2,489**	**130**	
Difference	(0)	28	**347**	16		139%	181%	178%	
Threshold	80	550	80	80					

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Calculations for Table 4.2-9: Existing Emissions of Greenhouse Gases From Quarry Operations

Mobile Sources

SUMMARY OF MOBILE EQUIPMENT EMISIONS FROM SAN RAFAEL ROCKQUARRY

tons/year	Year	ROG-Exhaus	CO-Exhaus	NOx-Exhaus	CO2 Exhaust	SOx-Exhaus	M10-Exhau	M2.5-Exhau	PM-Exhaus	N2O Exhau	CH4 Exhaust
Total Onsite	2008	1.47	7.54	21.08	2,287.03	0.02	0.70	0.69	0.69	0.03	0.22
Total Offsite	2008	7.63	39.74	119.13	13,384.41	0.13	5.02	4.35	4.20	-	0.35
Total	2008	9.10	47.28	140.21	15,671.44	0.15	5.72	5.04	4.89	0.03	0.57

pounds/day	Year	ROG-Exhaus	CO-Exhaus	NOx-Exhaus	CO2 Exhaust	SOx-Exhaus	M10-Exhau	M2.5-Exhau	PM-Exhaus	N2O Exhau	CH4 Exhaust
Total Onsite	2008	11.60	52.98	132.05	14,613.60	0.15	5.08	5.03	5.00	0.18	1.38
Total Offsite	2008	48.76	253.92	761.22	85,523.40	0.80	32.05	27.78	26.85	-	2.27
Total	2008	60.36	306.90	893.27	100,136.99	0.95	37.12	32.81	31.85	0.18	3.65

Total Onsite	lb/hr	0.63
	lb/year (70-yr)	59.10

EXISTING CRITERIA POLLUTANT AND GHG EMISSIONS FROM MOBILE EQUIPMENT AT SAN RAFAEL ROCK QUARRY

Source Type	g/hp-hr ROG-Exhaus	CO-Exhaust	NOx-Exhaust	CO2 Exhaust	SOx-Exhaust	PM10-Exhaus	PM2.5-Exhaus	DPM-Exhaus	N2O Exhaus	CH4 Exhaust	HP	Number of Equipment	Load Factor	Daily Hours	Annual Hours	lbs/day ROG-Exhau
Diesel Wheeled Loaders	0.65	2.24	3.93	312.56	0.00	0.36	0.36	0.36	0.00	0.06	**75**	**7**	0.55	**7**	**2250**	**2.40**
Diesel Excavator	0.30	0.98	3.07	323.93	0.00	0.11	0.11	0.11	0.00	0.03	**300**	**3**	0.57	**5**	**1625**	**1.42**
Diesel Bulldozer	0.27	0.87	2.94	312.56	0.00	0.10	0.10	0.10	0.00	0.02	**520**	**1**	0.55	**3**	**950**	**0.41**
Diesel Rock Drill	0.21	0.77	2.77	426.22	0.00	0.09	0.09	0.09	0.00	0.02	**475**	**1**	0.75	**5**	**1500**	**0.65**
Diesel Off-highway Truck	0.32	1.04	3.16	323.93	0.00	0.12	0.12	0.12	0.00	0.03	**375**	**8**	0.57	**6**	**2000**	**6.25**
Haul Trucks	1.097	5.713	17.127	1924.234	0.018	0.721	0.625	0.604	0	0.051				20160	6310080 2504	**48.76**
Pickup Trucks/Employees	0.132	3.473	0.320	345.052	0.003	0.031	0.017	0.010	0.05	0.035				1677	524901	**0.49**

Total Onsite	11.60
Total Offsite	48.76
Total	60.36

EXISTING CRITERIA POLLUTANT AND GHG EMISSIONS FROM MOBILE EQUIPMENT AT SAN RAFAEL ROCK QUARRY

tons/year

CO-Exhaus	NOx-Exhaus	CO2 Exhaust	SOx-Exhaus	PM10-Exhau	PM2.5-Exhau	PM-Exhaus	N2O Exhau	CH4 Exhaust	ROG-Exhau	CO-Exhaus	NOx-Exhaus	CO2 Exhaust	SOx-Exhaus	PM10-Exhau	PM2.5-Exhau	PM-Exhaus	N2O Exhau	CH4 Exhau
9.01	**18.36**	**1430.32**	**0.02**	**1.45**	**1.45**	**1.45**	**0.00**	**0.27**	**0.30**	**1.24**	**2.93**	**223.85**	**0.00**	**0.20**	**0.20**	**0.20**	**0.00**	**0.04**
5.08	**18.40**	**1902.01**	**0.02**	**0.57**	**0.57**	**0.57**	**0.00**	**0.16**	**0.18**	**0.70**	**2.94**	**297.66**	**0.00**	**0.08**	**0.08**	**0.08**	**0.00**	**0.02**
1.46	**5.74**	**598.16**	**0.01**	**0.17**	**0.17**	**0.17**	**0.00**	**0.05**	**0.05**	**0.20**	**0.92**	**93.61**	**0.00**	**0.02**	**0.02**	**0.02**	**0.00**	**0.01**
2.55	**10.63**	**1604.26**	**0.02**	**0.29**	**0.29**	**0.29**	**0.00**	**0.07**	**0.08**	**0.35**	**1.70**	**251.07**	**0.00**	**0.04**	**0.04**	**0.04**	**0.00**	**0.01**
22.03	**77.74**	**7803.12**	**0.08**	**2.48**	**2.48**	**2.48**	**0.00**	**0.71**	**0.78**	**3.03**	**12.41**	**1221.19**	**0.01**	**0.34**	**0.34**	**0.34**	**0.00**	**0.11**
253.92	**761.22**	**85523.40**	**0.80**	**32.05**	**27.78**	**26.85**	**0.00**	**2.27**	**7.63**	**39.74**	**119.13**	**13384.41**	**0.13**	**5.02**	**4.35**	**4.20**	**0.00**	**0.35**
12.84	**1.18**	**1275.72**	**0.01**	**0.11**	**0.06**	**0.04**	**0.18**	**0.13**	**0.08**	**2.01**	**0.19**	**199.65**	**0.00**	**0.02**	**0.01**	**0.01**	**0.03**	**0.02**
52.98	132.05	14613.60	0.15	5.08	5.03	5.00	0.18	1.38	1.47	7.54	21.08	2287.03	0.02	0.70	0.69	0.69	0.03	0.22
253.92	761.22	85523.40	0.80	32.05	27.78	26.85	0.00	2.27	7.63	39.74	119.13	13384.41	0.13	5.02	4.35	4.20	0.00	0.35
306.90	893.27	100136.99	0.95	37.12	32.81	31.85	0.18	3.65	9.10	47.28	140.21	15671.44	0.15	5.72	5.04	4.89	0.03	0.57

2024.261

Onsite eCO2 =	0	4.905399
Worker eCO2 =	8.621249	0.506281
Offsite e CO2 =		8.868529

		DPM 2008	lbs/hr	lbs/yr
Quarry Haul				
Number of Sources	from AERMOD	46		
Link Length (meters)	from AERMOD	1040		
Volume (VPH)		31		
Mass Emission Rate (gr/mi)	from EMFAC	0.604		
Emission Rate (gr/sec) = ((Mass Emission Rate x Volume)/(1609.3 m/mile) x (3600 sec/hr)) x (Link Length)				
			0.027	2.4
Emission Rate (gr/sec)		3.39E-03		1.45E-04
Emission Rate (gr/sec/source)		7.37E-05		
Quarry Unpaved				
Number of Sources	from AERMOD	22		
Link Length (meters)	from AERMOD	480		
Volume (VPH)		31		
Mass Emission Rate (gr/mi)	from EMFAC	0.604		
Emission Rate (gr/sec) = ((Mass Emission Rate x Volume)/(1609.3 m/mile) x (3600 sec/hr)) x (Link Length)				
			0.012	1.1
Emission Rate (gr/sec)		1.56E-03		6.70E-05
Emission Rate (gr/sec/source)		7.11E-05		
Brickyard Haul				
Number of Sources	from AERMOD	63		
Link Length (meters)	from AERMOD	1310		
Volume (VPH)		4		
Mass Emission Rate (gr/mi)	from EMFAC	0.604		
Emission Rate (gr/sec) = ((Mass Emission Rate x Volume)/(1609.3 m/mile) x (3600 sec/hr)) x (Link Length)				
			0.004	0.4
Emission Rate (gr/sec)		5.46E-04		2.34E-05
Emission Rate (gr/sec/source)		8.67E-06		
Haul Route				
Number of Sources	from AERMOD	197		
Link Length (meters)	from AERMOD	4700		
Volume (VPH)		35		
Mass Emission Rate (gr/mi)	from EMFAC	0.604		
Emission Rate (gr/sec) = ((Mass Emission Rate x Volume)/(1609.3 m/mile) x (3600 sec/hr)) x (Link Length)				
			0.137	12.2
Emission Rate (gr/sec)		1.73E-02		7.40E-04
Emission Rate (gr/sec/source)		8.77E-05		

EXISTING CRITERIA POLLUTANT AND GHG EMISSIONS FROM BARGE TUG BOATS AT SAN RAFAEL ROCK QUARRY

Emission Factors

Pollutant	gm/kW-hr
CO	1.20
HC	0.114
Nox	10.7
PM10/2.5	0.265
SO2	536
CO2	712

Operation Assumptions

2	Barges per day
6	hours per day per barge
730	Barges per year
4,268	Ave tug engine size (hp)
0.7	Average load
226	Fuel Consumption (g/kW-hr)

Emission factors from U.S. EPA Analysis of Commercial Marine Vessels Emissions and Fuel Consumption Data February 2000

Fractional load assumption: 80 percent cruise, 10 percent slow cruise, 10 percent manuevering

Tug Emission Rates

Pollutant	gm/hr	lb/hr	lb/day	tons/yr
CO	3,812	8.39	101	36.7
HC	363	0.798	9.58	3.50
Nox	33,965	74.7	897	327
PM10/2.5	845	1.86	22.3	8.14
SO2	1,707,666	3,756.86	45,082	16,455
CO2	2,266,499	4,986	59,836	21,840
CH4		23.9	191	69.9
N2O		470	3,758	1,372

CH4 emission = 0.32 percent of CO2 Emissions as eCC

N2O emissions = 6.28 percent of CO2 Emissions as eCC

Tug Emission Rates for DPM

Pollutant	gm/hr	lb/hr	lb/day	tons/yr	lb/yr (70-yr)
DPM	845	1.86	1.86	0.68	58

Manuevering	0.2	0.37	12
Cruise	0.8	1.49	47
	Load		

2	Barges per day
0.5	hours per day per barge
730	Barges per year

Calculations for Table 4.2-9: Existing Emissions of Greenhouse Gases From Quarry Operations

Onsite Sources

SAN RAFAEL ROCK QUARRY
Asphalt Plant Emissions - Existing

	676,000	ton/year						112	MMBTU/year				
	325	tons/hr	2080					0.0538	MMBTU/hr				
													70 yr
Drum Mix Hot Mix Natural Gas fired (AP42 11.1)			ton/year	lb/day	lbs/hr	g/s	Heater (AP42 1.4)			ton/year	lb/day	lbs/hr	g/s	lbs/yr
PM	0.033	lb/ton	11.15	85.8	10.73	1.351	0.00745	lb/mmbtu		4.17E-04	0.003	4.01E-04	5.06E-05	
PM10	0.0042	lb/ton	1.4196	10.92	1.365	0.172	0.00745	lb/mmbtu		4.17E-04	0.003	4.01E-04	5.06E-05	
PM2.5	0.0029	lb/ton	0.980	7.54	0.943	0.119	0.00745	lb/mmbtu		4.17E-04	0.003	4.01E-04	5.06E-05	
CO	0.13	lb/ton	43.9	338	42.3	5.32	0.08235	lb/mmbtu		0.005	0.04	0.004	5.59E-04	
Nox	0.026	lb/ton	8.79	67.6	8.45	1.065	0.09804	lb/mmbtu		0.005	0.04	0.005	6.65E-04	
SO2	0.0034	lb/ton	1.1492	8.84	1.105	1.39E-01	0.00059	lb/mmbtu		3.29E-05	2.53E-04	3.17E-05	3.99E-06	
TOC (50% CE)	0.022	lb/ton	7.44	57.2	7.15	0.901								
VOC (50% CE)	0.016	lb/ton	5.41	41.6	5.20	0.655	0.00539	lb/mmbtu		3.02E-04	0.002	2.90E-04	3.66E-05	
H2S	0.005	lb/ton	1.690	13.00	1.63	0.205								144.857

				lbs/yr	g/s	lbs/hr	g/s	70 yr lbs/yr
Non-PAH HAPs	Benzene	0.00039	lb/ton	263.6	3.79E-03	1.27E-01	1.60E-02	11.3
	Ethylbenzene	0.00024	lb/ton	162.2	2.33E-03	7.80E-02	9.83E-03	7.0
	Formaldehyde	0.0031	lb/ton	2,096	3.01E-02	1.008	1.27E-01	89.8
	Hexane	0.00092	lb/ton	622	8.95E-03	0.299	3.77E-02	26.7
	Methyl chloroform	0.000048	lb/ton	32.45	4.67E-04	1.56E-02	1.97E-03	1.4
	Toluene	0.00015	lb/ton	101.4	1.46E-03	4.88E-02	6.14E-03	4.3
	Xylene	0.0002	lb/ton	135.2	1.94E-03	6.50E-02	8.19E-03	5.8
PAH HAPs	2-Methylnaphthalene	7.40E-05	lb/ton	50.0	7.20E-04	2.41E-02	3.03E-03	2.1
	Acenaphthene	1.40E-06	lb/ton	0.946	1.36E-05	4.55E-04	5.73E-05	0.0
	Acenaphthylene	8.60E-06	lb/ton	5.81	8.36E-05	2.80E-03	3.52E-04	0.2
	Anthracene	2.20E-07	lb/ton	1.49E-01	2.14E-06	7.15E-05	9.01E-06	0.0
	Benzo(a)anthracene	2.10E-07	lb/ton	1.42E-01	2.04E-06	6.83E-05	8.60E-06	0.0
	Benzo(a)pyrene	1.10E-07	lb/ton	7.44E-02	1.07E-06	3.58E-05	4.50E-06	0.0
	Benzo(b)flroranthene	1.00E-07	lb/ton	6.76E-02	9.72E-07	3.25E-05	4.10E-06	0.0
	Benzo(ghi)perylene	4.00E-08	lb/ton	2.70E-02	3.89E-07	1.30E-05	1.64E-06	0.0
	Benzo(k)fluoranthene	4.10E-08	lb/ton	2.77E-02	3.99E-07	1.33E-05	1.68E-06	0.0
	Chrysene	1.80E-07	lb/ton	1.22E-01	1.75E-06	5.85E-05	7.37E-06	0.0
	Fluoranthene	6.10E-07	lb/ton	0.412	5.93E-06	1.98E-04	2.50E-05	0.0
	Fluorene	3.80E-06	lb/ton	2.569	3.69E-05	1.24E-03	1.56E-04	0.1
	Indeno(123-cd)pyrene	7.00E-09	lb/ton	4.73E-03	6.81E-08	2.28E-06	2.87E-07	0.0
	Naphthalene	9.00E-05	lb/ton	60.8	8.75E-04	2.93E-02	3.69E-03	2.6
	Phenanthrene	7.60E-06	lb/ton	5.14	7.39E-05	2.47E-03	3.11E-04	0.2
	Pyrene	5.40E-07	lb/ton	3.65E-01	5.25E-06	1.76E-04	2.21E-05	0.0
	Perylene	8.80E-09	lb/ton	5.95E-03	8.56E-08	2.86E-06	3.60E-07	0.0
Metals	Arsenic	5.60E-07	lb/ton	3.79E-01	5.45E-06	1.82E-04	2.29E-05	0.0
	Barium	5.80E-06	lb/ton	3.921	5.64E-05	1.89E-03	2.38E-04	0.2
	Beryllium		lb/ton					
	Cadmium	4.10E-07	lb/ton	2.77E-01	3.99E-06	1.33E-04	1.68E-05	0.0
	Chromium	5.50E-06	lb/ton	3.718	5.35E-05	1.79E-03	2.25E-04	0.2
	Chromium VI	4.50E-07	lb/ton	3.04E-01	4.38E-06	1.46E-04	1.84E-05	0.0
	Copper	3.10E-06	lb/ton	2.096	3.01E-05	1.01E-03	1.27E-04	0.1
	Lead	6.20E-07	lb/ton	0.419	6.03E-06	2.02E-04	2.54E-05	0.0
	Manganese	7.70E-06	lb/ton	5.21	7.49E-05	2.50E-03	3.15E-04	0.2
	Mercury	2.40E-07	lb/ton	1.62E-01	2.33E-06	7.80E-05	9.83E-06	0.0
	Nickel	6.30E-05	lb/ton	42.6	6.13E-04	2.05E-02	2.58E-03	1.8
	Selenium	3.50E-07	lb/ton	2.37E-01	3.40E-06	1.14E-04	1.43E-05	0.0
	Zinc	6.10E-05	lb/ton	41.2	5.93E-04	1.98E-02	2.50E-03	1.8
	Antimony	1.80E-07	lb/ton	1.22E-01	1.75E-06	5.85E-05	7.37E-06	0.0
	Cobalt	2.60E-08	lb/ton	1.76E-02	2.53E-07	8.45E-06	1.06E-06	0.0
	Phospherous	2.80E-05	lb/ton	18.93	2.72E-04	9.10E-03	1.15E-03	0.8
	Silver	4.80E-07	lb/ton	3.24E-01	4.67E-06	1.56E-04	1.97E-05	0.0
	Thallium	4.10E-09	lb/ton	2.77E-03	3.99E-08	1.33E-06	1.68E-07	0.0

SAN RAFAEL ROCK QUARRY
Asphalt Plant Emissions - Proposed

676,000	ton/year		112	MMBTU/year	
325	tons/hr	2080	0.0538	MMBTU/hr	

Drum Mix Hot Mix Natural Gas fired (AP42 11.1)			ton/year	lb/day	lbs/hr	g/s	Heater (AP42 1.4)		ton/year	lb/day	lbs/hr	g/s	70 yr lbs/yr
PM	0.033	lb/ton	11.15	85.8	10.73	1.351	0.00745	lb/mmbtu	4.17E-04	0.003	4.01E-04	5.06E-05	
PM10	0.0042	lb/ton	1.4196	10.92	1.365	0.172	0.00745	lb/mmbtu	4.17E-04	0.003	4.01E-04	5.06E-05	
PM2.5	0.0029	lb/ton	0.980	7.54	0.943	0.119	0.00745	lb/mmbtu	4.17E-04	0.003	4.01E-04	5.06E-05	
CO	0.13	lb/ton	43.9	338	42.3	5.32	0.08235	lb/mmbtu	0.005	0.04	0.004	5.59E-04	
Nox	0.026	lb/ton	8.79	67.6	8.45	1.065	0.09804	lb/mmbtu	0.005	0.04	0.005	6.65E-04	
SO2	0.0034	lb/ton	1.1492	8.84	1.105	1.39E-01	0.00059	lb/mmbtu	3.29E-05	2.53E-04	3.17E-05	3.99E-06	
TOC (50% CE)	0.022	lb/ton	7.44	57.2	7.15	0.901							
VOC (50% CE)	0.016	lb/ton	5.41	41.6	5.20	0.655	0.00539	lb/mmbtu	3.02E-04	0.002	2.90E-04	3.66E-05	
H2S	0.005	lb/ton	1.690	13.00	1.63	0.205							820.857

				lbs/yr	g/s	lbs/hr	g/s	70 yr lbs/yr
Non-PAH HAPs	Benzene	0.00039	lb/ton	263.6	3.79E-03	1.27E-01	1.60E-02	64.0
	Ethylbenzene	0.00024	lb/ton	162.2	2.33E-03	7.80E-02	9.83E-03	39.4
	Formaldehyde	0.0031	lb/ton	2,096	3.01E-02	1.008	1.27E-01	508.9
	Hexane	0.00092	lb/ton	622	8.95E-03	0.299	3.77E-02	151.0
	Methyl chloroform	0.000048	lb/ton	32.45	4.67E-04	1.56E-02	1.97E-03	7.9
	Toluene	0.00015	lb/ton	101.4	1.46E-03	4.88E-02	6.14E-03	24.6
	Xylene	0.0002	lb/ton	135.2	1.94E-03	6.50E-02	8.19E-03	32.8
PAH HAPs	2-Methylnaphthalene	7.40E-05	lb/ton	50.0	7.20E-04	2.41E-02	3.03E-03	12.1
	Acenaphthene	1.40E-06	lb/ton	0.946	1.36E-05	4.55E-04	5.73E-05	0.2
	Acenaphthylene	8.60E-06	lb/ton	5.81	8.36E-05	2.80E-03	3.52E-04	1.4
	Anthracene	2.20E-07	lb/ton	1.49E-01	2.14E-06	7.15E-05	9.01E-06	0.0
	Benzo(a)anthracene	2.10E-07	lb/ton	1.42E-01	2.04E-06	6.83E-05	8.60E-06	0.0
	Benzo(a)pyrene	1.10E-07	lb/ton	7.44E-02	1.07E-06	3.58E-05	4.50E-06	0.0
	Benzo(b)flroranthene	1.00E-07	lb/ton	6.76E-02	9.72E-07	3.25E-05	4.10E-06	0.0
	Benzo(ghi)perylene	4.00E-08	lb/ton	2.70E-02	3.89E-07	1.30E-05	1.64E-06	0.0
	Benzo(k)fluoranthene	4.10E-08	lb/ton	2.77E-02	3.99E-07	1.33E-05	1.68E-06	0.0
	Chrysene	1.80E-07	lb/ton	1.22E-01	1.75E-06	5.85E-05	7.37E-06	0.0
	Fluoranthene	6.10E-07	lb/ton	0.412	5.93E-06	1.98E-04	2.50E-05	0.1
	Fluorene	3.80E-06	lb/ton	2.569	3.69E-05	1.24E-03	1.56E-04	0.6
	Indeno(123-cd)pyrene	7.00E-09	lb/ton	4.73E-03	6.81E-08	2.28E-06	2.87E-07	0.0
	Naphthalene	9.00E-05	lb/ton	60.8	8.75E-04	2.93E-02	3.69E-03	14.8
	Phenanthrene	7.60E-06	lb/ton	5.14	7.39E-05	2.47E-03	3.11E-04	1.2
	Pyrene	5.40E-07	lb/ton	3.65E-01	5.25E-06	1.76E-04	2.21E-05	0.1
	Perylene	8.80E-09	lb/ton	5.95E-03	8.56E-08	2.86E-06	3.60E-07	0.0
Metals	Arsenic	5.60E-07	lb/ton	3.79E-01	5.45E-06	1.82E-04	2.29E-05	0.1
	Barium	5.80E-06	lb/ton	3.921	5.64E-05	1.89E-03	2.38E-04	1.0
	Beryllium		lb/ton					
	Cadmium	4.10E-07	lb/ton	2.77E-01	3.99E-06	1.33E-04	1.68E-05	0.1
	Chromium	5.50E-06	lb/ton	3.718	5.35E-05	1.79E-03	2.25E-04	0.9
	Chromium VI	4.50E-07	lb/ton	3.04E-01	4.38E-06	1.46E-04	1.84E-05	0.1
	Copper	3.10E-06	lb/ton	2.096	3.01E-05	1.01E-03	1.27E-04	0.5
	Lead	6.20E-07	lb/ton	0.419	6.03E-06	2.02E-04	2.54E-05	0.1
	Manganese	7.70E-06	lb/ton	5.21	7.49E-05	2.50E-03	3.15E-04	1.3
	Mercury	2.40E-07	lb/ton	1.62E-01	2.33E-06	7.80E-05	9.83E-06	0.0
	Nickel	6.30E-05	lb/ton	42.6	6.13E-04	2.05E-02	2.58E-03	10.3
	Selenium	3.50E-07	lb/ton	2.37E-01	3.40E-06	1.14E-04	1.43E-05	0.1
	Zinc	6.10E-05	lb/ton	41.2	5.93E-04	1.98E-02	2.50E-03	10.0
	Antimony	1.80E-07	lb/ton	1.22E-01	1.75E-06	5.85E-05	7.37E-06	0.0
	Cobalt	2.60E-08	lb/ton	1.76E-02	2.53E-07	8.45E-06	1.06E-06	0.0
	Phospherous	2.80E-05	lb/ton	18.93	2.72E-04	9.10E-03	1.15E-03	4.6
	Silver	4.80E-07	lb/ton	3.24E-01	4.67E-06	1.56E-04	1.97E-05	0.1
	Thallium	4.10E-09	lb/ton	2.77E-03	3.99E-08	1.33E-06	1.68E-07	0.0

SAN RAFAEL ROCK QUARRY
Asphalt Plant Fugitive Emissions - Existing

676,000	ton/year	
325	tons/hr	2080

			tons/yr	lb/day	lb/hr	g/s	
Loadout PM10/PM2.5	0.00030	lb/ton	0.1004	2.318	9.66E-02	1.22E-02	
Loadout TOC	0.00142	lb/ton	0.479	11.05	4.60E-01	5.80E-02	
Loadout VOC	0.00133	lb/ton	0.450	10.39	4.33E-01	5.45E-02	
Loadout CO	0.00046	lb/ton	1.55E-01	3.585	1.49E-01	1.88E-02	
Silo Filling PM10/PM2.5	0.00042	lb/ton	1.41E-01	3.264	1.36E-01	1.71E-02	
Silo Filling TOC	0.00415	lb/ton	1.403	32.38	1.349	1.70E-01	
Silo Filling VOC	0.00390	lb/ton	1.319	30.44	1.268	1.60E-01	
Silo Filling CO	0.00040	lb/ton	1.36E-01	3.135	1.31E-01	1.65E-02	
Storage Tank TOC	1.37E-05	lb/ton	4.63E-03	1.07E-01	4.45E-03	5.61E-04	
Storage Tank VOC	0.00001	lb/ton	4.35E-03	1.00E-01	4.19E-03	5.27E-04	
Storage Tank CO	1.33E-06	lb/ton	4.49E-04	1.04E-02	4.32E-04	5.44E-05	
Storage Tank H2S	0.0049	lb/ton	1.656	38.22	1.593	2.01E-01	141.96
							70 yr

		Loadout	Silo/Storage		lbs/yr	g/s	lb/hr	g/s	lbs/yr
	Benzene	0.052%	0.032%	lb/ton	1.399	2.01E-05	6.73E-04	8.47E-05	0.1
Non-PAH HAPs	Ethylbenzene	0.28%	0.038%	lb/ton	3.752	5.40E-05	1.80E-03	2.27E-04	0.2
TOC	Formaldehyde	0.088%	0.69%	lb/ton	20.27	2.92E-04	9.75E-03	1.23E-03	0.9
	Hexane	0.15%	0.10%	lb/ton	4.25	6.12E-05	2.04E-03	2.58E-04	0.2
	Toluene	0.21%	0.062%	lb/ton	3.757	5.40E-05	1.81E-03	2.28E-04	0.2
	Xylene	0.41%	0.20%	lb/ton	9.56	1.37E-04	4.60E-03	5.79E-04	0.4
	Bromomethane	0.0096%	0.0049%	lb/ton	2.30E-01	3.31E-06	1.11E-04	1.39E-05	0.0
	2-Butanone	0.049%	0.039%	lb/ton	1.567	2.25E-05	7.54E-04	9.49E-05	0.1
	Carbon Disulfide	0.013%	0.016%	lb/ton	0.575	8.27E-06	2.76E-04	3.48E-05	0.0
	Chloroethane	0.00021%	0.004%	lb/ton	1.15E-01	1.65E-06	5.51E-05	6.94E-06	0.0
	Chloromethane	0.015%	0.023%	lb/ton	0.791	1.14E-05	3.80E-04	4.79E-05	0.0
	Cumene	0.11%		lb/ton	1.053	1.52E-05	5.06E-04	6.38E-05	0.0
	Methylene Chloride		0.00027%	lb/ton	7.60E-03	1.09E-07	3.65E-06	4.61E-07	0.0
	Styrene	0.0073%	0.0054%	lb/ton	2.22E-01	3.19E-06	1.07E-04	1.34E-05	0.0
	Tetrachloroethane	0.0077%		lb/ton	7.37E-02	1.06E-06	3.55E-05	4.47E-06	0.0
PAH HAPs	2-Methylnaphthalene	2.38%	5.27%	lb/ton	171.2	2.46E-03	9.47E-03	1.19E-03	7.3
PM	Acenaphthene	0.26%	0.47%	lb/ton	15.72	2.26E-04	8.90E-04	1.12E-04	0.7
	Acenaphthylene	0.028%	0.014%	lb/ton	0.662	9.53E-06	4.61E-05	5.81E-06	0.0
	Anthracene	0.07%	0.13%	lb/ton	4.33	6.23E-05	2.44E-04	3.08E-05	0.2
	Benzo(a)anthracene	0.019%	0.056%	lb/ton	1.759	2.53E-05	9.45E-05	1.19E-05	0.1
	Benzo(a)pyrene	0.0078%	0.0095%	lb/ton	3.42E-01	4.92E-06	2.05E-05	2.58E-06	0.0
	Benzo(b)flroranthene	0.0076%		lb/ton	7.28E-02	1.05E-06	7.34E-06	9.25E-07	0.0
	Benzo(ghi)perylene	0.0019%		lb/ton	1.82E-02	2.62E-07	1.83E-06	2.31E-07	0.0
	Benzo(k)fluoranthene	0.0022%		lb/ton	2.11E-02	3.03E-07	2.12E-06	2.68E-07	0.0
	Chrysene	0.103%	0.21%	lb/ton	6.90	9.92E-05	3.85E-04	4.85E-05	0.3
	Dibenzo(ah)anthracene	0.00037%		lb/ton	3.54E-03	5.10E-08	3.57E-07	4.50E-08	0.0
	Fluoranthene	0.05%	0.15%	lb/ton	4.70	6.76E-05	2.52E-04	3.18E-05	0.2
	Fluorene	0.77%	1.01%	lb/ton	35.81	5.15E-04	2.12E-03	2.67E-04	1.5
	Indeno(123-cd)pyrene	0.00047%		lb/ton	4.50E-03	6.47E-08	4.54E-07	5.72E-08	0.0
	Naphthalene	1.25%	1.82%	lb/ton	63.2	9.09E-04	3.68E-03	4.64E-04	2.7
	Phenanthrene	0.81%	1.80%	lb/ton	58.4	8.41E-04	3.23E-03	4.07E-04	2.5
	Pyrene	0.15%	0.40%	lb/ton	12.70	1.83E-04	6.89E-04	8.68E-05	0.5
	Perylene	0.022%	0.03%	lb/ton	1.055	1.52E-05	6.20E-05	7.82E-06	0.0
	Phenol	1.18%		lb/ton	11.30	1.63E-04	1.14E-03	1.44E-04	0.5

SAN RAFAEL ROCK QUARRY
Asphalt Plant Fugitive Emissions - Proposed

676,000	ton/year	
325	tons/hr	2080

			tons/yr	lb/day	lb/hr	g/s	
Loadout PM10/PM2.5	0.00030	lb/ton	0.1004	2.318	9.66E-02	1.22E-02	
Loadout TOC	0.00142	lb/ton	0.479	11.05	4.60E-01	5.80E-02	
Loadout VOC	0.00133	lb/ton	0.450	10.39	4.33E-01	5.45E-02	
Loadout CO	0.00046	lb/ton	1.55E-01	3.585	1.49E-01	1.88E-02	
Silo Filling PM10/PM2.5	0.00042	lb/ton	1.41E-01	3.264	1.36E-01	1.71E-02	
Silo Filling TOC	0.00415	lb/ton	1.403	32.38	1.349	1.70E-01	
Silo Filling VOC	0.00390	lb/ton	1.319	30.44	1.268	1.60E-01	
Silo Filling CO	0.00040	lb/ton	1.36E-01	3.135	1.31E-01	1.65E-02	
Storage Tank TOC	1.37E-05	lb/ton	4.63E-03	1.07E-01	4.45E-03	5.61E-04	
Storage Tank VOC	0.00001	lb/ton	4.35E-03	1.00E-01	4.19E-03	5.27E-04	
Storage Tank CO	1.33E-06	lb/ton	4.49E-04	1.04E-02	4.32E-04	5.44E-05	
Storage Tank H2S	0.0049	lb/ton	1.656	38.22	1.593	2.01E-01	804.44
							70 yr

		Loadout	Silo/Storage		lbs/yr	g/s	lb/hr	g/s	lbs/yr
	Benzene	0.052%	0.032%	lb/ton	1.399	2.01E-05	6.73E-04	8.47E-05	0.3
Non-PAH HAPs	Ethylbenzene	0.28%	0.038%	lb/ton	3.752	5.40E-05	1.80E-03	2.27E-04	0.9
TOC	Formaldehyde	0.088%	0.69%	lb/ton	20.27	2.92E-04	9.75E-03	1.23E-03	4.9
	Hexane	0.15%	0.10%	lb/ton	4.25	6.12E-05	2.04E-03	2.58E-04	1.0
	Toluene	0.21%	0.062%	lb/ton	3.757	5.40E-05	1.81E-03	2.28E-04	0.9
	Xylene	0.41%	0.20%	lb/ton	9.56	1.37E-04	4.60E-03	5.79E-04	2.3
	Bromomethane	0.0096%	0.0049%	lb/ton	2.30E-01	3.31E-06	1.11E-04	1.39E-05	0.1
	2-Butanone	0.049%	0.039%	lb/ton	1.567	2.25E-05	7.54E-04	9.49E-05	0.4
	Carbon Disulfide	0.013%	0.016%	lb/ton	0.575	8.27E-06	2.76E-04	3.48E-05	0.1
	Chloroethane	0.00021%	0.004%	lb/ton	1.15E-01	1.65E-06	5.51E-05	6.94E-06	0.0
	Chloromethane	0.015%	0.023%	lb/ton	0.791	1.14E-05	3.80E-04	4.79E-05	0.2
	Cumene	0.11%		lb/ton	1.053	1.52E-05	5.06E-04	6.38E-05	0.3
	Methylene Chloride		0.00027%	lb/ton	7.60E-03	1.09E-07	3.65E-06	4.61E-07	0.0
	Styrene	0.0073%	0.0054%	lb/ton	2.22E-01	3.19E-06	1.07E-04	1.34E-05	0.1
	Tetrachloroethane	0.0077%		lb/ton	7.37E-02	1.06E-06	3.55E-05	4.47E-06	0.0
PAH HAPs	2-Methylnaphthalene	2.38%	5.27%	lb/ton	171.2	2.46E-03	9.47E-03	1.19E-03	41.6
PM	Acenaphthene	0.26%	0.47%	lb/ton	15.72	2.26E-04	8.90E-04	1.12E-04	3.8
	Acenaphthylene	0.028%	0.014%	lb/ton	0.662	9.53E-06	4.61E-05	5.81E-06	0.2
	Anthracene	0.07%	0.13%	lb/ton	4.33	6.23E-05	2.44E-04	3.08E-05	1.1
	Benzo(a)anthracene	0.019%	0.056%	lb/ton	1.759	2.53E-05	9.45E-05	1.19E-05	0.4
	Benzo(a)pyrene	0.0078%	0.0095%	lb/ton	3.42E-01	4.92E-06	2.05E-05	2.58E-06	0.1
	Benzo(b)flroranthene	0.0076%		lb/ton	7.28E-02	1.05E-06	7.34E-06	9.25E-07	0.0
	Benzo(ghi)perylene	0.0019%		lb/ton	1.82E-02	2.62E-07	1.83E-06	2.31E-07	0.0
	Benzo(k)fluoranthene	0.0022%		lb/ton	2.11E-02	3.03E-07	2.12E-06	2.68E-07	0.0
	Chrysene	0.103%	0.21%	lb/ton	6.90	9.92E-05	3.85E-04	4.85E-05	1.7
	Dibenzo(ah)anthracene	0.00037%		lb/ton	3.54E-03	5.10E-08	3.57E-07	4.50E-08	0.0
	Fluoranthene	0.05%	0.15%	lb/ton	4.70	6.76E-05	2.52E-04	3.18E-05	1.1
	Fluorene	0.77%	1.01%	lb/ton	35.81	5.15E-04	2.12E-03	2.67E-04	8.7
	Indeno(123-cd)pyrene	0.00047%		lb/ton	4.50E-03	6.47E-08	4.54E-07	5.72E-08	0.0
	Naphthalene	1.25%	1.82%	lb/ton	63.2	9.09E-04	3.68E-03	4.64E-04	15.4
	Phenanthrene	0.81%	1.80%	lb/ton	58.4	8.41E-04	3.23E-03	4.07E-04	14.2
	Pyrene	0.15%	0.40%	lb/ton	12.70	1.83E-04	6.89E-04	8.68E-05	3.1
	Perylene	0.022%	0.03%	lb/ton	1.055	1.52E-05	6.20E-05	7.82E-06	0.3
	Phenol	1.18%		lb/ton	11.30	1.63E-04	1.14E-03	1.44E-04	2.7

SAN RAFAEL ROCK QUARRY
Aggregate Plant Emissions - Existing

Operating Assumptions	Stationary	Portable
Hourly Process Rate (ton)	680	680
Daily Process Rate (ton)	5,441	5,441
Annual Process Rate (ton)	1,414,667	1,414,667

2,080

Aggregate Plant PM10 Emissions

Equipment	Process Rate (ton/hr)	Number of Transfers	Daily Operation (hours)	Uncontrolled Emission Factor (lb/ton)	Controlled Emission Factor (lb/ton)	Controlled PM10 Emissions Hourly (lb/hr)	Controlled PM10 Emissions Daily (lb/day)	Controlled PM10 Emissions Annual (ton/yr)	Controlled PM2.5 Emissions Hourly (lb/hr)	Controlled PM2.5 Emissions Daily (lb/day)	Controlled PM2.5 Emissions Annual (ton/yr)	Uncontrolled PM10 Emissions Hourly (lb/hr)	Uncontrolled PM10 Emissions Daily (lb/day)	Uncontrolled PM10 Emissions Annual (ton/yr)	Uncontrolled PM2.5 Emissions Hourly (lb/hr)	Uncontrolled PM2.5 Emissions Daily (lb/day)	Uncontrolled PM2.5 Emissions Annual (ton/yr)
Primary Crusher	1000	1	8	0.0024	0.00054	0.54	4.32	0.38	0.08	0.65	0.06	2.40	19.20	1.70	0.36	2.88	0.25
Secondary Crusher	800	1	8	0.0024	0.00054	0.43	3.46	0.38	0.06	0.52	0.06	1.92	15.36	1.70	0.29	2.30	0.25
Primary Screening	600	1	8	0.0087	0.00074	0.44	3.55	0.52	0.07	0.53	0.08	5.22	41.76	6.15	0.78	6.26	0.92
Primary Conveying	1000	1	8	0.0011	0.000046	0.05	0.37	0.03	0.01	0.06	0.00	1.10	8.80	0.78	0.17	1.32	0.12
SWOOP Plant Primary Crusher	300	1	8	0.0024	0.00054	0.16	1.30	0.38	0.02	0.19	0.06	0.72	5.76	1.70	0.11	0.86	0.25
Conveyed Crushed Rock	1000	1	8	0.0011	0.000046	0.05	0.37	0.03	0.01	0.06	0.00	1.10	8.80	0.78	0.17	1.32	0.12
SWOOP Plant Screen	600	1	8	0.0087	0.00074	0.44	3.55	0.52	0.07	0.53	0.08	5.22	41.76	6.15	0.78	6.26	0.92
E6 Secondary Cone Crusher	400	1	8	0.0024	0.00054	0.22	1.73	0.38	0.03	0.26	0.06	0.96	7.68	1.70	0.14	1.15	0.25
E10 Secondary Cone Crusher	375	1	8	0.0024	0.00054	0.20	1.62	0.38	0.03	0.24	0.06	0.90	7.20	1.70	0.14	1.08	0.25
E11 Secondary Cone Crusher	375	1	8	0.0024	0.00054	0.20	1.62	0.38	0.03	0.24	0.06	0.90	7.20	1.70	0.14	1.08	0.25
Belts	1000	1	8	0.0011	0.000046	0.05	0.37	0.03	0.01	0.06	0.00	1.10	8.80	0.78	0.17	1.32	0.12
E5 Secondary Screen	1000	1	8	0.0087	0.00074	0.74	5.92	0.52	0.11	0.89	0.08	8.70	69.60	6.15	1.31	10.44	0.92
6x20 Simplicty Screen	350	1	8	0.0087	0.00074	0.26	2.07	0.52	0.04	0.31	0.08	3.05	24.36	6.15	0.46	3.65	0.92
E8 Secondary Screen	800	1	8	0.0087	0.00074	0.59	4.74	0.52	0.09	0.71	0.08	6.96	55.68	6.15	1.04	8.35	0.92
E7 Secondary Screen	800	1	8	0.0087	0.00074	0.59	4.74	0.52	0.09	0.71	0.08	6.96	55.68	6.15	1.04	8.35	0.92
E12 Secondary Screen	400	1	8	0.0087	0.00074	0.30	2.37	0.52	0.04	0.36	0.08	3.48	27.84	6.15	0.52	4.18	0.92
E13 Secondary Screen	400	1	8	0.0087	0.00074	0.30	2.37	0.52	0.04	0.36	0.08	3.48	27.84	6.15	0.52	4.18	0.92
Portable Jaw Crusher	300	1	8	0.0024	0.00054	0.16	1.30	0.38	0.02	0.19	0.06	0.72	5.76	1.70	0.11	0.86	0.25
Portable Conveyors	550	4	8	0.0011	0.000046	0.10	0.81	0.03	0.02	0.12	0.00	2.42	19.36	0.78	0.36	2.90	0.12
Portable Screen	550	1	8	0.0087	0.00074	0.41	3.26	0.52	0.06	0.49	0.08	4.79	38.28	6.15	0.72	5.74	0.92
Portable Cone Crusher	250	1	8	0.0024	0.00054	0.14	1.08	0.38	0.02	0.16	0.06	0.60	4.80	1.70	0.09	0.72	0.25
Total Aggregate Plant PM Emissions						***6.36***	***50.9***	***7.9***	***0.95***	***7.63***	***1.18***	***62.7***	***501.5***	***72.1***	***9.40***	***75.2***	***10.81***

Primary
Secondary
Portable

Emission Factors and Rates for HRA

Hourly	PM10	6.36	lb/hr	0.80	g/s
Annual	PM10	15,793	lb/yr	0.227	g/s
Hourly	PM2.5	0.95	lb/hr	0.120	g/s
Annual	PM2.5	2,369	lb/yr	0.0341	g/s
Hourly	Silica	3.57	lb/hr	0.450	g/s
Annual	Silica	8,862	lb/yr	0.127	g/s
Hourly	Silica	3.57	lb/hr	0.450	g/s
Annual	Silica	380	lb/yr (70-yr)	0.0055	g/s

56% cystalline silica

Hourly	Antimony	4.26E-06
Hourly	Arsenic	4.33E-05
Hourly	Barium	4.45E-03
Hourly	Beryllium	7.63E-06
Hourly	Cadmium	0.00E+00
Hourly	Chromium	1.02E-04
Hourly	Cobalt	1.40E-04
Hourly	Copper	8.27E-05
Hourly	Lead	1.53E-04
Hourly	Mercury	2.67E-05
Hourly	Molybdenum	5.53E-06
Hourly	Nickel	1.72E-04
Hourly	Selenium	3.82E-06
Hourly	Silver	0.00E+00
Hourly	Thallium	0.00E+00
Hourly	Vanadium	1.84E-04
Hourly	Zinc	3.82E-04
Annual	Antimony	4.53E-04
Annual	Arsenic	4.60E-03
Annual	Barium	4.74E-01
Annual	Beryllium	8.12E-04
Annual	Cadmium	0.00E+00
Annual	Chromium	1.08E-02
Annual	Cobalt	1.49E-02
Annual	Copper	8.80E-03
Annual	Lead	1.62E-02
Annual	Mercury	2.84E-03
Annual	Molybdenum	5.89E-04
Annual	Nickel	1.83E-02
Annual	Selenium	4.06E-04
Annual	Silver	0.00E+00
Annual	Thallium	0.00E+00
Annual	Vanadium	1.96E-02
Annual	Zinc	4.06E-02

SAN RAFAEL ROCK QUARRY
Aggregate Plant Emissions - Proposed

Operating Assumptions	Stationary	Portable
Hourly Process Rate (ton)	816	816
Daily Process Rate (ton)	6,529	6,529
Annual Process Rate (ton)	1,697,600	1,697,600

2,080

Aggregate Plant PM10 Emissions

Equipment	Process Rate (ton/hr)	Number of Transfers	Daily Operation (hours)	Uncontrolled Emission Factor (lb/ton)	Controlled Emission Factor (lb/ton)	Controlled PM10 Emissions Hourly (lb/hr)	Controlled PM10 Emissions Daily (lb/day)	Controlled PM10 Emissions Annual (ton/yr)	Controlled PM2.5 Emissions Hourly (lb/hr)	Controlled PM2.5 Emissions Daily (lb/day)	Controlled PM2.5 Emissions Annual (ton/yr)	Uncontrolled PM10 Emissions Hourly (lb/hr)	Uncontrolled PM10 Emissions Daily (lb/day)	Uncontrolled PM10 Emissions Annual (ton/yr)	Uncontrolled PM2.5 Emissions Hourly (lb/hr)	Uncontrolled PM2.5 Emissions Daily (lb/day)	Uncontrolled PM2.5 Emissions Annual (ton/yr)
Primary Crusher	1200	1	8	0.0024	0.00054	0.65	5.18	0.46	0.10	0.78	0.07	2.88	23.04	2.04	0.43	3.46	0.31
Secondary Crusher	960	1	8	0.0024	0.00054	0.52	4.15	0.46	0.08	0.62	0.07	2.30	18.43	2.04	0.35	2.76	0.31
Primary Screening	720	1	8	0.0087	0.00074	0.53	4.26	0.63	0.08	0.64	0.09	6.26	50.11	7.38	0.94	7.52	1.11
Primary Conveying	1200	1	8	0.0011	0.000046	0.06	0.44	0.04	0.01	0.07	0.01	1.32	10.56	0.93	0.20	1.58	0.14
SWOOP Plant Primary Crusher	360	1	8	0.0024	0.00054	0.19	1.56	0.46	0.03	0.23	0.07	0.86	6.91	2.04	0.13	1.04	0.31
Conveyed Crushed Rock	1200	1	8	0.0011	0.000046	0.06	0.44	0.04	0.01	0.07	0.01	1.32	10.56	0.93	0.20	1.58	0.14
SWOOP Plant Screen	720	1	8	0.0087	0.00074	0.53	4.26	0.63	0.08	0.64	0.09	6.26	50.11	7.38	0.94	7.52	1.11
E6 Secondary Cone Crusher	480	1	8	0.0024	0.00054	0.26	2.07	0.46	0.04	0.31	0.07	1.15	9.22	2.04	0.17	1.38	0.31
E10 Secondary Cone Crusher	450	1	8	0.0024	0.00054	0.24	1.94	0.46	0.04	0.29	0.07	1.08	8.64	2.04	0.16	1.30	0.31
E11 Secondary Cone Crusher	450	1	8	0.0024	0.00054	0.24	1.94	0.46	0.04	0.29	0.07	1.08	8.64	2.04	0.16	1.30	0.31
Belts	1200	1	8	0.0011	0.000046	0.06	0.44	0.04	0.01	0.07	0.01	1.32	10.56	0.93	0.20	1.58	0.14
E5 Secondary Screen	1200	1	8	0.0087	0.00074	0.89	7.10	0.63	0.13	1.07	0.09	10.44	83.52	7.38	1.57	12.53	1.11
6x20 Simplicty Screen	420	1	8	0.0087	0.00074	0.31	2.49	0.63	0.05	0.37	0.09	3.65	29.23	7.38	0.55	4.38	1.11
E8 Secondary Screen	960	1	8	0.0087	0.00074	0.71	5.68	0.63	0.11	0.85	0.09	8.35	66.82	7.38	1.25	10.02	1.11
E7 Secondary Screen	960	1	8	0.0087	0.00074	0.71	5.68	0.63	0.11	0.85	0.09	8.35	66.82	7.38	1.25	10.02	1.11
E12 Secondary Screen	480	1	8	0.0087	0.00074	0.36	2.84	0.63	0.05	0.43	0.09	4.18	33.41	7.38	0.63	5.01	1.11
E13 Secondary Screen	480	1	8	0.0087	0.00074	0.36	2.84	0.63	0.05	0.43	0.09	4.18	33.41	7.38	0.63	5.01	1.11
Portable Jaw Crusher	360	1	8	0.0024	0.00054	0.19	1.56	0.46	0.03	0.23	0.07	0.86	6.91	2.04	0.13	1.04	0.31
Portable Conveyors	660	4	8	0.0011	0.000046	0.12	0.97	0.04	0.02	0.15	0.01	2.90	23.23	0.93	0.44	3.48	0.14
Portable Screen	660	1	8	0.0087	0.00074	0.49	3.91	0.63	0.07	0.59	0.09	5.74	45.94	7.38	0.86	6.89	1.11
Portable Cone Crusher	300	1	8	0.0024	0.00054	0.16	1.30	0.46	0.02	0.19	0.07	0.72	5.76	2.04	0.11	0.86	0.31
Total Aggregate Plant PM Emissions						***7.6***	***61.1***	***9.5***	***1.15***	***9.2***	***1.42***	***75.2***	***601.8***	***86.5***	***11.28***	***90.3***	***12.97***

Emission Factors and Rates for HRA

Hourly	PM10	7.63	lb/hr	0.96 g/s
Annual	PM10	18,952	lb/yr	0.273 g/s
Hourly	PM2.5	1.15	lb/hr	0.144 g/s
Annual	PM2.5	2,843	lb/yr	0.0409 g/s
Hourly	Silica	4.28	lb/hr	0.540 g/s
Annual	Silica	10,634	lb/yr	0.153 g/s
Hourly	Silica	4.28	lb/hr	0.540 g/s
Annual	Silica	2,583	lb/yr (70-yr)	0.0371 g/s

56% cystalline silica

Hourly	Antimony	5.11E-06
Hourly	Arsenic	5.19E-05
Hourly	Barium	5.34E-03
Hourly	Beryllium	9.16E-06
Hourly	Cadmium	0.00E+00
Hourly	Chromium	1.22E-04
Hourly	Cobalt	1.68E-04
Hourly	Copper	9.92E-05
Hourly	Lead	1.83E-04
Hourly	Mercury	3.21E-05
Hourly	Molybdenum	6.64E-06
Hourly	Nickel	2.06E-04
Hourly	Selenium	4.58E-06
Hourly	Silver	0.00E+00
Hourly	Thallium	0.00E+00
Hourly	Vanadium	2.21E-04
Hourly	Zinc	4.58E-04
Annual	Antimony	5.44E-04
Annual	Arsenic	5.52E-03
Annual	Barium	5.69E-01
Annual	Beryllium	9.75E-04
Annual	Cadmium	0.00E+00
Annual	Chromium	1.30E-02
Annual	Cobalt	1.79E-02
Annual	Copper	1.06E-02
Annual	Lead	1.95E-02
Annual	Mercury	3.41E-03
Annual	Molybdenum	7.07E-04
Annual	Nickel	2.19E-02
Annual	Selenium	4.87E-04
Annual	Silver	0.00E+00
Annual	Thallium	0.00E+00
Annual	Vanadium	2.36E-02
Annual	Zinc	4.87E-02

SAN RAFAEL ROCK QUARRY
Aggregate Plant Emissions - proposed with 1982 production rate as mitigation

Operating Assumptions	Stationary	Portable	
Hourly Process Rate (ton)	680	680	
Daily Process Rate (ton)	5,441	5,441	
Annual Process Rate (ton)	1,414,667	1,414,667	2,080

Aggregate Plant PM10 Emissions

Equipment	Process Rate (ton/hr)	Number of Transfers	Daily Operation (hours)	Uncontrolled Emission Factor (lb/ton)	Controlled Emission Factor (lb/ton)	Controlled PM10 Emissions Hourly (lb/hr)	Controlled PM10 Emissions Daily (lb/day)	Controlled PM10 Emissions Annual (ton/yr)	Controlled PM2.5 Emissions Hourly (lb/hr)	Controlled PM2.5 Emissions Daily (lb/day)	Controlled PM2.5 Emissions Annual (ton/yr)	Uncontrolled PM10 Emissions Hourly (lb/hr)	Uncontrolled PM10 Emissions Daily (lb/day)	Uncontrolled PM10 Emissions Annual (ton/yr)	Uncontrolled PM2.5 Emissions Hourly (lb/hr)	Uncontrolled PM2.5 Emissions Daily (lb/day)	Uncontrolled PM2.5 Emissions Annual (ton/yr)
Primary Crusher	1200	1	8	0.0024	0.00054	0.65	5.18	0.38	0.10	0.78	0.06	2.88	23.04	1.70	0.43	3.46	0.25
Secondary Crusher	960	1	8	0.0024	0.00054	0.52	4.15	0.38	0.08	0.62	0.06	2.30	18.43	1.70	0.35	2.76	0.25
Primary Screening	720	1	8	0.0087	0.00074	0.53	4.26	0.52	0.08	0.64	0.08	6.26	50.11	6.15	0.94	7.52	0.92
Primary Conveying	1200	1	8	0.0011	0.000046	0.06	0.44	0.03	0.01	0.07	0.00	1.32	10.56	0.78	0.20	1.58	0.12
SWOOP Plant Primary Crusher	360	1	8	0.0024	0.00054	0.19	1.56	0.38	0.03	0.23	0.06	0.86	6.91	1.70	0.13	1.04	0.25
Conveyed Crushed Rock	1200	1	8	0.0011	0.000046	0.06	0.44	0.03	0.01	0.07	0.00	1.32	10.56	0.78	0.20	1.58	0.12
SWOOP Plant Screen	720	1	8	0.0087	0.00074	0.53	4.26	0.52	0.08	0.64	0.08	6.26	50.11	6.15	0.94	7.52	0.92
E6 Secondary Cone Crusher	480	1	8	0.0024	0.00054	0.26	2.07	0.38	0.04	0.31	0.06	1.15	9.22	1.70	0.17	1.38	0.25
E10 Secondary Cone Crusher	450	1	8	0.0024	0.00054	0.24	1.94	0.38	0.04	0.29	0.06	1.08	8.64	1.70	0.16	1.30	0.25
E11 Secondary Cone Crusher	450	1	8	0.0024	0.00054	0.24	1.94	0.38	0.04	0.29	0.06	1.08	8.64	1.70	0.16	1.30	0.25
Belts	1200	1	8	0.0011	0.000046	0.06	0.44	0.03	0.01	0.07	0.00	1.32	10.56	0.78	0.20	1.58	0.12
E5 Secondary Screen	1200	1	8	0.0087	0.00074	0.89	7.10	0.52	0.13	1.07	0.08	10.44	83.52	6.15	1.57	12.53	0.92
6x20 Simplicty Screen	420	1	8	0.0087	0.00074	0.31	2.49	0.52	0.05	0.37	0.08	3.65	29.23	6.15	0.55	4.38	0.92
E8 Secondary Screen	960	1	8	0.0087	0.00074	0.71	5.68	0.52	0.11	0.85	0.08	8.35	66.82	6.15	1.25	10.02	0.92
E7 Secondary Screen	960	1	8	0.0087	0.00074	0.71	5.68	0.52	0.11	0.85	0.08	8.35	66.82	6.15	1.25	10.02	0.92
E12 Secondary Screen	480	1	8	0.0087	0.00074	0.36	2.84	0.52	0.05	0.43	0.08	4.18	33.41	6.15	0.63	5.01	0.92
E13 Secondary Screen	480	1	8	0.0087	0.00074	0.36	2.84	0.52	0.05	0.43	0.08	4.18	33.41	6.15	0.63	5.01	0.92
Portable Jaw Crusher	360	1	8	0.0024	0.00054	0.19	1.56	0.38	0.03	0.23	0.06	0.86	6.91	1.70	0.13	1.04	0.25
Portable Conveyors	660	4	8	0.0011	0.000046	0.12	0.97	0.03	0.02	0.15	0.00	2.90	23.23	0.78	0.44	3.48	0.12
Portable Screen	660	1	8	0.0087	0.00074	0.49	3.91	0.52	0.07	0.59	0.08	5.74	45.94	6.15	0.86	6.89	0.92
Portable Cone Crusher	300	1	8	0.0024	0.00054	0.16	1.30	0.38	0.02	0.19	0.06	0.72	5.76	1.70	0.11	0.86	0.25
Total Aggregate Plant PM Emissions						***7.6***	***61.1***	***7.9***	***1.15***	***9.2***	***1.18***	***75.2***	***601.8***	***72.1***	***11.28***	***90.3***	***10.81***

Emission Factors and Rates for HRA

Hourly	PM10	7.63	lb/hr	0.96 g/s
Annual	PM10	15,793	lb/yr	0.227 g/s
Hourly	PM2.5	1.15	lb/hr	0.144 g/s
Annual	PM2.5	2,369	lb/yr	0.0341 g/s
Hourly	Silica	4.28	lb/hr	0.540 g/s
Annual	Silica	8,862	lb/yr	0.127 g/s
Hourly	Silica	4.28	lb/hr	0.540 g/s
Annual	Silica	2,152	lb/yr (70-yr)	0.0310 g/s

56% cystalline silica

Hourly	Antimony	5.11E-06
Hourly	Arsenic	5.19E-05
Hourly	Barium	5.34E-03
Hourly	Beryllium	9.16E-06
Hourly	Cadmium	0.00E+00
Hourly	Chromium	1.22E-04
Hourly	Cobalt	1.68E-04
Hourly	Copper	9.92E-05
Hourly	Lead	1.83E-04
Hourly	Mercury	3.21E-05
Hourly	Molybdenum	6.64E-06
Hourly	Nickel	2.06E-04
Hourly	Selenium	4.58E-06
Hourly	Silver	0.00E+00
Hourly	Thallium	0.00E+00
Hourly	Vanadium	2.21E-04
Hourly	Zinc	4.58E-04
Annual	Antimony	4.53E-04
Annual	Arsenic	4.60E-03
Annual	Barium	4.74E-01
Annual	Beryllium	8.12E-04
Annual	Cadmium	0.00E+00
Annual	Chromium	1.08E-02
Annual	Cobalt	1.49E-02
Annual	Copper	8.80E-03
Annual	Lead	1.62E-02
Annual	Mercury	2.84E-03
Annual	Molybdenum	5.89E-04
Annual	Nickel	1.83E-02
Annual	Selenium	4.06E-04
Annual	Silver	0.00E+00
Annual	Thallium	0.00E+00
Annual	Vanadium	1.96E-02
Annual	Zinc	4.06E-02

BRICK KILN EMISSIONS
EXISTING

Emission Factors and Rates

Pollutant	EF lb/ton	lb/hr	lb/day	ton/year
SO2	0.67	3.64	88	15.97
PM10/2.5	0.87	4.73	114	20.7
NOx	0.35	1.90	46	8.34
CO	1.2	6.53	157	28.61
CO2	400	2,176	52,256	9,536
VOC	0.054	0.29	7	1.29

Emission Factors and Rates for HRA

Pollutant	EF lb/ton	lb/hr	lb/day	ton/year	lb/yr (70-yr)
Hydrogen Fluoride	0.23	1.25	30	5.48	4.70E+02
1,1,1-trichloroethane	4.70E-06	2.56E-05	6.14E-04	1.12E-04	9.60E-03
2-butanone	0.00022	1.20E-03	2.87E-02	5.24E-03	4.50E-01
benzene	0.0029	1.58E-02	3.79E-01	6.91E-02	5.93E+00
bis(2-ethylhexy)phthalate	0.002	1.09E-02	2.61E-01	4.77E-02	4.09E+00
carbon disulfide	4.30E-05	2.34E-04	5.62E-03	1.03E-03	8.79E-02
chlorine	0.0013	7.07E-03	1.70E-01	3.10E-02	2.66E+00
chloroethane	0.00057	3.10E-03	7.45E-02	1.36E-02	1.16E+00
chloromethane	0.00067	3.64E-03	8.75E-02	1.60E-02	1.37E+00
di-n-butylphthalate	0.00014	7.62E-04	1.83E-02	3.34E-03	2.86E-01
ethylbenzene	4.40E-05	2.39E-04	5.75E-03	1.05E-03	8.99E-02
m-/p-xylene	6.70E-05	3.64E-04	8.75E-03	1.60E-03	1.37E-01
iodomethane	9.30E-05	5.06E-04	1.21E-02	2.22E-03	1.90E-01
naphthalene	6.50E-05	3.54E-04	8.49E-03	1.55E-03	1.33E-01
o-xylene	5.80E-05	3.16E-04	7.58E-03	1.38E-03	1.19E-01
phenol	8.60E-05	4.68E-04	1.12E-02	2.05E-03	1.76E-01
styrene	2.00E-05	1.09E-04	2.61E-03	4.77E-04	4.09E-02
tetrachloroethene	2.80E-06	1.52E-05	3.66E-04	6.68E-05	5.72E-03
toluene	0.00016	8.70E-04	2.09E-02	3.81E-03	3.27E-01
antimony	2.70E-05	1.47E-04	3.53E-03	6.44E-04	5.52E-02
cadmium	1.50E-05	8.16E-05	1.96E-03	3.58E-04	3.07E-02
chromium	5.10E-05	2.77E-04	6.66E-03	1.22E-03	1.04E-01
cobalt	2.10E-06	1.14E-05	2.74E-04	5.01E-05	4.29E-03
lead	1.50E-04	8.16E-04	1.96E-02	3.58E-03	3.07E-01
nickel	7.20E-05	3.92E-04	9.41E-03	1.72E-03	1.47E-01
selenium	2.30E-04	1.25E-03	3.00E-02	5.48E-03	4.70E-01
arsenic	3.10E-05	1.69E-04	4.05E-03	7.39E-04	6.33E-02
beryllium	4.20E-07	2.28E-06	5.49E-05	1.00E-05	8.58E-04
manganese	2.90E-04	1.58E-03	3.79E-02	6.91E-03	5.93E-01
mercury	7.50E-06	4.08E-05	9.80E-04	1.79E-04	1.53E-02

Operating Assumptions

47,680	tons brick fired per year	
365	days per year	
131	tons brick fired per day	
24	hours per day	8760
5.44	tons brick fired per hour	

Exhaust Parameters

Temperature	280	F	411	K
Flow Rate	10,631	cfm	11.0	m/s
Diameter	30	in	0.762	m
Area			4.91	ft2

BRICK KILN EMISSIONS
PROPOSED

Emission Factors and Rates

Pollutant	EF lb/ton	lb/hr	lb/day	ton/year
SO2	0.67	3.64	88	15.97
PM10/2.5	0.87	4.73	114	20.7
NOx	0.35	1.90	46	8.34
CO	1.2	6.53	157	28.61
CO2	400	2,176	52,256	9,536
VOC	0.054	0.29	7	1.29

Emission Factors and Rates for HRA

Pollutant	EF lb/ton	lb/hr	lb/day	ton/year	lb/yr (70-yr)
Hydrogen Fluoride	0.23	1.25	30	5.48	2.66E+03
1,1,1-trichloroethane	4.70E-06	2.56E-05	6.14E-04	1.12E-04	5.44E-02
2-butanone	0.00022	1.20E-03	2.87E-02	5.24E-03	2.55E+00
benzene	0.0029	1.58E-02	3.79E-01	6.91E-02	3.36E+01
bis(2-ethylhexy)phthalate	0.002	1.09E-02	2.61E-01	4.77E-02	2.32E+01
carbon disulfide	4.30E-05	2.34E-04	5.62E-03	1.03E-03	4.98E-01
chlorine	0.0013	7.07E-03	1.70E-01	3.10E-02	1.51E+01
chloroethane	0.00057	3.10E-03	7.45E-02	1.36E-02	6.60E+00
chloromethane	0.00067	3.64E-03	8.75E-02	1.60E-02	7.76E+00
di-n-butylphthalate	0.00014	7.62E-04	1.83E-02	3.34E-03	1.62E+00
ethylbenzene	4.40E-05	2.39E-04	5.75E-03	1.05E-03	5.09E-01
m-/p-xylene	6.70E-05	3.64E-04	8.75E-03	1.60E-03	7.76E-01
iodomethane	9.30E-05	5.06E-04	1.21E-02	2.22E-03	1.08E+00
naphthalene	6.50E-05	3.54E-04	8.49E-03	1.55E-03	7.53E-01
o-xylene	5.80E-05	3.16E-04	7.58E-03	1.38E-03	6.72E-01
phenol	8.60E-05	4.68E-04	1.12E-02	2.05E-03	9.96E-01
styrene	2.00E-05	1.09E-04	2.61E-03	4.77E-04	2.32E-01
tetrachloroethene	2.80E-06	1.52E-05	3.66E-04	6.68E-05	3.24E-02
toluene	0.00016	8.70E-04	2.09E-02	3.81E-03	1.85E+00
antimony	2.70E-05	1.47E-04	3.53E-03	6.44E-04	3.13E-01
cadmium	1.50E-05	8.16E-05	1.96E-03	3.58E-04	1.74E-01
chromium	5.10E-05	2.77E-04	6.66E-03	1.22E-03	5.91E-01
cobalt	2.10E-06	1.14E-05	2.74E-04	5.01E-05	2.43E-02
lead	1.50E-04	8.16E-04	1.96E-02	3.58E-03	1.74E+00
nickel	7.20E-05	3.92E-04	9.41E-03	1.72E-03	8.34E-01
selenium	2.30E-04	1.25E-03	3.00E-02	5.48E-03	2.66E+00
arsenic	3.10E-05	1.69E-04	4.05E-03	7.39E-04	3.59E-01
beryllium	4.20E-07	2.28E-06	5.49E-05	1.00E-05	4.86E-03
manganese	2.90E-04	1.58E-03	3.79E-02	6.91E-03	3.36E+00
mercury	7.50E-06	4.08E-05	9.80E-04	1.79E-04	8.68E-02

Operating Assumptions

47,680	tons brick fired per year	
365	days per year	
131	tons brick fired per day	
24	hours per day	8760
5.44	tons brick fired per hour	

Exhaust Parameters

Temperature	280	F	411	K
Flow Rate	10,631	cfm	11.0	m/s
Diameter	30	in	0.762	m
Area			4.91	ft2

SAN RAFAEL ROCK QUARRY
EXISTING GENERATOR EMISSIONS

Operating Assumptions

1,200	horsepower	200	day per year
8	hours per day	294	gal per day
2,088	hours per year	58,875	gal per year

Emission Factors and Rates

Pollutant	lb/hp-hr	lb/hr	lb/day	tons/year
NOx	1.54E-02	19	148	19.3
CO	6.17E-03	7.41	59.26	7.73
CO2	1.16E+00	1392	11,136	1,453
CH4	7.05E-04	0.846	6.77	0.883
SO2	2.05E-03	2.46	19.7	2.57
PM10/2.5	4.01E-04	0.481	3.85	0.502
TOC	3.31E-03	3.968	31.75	4.143

Emission Factors and Rates for HRA

Pollutant	lb/hp-hr	lb/hr	lb/day	tons/year	lb/yr (70-yr)
DPM		4.81E-01	3.85	0.5025	4.31E+01

CH4 as eCO2 = 22.0806 toms/yr

Exhaust Parameters

Temperature	833.5	F	718	K
Flow Rate	8,207	cfm	119	m/s
Diameter	8	in	0.203	m
Area			0.349	ft2

SAN RAFAEL ROCK QUARRY
PROPOSED GENERATOR EMISSIONS

Operating Assumptions

1,200	horsepower	200	day per year
10	hours per day	353	gal per day
2,506	hours per year	70,650	gal per year

Emission Factors and Rates

Pollutant	lb/hp-hr	lb/hr	lb/day	tons/year
NOx	1.54E-02	19	178	23.2
CO	6.17E-03	7.41	71.11	9.28
CO2	1.16E+00	1392	13,363	1,744
CH4	7.05E-04	0.846	8.12	1.060
SO2	2.05E-03	2.46	23.6	3.08
PM10/2.5	4.01E-04	0.481	4.62	0.603
TOC	3.31E-03	3.968	38.10	4.972

Emission Factors and Rates for HRA

Pollutant	lb/hp-hr	lb/hr	lb/day	tons/year	lb/yr (70-yr)
DPM		4.81E-01	4.62	0.6030	2.93E+02

Exhaust Parameters

Temperature	833.5	F	718	K
Flow Rate	8,207	cfm	119	m/s
Diameter	8	in	0.203	m
Area			0.349	ft2

SAN RAFAEL ROCK QUARRY
GENERATOR EMISSIONS WITH 1982 OPERATIONS AS MITIGATION

Operating Assumptions

1,200	horsepower	200	day per year
8	hours per day	294	gal per day
2,088	hours per year	58,875	gal per year

Emission Factors and Rates

Pollutant	lb/hp-hr	lb/hr	lb/day	tons/year
NOx	1.54E-02	19	148	19.3
CO	6.17E-03	7.41	59.26	7.73
CO2	1.16E+00	1392	11,136	1,453
CH4	7.05E-04	0.846	6.77	0.883
SO2	2.05E-03	2.46	19.7	2.57
PM10/2.5	4.01E-04	0.481	3.85	0.502
TOC	3.31E-03	3.968	31.75	4.143

Emission Factors and Rates for HRA

Pollutant	lb/hp-hr	lb/hr	lb/day	tons/year	lb/yr (70-yr)
DPM		4.81E-01	3.85	0.5025	2.44E+02

Exhaust Parameters

Temperature	833.5	F	718	K
Flow Rate	8,207	cfm	119	m/s
Diameter	8	in	0.203	m
Area			0.349	ft2

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Calculations for Table 4.2-10: Increases in Emissions of Criteria Air Pollutants from the ARP

and

Table 4.2-11: Increases in Emissions of Criteria Air Pollutants from the Phase 4 Reclamation

SAN RAFAEL ROCK QUARRY
RECLAMATION EMISSIONS
PHASE1

SRRQ RECLAMATION EMMISSIONS BY PHASE

Phase 1

Exhaust Emision rate (from BAAQMD Table 7)
gm/yd

			PM10	CO	ROG	Nox	Sox
Cut and Fill Volume	416900	cy					
Cut and fill per day (=volume /5years/48 days)	1737.08	cy	2.2	138	9.2	42.4	4.6
Phase 1 exhaust emissions (gm/day)			3821.58	2.40E+05	15981.17	73652.33	7990.58
Phase I exhaust emissions (pounds/day)			**8.41**	**527.38**	**35.16**	**162.04**	**17.58**

Phase I fugitive dist emissions

Trucks on unpaved roadways Default emission factor (from SCAQMD,1993)
23 pounds pm10/mile

VMT assumptions:

haul road length (X)= 0.5 mile (approx. length across each quadrant)
Number of trucks/day (Y)= 173.7 (1737 cy excavated per day in Phase 1 / 20cy per truck x 2 trips per load)

VMT) = 86.85 miles/day

Calculated Emission Factor for travel on unpaved roads

F = 2.1*(G/12)*(H/30)*[(I/3)^0.7]*[(J/4)^0.5]*[(365-K)/365]

G = silt content :Mining Haul Road, 8%
H = Mean vehicle speed, 15 mph
I = Mean vehicle weight, 33 tons unloded per cat 735 web site , 69 tons when loaded
J = Mean # of wheels, 6 per web site
K = Mean # of days with rain above 0.01 inches, 0 (dry season work only)

Loaded Emission factor = 7.70 pounds pm10/vmt
Unloaded Emission Factor = 4.59 pounds pm10/vmt

PM10 emissions loaded = 334.27 Pounds pm10/day

PM10 Emissions unladed = 199.46 Pounds pm10/day

PM10 trucks = 533.73 pounds per day of PM10

Fugitive PM10 emissions from material handling

E = [0.00112*({[G/5]^1.3}/{[H/2]^1.4})]*[I/J]

E = Emissions in lb/day
G = Mean wind speed in miles per hour = 13mph
H = Moisture Content of soil = 2.0 (dry)
I = lbs of material handled = 6254000 lb/day (based on 1737 cy excvated per day)
J = 2,000 (conversion factor, lbs to tons) and 36 tons for 20cy

E = **12.13** lb/day

Truck Exhaust

A. Emissions from on-site truck travel exhaust

emission factor (lb/hour) /a/

Equipment/t	#	Hours/b/	Total hrs	CO	ROG	NOx	SOx	PM10
735 Truck	4	10	40	4.11	1.36	12.65	0.0146	0.4758

0

Daily Emissions lb/day

CO	ROG	NOx	SOx	PM10
164	54	506	1	19

SAN RAFAEL ROCK QUARRY
RECLAMATION EMISSIONS
PHASE 2

SRRQ RECLAMATION EMMISSIONS BY PHASE

Phase 2			Exhaust Emision rate (from BAAQMD Table 7) gm/yd				
			PM10	CO	ROG	Nox	Sox
Cut and Fill Volume	448400	cy					
Cut and fill per day (=volume /5years/48 days)	1868.33	cy	2.2	138	9.2	42.4	4.6
Phase 2 exhaust emissions (gm/day)			4110.33	2.58E+05	17188.67	79217.33	8594.33
Phase 2 exhaust emissions (pounds/day)			**9.04**	**567.23**	**37.82**	**174.28**	**18.91**

Phase 2 fugitive dist emissions

Trucks on unpaved roadways Default emission factor (from SCAQMD,1993)
23 pounds pm10/mile

VMT assumptions:

haul road length (X)= 0.5 mile (approx. length across each quadrant)
Number of trucks/day (Y)= 186.8 (1868 cy excavated per day in Phase 1 / 20cy per truck x 2 trips per load)

VMT) = 93.4 miles/day

Calculated Emission Factor for travel on unpaved roads

F = 2.1*(G/12)*(H/30)*[(I/3)^0.7]*[(J/4)^0.5]*[(365-K)/365]

G = silt content :Mining Haul Road, 8%
H = Mean vehicle speed, 15 mph
I = Mean vehicle weight, 33 tons unloded per cat 735 web site , 69 tons when loaded
J = Mean # of wheels, 6 per web site
K = Mean # of days with rain above 0.01 inches, 0 (dry season work only)

Loaded Emission factor = 7.70 pounds pm10/vmt
Unloaded Emission Factor = 4.59 pounds pm10/vmt

PM10 emissions loaded = 359.48 Pounds pm10/day

PM10 Emissions unladed = 214.50 Pounds pm10/day

PM10 trucks = 573.98 pounds per day of PM10

Fugitive PM10 emissions from material handling

E = [0.00112*({[G/5]^1.3}/{[H/2]^1.4})]*[I/J]

E = Emissions in lb/day
G = Mean wind speed in miles per hour = 13mph
H = Moisture Content of soil = 2.0 (dry)
I = lbs of material handled = 6724000 lb/day (based on 1868 cy excvated per day)
J = 2,000 (conversion factor, lbs to tons) and 36 tons for 20cy

E = **13.04** lb/day

Truck Exhaust

A. Emissions from on-site truck travel exhaust

				emission factor (lb/hour) /a/				
Equipment/t	#	Hours/b/	Total hrs	CO	ROG	NOx	SOx	PM10
735 Truck	4	10	40	3.47	1.18	9.68	0.0146	0.3453

Daily Emissions			lb/day	
CO	ROG	NOx	SOx	PM10
139	47	387	1	14

SAN RAFAEL ROCK QUARRY
RECLAMATION EMISSIONS
PHASE 3

SRRQ RECLAMATION EMMISSIONS BY PHASE

Phase 3			Exhaust Emision rate (from BAAQMD Table 7) gm/yd				
			PM10	CO	ROG	Nox	Sox
Cut and Fill Volume	569500	cy					
Cut and fill per day (=volume /5years/48 days)	2372.92	cy	2.2	138	9.2	42.4	4.6
Phase 3 exhaust emissions (gm/day)			5220.42	3.27E+05	21830.83	100611.67	10915.42
Phase 3 exhaust emissions (pounds/day)			**11.48**	**720.42**	**48.03**	**221.35**	**24.01**

Phase 3 fugitive dust emissions

Trucks on unpaved roadways Default emission factor (from SCAQMD,1993)
23 pounds pm10/mile

VMT assumptions:

haul road length (X)= 0.5 mile (approx. length across each quadrant)
Number of trucks/day (Y)= 237.3 (2373 cy excavated per day in Phase 1 / 20cy per truck x 2 trips per load)

VMT) = 118.65 miles/day

Calculated Emission Factor for travel on unpaved roads

F = 2.1*(G/12)*(H/30)*[(I/3)^0.7]*[(J/4)^0.5]*[(365-K)/365]

G = silt content :Mining Haul Road, 8%
H = Mean vehicle speed, 15 mph
I = Mean vehicle weight, 33 tons unloded per cat 735 web site , 69 tons when loaded
J = Mean # of wheels, 6 per web site
K = Mean # of days with rain above 0.01 inches, 0 (dry season work only)

Loaded Emission factor = 7.70 pounds pm10/vmt
Unloaded Emission Factor = 4.59 pounds pm10/vmt

PM10 emissions loaded = 456.66 Pounds pm10/day

PM10 Emissions unladed = 272.49 Pounds pm10/day

PM10 trucks = 729.15 pounds per day of PM10

Fugitive PM10 emissions from material handling

E = [0.00112*({[G/5]^1.3}/{[H/2]^1.4})]*[I/J]

E = Emissions in lb/day
G = Mean wind speed in miles per hour = 13mph
H = Moisture Content of soil = 2.0 (dry)
I = lbs of material handled = 8542000 lb/day (based on 2373 cy excvated per day)
J = 2,000 (conversion factor, lbs to tons) and 36 tons for 20cy

E = **16.57** lb/day

Truck Exhaust

A. Emissions from on-site truck travel exhaust

				emission factor (lb/hour) /a/				
Equipment/t	#	Hours/b/	Total hrs	CO	ROG	NOx	SOx	PM10
735 Truck	5	10	50	3.15	1.01	6.69	0.0145	0.2438

Daily Emissions			lb/day	
CO	HC	NOx	SOx	PM10
158	51	335	1	12

SAN RAFAEL ROCK QUARRY
RECLAMATION EMISSIONS
PHASE 4

SRRQ RECLAMATION EMMISSIONS BY PHASE

Phase 4

Exhaust Emision rate (from BAAQMD Table 7)
gm/yd

			PM10	CO	ROG	Nox	Sox
Cut and Fill Volume	865500	cy					
Cut and fill per day (=volume /5years/48 days)	3606.25	cy	2.2	138	9.2	42.4	4.6
Phase 4 exhaust emissions (gm/day)			7933.75	4.98E+05	33177.50	152905.00	16588.75
Phase 4 exhaust emissions (pounds/day)			**17.45**	**1094.86**	**72.99**	**336.39**	**36.50**

Phase 4 fugitive dust emissions

Trucks on unpaved roadways Default emission factor (from SCAQMD,1993)
23 pounds pm10/mile

VMT assumptions:

haul road length (X)= 0.5 mile (approx. length across each quadrant)
Number of trucks/day (Y)= 360.6 (3606 cy excavated per day in Phase 4 / 20cy per truck x 2 trips per load)

VMT) = 180.3 miles/day

Calculated Emission Factor for travel on unpaved roads

F = 2.1*(G/12)*(H/30)*[(I/3)^0.7]*[(J/4)^0.5]*[(365-K)/365]

G = silt content :Mining Haul Road, 8%
H = Mean vehicle speed, 15 mph
I = Mean vehicle weight, 33 tons unloded per cat 735 web site , 69 tons when loaded
J = Mean # of wheels, 6 per web site
K = Mean # of days with rain above 0.01 inches, 0 (dry season work only)

Loaded Emission factor = 7.70 pounds pm10/vmt
Unloaded Emission Factor = 4.59 pounds pm10/vmt

PM10 emissions loaded = 693.94 Pounds pm10/day

PM10 Emissions unladed = 414.08 Pounds pm10/day

PM10 trucks = 1108.02 pounds per day of PM10

Fugitive PM10 emissions from material handling

E = [0.00112*({[G/5]^1.3}/{[H/2]^1.4})]*[I/J]

E = Emissions in lb/day
G = Mean wind speed in miles per hour = 13mph
H = Moisture Content of soil = 2.0 (dry)
I = lbs of material handled = 12982000 lb/day (based on 3606 cy excvated per day)
J = 2,000 (conversion factor, lbs to tons) and 36 tons for 20cy

E = **25.18** lb/day

Truck Exhaust

A. Emissions from on-site truck travel exhaust

emission factor (lb/hour) /a/

Equipment/t	#	Hours/b/	Total hrs	CO	ROG	NOx	SOx	PM10
735 Truck	5	10	50	2.99	0.85	4.5	0.0145	0.1683

Daily Emissions lb/day

CO	HC	NOx	SOx	PM10
150	43	225	1	8

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Calculations for Table 4.2-12: Emissions of Greenhouse Gases from Proposed Reclamation Activities

SAN RAFAEL ROCK QUARRY
GREENHOUSE GAS EMISSIONS FROM RECLAMATION

Equipment CO2 emissions from OFFROAD 2007

Work days per year = 48

#	Equipment (per 12/15/06 email from Al Cornwell)	Invenntory CO2 exhaust (tons/day)	Inventory Population	CO2 exhaust per unit/day	CO2 emissions tons/year	CH4 exhaust ton/day/pop	CH4 ehaust/day ton/day	CH4 emissions tons/year
5	Scrapers 500	5.63E+02	1.15E+03	4.91E-01 tons/day	1.18E+02	5.77E-02	5.03E-05	1.21E-02
1	Grader	2.01E+01	6.70E+01	3.00E-01 tons/day	1.44E+01	1.70E-03	2.53E-05	1.22E-03
1	Backhoe	4.80E+02	1.05E+03	4.57E-01 tons/day	2.20E+01	3.30E-02	3.15E-05	1.51E-03
1	Wheeled Loader	6.53E+02	2.06E+03	3.17E-01 tons/day	1.52E+01	5.40E-02	2.62E-05	1.26E-03
1	Trucks 500	6.01E+02	8.08E+02	7.43E-01 tons/day	3.57E+01	4.96E-02	6.14E-05	2.95E-03
4	Dozers (crawler tractor)	7.07E+02	1.89E+03	3.74E-01	7.17E+01	7.17E-02	3.79E-05	7.27E-03
	Total				**2.77E+02 Tons/year**			**2.63E-02 Tons CH4/year**
								6.57E-01 Tons CH4/year as eCO2

Truck CO2 emissions from EMFAC2007

Workers	19	(from e-mail cited above)
Trips/day =	57	(2 tripsto work & back & 50% lunch trips)
trip length =	7.8 miles	(BAAQMD Guidelines for Marin Year 2010
VMT =	444.6 miles/day	
CO2Emission rat	405 gm/mile	[3] California ARB, EMFAC2007 compurt model for year 2010, 75% LDA & 25 LDT, in grams per mile.
CH4 Emission Ra	0.05 gm/mile	CaliforniaClimate Action Registry protocol for lt duty trucks
N2O emission Ra	0.06 gm/mile	CaliforniaClimate Action Registry protocol for lt duty trucks

180063 gm/day **396.973** pounds/day **9.527353 tons CO2/year**

22.23 grams CH4/day
0.049009 ponds/day CH4
0.001176 tons CH4/year
25 GWP of CH4 per 4th assessment report IPCC
0.029405 tons CH4/year as eCO2

26.676 grams N2O/day
0.0588108 pounds N2O/day
0.0014115 tons N2O/year
298 GWP of N2O per IPCC
0.420615 tons N2O/year as e CO2

Total equipment & Trucks **286.40 tons CO2/yr** **6.87E-01 Tons CH4/year as eCO2** **0.420615 tons N2O/year as e CO2**

Calculations for Table 4.2-13: Estimated Post-Reclamation Operational Emissions

Stationary Source Greenhouse Gas Calculations

SAN RAFAEL ROCK QUARRY
GREENHOUSE GAS EMISSIONS
FROM POST-RECLAMATION USES
MOBILE SOURCES AND SPACE/WATER HEATING

GHG Calculations **SRRQ POST RECLAMATION**

EMISSIONS in pounds per day

1. Mobile Sources: **CO2** **CH4** **N2O**

195137 (from URBEMIS)

To calculate CH4 and N2O, need to use emmission rates of California Climate Action Registry Protocol

VMT from URBEMIS = 204328 miles/day

		CH4	**N2O**	
CCAR Emission Rates =		0.06 gm/mile	0.06 gm/mile	(rates are for light duty truck 1994 to present as worst case
Emissions in gm/day =		12259.68	12259.68	
Emissions in pounds per day =		27.03	27.03	
GWP per IPCC 4th assessment report =		25	298	
Emission in poundsof eCO2/day =		675.69	8054.20	

Total mobile emissions as eCO2 in pounds/day=

CO2	**CH4**	**N2O**	**Total GHG**
195137.00	**675.69**	**8054.20**	**203866.89**

Total mobile emissions as eCO2 in tons/year=

35612.50	**123.31**	**1469.89**	**37205.71**

2. Natural Gas Use:

From URBEMIS: CO2

11390 pounds/day

Per CCAR Protocol Table C5 and C6 GHG Emission Rate for Natural Gas =

CO2	**CH4**	**N2O**
52.78 kg CO2/MMBtu	0.0059 kg/MMBtu	0.0001 kg N2O/MMBtu

So, CH4 and N2O enmissions as percentage of CO2=

	0.011178	0.00018947

Total Natural Gas emission =

CO2	**CH4**	**N2O**
11390 lbs/day	1.273228 lbs/day	0.02158014 lbs/day

Total Nat Gas emissions as eCO2 =

			Total GHG
11390 lbs/day	**31.83 lbs/day**	**6.43 lbs/day**	**11428.26**

Total Nat Gas emissions in tons eCO2/year

2078.68	**5.81**	**1.17**	**2085.66**

Total Area Sources (Nat Gas + Elecrteicity) =	**16902.85**	**32.98**	**8.73**

SAN RAFAEL ROCK QUARRY
GREENHOUSE GAS EMISSIONS
FROM POST-RECLAMATION ELECRICAL USE

3. Electrcity

Electricity Usage Rate From SCAQMD, 1993

Land use	Rate (Kw-Hrs/sq ft/yr)	
Retail	13.55	
Residential	5626.5	Kw-hr/unit/yr
Miscellaneous	10.5	

Land Uses (from PD)

	Square footage
Retail	13500
Residential	412

Annual electricity use for each land use

Retail	182925	Kw-hr/yr
Residential	2318118	
Total	**2501043**	**Kw-hr/yr**
	2501.043	Mw - hr/yr

Emission factors for electricity use from California Climate Action Registry General Reporting Protocol March 2007 Version 2.2

	CO2		**CH4**		**N2O**	
CALI Subregion	804.54	lbs/MW-hr	0.0067	lbs/MW-hr	0.0037	lbs/MW-hr
Total Emissions =	2012189	lb/yr	16.75699	lb/yr	9.253859	lb/yr

Total emissions as eCO2 =

5512.847	lb/day	1.147739	lb/day	7.555206	lb/day
2012189	lb/yr	418.9247	lb/yr	2757.65	lb/yr
1006.095	ton/yr	0.209462	ton/yr	1.378825	ton/yr
914631.4	kg/yr	190.4203	kg/yr	1253.477	kg/yr
914.6314	**MT/yr**	**0.19042**	**MT/yr**	**1.253477**	**MT/yr**

TOTAL PROJECT ELECTRICITY EMISSIONS AS eCO2 =	**2015366**	**lb/yr**
	916075.3	**kg/yr**
	916.0753	**MT/yr**
	0.000916	**MMT/yr**
	1007.68	**tons/yr**

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Calculations for Table 4.2-13: Estimated Post-Reclamation Operational Emissions

Mobile and Area Source Emissions

Urbemis 2007 Version 9.2.2

Detail Report for Summer Operational Unmitigated Emissions (Pounds/Day)

File Name:

Project Name: SRRQ Post Reclamation Land Use

Project Location: Marin County

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

OPERATIONAL EMISSION ESTIMATES (Summer Pounds Per Day, Unmitigated)

Source	ROG	NOX	CO	SO2	PM10	PM25	CO2
Single family housing	13.72	10.63	142.22	0.32	57.69	10.85	32,477.86
City park	0.49	0.19	2.40	0.01	1.01	0.19	565.56
Undeveloped Park	0.07	0.04	0.54	0.00	0.23	0.04	128.05
Community Shopping Center	51.18	48.38	614.16	1.43	260.26	48.84	145,050.45
Marina	9.42	5.64	71.62	0.17	30.35	5.70	16,915.50
TOTALS (lbs/day, unmitigated)	74.88	64.88	830.94	1.93	349.54	65.62	195,137.42

Does not include correction for passby trips

Does not include double counting adjustment for internal trips

Analysis Year: 2025 Temperature (F): 85 Season: Summer

Emfac: Version : Emfac2007 V2.3 Nov 1 2006

Summary of Land Uses

Land Use Type	Acreage	Trip Rate	Unit Type	No. Units	Total Trips	Total VMT
Single family housing	137.33	9.57	dwelling units	412.00	3,942.84	33,710.10
City park		1.59	acres	50.00	79.50	592.87
Undeveloped Park		5.00	acres	3.60	18.00	134.23
Community Shopping Center		490.00	acres	42.00	20,580.00	152,147.94
Marina		4.00	1000 sq ft	600.00	2,400.00	17,743.20
					27,020.34	204,328.34

Vehicle Fleet Mix

Vehicle Type	Percent Type	Non-Catalyst	Catalyst	Diesel
Light Auto	53.1	0.0	100.0	0.0
Light Truck < 3750 lbs	14.9	0.0	99.3	0.7
Light Truck 3751-5750 lbs	18.9	0.0	100.0	0.0
Med Truck 5751-8500 lbs	6.7	0.0	100.0	0.0
Lite-Heavy Truck 8501-10,000 lbs	0.9	0.0	77.8	22.2
Lite-Heavy Truck 10,001-14,000 lbs	0.6	0.0	66.7	33.3
Med-Heavy Truck 14,001-33,000 lbs	0.8	0.0	25.0	75.0
Heavy-Heavy Truck 33,001-60,000 lbs	0.1	0.0	0.0	100.0
Other Bus	0.1	0.0	0.0	100.0
Urban Bus	0.2	0.0	50.0	50.0
Motorcycle	3.1	35.5	64.5	0.0
School Bus	0.1	0.0	0.0	100.0
Motor Home	0.5	0.0	80.0	20.0

Travel Conditions

	Residential			Commercial		
	Home-Work	Home-Shop	Home-Other	Commute	Non-Work	Customer
Urban Trip Length (miles)	10.8	7.3	7.5	9.5	7.4	7.4
Rural Trip Length (miles)	16.8	7.1	7.9	14.7	6.6	6.6
Trip speeds (mph)	35.0	35.0	35.0	35.0	35.0	35.0
% of Trips - Residential	32.9	18.0	49.1			
% of Trips - Commercial (by land use)						
City park				5.0	2.5	92.5
Undeveloped Park				5.0	2.5	92.5
Community Shopping Center				2.0	1.0	97.0
Marina				2.0	1.0	97.0

Operational Changes to Defaults

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Urbemis 2007 Version 9.2.2

Detail Report for Summer Area Source Unmitigated Emissions (Pounds/Day)

File Name:

Project Name: SRRQ Post Reclamation Land Use

Project Location: Marin County

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

AREA SOURCE EMISSION ESTIMATES (Summer Pounds Per Day, Unmitigated)

Source	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
Natural Gas	0.69	9.16	5.56	0.00	0.02	0.02	11,390.35
Hearth							
Landscape	3.98	0.25	25.53	0.00	0.07	0.07	40.37
Consumer Products	20.16						
Architectural Coatings	15.18						
TOTALS (lbs/day, unmitigated)	40.01	9.41	31.09	0.00	0.09	0.09	11,430.72

Area Source Changes to Defaults

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Urbemis 2007 Version 9.2.2

Detail Report for Summer Construction Unmitigated Emissions (Pounds/Day)

File Name:

Project Name: SRRQ Post Reclamation Land Use

Project Location: Marin County

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

CONSTRUCTION EMISSION ESTIMATES (Summer Pounds Per Day, Unmitigated)

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10 Total	PM2.5 Dust	PM2.5 Exhaust	PM2.5 Total	CO2
Time Slice 11/30/2007-12/27/2007	13.15	113.20	58.90	0.00	1,302.41	5.53	1,307.94	272.00	5.09	277.09	9,098.00
Fine Grading 11/30/2007-01/11/2008	13.15	113.20	58.90	0.00	1,302.41	5.53	1,307.94	272.00	5.09	277.09	9,098.00
Fine Grading Dust	0.00	0.00	0.00	0.00	1,302.40	0.00	1,302.40	271.99	0.00	271.99	0.00
Fine Grading Off Road Diesel	13.03	113.00	55.54	0.00	0.00	5.53	5.53	0.00	5.08	5.08	8,842.87
Fine Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fine Grading Worker Trips	0.12	0.20	3.36	0.00	0.01	0.01	0.02	0.00	0.00	0.01	255.14
Time Slice 12/28/2007-12/31/2007	36.04	196.03	90.57	0.07	1,302.67	9.79	1,312.45	272.08	9.00	281.08	17,709.96
Asphalt 12/28/2007-01/11/2008	22.89	82.83	31.68	0.07	0.25	4.26	4.51	0.08	3.91	4.00	8,611.96
Paving Off-Gas	15.51	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving Off Road Diesel	3.78	22.19	10.88	0.00	0.00	1.89	1.89	0.00	1.74	1.74	1,418.81
Paving On Road Diesel	3.54	60.55	19.12	0.07	0.25	2.36	2.61	0.08	2.17	2.25	7,065.58
Paving Worker Trips	0.06	0.10	1.68	0.00	0.01	0.00	0.01	0.00	0.00	0.00	127.57
Fine Grading 11/30/2007-01/11/2008	13.15	113.20	58.90	0.00	1,302.41	5.53	1,307.94	272.00	5.09	277.09	9,098.00
Fine Grading Dust	0.00	0.00	0.00	0.00	1,302.40	0.00	1,302.40	271.99	0.00	271.99	0.00
Fine Grading Off Road Diesel	13.03	113.00	55.54	0.00	0.00	5.53	5.53	0.00	5.08	5.08	8,842.87
Fine Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fine Grading Worker Trips	0.12	0.20	3.36	0.00	0.01	0.01	0.02	0.00	0.00	0.01	255.14
Time Slice 1/1/2008-1/10/2008 Active	34.93	184.40	85.33	0.07	1,302.67	9.20	1,311.87	272.08	8.46	280.54	17,709.93
Asphalt 12/28/2007-01/11/2008	22.46	77.38	29.87	0.07	0.25	3.94	4.19	0.08	3.62	3.71	8,611.95
Paving Off-Gas	15.51	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving Off Road Diesel	3.59	21.14	10.74	0.00	0.00	1.82	1.82	0.00	1.68	1.68	1,418.81
Paving On Road Diesel	3.31	56.16	17.56	0.07	0.25	2.11	2.36	0.08	1.94	2.02	7,065.58
Paving Worker Trips	0.05	0.09	1.57	0.00	0.01	0.00	0.01	0.00	0.00	0.00	127.56
Fine Grading 11/30/2007-01/11/2008	12.46	107.02	55.46	0.00	1,302.41	5.26	1,307.67	272.00	4.84	276.84	9,097.98
Fine Grading Dust	0.00	0.00	0.00	0.00	1,302.40	0.00	1,302.40	271.99	0.00	271.99	0.00
Fine Grading Off Road Diesel	12.36	106.84	52.32	0.00	0.00	5.25	5.25	0.00	4.83	4.83	8,842.87
Fine Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fine Grading Worker Trips	0.11	0.18	3.14	0.00	0.01	0.01	0.02	0.00	0.00	0.01	255.11
Time Slice 1/11/2008-1/11/2008 Active	58.06	**328.09**	**508.74**	**0.49**	**1,304.61**	**15.43**	**1,320.04**	**272.77**	**14.12**	**286.89**	**63,865.77**
Asphalt 12/28/2007-01/11/2008	22.46	77.38	29.87	0.07	0.25	3.94	4.19	0.08	3.62	3.71	8,611.95
Paving Off-Gas	15.51	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving Off Road Diesel	3.59	21.14	10.74	0.00	0.00	1.82	1.82	0.00	1.68	1.68	1,418.81
Paving On Road Diesel	3.31	56.16	17.56	0.07	0.25	2.11	2.36	0.08	1.94	2.02	7,065.58
Paving Worker Trips	0.05	0.09	1.57	0.00	0.01	0.00	0.01	0.00	0.00	0.00	127.56
Building 01/11/2008-08/22/2008	23.13	143.68	423.41	0.42	1.95	6.23	8.18	0.69	5.66	6.35	46,155.85
Building Off Road Diesel	4.65	26.25	14.99	0.00	0.00	1.91	1.91	0.00	1.75	1.75	2,259.28
Building Vendor Trips	6.74	97.54	65.77	0.15	0.58	3.67	4.26	0.20	3.37	3.56	16,076.25
Building Worker Trips	11.74	19.89	342.66	0.27	1.36	0.66	2.02	0.49	0.54	1.03	27,820.31
Fine Grading 11/30/2007-01/11/2008	12.46	107.02	55.46	0.00	1,302.41	5.26	1,307.67	272.00	4.84	276.84	9,097.98
Fine Grading Dust	0.00	0.00	0.00	0.00	1,302.40	0.00	1,302.40	271.99	0.00	271.99	0.00
Fine Grading Off Road Diesel	12.36	106.84	52.32	0.00	0.00	5.25	5.25	0.00	4.83	4.83	8,842.87
Fine Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fine Grading Worker Trips	0.11	0.18	3.14	0.00	0.01	0.01	0.02	0.00	0.00	0.01	255.11
Time Slice 1/14/2008-8/7/2008 Active	23.13	143.68	423.41	0.42	1.95	6.23	8.18	0.69	5.66	6.35	46,155.85
Building 01/11/2008-08/22/2008	23.13	143.68	423.41	0.42	1.95	6.23	8.18	0.69	5.66	6.35	46,155.85
Building Off Road Diesel	4.65	26.25	14.99	0.00	0.00	1.91	1.91	0.00	1.75	1.75	2,259.28
Building Vendor Trips	6.74	97.54	65.77	0.15	0.58	3.67	4.26	0.20	3.37	3.56	16,076.25
Building Worker Trips	11.74	19.89	342.66	0.27	1.36	0.66	2.02	0.49	0.54	1.03	27,820.31
Time Slice 8/8/2008-8/22/2008 Active	**2,670.85**	145.94	462.23	0.45	2.10	6.31	8.41	0.74	5.72	6.47	49,307.47
Building 01/11/2008-08/22/2008	23.13	143.68	423.41	0.42	1.95	6.23	8.18	0.69	5.66	6.35	46,155.85
Building Off Road Diesel	4.65	26.25	14.99	0.00	0.00	1.91	1.91	0.00	1.75	1.75	2,259.28
Building Vendor Trips	6.74	97.54	65.77	0.15	0.58	3.67	4.26	0.20	3.37	3.56	16,076.25
Building Worker Trips	11.74	19.89	342.66	0.27	1.36	0.66	2.02	0.49	0.54	1.03	27,820.31
Coating 08/08/2008-09/05/2008	2,647.73	2.25	38.82	0.03	0.15	0.07	0.23	0.06	0.06	0.12	3,151.62
Architectural Coating	2,646.40	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Coating Worker Trips	1.33	2.25	38.82	0.03	0.15	0.07	0.23	0.06	0.06	0.12	3,151.62
Time Slice 8/25/2008-9/5/2008 Active	2,647.73	2.25	38.82	0.03	0.15	0.07	0.23	0.06	0.06	0.12	3,151.62
Coating 08/08/2008-09/05/2008	2,647.73	2.25	38.82	0.03	0.15	0.07	0.23	0.06	0.06	0.12	3,151.62
Architectural Coating	2,646.40	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Coating Worker Trips	1.33	2.25	38.82	0.03	0.15	0.07	0.23	0.06	0.06	0.12	3,151.62

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Phase Assumptions

Phase: Fine Grading 11/30/2007 - 1/11/2008 - Default Fine Site Grading Description
Total Acres Disturbed: 260.48
Maximum Daily Acreage Disturbed: 65.12
Fugitive Dust Level of Detail: Default
20 lbs per acre-day
On Road Truck Travel (VMT): 0
Off-Road Equipment:
1 Excavators (168 hp) operating at a 0.57 load factor for 8 hours per day
1 Graders (174 hp) operating at a 0.61 load factor for 8 hours per day
1 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 8 hours per day
3 Scrapers (313 hp) operating at a 0.72 load factor for 8 hours per day
3 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 8 hours per day
1 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

Phase: Paving 12/28/2007 - 1/11/2008 - Default Paving Description
Acres to be Paved: 65.12
Off-Road Equipment:
1 Pavers (100 hp) operating at a 0.62 load factor for 8 hours per day
2 Paving Equipment (104 hp) operating at a 0.53 load factor for 8 hours per day
2 Rollers (95 hp) operating at a 0.56 load factor for 6 hours per day

Phase: Building Construction 1/11/2008 - 8/22/2008 - Default Building Construction Description
Off-Road Equipment:
1 Cranes (399 hp) operating at a 0.43 load factor for 7 hours per day
3 Forklifts (145 hp) operating at a 0.3 load factor for 8 hours per day
1 Generator Sets (49 hp) operating at a 0.74 load factor for 8 hours per day
3 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day
1 Welders (45 hp) operating at a 0.45 load factor for 8 hours per day

Phase: Architectural Coating 8/8/2008 - 9/5/2008 - Default Architectural Coating Description
Rule: Residential Interior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 250
Rule: Residential Exterior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 250
Rule: Nonresidential Interior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 250
Rule: Nonresidential Exterior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 250

Urbemis 2007 Version 9.2.2

Summary Report for Summer Emissions (Pounds/Day)

File Name:

Project Name: SRRQ Post Reclamation Land Use

Project Location: Marin County

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

CONSTRUCTION EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10	PM2.5 Dust	PM2.5 Exhaust	PM2.5	CO2
2007 TOTALS (lbs/day unmitigated)	36.04	196.03	90.57	0.07	1,302.67	9.79	1,312.45	272.08	9.00	281.08	17,709.96
2008 TOTALS (lbs/day unmitigated)	2,670.85	328.09	508.74	0.49	1,304.61	15.43	1,320.04	272.77	14.12	286.89	63,865.77

AREA SOURCE EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (lbs/day, unmitigated)	40.01	9.41	31.09	0.00	0.09	0.09	11,430.72

OPERATIONAL (VEHICLE) EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (lbs/day, unmitigated)	74.88	64.88	830.94	1.93	349.54	65.62	195,137.42

SUM OF AREA SOURCE AND OPERATIONAL EMISSION ESTIMATES

	ROG	NOx	CO	SO2	PM10	PM2.5	CO2
TOTALS (lbs/day, unmitigated)	114.89	74.29	862.03	1.93	349.63	65.71	206,568.14

APPENDIX D
Health Risk Assessment

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A. AIR QUALITY METHODOLGY AND ASSUMPTIONS

Emission Sources

Aggregate Processing

In the general aggregate processing, rock and crushed stone are loosened by drilling and blasting, loaded by front-end loader into large haul trucks that transport the material to the processing operations. Processing operations include crushing, screening, size classification, conveyance, material handling and storage operations. Air emissions include particulate matter less than 10 microns (PM10), particulate matter less than 2.5 microns (PM2.5), crystalline silica and various metals.

The air emission calculations accounted for the production level, the number, types, and size of equipment, the type of material processed, and emission controls. Much of this information is based on air quality permits for the facility. Emissions are based on a production level of 1,414,667 tons for the Baseline Condition and 1,697,600 tons for the Proposed Project. The emission factors were determined using the methodology found in Section 11.19 of EPA's Compilation of Air Pollutant Emission Factors (AP-42). **Table A-1** presents the emission factors for the aggregate processing operations. A ratio of 0.15 is applied to determine the amount of PM2.5 per mass of PM10 based on AP-42. Soil sampling (McCampbell Analytical, Inc, November 2007 – Appendix N) was conducted to determine the crystalline silica and metals content of the aggregate processing material.

Detailed emission calculations for emission sources are contained in Section C of this appendix.

Fugitive dust sources include the transfer of aggregate, truck loading and unloading, and wind erosion from aggregate storage piles. The amount of fugitive emissions generated during the transfer of the aggregate depends primarily on the surface moisture content of these materials. The air quality and HHRA were performed using the controlled emission factors based on the existing particulate control measures (required by the BAAQMD permit) and dust control measures required by County Surface Mining and Quarry Permit (see Section 4.2).

TABLE A-1
PM10 EMISSION FACTORS FOR AGGREGATE PROCESSING

Emission Point	Uncontrolled Emission Factor (lbs/ton of material)	Controlled Emission Factor (lbs/ton of material)
Crushers	0.0024	0.00054
Screens	0.0087	0.00074
Conveyers	0.0011	0.000046

SOURCE: Compilation of Air Pollutant Emission Factors, AP-42, Fifth Edition, Volume I: *Stationary Point and Area Sources*, Section 11.19.2 Crushed Stone Processing, November 2006.

Brick Manufacturing

The brick making process involves mining, crushing/grinding, screening and blending of raw materials, forming, cutting or shaping, drying, firing, cooling, storage, and shipping of the final product. Emission points from these processes include crushing, grinding and screening operations, raw material handling and storage piles, brick drying and kiln firing. Air emissions include criteria pollutants such as sulfur dioxide (SO2), PM10, PM2.5, NOx, carbon monoxide (CO), and precursors to the formation of ozone, volatile organic compounds (VOC).

The air emission calculations accounted for the production level, the number, types, and size of equipment, the type of material processed, and emission controls. Much of this information is based on air quality permits for the facility. Emissions are based on a production level of 131 bricks fired per day and 47,680 bricks fired per year. The emission factors were determined using the methodology found in Section 11.3 of USEPA's AP-42. **Table A-2** presents the emission factors for the aggregate processing operations. An emission factor for hydrogen fluoride (HF) of 0.23 lbs/ton of material was used. This factor was based on testing by the National Brick Research Center (June 2005)[1] Of note, the BAAQMD conducted a HHRA for the brickyard in 2005, however, this analysis used more conservative, out-of-date emission factors. That study also used the ISC3 model (now replaced by the AERMOD model) using highly conservative SCREEN3 meteorological data (instead of a year of actual representative measurements).

Detailed emission calculations for emission sources are contained in Section C.

TABLE A-2
EMISSION FACTORS FOR BRICK MANUFACTURING

Pollutant	Emission Factor (lbs/ton of material)
SO2	0.67
PM10/PM2.5	0.87
NOx	0.35
CO	1.2
CO2	400
VOC	0.054

SOURCE: Compilation of Air Pollutant Emission Factors, AP-42, Fifth Edition, Volume I: *Stationary Point and Area Sources*, Section 11.3 Brick and Structural Clay Product Manufacturing, August 1997.

Asphalt Batching

In the general asphalt process, hot mix asphalt materials are a mixture of size-graded, high quality aggregate, and liquid asphalt cement, which is heated and mixed. The material is metered from the hoppers onto a conveyer belt and transported into a rotary natural gas fired dryer.

[1] Results of AB2588 Health Risk Analysis for McNear Brick and Block (San Rafael, CA) Hydrogen Fluoride Emission (Kiln exhaust), June 27, 2005.

As the hot aggregate leaves the dryer, it transferred to a set of vibrating screens, where it is classified into different grades (sizes) and dropped into individual "hot" bins according to size. Liquid asphalt cement is pumped from a heated storage tank to an asphalt bucket, where it is weighed to achieve the desired aggregate-to-asphalt cement ratio in the final mix. The aggregate from the weigh hopper is dropped into the mixer and dry-mixed. The liquid asphalt is then dropped into a mill where it is mixed for an additional period of time. Then the hot mix is conveyed to a hot storage silo.

The most significant air emission source from the asphalt process is the rotary dryer, which is vented to a stack. Air emissions include criteria pollutants such as SO2, PM10, PM2.5, NOx, CO, and VOC.

The air emission calculations accounted for the production levels, the number, types, and size of equipment, the type of material processed, and emission controls. Much of this information is based on air quality permits for the facility. Emissions are based on a production level of 200,000 tons per year and 100 tons per hour. The emission factors were determined using the methodology found in Section 11.1 of USEPA's AP-42. The H2S emission factors (0.005 lbs/ton of material for asphalt processing and 0.0049 lbs/ton of material for asphalt silo) were based on information contained in a North Carolina Department of Environmental Quality report entitled *Hydrogen Sulfide Study near Petroleum Asphalt Plants*. **Table A-3** presents the emission factors for the asphalt processing operations and **Table A-4** presents the emission factors for the asphalt silo.

Detailed emission calculations for emission sources are contained in Section C.

TABLE A-3
EMISSION FACTORS FOR ASPHALT PROCESSING

Pollutant	Asphalt Processing Emission Factor (lbs/ton of material)	Asphalt Heater Emission Factor (lbs/MMBtu)
PM	0.033	0.00745
PM10	0.0042	0.00745
PM2.5	0.0029	0.00745
CO	0.13	0.08235
NOx	0.026	0.09804
SO2	0.0034	0.00059
VOC	0.016	0.00539

SOURCE: Compilation of Air Pollutant Emission Factors, AP-42, Fifth Edition, Volume I: *Stationary Point and Area Sources*, Section 11.1 Hot Mix Asphalt Plans, March 2006.

TABLE A-4
EMISSION FACTORS FOR ASPHALT SILO

Pollutant	Emission Factor (lbs/ton of material)
Loadout	
PM10/PM2.5	0.00030
VOC	0.00133
CO	0.00046
Silo Filling	
PM10/PM2.5	0.00042
VOC	0.00390
CO	0.00040
Storage Tank	
VOC	0.00001
CO	1.33E-06

SOURCE: Compilation of Air Pollutant Emission Factors, AP-42, Fifth Edition, Volume I: *Stationary Point and Area Sources*, Section 11.1 Hot Mix Asphalt Plans, March 2006.

Blasting Operations

Air emissions from blasting include particulate matter less than 10 microns (PM10), particulate matter less than 2.5 microns (PM2.5), crystalline silica and various metals. Emissions are based on 150 blasts per year for the Baseline Condition and 180 blasts per year for the Proposed Project.

The emission factor for the quantity of emissions (in pounds) per blast event was estimated using the following equation from Section 11.9 of USEPA's AP-42:

$$EF = 0.000014 * (A)^{1.5}$$

where:

EF = PM30 emission factor (lb emissions/blast)
A = blast area (6,750 square feet)

A ratio of 0.52 was applied to determine the amount of PM10 per PM30 based on AP-42. A ratio of 0.15 was applied to determine the amount of PM2.5 per mass PM10 based on AP-42. Soil sampling (McCampbell Analytical, Inc, November 2007, see Appendix N) was conducted to determine the crystalline silica and metals content of the aggregate processing material. The PM10 emission factor used in the analysis was 4.0 lbs per blast event.

Detailed emission calculations for emission sources are contained in Section C.

MSHA rules require the use of water injection when drilling to control drilling dust. Standard blasting practices using sequential delay timing schemes to generate effective rock fragmentation and vibration control will also minimize blasting dust. Quarry operators usually remove loose overburden to prevent

dilution of mined rock, which also lessens the amount of fine material that can become airborne by blasting. If needed, during dry summer periods, water can also be sprayed onto blast areas to further mitigate dust.

Handling and Storage

Fugitive particulate matter emissions are expected from the handling and storage of raw materials from quarry processing. The methodology for the calculation of particulate emissions from the handling and storage of raw materials is described in Section 13.2.4 of USEPA's AP-42 for aggregate handling and storage piles. The quantity of dust emissions from aggregate handling and storage operations varies with the volume of aggregate passing through the storage cycle. The emission factor for the quantity of emissions per quantity of material was estimated using the following equation:

$$EF = k(0.0032)\frac{\left[\frac{U}{5}\right]^{1.3}}{\left[\frac{M}{2}\right]^{1.4}}$$

where:

EF	=	emission factor (lb emissions/ton material)
k	=	particulate size multiplier (PM10 = 0.35)
U	=	mean wind speed (13 mph)
M	=	material moisture content (2 %)

The emission factor used in the analysis for handling and storage activities was 0.00388 pounds of PM10 per ton of material processed (uncontrolled) and 0.00116 pounds of PM10 per ton of material processed (controlled). To account for emission controls, a control efficiency of 70 percent (based on AP-42) was also applied. The air quality and HHRA were performed using the controlled emission factors based on the existing particulate control measures (required by the BAAQMD permit) and dust control measures required by County Surface Mining and Quarry Permit (see Section 4.2).

Unpaved Roads

When a vehicle travels over an unpaved road, the force of the wheels on the road surface causes pulverization of surface material. Particles are lifted and dropped from the rolling wheels, and the road surface is exposed to strong air currents in turbulent shear with the surface. Additionally, the turbulent wake behind the vehicle continues to act on the road surface after the vehicle has passed.

The emission factors for this analysis were calculated using a methodology found in CARB's URBEMIS2007. The following is the equation used to develop the emission factor is:

$$EF = k\,(s/12)^a(S/30)^b(W/3)^c\,(M/4)^d\,[(365-p)/365]\,(1-CE)$$

where:

k (PM_{10})	=	2.1 (empirical constant)
s	=	Silt content of 8% (use whole number value)
S	=	Vehicle speed of 15 (mph)

W	=	Mean vehicle weight, 33 tons unloaded and 69 tons loaded
M	=	Number of wheels, 6
p	=	Number of days with measurable precipitation (66 days)
a	=	1.0 (empirical constant)
b	=	1.0 (empirical constant)
c	=	0.7 (empirical constant)
c	=	0.5 (empirical constant)
CE	=	Control efficiency rate of 70 percent

The uncontrolled emission factor for unpaved roads was 6.3 and 3.8 pounds per vehicle mile for loaded and unloaded trucks, respectively. The controlled emission factor for unpaved roads was 1.9 and 1.1 pounds per vehicle mile for loaded and unloaded trucks, respectively. The $PM_{2.5}$ emissions were assumed to be 15 percent of the PM_{10} emissions (based on AP-42). Finally, each vehicle was assumed to travel a distance of ¼ of a mile on unpaved area. Soil sampling (McCampbell Analytical, Inc, November 2007; see Appendix N) was conducted to determine the crystalline silica and metals content of the aggregate processing material. The air quality and HHRA were performed using the controlled emission factors based on the existing particulate control measures (required by the BAAQMD permit) and dust control measures required by County Surface Mining and Quarry Permit (see Section 4.2).

Barge Tugs

Tugboats are used to propel barges to and from the quarry. Emissions are based on an average tugboat engine size of 4,268 kW and a load factor of 70 percent. Tugboats are assumed to be in cruise mode prior to arrival and after departure, in slow cruise, and maneuvering mode for 80, 10, and 10 percent, respectively, of their operating time within the Bay Area air basin geographic boundaries. . The methodology for the calculation of emissions from tugboat operations is described in US EPA *Analysis of Commercial Marine Vessels Emissions and Fuel Consumption Data* (dated February 2000). Emissions are based on a production level of 730 barges per year (two barges per day) for the Baseline Condition and 980 barges per year (three barges per day) for the Proposed Project. **Table A-5** presents the emission factors for the tugboat operations. The SO2 emission factor is based on the use of distillate fuel at 2.5 percent sulfur content.

TABLE A-5
EMISSION FACTORS FOR BARGE TUGS

Pollutant	Emission Factor (g/kW-hr)
CO	1.20
HC	0.114
NOx	10.7
PM10/PM2.5	0.265
SO2	14.48
CO2	712

SOURCE: U.S. EPA Analysis of Commercial Marine Vessels Emissions and Fuel Consumption Data, February 2000.

Diesel Generator

The quarry contains a portable diesel generator which is rated at 1,200 horsepower and operated no more than 200 hours per year. This generator is used offsite but is included in the air quality analysis because it is permitted to operate within the BAAQMD.

All reciprocating internal combustion engines operate by the same basic process. A combustible mixture is first compressed in a small volume between the head of a piston and its surrounding cylinder. The mixture is then ignited, and the resulting high-pressure products of combustion push the piston through the cylinder. This movement is converted from linear to rotary motion by a crankshaft. The piston returns, pushing out exhaust gases, and the cycle is repeated. The emission factors were based on information contained within the manufacturer's specification sheet and EPA's AP-42 Section 3.4 (EPA, 1996).

Non-road Equipment and Mobile Vehicles

The types of non-road equipment and motor vehicles at the project site could include loaders, dozers, and off-highway trucks (such as water trucks, rock trucks), haul trucks, pickup trucks, and employee vehicles. Emission factors for all equipment except haul trucks and employee vehicles were obtained from the CARB OFFROAD2007 emissions model. Emission factors for each of the equipment types were applied to the anticipated equipment work output (horsepower-hours of expected equipment use). Equipment horsepower and hours of operations were provided or estimated based on engineering data.

Emission factors for haul trucks and employee vehicles were obtained from the CARB EMFAC2007 emissions model. The haul trucks were assumed to travel 80 miles each way between the facility and the aggregate markets. **Table A-6** presents the onsite mobile equipment usage data. **Table A-7** presents the emission factors used for the onsite mobile equipment, haul trucks, and employee vehicles from 2008 through 2024. **Figure A-1** displays the emission factors for onsite mobile equipment and haul trucks from 1982 through 2024. As shown, emission factors gradually decrease with time as regulatory requirements become effective and older, less efficient equipment and vehicles are retired. The HHRA used the average emission factors within the period of analysis (i.e., 2008 through 2024 for the proposed project). **Table A-7** shows the emissions factors using conventional diesel fuel. The quarry currently uses B20 and possible mitigation measures include the use of B80. Section C provides data on the decrease/increase in emission factors as a result of Biodiesel usage.

TABLE A-6
USAGE DATA FOR ONSITE MOBILE EQUIPMENT

Equipment	Number of Pieces	Horsepower	Load Factor	Daily Hours	Annual Hours
Diesel Wheeled Loaders	7	75	0.55	9	2700
Diesel Excavator	3	300	0.57	6	1950
Diesel Bulldozer	1	520	0.55	4	1140
Diesel Rock Drill	1	475	0.75	6	1800
Diesel Off-highway Truck	8	375	0.57	8	2400

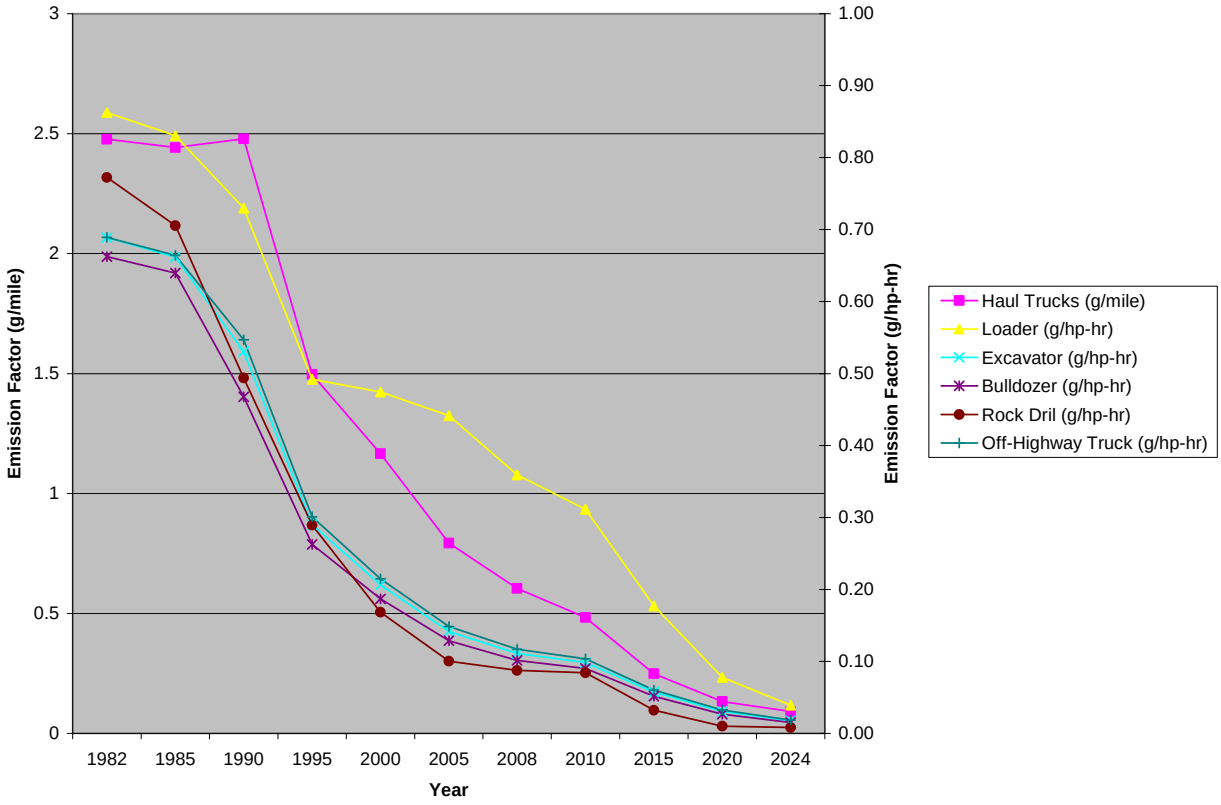
SOURCE: San Rafael Rock Quarry, 2006 and California Air Resources Board OFFROAD2007.

TABLE A-7
ONSITE MOBILE EQUIPMENT, HAUL TRUCKS, AND EMPLOYEE VEHICLE EMISSION FACTORS

Equipment/Year	Units	VOC	CO	NOx	PM10	PM2.5
2008						
Wheeled Loader	g/hp-hr	0.65	2.24	3.93	0.36	0.36
Excavator	g/hp-hr	0.30	0.98	3.07	0.11	0.11
Bulldozer	g/hp-hr	0.27	0.87	2.94	0.10	0.10
Rock Drill	g/hp-hr	0.21	0.77	2.77	0.09	0.09
Off-Highway Truck	g/hp-hr	0.32	1.04	3.16	0.12	0.12
Employee Vehicles	g/mile	0.132	3.473	0.320	0.031	0.017
Haul Trucks	g/mile	1.097	5.713	17.127	0.721	0.625
2010						
Wheeled Loader	g/hp-hr	0.55	2.19	3.42	0.31	0.31
Excavator	g/hp-hr	0.27	0.85	2.67	0.10	0.10
Bulldozer	g/hp-hr	0.24	0.77	2.55	0.09	0.09
Rock Drill	g/hp-hr	0.20	0.76	2.33	0.08	0.08
Off-Highway Truck	g/hp-hr	0.30	0.90	2.76	0.10	0.10
Employee Vehicles	g/mile	0.092	2.750	0.248	0.031	0.016
Haul Trucks	g/mile	0.958	4.784	14.543	0.589	0.504
2015						
Wheeled Loader	g/hp-hr	0.35	2.10	2.34	0.18	0.18
Excavator	g/hp-hr	0.22	0.69	1.61	0.06	0.06
Bulldozer	g/hp-hr	0.19	0.64	1.50	0.05	0.05
Rock Drill	g/hp-hr	0.15	0.75	1.05	0.03	0.03
Off-Highway Truck	g/hp-hr	0.23	0.71	1.68	0.06	0.06
Employee Vehicles	g/mile	0.038	1.602	0.137	0.018	0.016
Haul Trucks	g/mile	0.625	2.799	8.173	0.335	0.27
2020						
Wheeled Loader	g/hp-hr	0.22	2.06	1.49	0.08	0.08
Excavator	g/hp-hr	0.17	0.64	0.84	0.03	0.03
Bulldozer	g/hp-hr	0.15	0.60	0.75	0.03	0.03
Rock Drill	g/hp-hr	0.11	0.75	0.36	0.01	0.01
Off-Highway Truck	g/hp-hr	0.18	0.65	0.89	0.03	0.03
Employee Vehicles	g/mile	0.019	1.050	0.100	0.018	0.016
Haul Trucks	g/mile	0.423	1.729	4.718	0.208	0.154
2024						
Wheeled Loader	g/hp-hr	0.18	2.04	1.12	0.04	0.04
Excavator	g/hp-hr	0.14	0.62	0.49	0.02	0.02
Bulldozer	g/hp-hr	0.12	0.59	0.43	0.02	0.02
Rock Drill	g/hp-hr	0.10	0.75	0.23	0.01	0.01
Off-Highway Truck	g/hp-hr	0.15	0.63	0.53	0.02	0.02
Employee Vehicles	g/mile	0.014	0.809	0.063	0.018	0.016
Haul Trucks	g/mile	0.340	1.319	3.422	0.163	0.112

SOURCE: California Air Resources Board OFFROAD2007 and EMFAC2007.

FIGURE A-1
DPM ONSITE MOBILE EQUIPMENT AND HAUL TRUCKS EMISSION FACTORS (1982 THROUGH 2024)



SOURCE: California Air Resources Board OFFROAD2007 and EMFAC2007.

B. HEALTH RISK ASSESSMENT METHODOLOGY AND ASSUMPTIONS

A human health risk assessment (HHRA) involves four steps; hazards identification, exposure assessment, toxicity assessment, and risk characterization; in the presentation of the methodologies and assumptions within the HHRA, each step is described. The following also provides a listing of terms and definitions, and a description of limitations and uncertainties associated with the performance of HHRA. The methodologies, assumptions, and data that were used in the HHRA are included within each of the four steps.

TERMS AND DEFINITIONS

As the practice of conducting a HHRA is particularly complex and involves concepts that are not altogether familiar to some people, several terms and definitions are provided below that are considered essential to the understanding of the approach, methodology and results:

Acute effect – a health effect (non-cancer) produced within a short period of time (few minutes to several days) following an exposure to toxic air contaminants (TACs).

Cancer risk – the probability of an individual contracting cancer from a lifetime (i.e., 70 years) exposure to TACs in the ambient air.

Chronic effect – a health effect (non-cancer) produced from a continuous exposure occurring over an extended period of time (weeks, months, years).

Criteria air pollutants – a series of common air pollutants regulated by the Federal or California Clean Air Acts (i.e., CO, NO_2, O_3, particulate matter, etc.).

Hazard Index (HI) – the unitless ratio of an exposure level over the acceptable reference dose (RfC). The HI should be less than 1.0 and can be applied to multiple compounds in an additive manner.

Hazard Quotient (HQ) – the unitless ratio of an exposure level over the acceptable reference dose (RfC). The HQ should be less than 1.0 as applied to individual compounds.

Toxic air contaminants (TACs) – any air pollutants that can cause health effects in humans that are not regulated as "criteria" pollutants.

Human Health Effects - comprise disorders such as eye watering, respiratory or heart ailments, and other (i.e., non-cancer) related diseases.

Human Health Risk Assessment (HHRA) – an analysis designed to predict the generation and dispersion of TACs in the outdoor environment, evaluate the potential for exposure of human populations, and to assess and quantify both the individual and population-wide health risks associated with those levels of exposure.

Incremental – under CEQA, the net difference (or change) in conditions or impacts when comparing the existing to future year conditions.

Maximum exposed individual (MEI) – the point where the highest concentrations of TACs, and therefore, health risks are predicted to occur, assuming that an individual were located there for the modeled exposure period.

Non-cancer risks – health risks such as eye watering, respiratory or heart ailments, and other non-cancer related diseases.

Receptors – the locations where potential health impacts or risks are predicted (schools, residences and work-sites).

LIMITATIONS AND UNCERTAINTIES

There are also a number of important limitations and uncertainties commonly associated with a HHRA due to the wide variability of human exposures to TACs, the extended timeframes over which the exposures are evaluated and the inability to verify the results. Among these challenges are the following:

- The current guidance and methodologies for modeling TACs and conducting a HHRA are principally intended and designed to assess "stationary point" (i.e., smokestack) sources of air emissions. By comparison, this quarry is an assemblage of stationary sources (i.e., asphalt processing, brick manufacturing), moving (or "mobile") "line" sources (i.e., roadways, marine vessels) and "area" sources (i.e., quarry onsite mobile equipment, unpaved circulation areas).
- TAC speciation profile data are and based upon limited source testing data. Therefore, the TAC emissions and the predicted ambient concentrations of these pollutants from emission sources are not entirely reliable.
- The HHRA exposure estimates do not take into account that people do not usually reside at the same location for 70 years and that other exposures (i.e., school children and workers) are also of much shorter durations than was assumed in this analysis. Therefore, the results of the HHRA are highly overstated for those cases.
- Other limitations and uncertainties associated with HHRA and identified by the California Environmental Protection Agency (CalEPA) include: (a.) lack of reliable monitoring data; (b.) extrapolation of toxicity data in animals to humans; (c.) estimation errors in calculating TACs emissions; (d.) concentration prediction errors with dispersion models; and (e.) the variability in lifestyles, fitness and other confounding factors of the human population.[2]

Therefore, according to CalEPA guidelines, the results of a HHRA should not be interpreted as the expected rates of cancer or other potential human health effects, but rather as estimates of potential risk based on current knowledge, a number of highly conservative assumptions and the best assessment tools presently available.[3]

HAZARDS IDENTIFICATION

Toxic air contaminant emissions associated with the proposed project would occur from the following project activities:

- Onsite mobile equipment (such as loaders, excavators, and rock drills) within the quarry area;
- Haul truck traffic on local streets, arterials, and freeways in transit to and from the quarry,
- Tugs assistance of barge movement of material in transit to and from the quarry;
- Aggregate processing through the use of crushers, screens, and conveyers;
- Fugitive dust sources such as blasting activities, unpaved areas, and material handling;
- Asphalt processing and storage; and

[2] CalEPA OEHHA Air Toxics Hot Spots HRA Guidelines, Ibid.
[3] Ibid.

- Brick manufacturing

Although these activities would emit several different TAC; diesel particulate matter (DPM), crystalline silica, hydrogen fluoride (HF), and hydrogen sulfide (H2S) are the most important within this HHRA. These pollutants are described within the following sections. **Table B-1** displays the pollutants emitted within each source type.

Pollutants

Diesel Particulate Matter

Diesel exhaust is a complex mixture of thousands of individual gaseous and particulate compounds emitted from diesel-fueled combustion engines. DPM is formed primarily through the incomplete combustion of diesel fuel. Particulate matter in diesel exhaust can be emitted from on- and off-road vehicles, stationary area sources, and stationary point sources. DPM is removed from the atmosphere through physical processes including atmospheric fall-out and washout by rain. Humans can be exposed to airborne DPM or by deposition on water, soil, and vegetation. Acute inhalation exposure to elevated DPM has shown increased symptoms of irritation, cough, phlegm, chronic bronchitis, and inhibited pulmonary function. The U.S. Environmental Protection Agency (USEPA) has concluded that DPM is likely to be carcinogenic to humans by inhalation.

Diesel particulates, as defined by most emission standards, are sampled from diluted and cooled exhaust gases. This definition includes both solids and liquid material that condenses during the dilution process. The basic fractions of DPM are elemental carbon; heavy hydrocarbons derived from the fuel and lubricating oil and hydrated sulfuric acid derived from the fuel sulfur. Diesel particulates contain a large portion of the polycyclic aromatic hydrocarbons (PAH) found in diesel exhaust. Diesel particulates include small nuclei mode particles of diameters below 0.04 microns (μm) and their agglomerates of diameters up to 1 μm. Ambient exposures to diesel particulates in California are significant fractions of total TAC levels in the State.

In August 1998, the California Air Resource Board (CARB) identified diesel PM as a TAC. The CARB developed *Risk Reduction Plan to Reduce Particulate Matter Emissions from Diesel- Fueled Engines and Vehicles and Risk Management Guidance for the Permitting of New Stationary Diesel-Fueled Engines* and approved these documents on September 28, 2000. The documents represent proposals to reduce DPM emissions, with the goal of reducing emissions and the associated health risk by 75 percent in 2010 and by 85 percent in 2020. The program aims to require the use of state-of-the-art catalyzed DPM filters and ultra-low-sulfur diesel fuel.

In December 2000, the EPA promulgated regulations requiring that the sulfur content in motor vehicle diesel fuel be reduced to less than 15 parts per million (ppm) by June 1, 2006. Control of DPM emissions focuses on two strategies, reducing the amount of sulfur in diesel fuel and developing filters for operating diesel engines to reduce the amount of particulate matter that is emitted. The EPA also finalized a comprehensive national emissions control program which regulates highway heavy-duty vehicles and diesel fuel as a single system. Finally, the EPA established new motor-related emission standards that should significantly reduce PM and nitrogen oxides (NOx) from highway heavy-duty vehicles.

In 2001, CARB assessed the state-wide health risks from exposure to diesel exhaust and to other toxic air contaminants. It is difficult to distinguish the health risks of diesel emissions from those of other air toxics, since diesel exhaust contains approximately 40 different TACs. The CARB study detected diesel exhaust by using ambient air carbon soot measurements as a surrogate for diesel emissions. The study reported that in 2000, the state-wide cancer risk from exposure to diesel exhaust was about 540 per million population as compared to a total risk for exposure to all ambient air toxics of 760 per million. This estimate, which accounts for about 70 percent of the total risk from TACs, included both urban and rural areas in the state. The estimate can also be considered an average worst-case for the state, since it assumes constant exposure to outdoor concentrations of diesel exhaust and does not account for expected lower concentrations indoors, where most of time is spent.

Crystalline Silica

In 2005, the California Office of Environmental Health Hazard Assessment (OEHHA) added a chronic reference exposure level (REL) for crystalline silica. Silica is a hazardous substance when it is inhaled, and the airborne dust particles that are formed when the material containing the silica are broken, crushed, or sawn pose potential risks.

Hydrogen Sulfide

Hydrogen sulfide is found in nature around some hot springs, geothermal sources, and oil fields (sour gas). It is also produced by anaerobic decomposition, and is sometimes called swamp gas. The human nose can detect H2S at concentrations well below toxic levels. Heavier than air, this gas is considered obnoxious and unpleasant. At higher levels, it desensitizes the nose, and can be fatal because it blocks oxygen uptake by the blood. Mainly a health threat to industrial workers, H2S is usually regulated to eliminate nuisance for nearby residents or property owners. California has established state ambient air quality standard for H2S of 0.03 ppm (42 micrograms per cubic meter ($\mu g/m^3$)).

TABLE B-1

TOXIC AIR CONTAMINANT EMISSION INCLUDED IN HEALTH RISK ASSESSMENT

Toxic Air Contaminant	Haul Trucks	Aggregate Plant	Mobile Equipment	Asphalt Plant	Asphalt Storage Silo	Fugitive Dust	Brick Kiln	Barge Operations
Diesel Particulate Matter	√		√					√
Crystalline Silica		√				√		
Non-Poly Aromatic Hydrocarbons								
Benzene				√	√		√	
bis(2-ethylhexy)phthalate							√	
Di-n-butylphthalate							√	
Ethyl benzene				√	√		√	
Formaldehyde				√	√		√	
Hexane				√	√			
Hydrogen Fluoride							√	
Hydrogen Sulfide				√	√			
Iodomethane							√	
Methyl chloroform				√				
Toluene				√	√		√	
Bromomethane					√			
2-Butanone					√		√	
Carbon Disulfide					√		√	
Chloroethane					√		√	
Chlorine							√	
Chloromethane					√		√	
Cumene					√			
Methylene Chloride					√			

Toxic Air Contaminant	Haul Trucks	Aggregate Plant	Mobile Equipment	Asphalt Plant	Asphalt Storage Silo	Fugitive Dust	Brick Kiln	Barge Operations
Styrene					√		√	
Tetrachloroethane					√		√	
1,1,1-trichloroethane							√	
Xylene							√	
Poly Aromatic Hydrocarbons								
2-Methylnaphthalene				√	√			
Acenaphthene				√	√			
Acenaphthylene				√	√			
Anthracene				√	√			
Benzo(a)anthracene				√	√			
Benzo(a)pyrene				√	√			
Benzo(b)flroranthene				√	√			
Benzo(ghi)perylene				√	√			
Benzo(k)fluoranthene				√	√			
Chrysene				√	√			
Dibenzo(ah)anthracene					√			
Fluoranthene				√	√			
Fluorene				√	√			
Indeno(123-cd)pyrene				√	√			
Naphthalene				√	√		√	
Phenanthrene				√	√			
Pyrene				√	√			
Perylene				√	√			
Phenol					√		√	
Metals								

Toxic Air Contaminant	Haul Trucks	Aggregate Plant	Mobile Equipment	Asphalt Plant	Asphalt Storage Silo	Fugitive Dust	Brick Kiln	Barge Operations
Antimony		√		√		√	√	
Arsenic		√		√		√	√	
Barium		√		√		√		
Beryllium		√		√		√	√	
Cadmium		√		√		√	√	
Chromium		√		√		√	√	
Chromium VI				√				
Cobalt		√		√		√	√	
Copper		√		√		√		
Lead		√		√		√	√	
Manganese				√			√	
Mercury		√		√		√	√	
Molybdenum		√				√		
Nickel		√		√		√	√	
Phosphorous				√				
Selenium		√		√		√	√	
Silver		√		√		√		
Thallium		√		√		√		
Vanadium		√				√		
Zinc		√		√		√		

SOURCE: USEPA Compilation of Air Pollutant Emission Factors, AP-42, Fifth Edition, Volume I: *Stationary Point and Area Sources*, North Carolina Department of Environmental Quality, *Hydrogen Sulfide Study near Petroleum Asphalt Plants,* California Air Resources Board OFFROAD2007 and EMFAC2007, and Soil Sampling at SRRQ, Nov 2007.

EXPOSURE ASSESSMENT

Dispersion is the process by which atmospheric pollutants disseminate due to wind and vertical stability. The results of a dispersion analysis are used to assess pollutant concentrations at or near an emission source.

Dispersion Modeling Approach

Emission sources producing DPM and other TAC emissions include mining equipment such as loaders, excavators, rock drills, bulldozers, haul trucks, tugs associated with barges, aggregate processing, and asphalt and brick processing. This section presents the methodology used for the dispersion modeling analysis for these emissions to determine the health risk impacts as a result of the proposed project. This section addresses all of the fundamental components of an air dispersion modeling analysis including:

- Model selection and options
- Receptor spacing and location
- Meteorological data
- Source release characteristics

The dispersion modeling analysis estimated the TAC (such as DPM, crystalline silica and hydrogen sulfide) concentrations resulting from project emissions and then determined the incremental cancer risk compared to the existing baseline condition, as well as the non-cancer chronic and acute health impacts as a result of the proposed project.

Model Selection and Options

The AERMOD dispersion model (Version 07026) was used for the modeling analysis. AERMOD is the US EPA preferred dispersion model for general industrial purposes. The AERMOD model is the appropriate model for this analysis based on the coverage of simple, intermediate, and complex terrain. It also predicts both short-term and long-term (annual) average concentrations. The model was executed using the regulatory default options (stack-tip downwash, buoyancy-induced dispersion, final plume rise), default wind speed profile categories, default potential temperature gradients, and no pollutant decay. Building wake effects were also addressed. The AERMOD model is based on the Industrial Source Complex-3 (ISC3) model and PRIME downwash algorithm.

The selection of the appropriate dispersion coefficients depends on the land use within three kilometers (km) of the project site. The land use typing was based on the classification method defined by Auer (1978); using pertinent United States Geological Survey (USGS) 1:24,000 scale (7.5 minute) topographic maps of the area. If the Auer land use types of heavy industrial, light-to-moderate industrial, commercial, and compact residential account for 50 percent or more of the total area, the *Guideline on Air Quality Models* recommends using urban dispersion coefficients; otherwise, the appropriate rural coefficients were used. Based on observation of the area surrounding the project site, rural dispersion coefficients were applied in the analysis. Particle gravitational settling was not accounts for in the analysis; this would tend to produce conservative higher values because more particulates would tend to deposit closer to the source.

Hourly, weekly, and seasonal emission scalars were applied accounting to each sources operational schedule (i.e., 7 am through 7 pm, Monday through Friday). The resulting hours of operation were then accounted for in the HARP analysis.

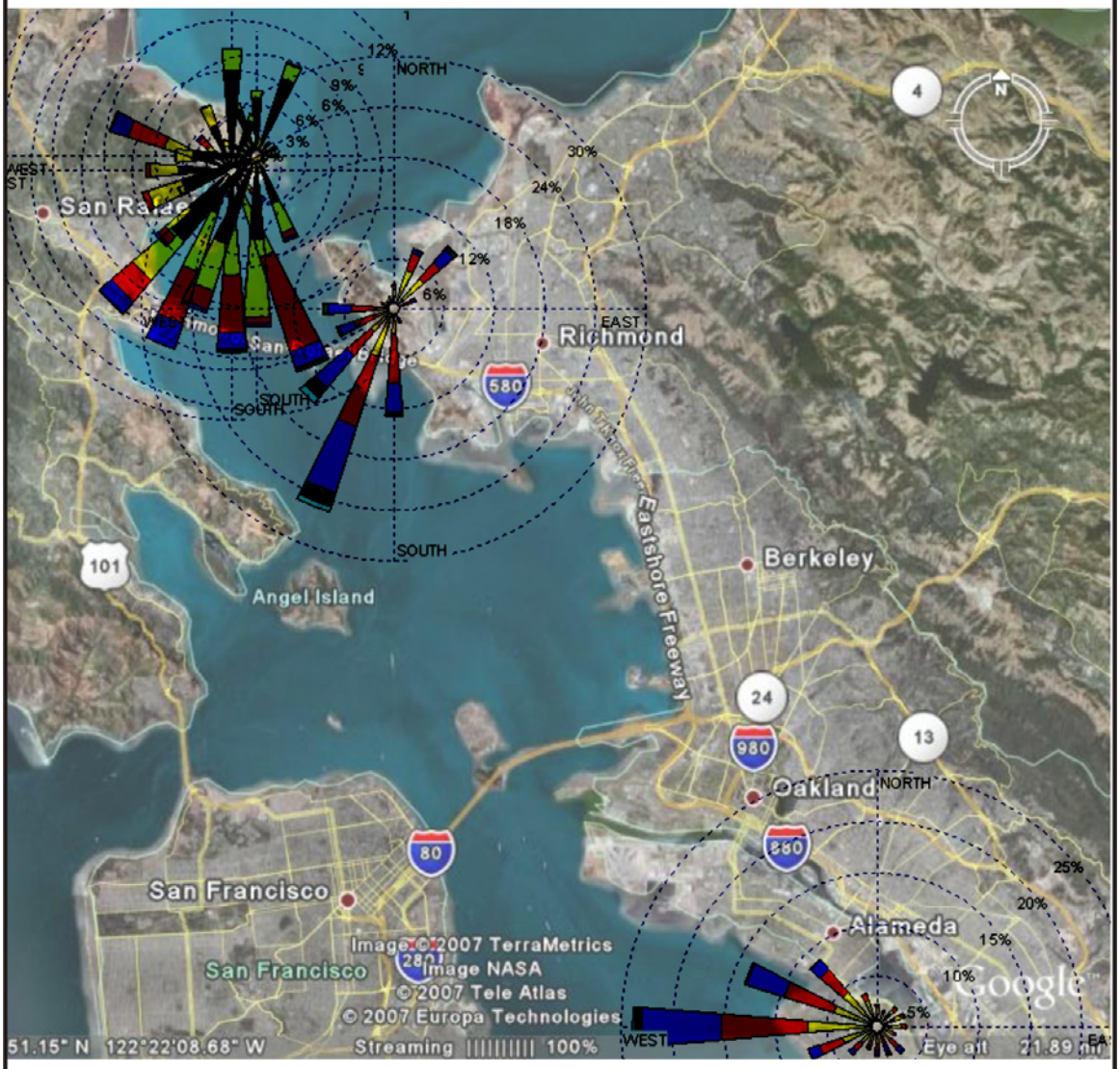
Receptor Locations

Sensitive receptors such as residences, schools, and outdoor recreational areas near the proposed project were chosen as the receptors to be analyzed. A total of 485 receptors were selected. These receptors were placed in a grid pattern with a spacing of 100 meters. These receptors include the West Marin Island (wildlife refuge), San Pedro Elementary School, Madrone High School, Glenwood Elementary School, McNear's Beach Country Park, Marin Bay Park, China Camp, Peacock Country Club, and numerous residential neighborhoods near the quarry and along the haul route. Receptors were placed at a height of 1.8 meters (typical breathing height). Terrain elevations for receptor locations were used (i.e., complex terrain) based on available USGS DEM for the area.

Meteorological Data

Air quality is a function of both the rate and location of pollutant emissions under the influence of meteorological conditions and topographic features effecting pollutant movement and dispersal. Atmospheric conditions such as wind speed, wind direction, atmospheric stability, and air temperature gradients interact with the physical features of the landscape to determine the movement and dispersal of air pollutants, and consequently affect air quality.

Surface meteorological data and upper air meteorological (mixing height) data from San Rafael Rock Quarry and Oakland, California, respectively, were used for the modeling analysis. Onsite meteorological data was monitored at two location; Marin Bay Park and Via Montebello Pump. Meteorological data were obtained from STI and used for modeling impacts of the proposed project. Data from April 2004 through June 2005 were used. Each meteorological data set was modeled and the maximum health impacts from either data was reported. **Exhibits 1 and 2** provide the annual wind roses for the two onsite meteorological station, a station at Point Pablo (across the bay), and Oakland International Airport. Surface roughness was chosen based on eight compass sectors; separated in water surface or grassland land uses.


NORTH
EAST
SOUTH
WEST
12%
9%
6%
3%
30%
24%
18%
San Rafael
Richmond
Berkeley
Angel Island
Eastshore Freeway
Oakland
San Francisco
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580
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880
980
101
24
13
4
25%
20%
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Image © 2007 TerraMetrics
Image NASA
© 2007 Tele Atlas
© 2007 Europa Technologies
Google
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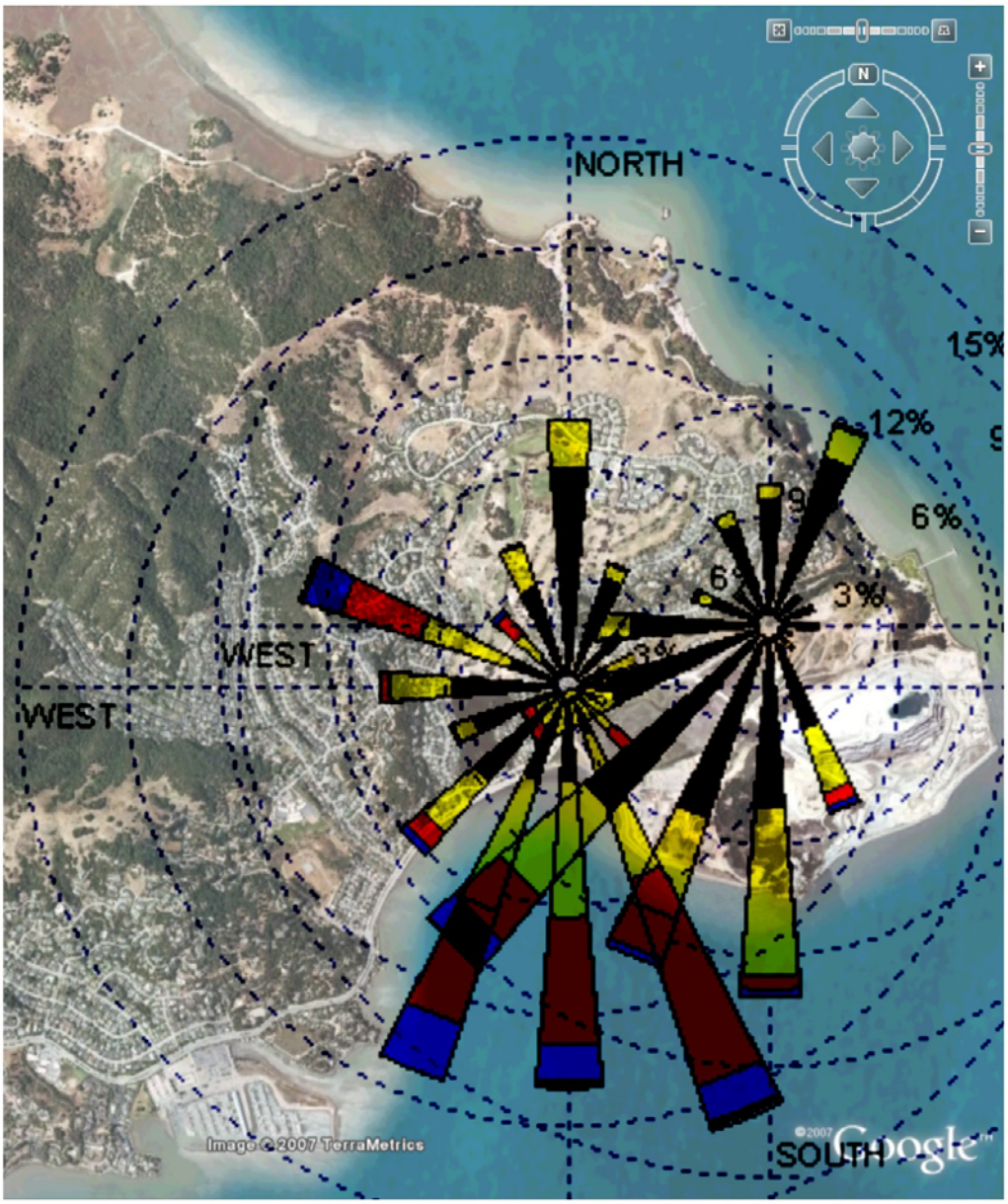
Exhibit 1


NORTH
15%
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WEST
WEST
SOUTH
Image © 2007 TerraMetrics
Google

Exhibit 2

Source Release Characteristics

Onsite equipment was treated as area sources located within the boundary of the mining operations. These sources were assigned a release height of 4.15 meters and an initial vertical dimension of 4.85 meters Haul trucks were treated as a line source (i.e., volume sources placed at regular intervals) located along unpaved roads, egress/ingress routes and the Point San Pedro Road (haul route). The haul route was modeled from the quarry to Highway 101 to the west along Point San Pedro Road. Of note, the emissions inventory included the complete haul route distance within the BAAQMD. These sources were assigned a release height of 4.15 meters and an initial vertical dimension of 8.3 meters, which accounts for dispersion from the movement of vehicles. Barge operations were treated as a line sources with two shipping routes, one to the northeast and one to the south west. These sources were assigned a release height of 10 meters and a source width of 180 meters (for maneuvering) and 800 meters (for cruise). These characteristics are similar to those used in dispersion modeling for the Port of Long Beach, Port of Los Angeles, and other similar sources of barge traffic. Because barge activities occurs to the northeast (toward the Sacramento Delta and to the southwest (towards Oakland and San Francisco), two line sources were modeled, each assuming a distance of approximately 2 kilometers to the berth.

Brick processing was treated as a point source with a release height of 7.92 meters, an exhaust temperature of 410 Kelvin, an exhaust velocity of 11 meters per second and a diameter of 0.76 meters. The asphalt processing was treated as a point source with a release height of 12.2 meters, an exhaust temperature of 422 Kelvin, an exhaust velocity of 17.4 meters per second and a diameter of 1.4 meters. The asphalt silo was treated as a volume source with a release height of 4.2 meters and horizontal dimension of 12 meters.

Blasting activities were treated as a volume source with a release height of 12 meters and a width of 200 meters. The aggregate processing operation was treated as an area source with a release height of 10 meters and a width of 120 meters. The fugitive dust sources associated with the quarry was treated as an area source with a release height of 2 meters and a initial vertical ca dimension of 4.65 meters.

Terrain elevations for emission source locations were used (i.e., complex terrain) based on available USGS DEM for the area. AERMAP (supplemented with geological surveys of the facility) was used to develop the terrain heights.

Exposure Assumptions

The exposure assumptions used to calculate health impacts include exposure frequency, exposure time, exposure duration and averaging time. Each land use classification considered in the HHRA has its own unique exposure assumptions. For example, the HHRA assumes a 70-year, 24-hour/day, 350 days/year exposure duration to calculate carcinogenic effects for residents. This exposure duration is equivalent to residents being present in their home seven days a week for 50 weeks/year (or about 96 percent of the time) with approximately 15 days spent away from home. Potential health impacts to an offsite worker will vary depending on the worker's schedule and the operating hours of the facility. Offsite workers are assumed to work a regular eight hours/day, five days/week, 49 weeks/year, over a 40-year schedule. School children exposure assumptions were based on ~~eight~~ ten hours/day, five days/week, 180 days/year over ~~14~~ nine years. Teacher exposure assumptions were based on ~~eight~~ ten hours/day, five days/week, 180 days/year over 40 years. Individual body weights and breathing rates were based on OEHHA guidance. Of note, given land uses in the vicinity of the quarry, no off-site workers were included in the analysis,

since using exposure duration factors for residential receptors is more conservative than the factors used for off-site workers.

For the cancer risk assessment, emission rates were determined based on the average emission rate over a 70-year lifetime (i.e., the project emission rate divided by 70 years). However, to model the chronic and acute health impacts, the maximum emission rate was used. In the case of DPM, maximum emission rates were assumed to occur in the beginning of the time period.

TOXICITY ASSESSMENT

The toxicity values used in this analysis were based on OEHHA guidance. These toxicity values are for carcinogenic effects and chronic health impacts. The primary pathway for exposures was assumed to be inhalation and carcinogenic and non-carcinogenic effects were evaluated separately.

The principal issues related to health risks from the project pertain to emissions of toxic substances from the exhaust of diesel trucks and equipment. The incremental risks were determined for these sources of TAC as described above and summed to obtain an estimated total incremental carcinogenic health risk. The health risk assessment was conducted according to methodologies present in BAAQMD's *Health Risk Screening Analysis Guidelines*.

In accordance with OEHHA guidelines, The HHRA was accomplished by applying the highest estimated concentrations of TAC at the receptors analyzed to the established cancer potency factors and acceptable reference concentrations (RfC) for non-cancer health effects. The HHRA for this project utilized CARB Hotspot Analysis and Reporting Program (HARP)[4] to determine the cancer risks and non-cancer health effects. HARP is a computer software package that combines the tools of emission inventory database, facility prioritization, air dispersion modeling, and risk assessment analysis.

RISK CHARACTERIZATION

The cancer risk is the probability of an individual developing cancer as a result of exposure to DPM. The cancer risks are assumed to occur exclusively through the inhalation pathway. The cancer risk based on a one-year exposure can be estimated by utilizing the cancer potency factor (mg/kg-day), the annual average concentration ($\mu g/m^3$), and the lifetime exposure adjustment. HARP was conducted using the ~~95~~ 80th percentile breathing rate (derived OEHHA) method.

The cancer risks occur exclusively through the inhalation pathway; therefore, the cancer risks can be estimated from the following equation:

$$\text{Dose} = \sum C \bullet DBR \bullet EF \bullet ED \bullet (10^{-6})/(AT)$$

Where:

Dose Dose through Inhalation (mg/kg-day)

[4] On December 9, 2006 after a one year grandfathering period, the AERMOD model replaced ISC3 as EPA's preferred regulatory model. The current version of HARP (Version 1.3) uses the ISC3 dispersion tool. CARB has recognized this disconnection with EPA's preferred regulatory model and has developed a Converter (to converts air dispersion files (e.g., AERMOD and ISC3) into text files that can be imported into the HARP) and it was released to the public as a beta version on April 30, 2007.

C	Annual average concentration ($\mu g/m^3$) (from previous equation) during the 70 year exposure period
DBR	Daily Breathing Rate (L/kg-day)
EF	Exposure Frequency (days/year)
ED	Exposure Duration (years)
AT	Averaging Period over which exposure is averaged (25,550 days or 70 years)

$$\text{Cancer Risk} = \text{Dose (mg/kg-day)} \bullet \text{Cancer Potency (kg-day/mg)} \bullet (10^6)$$

The Hazard Index is an expression used for the potential for non-cancer health effects. The relationship for the non-cancer health effects is given by the annual concentration ($\mu g/m^3$) and the Reference Exposure Level ($\mu g/m^3$). The acute hazard index was determined using the "simple" concurrent maximum approach, which tends to be conservative (i.e., over-predicts).

The relationship for the non-cancer health effects is given by the following equation:

$$HI = C/REL$$

where,

HI_{DPM}	Hazard index; an expression of the potential for non-cancer health effects.
C_{DPM}	Annual average DPM concentration ($\mu g/m^3$) during the 70 year exposure period
REL_{DPM}	Reference exposure level (REL); the concentration at which no adverse health effects are anticipated.

The cancer risk and health index are determined by pollutant and then totaled for comparison with the significance thresholds.

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C. EMISSION CALCULATIONS

Please note that the spreadsheet tables that make up this section have been revised from the Draft EIR version to increase clarity of presentation and to facilitate location of data presented herein.

TABLE OF CONTENTS

Table C-1
Aggregate Plant - Past Conditions

Operating Assumptions	Stationary	Portable		
Hourly Process Rate (ton)	1,000	550		
Daily Process Rate (ton)	8,000	4,400		
Annual Process Rate (ton)	1,414,667	1,144,000	2,080	hours/year

Aggregate Plant PM Emissions

Equipment	Process Rate (ton/hr)	Number of Transfers	Daily Operation (hours)	Uncontrolled Emission Factor (lb/ton)	Controlled Emission Factor (lb/ton)	Controlled PM10 Emissions Hourly (lb/hr)	Controlled PM10 Emissions Daily (lb/day)	Controlled PM10 Emissions Annual (ton/yr)	Controlled PM2.5 Emissions Hourly (lb/hr)	Controlled PM2.5 Emissions Daily (lb/day)	Controlled PM2.5 Emissions Annual (ton/yr)	Uncontrolled PM10 Emissions Hourly (lb/hr)	Uncontrolled PM10 Emissions Daily (lb/day)	Uncontrolled PM10 Emissions Annual (ton/yr)	Uncontrolled PM2.5 Emissions Hourly (lb/hr)	Uncontrolled PM2.5 Emissions Daily (lb/day)	Uncontrolled PM2.5 Emissions Annual (ton/yr)
Primary Crusher	1000	1	8	0.0024	0.00054	0.54	4.32	0.38	0.08	0.65	0.06	2.40	19.20	1.70	0.36	2.88	0.25
Secondary Crusher	800	1	8	0.0024	0.00054	0.43	3.46	0.31	0.06	0.52	0.05	1.92	15.36	1.36	0.29	2.30	0.20
Primary Screening	600	1	8	0.0087	0.00074	0.44	3.55	0.31	0.07	0.53	0.05	5.22	41.76	3.69	0.78	6.26	0.55
Primary Conveying	1000	1	8	0.0011	0.000046	0.05	0.37	0.03	0.01	0.06	0.00	1.10	8.80	0.78	0.17	1.32	0.12
SWOOP Plant Primary Crusher	300	1	8	0.0024	0.00054	0.16	1.30	0.11	0.02	0.19	0.02	0.72	5.76	0.51	0.11	0.86	0.08
Conveyed Crushed Rock	1000	1	8	0.0011	0.000046	0.05	0.37	0.03	0.01	0.06	0.00	1.10	8.80	0.78	0.17	1.32	0.12
SWOOP Plant Screen	600	1	8	0.0087	0.00074	0.44	3.55	0.31	0.07	0.53	0.05	5.22	41.76	3.69	0.78	6.26	0.55
E6 Secondary Cone Crusher	400	1	8	0.0024	0.00054	0.22	1.73	0.15	0.03	0.26	0.02	0.96	7.68	0.68	0.14	1.15	0.10
E10 Secondary Cone Crusher	375	1	8	0.0024	0.00054	0.20	1.62	0.14	0.03	0.24	0.02	0.90	7.20	0.64	0.14	1.08	0.10
E11 Secondary Cone Crusher	375	1	8	0.0024	0.00054	0.20	1.62	0.14	0.03	0.24	0.02	0.90	7.20	0.64	0.14	1.08	0.10
Belts	1000	1	8	0.0011	0.000046	0.05	0.37	0.03	0.01	0.06	0.00	1.10	8.80	0.78	0.17	1.32	0.12
E5 Secondary Screen	1000	1	8	0.0087	0.00074	0.74	5.92	0.52	0.11	0.89	0.08	8.70	69.60	6.15	1.31	10.44	0.92
6x20 Simplicty Screen	350	1	8	0.0087	0.00074	0.26	2.07	0.18	0.04	0.31	0.03	3.05	24.36	2.15	0.46	3.65	0.32
E8 Secondary Screen	800	1	8	0.0087	0.00074	0.59	4.74	0.42	0.09	0.71	0.06	6.96	55.68	4.92	1.04	8.35	0.74
E7 Secondary Screen	800	1	8	0.0087	0.00074	0.59	4.74	0.42	0.09	0.71	0.06	6.96	55.68	4.92	1.04	8.35	0.74
E12 Secondary Screen	400	1	8	0.0087	0.00074	0.30	2.37	0.21	0.04	0.36	0.03	3.48	27.84	2.46	0.52	4.18	0.37
E13 Secondary Screen	400	1	8	0.0087	0.00074	0.30	2.37	0.21	0.04	0.36	0.03	3.48	27.84	2.46	0.52	4.18	0.37
Total Aggregate Plant PM Emissions						***5.56***	***44.45***	***3.93***	***0.83***	***6.67***	***0.59***	***54.17***	***433.32***	***38.31***	***8.12***	***65.00***	***5.75***

Emission Rates

Hourly	PM10	5.56	lb/hr	0.70	g/s
Annual	PM10	7,860	lb/yr	0.113	g/s
Hourly	PM2.5	0.83	lb/hr	0.105	g/s
Annual	PM2.5	1,179	lb/yr	0.0170	g/s
Hourly	Silica	3.12	lb/hr	0.393	g/s
Annual	Silica	4,410	lb/yr	0.063	g/s
Hourly	Silica	3.12	lb/hr	0.393	g/s
Annual	Silica	1,638	lb/yr (70-yr)	0.0236	g/s

56% cystalline silica

Hourly	Antimony	3.72E-06	Annual (70-yr)	Antimony	1.96E-03	Annual	Antimony	5.27E-03
Hourly	Arsenic	3.78E-05	Annual (70-yr)	Arsenic	1.99E-02	Annual	Arsenic	5.34E-02
Hourly	Barium	3.89E-03	Annual (70-yr)	Barium	2.04E+00	Annual	Barium	5.50E+00
Hourly	Beryllium	6.67E-06	Annual (70-yr)	Beryllium	3.50E-03	Annual	Beryllium	9.43E-03
Hourly	Cadmium	0.00E+00	Annual (70-yr)	Cadmium	0.00E+00	Annual	Cadmium	0.00E+00
Hourly	Chromium	8.89E-05	Annual (70-yr)	Chromium	4.67E-02	Annual	Chromium	1.26E-01
Hourly	Cobalt	1.22E-04	Annual (70-yr)	Cobalt	6.42E-02	Annual	Cobalt	1.73E-01
Hourly	Copper	7.22E-05	Annual (70-yr)	Copper	3.80E-02	Annual	Copper	1.02E-01
Hourly	Lead	1.33E-04	Annual (70-yr)	Lead	7.01E-02	Annual	Lead	1.89E-01
Hourly	Mercury	2.33E-05	Annual (70-yr)	Mercury	1.23E-02	Annual	Mercury	3.30E-02
Hourly	Molybdenum	4.83E-06	Annual (70-yr)	Molybdenum	2.54E-03	Annual	Molybdenum	6.84E-03
Hourly	Nickel	1.50E-04	Annual (70-yr)	Nickel	7.88E-02	Annual	Nickel	2.12E-01
Hourly	Selenium	3.33E-06	Annual (70-yr)	Selenium	1.75E-03	Annual	Selenium	4.72E-03
Hourly	Silver	0.00E+00	Annual (70-yr)	Silver	0.00E+00	Annual	Silver	0.00E+00
Hourly	Thallium	0.00E+00	Annual (70-yr)	Thallium	0.00E+00	Annual	Thallium	0.00E+00
Hourly	Vanadium	1.61E-04	Annual (70-yr)	Vanadium	8.47E-02	Annual	Vanadium	2.28E-01
Hourly	Zinc	3.33E-04	Annual (70-yr)	Zinc	1.75E-01	Annual	Zinc	4.72E-01

Table C-1
Aggregate Plant - Past Conditions

Aggregate Portable Plant PM Emissions						Controlled						Uncontrolled					
						PM10 Emissions			PM2.5 Emissions			PM10 Emissions			PM2.5 Emissions		
Equipment	Process Rate (ton/hr)	Number of Transfers	Daily Operation (hours)	Uncontrolled Emission Factor (lb/ton)	Controlled Emission Factor (lb/ton)	Hourly (lb/hr)	Daily (lb/day)	Annual (ton/yr)	Hourly (lb/hr)	Daily (lb/day)	Annual (ton/yr)	Hourly (lb/hr)	Daily (lb/day)	Annual (ton/yr)	Hourly (lb/hr)	Daily (lb/day)	Annual (ton/yr)
Portable Jaw Crusher	300	1	8	0.0024	0.00054	0.16	1.30	0.17	0.02	0.19	0.03	0.72	5.76	0.75	0.11	0.86	0.11
Portable Conveyors	550	4	8	0.0011	0.000046	0.10	0.81	0.03	0.02	0.12	0.00	2.42	19.36	0.63	0.36	2.90	0.09
Portable Screen	550	1	8	0.0087	0.00074	0.41	3.26	0.42	0.06	0.49	0.06	4.79	38.28	4.98	0.72	5.74	0.75
Portable Cone Crusher	250	1	8	0.0024	0.00054	0.14	1.08	0.14	0.02	0.16	0.02	0.60	4.80	0.62	0.09	0.72	0.09
Total Aggregate Portable Plant PM Emissions						***0.81***	***6.44***	***0.76***	***0.12***	***0.97***	***0.11***	***8.53***	***68.20***	***6.98***	***1.28***	***10.23***	***1.05***
Total Aggregate PM Emissions						***6.36***	***50.89***	***4.69***	***0.95***	***7.63***	***0.70***	***62.69***	***501.52***	***45.29***	***9.40***	***75.23***	***6.79***

Table C-2
Aggregate Plant - Existing Condition

Operating Assumptions	Stationary	Portable		
Hourly Process Rate (ton)	1,000	550		
Daily Process Rate (ton)	8,000	4,400		
Annual Process Rate (ton)	1,414,667	1,144,000	2,080	hours/year

Aggregate Plant PM Emissions

Equipment	Process Rate (ton/hr)	Number of Transfers	Daily Operation (hours)	Uncontrolled Emission Factor (lb/ton)	Controlled Emission Factor (lb/ton)	Controlled PM10 Emissions Hourly (lb/hr)	Controlled PM10 Emissions Daily (lb/day)	Controlled PM10 Emissions Annual (ton/yr)	Controlled PM2.5 Emissions Hourly (lb/hr)	Controlled PM2.5 Emissions Daily (lb/day)	Controlled PM2.5 Emissions Annual (ton/yr)	Uncontrolled PM10 Emissions Hourly (lb/hr)	Uncontrolled PM10 Emissions Daily (lb/day)	Uncontrolled PM10 Emissions Annual (ton/yr)	Uncontrolled PM2.5 Emissions Hourly (lb/hr)	Uncontrolled PM2.5 Emissions Daily (lb/day)	Uncontrolled PM2.5 Emissions Annual (ton/yr)
Primary Crusher	1000	1	8	0.0024	0.00054	0.54	4.32	0.38	0.08	0.65	0.06	2.40	19.20	1.70	0.36	2.88	0.25
Secondary Crusher	800	1	8	0.0024	0.00054	0.43	3.46	0.31	0.06	0.52	0.05	1.92	15.36	1.36	0.29	2.30	0.20
Primary Screening	600	1	8	0.0087	0.00074	0.44	3.55	0.31	0.07	0.53	0.05	5.22	41.76	3.69	0.78	6.26	0.55
Primary Conveying	1000	1	8	0.0011	0.000046	0.05	0.37	0.03	0.01	0.06	0.00	1.10	8.80	0.78	0.17	1.32	0.12
SWOOP Plant Primary Crusher	300	1	8	0.0024	0.00054	0.16	1.30	0.11	0.02	0.19	0.02	0.72	5.76	0.51	0.11	0.86	0.08
Conveyed Crushed Rock	1000	1	8	0.0011	0.000046	0.05	0.37	0.03	0.01	0.06	0.00	1.10	8.80	0.78	0.17	1.32	0.12
SWOOP Plant Screen	600	1	8	0.0087	0.00074	0.44	3.55	0.31	0.07	0.53	0.05	5.22	41.76	3.69	0.78	6.26	0.55
E6 Secondary Cone Crusher	400	1	8	0.0024	0.00054	0.22	1.73	0.15	0.03	0.26	0.02	0.96	7.68	0.68	0.14	1.15	0.10
E10 Secondary Cone Crusher	375	1	8	0.0024	0.00054	0.20	1.62	0.14	0.03	0.24	0.02	0.90	7.20	0.64	0.14	1.08	0.10
E11 Secondary Cone Crusher	375	1	8	0.0024	0.00054	0.20	1.62	0.14	0.03	0.24	0.02	0.90	7.20	0.64	0.14	1.08	0.10
Belts	1000	1	8	0.0011	0.000046	0.05	0.37	0.03	0.01	0.06	0.00	1.10	8.80	0.78	0.17	1.32	0.12
E5 Secondary Screen	1000	1	8	0.0087	0.00074	0.74	5.92	0.52	0.11	0.89	0.08	8.70	69.60	6.15	1.31	10.44	0.92
6x20 Simplicty Screen	350	1	8	0.0087	0.00074	0.26	2.07	0.18	0.04	0.31	0.03	3.05	24.36	2.15	0.46	3.65	0.32
E8 Secondary Screen	800	1	8	0.0087	0.00074	0.59	4.74	0.42	0.09	0.71	0.06	6.96	55.68	4.92	1.04	8.35	0.74
E7 Secondary Screen	800	1	8	0.0087	0.00074	0.59	4.74	0.42	0.09	0.71	0.06	6.96	55.68	4.92	1.04	8.35	0.74
E12 Secondary Screen	400	1	8	0.0087	0.00074	0.30	2.37	0.21	0.04	0.36	0.03	3.48	27.84	2.46	0.52	4.18	0.37
E13 Secondary Screen	400	1	8	0.0087	0.00074	0.30	2.37	0.21	0.04	0.36	0.03	3.48	27.84	2.46	0.52	4.18	0.37
Total Aggregate Plant PM Emissions						***5.56***	***44.45***	***3.93***	***0.83***	***6.67***	***0.59***	***54.17***	***433.32***	***38.31***	***8.12***	***65.00***	***5.75***

Emission Rates

Hourly	PM10	5.56	lb/hr	0.70	g/s	
Annual	PM10	7,860	lb/yr	0.113	g/s	
Hourly	PM2.5	0.83	lb/hr	0.105	g/s	
Annual	PM2.5	1,179	lb/yr	0.0170	g/s	
Hourly	Silica	3.12	lb/hr	0.393	g/s	56% cystalline silica
Annual	Silica	4,410	lb/yr	0.063	g/s	
Hourly	Silica	3.12	lb/hr	0.393	g/s	
Annual	Silica	189	lb/yr (70-yr)	0.0027	g/s	

Hourly	Antimony	3.72E-06	Annual (70-yr)	Antimony	2.26E-04	Annual	Antimony	5.27E-03
Hourly	Arsenic	3.78E-05	Annual (70-yr)	Arsenic	2.29E-03	Annual	Arsenic	5.34E-02
Hourly	Barium	3.89E-03	Annual (70-yr)	Barium	2.36E-01	Annual	Barium	5.50E+00
Hourly	Beryllium	6.67E-06	Annual (70-yr)	Beryllium	4.04E-04	Annual	Beryllium	9.43E-03
Hourly	Cadmium	0.00E+00	Annual (70-yr)	Cadmium	0.00E+00	Annual	Cadmium	0.00E+00
Hourly	Chromium	8.89E-05	Annual (70-yr)	Chromium	5.39E-03	Annual	Chromium	1.26E-01
Hourly	Cobalt	1.22E-04	Annual (70-yr)	Cobalt	7.41E-03	Annual	Cobalt	1.73E-01
Hourly	Copper	7.22E-05	Annual (70-yr)	Copper	4.38E-03	Annual	Copper	1.02E-01
Hourly	Lead	1.33E-04	Annual (70-yr)	Lead	8.08E-03	Annual	Lead	1.89E-01
Hourly	Mercury	2.33E-05	Annual (70-yr)	Mercury	1.41E-03	Annual	Mercury	3.30E-02
Hourly	Molybdenum	4.83E-06	Annual (70-yr)	Molybdenum	2.93E-04	Annual	Molybdenum	6.84E-03
Hourly	Nickel	1.50E-04	Annual (70-yr)	Nickel	9.10E-03	Annual	Nickel	2.12E-01
Hourly	Selenium	3.33E-06	Annual (70-yr)	Selenium	2.02E-04	Annual	Selenium	4.72E-03
Hourly	Silver	0.00E+00	Annual (70-yr)	Silver	0.00E+00	Annual	Silver	0.00E+00
Hourly	Thallium	0.00E+00	Annual (70-yr)	Thallium	0.00E+00	Annual	Thallium	0.00E+00
Hourly	Vanadium	1.61E-04	Annual (70-yr)	Vanadium	9.77E-03	Annual	Vanadium	2.28E-01
Hourly	Zinc	3.33E-04	Annual (70-yr)	Zinc	2.02E-02	Annual	Zinc	4.72E-01

Table C-2
Aggregate Plant - Existing Condition

Aggregate Pportable Plant PM Emissions						Controlled						Uncontrolled					
						PM10 Emissions			PM2.5 Emissions			PM10 Emissions			PM2.5 Emissions		
Equipment	Process Rate (ton/hr)	Number of Transfers	Daily Operation (hours)	Uncontrolled Emission Factor (lb/ton)	Controlled Emission Factor (lb/ton)	Hourly (lb/hr)	Daily (lb/day)	Annual (ton/yr)	Hourly (lb/hr)	Daily (lb/day)	Annual (ton/yr)	Hourly (lb/hr)	Daily (lb/day)	Annual (ton/yr)	Hourly (lb/hr)	Daily (lb/day)	Annual (ton/yr)
Portable Jaw Crusher	300	1	8	0.0024	0.00054	0.16	1.30	0.17	0.02	0.19	0.03	0.72	5.76	0.75	0.11	0.86	0.11
Portable Conveyors	550	4	8	0.0011	0.000046	0.10	0.81	0.03	0.02	0.12	0.00	2.42	19.36	0.63	0.36	2.90	0.09
Portable Screen	550	1	8	0.0087	0.00074	0.41	3.26	0.42	0.06	0.49	0.06	4.79	38.28	4.98	0.72	5.74	0.75
Portable Cone Crusher	250	1	8	0.0024	0.00054	0.14	1.08	0.14	0.02	0.16	0.02	0.60	4.80	0.62	0.09	0.72	0.09
Total Aggregate Portable Plant PM Emissions						***0.81***	***6.44***	***0.76***	***0.12***	***0.97***	***0.11***	***8.53***	***68.20***	***6.98***	***1.28***	***10.23***	***1.05***
Total Aggregate PM Emissions						***6.36***	***50.89***	***4.69***	***0.95***	***7.63***	***0.70***	***62.69***	***501.52***	***45.29***	***9.40***	***75.23***	***6.79***

Table C-3
Aggregate Plant - Proposed Conditions

Operating Assumptions	Stationary	Portable		
Hourly Process Rate (ton)	1,200	550		
Daily Process Rate (ton)	9,600	4,400		
Annual Process Rate (ton)	1,697,600	1,144,000	2,080	hours/year

Aggregate Plant PM Emissions

Controlled

Equipment	Process Rate (ton/hr)	Number of Transfers	Daily Operation (hours)	Uncontrolled Emission Factor (lb/ton)	Controlled Emission Factor (lb/ton)	PM10 Emissions Hourly (lb/hr)	PM10 Emissions Daily (lb/day)	PM10 Emissions Annual (ton/yr)	PM2.5 Emissions Hourly (lb/hr)	PM2.5 Emissions Daily (lb/day)	PM2.5 Emissions Annual (ton/yr)
Primary Crusher	1200	1	8	0.0024	0.00054	0.65	5.18	0.46	0.10	0.78	0.07
Secondary Crusher	960	1	8	0.0024	0.00054	0.52	4.15	0.37	0.08	0.62	0.06
Primary Screening	720	1	8	0.0087	0.00074	0.53	4.26	0.38	0.08	0.64	0.06
Primary Conveying	1200	1	8	0.0011	0.000046	0.06	0.44	0.04	0.01	0.07	0.01
SWOOP Plant Primary Crusher	360	1	8	0.0024	0.00054	0.19	1.56	0.14	0.03	0.23	0.02
Conveyed Crushed Rock	1200	1	8	0.0011	0.000046	0.06	0.44	0.04	0.01	0.07	0.01
SWOOP Plant Screen	720	1	8	0.0087	0.00074	0.53	4.26	0.38	0.08	0.64	0.06
E6 Secondary Cone Crusher	480	1	8	0.0024	0.00054	0.26	2.07	0.18	0.04	0.31	0.03
E10 Secondary Cone Crusher	450	1	8	0.0024	0.00054	0.24	1.94	0.17	0.04	0.29	0.03
E11 Secondary Cone Crusher	450	1	8	0.0024	0.00054	0.24	1.94	0.17	0.04	0.29	0.03
Belts	1200	1	8	0.0011	0.000046	0.06	0.44	0.04	0.01	0.07	0.01
E5 Secondary Screen	1200	1	8	0.0087	0.00074	0.89	7.10	0.63	0.13	1.07	0.09
6x20 Simplicty Screen	420	1	8	0.0087	0.00074	0.31	2.49	0.22	0.05	0.37	0.03
E8 Secondary Screen	960	1	8	0.0087	0.00074	0.71	5.68	0.50	0.11	0.85	0.08
E7 Secondary Screen	960	1	8	0.0087	0.00074	0.71	5.68	0.50	0.11	0.85	0.08
E12 Secondary Screen	480	1	8	0.0087	0.00074	0.36	2.84	0.25	0.05	0.43	0.04
E13 Secondary Screen	480	1	8	0.0087	0.00074	0.36	2.84	0.25	0.05	0.43	0.04
Total Aggregate Plant PM Emissions						***6.67***	***53.34***	***4.72***	***1.00***	***8.00***	***0.71***

Uncontrolled

PM10 Emissions Hourly (lb/hr)	PM10 Emissions Daily (lb/day)	PM10 Emissions Annual (ton/yr)	PM2.5 Emissions Hourly (lb/hr)	PM2.5 Emissions Daily (lb/day)	PM2.5 Emissions Annual (ton/yr)
2.88	23.04	2.04	0.43	3.46	0.31
2.30	18.43	1.63	0.35	2.76	0.24
6.26	50.11	4.43	0.94	7.52	0.66
1.32	10.56	0.93	0.20	1.58	0.14
0.86	6.91	0.61	0.13	1.04	0.09
1.32	10.56	0.93	0.20	1.58	0.14
6.26	50.11	4.43	0.94	7.52	0.66
1.15	9.22	0.81	0.17	1.38	0.12
1.08	8.64	0.76	0.16	1.30	0.11
1.08	8.64	0.76	0.16	1.30	0.11
1.32	10.56	0.93	0.20	1.58	0.14
10.44	83.52	7.38	1.57	12.53	1.11
3.65	29.23	2.58	0.55	4.38	0.39
8.35	66.82	5.91	1.25	10.02	0.89
8.35	66.82	5.91	1.25	10.02	0.89
4.18	33.41	2.95	0.63	5.01	0.44
4.18	33.41	2.95	0.63	5.01	0.44
65.00	***519.98***	***45.98***	***9.75***	***78.00***	***6.90***

Emission Rates

Hourly	PM10	6.67	lb/hr	0.84	g/s
Annual	PM10	9,432	lb/yr	0.136	g/s
Hourly	PM2.5	1.00	lb/hr	0.126	g/s
Annual	PM2.5	1,415	lb/yr	0.0203	g/s
Hourly	Silica	3.74	lb/hr	0.471	g/s
Annual	Silica	5,292	lb/yr	0.076	g/s
Hourly	Silica	3.74	lb/hr	0.471	g/s
Annual	Silica	1,285	lb/yr (70-yr)	0.0185	g/s

56% cystalline silica

Hourly	Antimony	4.47E-06	Annual (70-yr)	Antimony	1.53E-03	Annual	Antimony	6.32E-03
Hourly	Arsenic	4.53E-05	Annual (70-yr)	Arsenic	1.56E-02	Annual	Arsenic	6.41E-02
Hourly	Barium	4.67E-03	Annual (70-yr)	Barium	1.60E+00	Annual	Barium	6.60E+00
Hourly	Beryllium	8.00E-06	Annual (70-yr)	Beryllium	2.75E-03	Annual	Beryllium	1.13E-02
Hourly	Cadmium	0.00E+00	Annual (70-yr)	Cadmium	0.00E+00	Annual	Cadmium	0.00E+00
Hourly	Chromium	1.07E-04	Annual (70-yr)	Chromium	3.66E-02	Annual	Chromium	1.51E-01
Hourly	Cobalt	1.47E-04	Annual (70-yr)	Cobalt	5.04E-02	Annual	Cobalt	2.08E-01
Hourly	Copper	8.67E-05	Annual (70-yr)	Copper	2.98E-02	Annual	Copper	1.23E-01
Hourly	Lead	1.60E-04	Annual (70-yr)	Lead	5.50E-02	Annual	Lead	2.26E-01
Hourly	Mercury	2.80E-05	Annual (70-yr)	Mercury	9.62E-03	Annual	Mercury	3.96E-02
Hourly	Molybdenum	5.80E-06	Annual (70-yr)	Molybdenum	1.99E-03	Annual	Molybdenum	8.21E-03
Hourly	Nickel	1.80E-04	Annual (70-yr)	Nickel	6.18E-02	Annual	Nickel	2.55E-01
Hourly	Selenium	4.00E-06	Annual (70-yr)	Selenium	1.37E-03	Annual	Selenium	5.66E-03
Hourly	Silver	0.00E+00	Annual (70-yr)	Silver	0.00E+00	Annual	Silver	0.00E+00
Hourly	Thallium	0.00E+00	Annual (70-yr)	Thallium	0.00E+00	Annual	Thallium	0.00E+00
Hourly	Vanadium	1.93E-04	Annual (70-yr)	Vanadium	6.64E-02	Annual	Vanadium	2.74E-01
Hourly	Zinc	4.00E-04	Annual (70-yr)	Zinc	1.37E-01	Annual	Zinc	5.66E-01

Table C-3
Aggregate Plant - Proposed Conditions

Aggregate Portable Plant PM Emissions						Controlled						Uncontrolled					
						PM10 Emissions			PM2.5 Emissions			PM10 Emissions			PM2.5 Emissions		
Equipment	Process Rate (ton/hr)	Number of Transfers	Daily Operation (hours)	Uncontrolled Emission Factor (lb/ton)	Controlled Emission Factor (lb/ton)	Hourly (lb/hr)	Daily (lb/day)	Annual (ton/yr)	Hourly (lb/hr)	Daily (lb/day)	Annual (ton/yr)	Hourly (lb/hr)	Daily (lb/day)	Annual (ton/yr)	Hourly (lb/hr)	Daily (lb/day)	Annual (ton/yr)
Portable Jaw Crusher	300	1	8	0.0024	0.00054	0.16	1.30	0.17	0.02	0.19	0.03	0.72	5.76	0.75	0.11	0.86	0.11
Portable Conveyors	550	4	8	0.0011	0.000046	0.10	0.81	0.03	0.02	0.12	0.00	2.42	19.36	0.63	0.36	2.90	0.09
Portable Screen	550	1	8	0.0087	0.00074	0.41	3.26	0.42	0.06	0.49	0.06	4.79	38.28	4.98	0.72	5.74	0.75
Portable Cone Crusher	250	1	8	0.0024	0.00054	0.14	1.08	0.14	0.02	0.16	0.02	0.60	4.80	0.62	0.09	0.72	0.09
Total Aggregate Portable Plant PM Emissions						***0.81***	***6.44***	***0.76***	***0.12***	***0.97***	***0.11***	***8.53***	***68.20***	***6.98***	***1.28***	***10.23***	***1.05***
Total Aggregate PM Emissions						***7.47***	***59.78***	***5.47***	***1.12***	***8.97***	***0.82***	***73.52***	***588.18***	***52.95***	***11.03***	***88.23***	***7.94***

Table C-4
Aggregate Plant - Proposed at 1982 Production Conditions

Operating Assumptions	Stationary	Portable		
Hourly Process Rate (ton)	1,000	550		
Daily Process Rate (ton)	8,000	4,400		
Annual Process Rate (ton)	1,414,667	1,144,000	2,080	hours/year

Aggregate Plant PM Emissions

Equipment	Process Rate (ton/hr)	Number of Transfers	Daily Operation (hours)	Uncontrolled Emission Factor (lb/ton)	Controlled Emission Factor (lb/ton)	Controlled PM10 Emissions Hourly (lb/hr)	Controlled PM10 Emissions Daily (lb/day)	Controlled PM10 Emissions Annual (ton/yr)	Controlled PM2.5 Emissions Hourly (lb/hr)	Controlled PM2.5 Emissions Daily (lb/day)	Controlled PM2.5 Emissions Annual (ton/yr)	Uncontrolled PM10 Emissions Hourly (lb/hr)	Uncontrolled PM10 Emissions Daily (lb/day)	Uncontrolled PM10 Emissions Annual (ton/yr)	Uncontrolled PM2.5 Emissions Hourly (lb/hr)	Uncontrolled PM2.5 Emissions Daily (lb/day)	Uncontrolled PM2.5 Emissions Annual (ton/yr)
Primary Crusher	1000	1	8	0.0024	0.00054	0.54	4.32	0.38	0.08	0.65	0.06	2.40	19.20	1.70	0.36	2.88	0.25
Secondary Crusher	800	1	8	0.0024	0.00054	0.43	3.46	0.31	0.06	0.52	0.05	1.92	15.36	1.36	0.29	2.30	0.20
Primary Screening	600	1	8	0.0087	0.00074	0.44	3.55	0.31	0.07	0.53	0.05	5.22	41.76	3.69	0.78	6.26	0.55
Primary Conveying	1000	1	8	0.0011	0.000046	0.05	0.37	0.03	0.01	0.06	0.00	1.10	8.80	0.78	0.17	1.32	0.12
SWOOP Plant Primary Crusher	300	1	8	0.0024	0.00054	0.16	1.30	0.11	0.02	0.19	0.02	0.72	5.76	0.51	0.11	0.86	0.08
Conveyed Crushed Rock	1000	1	8	0.0011	0.000046	0.05	0.37	0.03	0.01	0.06	0.00	1.10	8.80	0.78	0.17	1.32	0.12
SWOOP Plant Screen	600	1	8	0.0087	0.00074	0.44	3.55	0.31	0.07	0.53	0.05	5.22	41.76	3.69	0.78	6.26	0.55
E6 Secondary Cone Crusher	400	1	8	0.0024	0.00054	0.22	1.73	0.15	0.03	0.26	0.02	0.96	7.68	0.68	0.14	1.15	0.10
E10 Secondary Cone Crusher	375	1	8	0.0024	0.00054	0.20	1.62	0.14	0.03	0.24	0.02	0.90	7.20	0.64	0.14	1.08	0.10
E11 Secondary Cone Crusher	375	1	8	0.0024	0.00054	0.20	1.62	0.14	0.03	0.24	0.02	0.90	7.20	0.64	0.14	1.08	0.10
Belts	1000	1	8	0.0011	0.000046	0.05	0.37	0.03	0.01	0.06	0.00	1.10	8.80	0.78	0.17	1.32	0.12
E5 Secondary Screen	1000	1	8	0.0087	0.00074	0.74	5.92	0.52	0.11	0.89	0.08	8.70	69.60	6.15	1.31	10.44	0.92
6x20 Simplicty Screen	350	1	8	0.0087	0.00074	0.26	2.07	0.18	0.04	0.31	0.03	3.05	24.36	2.15	0.46	3.65	0.32
E8 Secondary Screen	800	1	8	0.0087	0.00074	0.59	4.74	0.42	0.09	0.71	0.06	6.96	55.68	4.92	1.04	8.35	0.74
E7 Secondary Screen	800	1	8	0.0087	0.00074	0.59	4.74	0.42	0.09	0.71	0.06	6.96	55.68	4.92	1.04	8.35	0.74
E12 Secondary Screen	400	1	8	0.0087	0.00074	0.30	2.37	0.21	0.04	0.36	0.03	3.48	27.84	2.46	0.52	4.18	0.37
E13 Secondary Screen	400	1	8	0.0087	0.00074	0.30	2.37	0.21	0.04	0.36	0.03	3.48	27.84	2.46	0.52	4.18	0.37
Total Aggregate Plant PM Emissions						***5.56***	***44.45***	***3.93***	***0.83***	***6.67***	***0.59***	***54.17***	***433.32***	***38.31***	***8.12***	***65.00***	***5.75***

Emission Rates

Hourly	PM10	5.56	lb/hr	0.70	g/s
Annual	PM10	7,860	lb/yr	0.113	g/s
Hourly	PM2.5	0.83	lb/hr	0.105	g/s
Annual	PM2.5	1,179	lb/yr	0.0170	g/s
Hourly	Silica	3.12	lb/hr	0.393	g/s
Annual	Silica	4,410	lb/yr	0.063	g/s
Hourly	Silica	3.12	lb/hr	0.393	g/s
Annual	Silica	1,071	lb/yr (70-yr)	0.0154	g/s

56% cystalline silica

Hourly	Antimony	3.72E-06	Annual (70-yr)	Antimony	1.28E-03	Annual	Antimony	5.27E-03
Hourly	Arsenic	3.78E-05	Annual (70-yr)	Arsenic	1.30E-02	Annual	Arsenic	5.34E-02
Hourly	Barium	3.89E-03	Annual (70-yr)	Barium	1.34E+00	Annual	Barium	5.50E+00
Hourly	Beryllium	6.67E-06	Annual (70-yr)	Beryllium	2.29E-03	Annual	Beryllium	9.43E-03
Hourly	Cadmium	0.00E+00	Annual (70-yr)	Cadmium	0.00E+00	Annual	Cadmium	0.00E+00
Hourly	Chromium	8.89E-05	Annual (70-yr)	Chromium	3.05E-02	Annual	Chromium	1.26E-01
Hourly	Cobalt	1.22E-04	Annual (70-yr)	Cobalt	4.20E-02	Annual	Cobalt	1.73E-01
Hourly	Copper	7.22E-05	Annual (70-yr)	Copper	2.48E-02	Annual	Copper	1.02E-01
Hourly	Lead	1.33E-04	Annual (70-yr)	Lead	4.58E-02	Annual	Lead	1.89E-01
Hourly	Mercury	2.33E-05	Annual (70-yr)	Mercury	8.02E-03	Annual	Mercury	3.30E-02
Hourly	Molybdenum	4.83E-06	Annual (70-yr)	Molybdenum	1.66E-03	Annual	Molybdenum	6.84E-03
Hourly	Nickel	1.50E-04	Annual (70-yr)	Nickel	5.15E-02	Annual	Nickel	2.12E-01
Hourly	Selenium	3.33E-06	Annual (70-yr)	Selenium	1.15E-03	Annual	Selenium	4.72E-03
Hourly	Silver	0.00E+00	Annual (70-yr)	Silver	0.00E+00	Annual	Silver	0.00E+00
Hourly	Thallium	0.00E+00	Annual (70-yr)	Thallium	0.00E+00	Annual	Thallium	0.00E+00
Hourly	Vanadium	1.61E-04	Annual (70-yr)	Vanadium	5.54E-02	Annual	Vanadium	2.28E-01
Hourly	Zinc	3.33E-04	Annual (70-yr)	Zinc	1.15E-01	Annual	Zinc	4.72E-01

Table C-4
Aggregate Plant - Proposed at 1982 Production Conditions

Aggregate Pportable Plant PM Emissions						Controlled						Uncontrolled					
						PM10 Emissions			PM2.5 Emissions			PM10 Emissions			PM2.5 Emissions		
Equipment	Process Rate (ton/hr)	Number of Transfers	Daily Operation (hours)	Uncontrolled Emission Factor (lb/ton)	Controlled Emission Factor (lb/ton)	Hourly (lb/hr)	Daily (lb/day)	Annual (ton/yr)	Hourly (lb/hr)	Daily (lb/day)	Annual (ton/yr)	Hourly (lb/hr)	Daily (lb/day)	Annual (ton/yr)	Hourly (lb/hr)	Daily (lb/day)	Annual (ton/yr)
Portable Jaw Crusher	300	1	8	0.0024	0.00054	0.16	1.30	0.17	0.02	0.19	0.03	0.72	5.76	0.75	0.11	0.86	0.11
Portable Conveyors	550	4	8	0.0011	0.000046	0.10	0.81	0.03	0.02	0.12	0.00	2.42	19.36	0.63	0.36	2.90	0.09
Portable Screen	550	1	8	0.0087	0.00074	0.41	3.26	0.42	0.06	0.49	0.06	4.79	38.28	4.98	0.72	5.74	0.75
Portable Cone Crusher	250	1	8	0.0024	0.00054	0.14	1.08	0.14	0.02	0.16	0.02	0.60	4.80	0.62	0.09	0.72	0.09
Total Aggregate Portable Plant PM Emissions						***0.81***	***6.44***	***0.76***	***0.12***	***0.97***	***0.11***	***8.53***	***68.20***	***6.98***	***1.28***	***10.23***	***1.05***
Total Aggregate PM Emissions						***6.36***	***50.89***	***4.69***	***0.95***	***7.63***	***0.70***	***62.69***	***501.52***	***45.29***	***9.40***	***75.23***	***6.79***

Table C-5
Asphalt Plant - Past Conditions

200,000 ton/year						112 MMBTU/year							
100 tons/hr		2000 hours/year				0.0560 MMBTU/hr							
												70 yr	
Drum Mix Hot Mix Natural Gas fired (AP42 11.1)			ton/year	lb/day	lbs/hr	g/s	Heater (AP42 1.4)		ton/year	lb/day	lbs/hr	g/s	lbs/yr	lbs/yr
PM	0.033	lb/ton	3.30	26.4	3.30	0.416	0.00745	lb/mmbtu	4.17E-04	0.003	4.17E-04	5.26E-05		
PM10	0.0042	lb/ton	0.42	3.36	0.420	0.053	0.00745	lb/mmbtu	4.17E-04	0.003	4.17E-04	5.26E-05		
PM2.5	0.0029	lb/ton	0.290	2.32	0.290	0.037	0.00745	lb/mmbtu	4.17E-04	0.003	4.17E-04	5.26E-05		
CO	0.13	lb/ton	13.0	104	13.0	1.64	0.08235	lb/mmbtu	0.005	0.04	0.005	5.81E-04		
Nox	0.026	lb/ton	2.60	20.8	2.60	0.328	0.09804	lb/mmbtu	0.005	0.04	0.005	6.92E-04		
SO2	0.0034	lb/ton	0.34	2.72	0.340	4.28E-02	0.00059	lb/mmbtu	3.29E-05	2.64E-04	3.29E-05	4.15E-06		
TOC (50% CE)	0.022	lb/ton	2.20	17.6	2.20	0.277								
VOC (50% CE)	0.016	lb/ton	1.60	12.8	1.60	0.202	0.00539	lb/mmbtu	3.02E-04	0.002	3.02E-04	3.80E-05		
H2S	0.005	lb/ton	0.500	4.00	0.50	0.063							371.429	1,000

Table C-5
Asphalt Plant - Past Conditions

				lbs/yr	g/s	lbs/hr	g/s	70 yr lbs/yr
Non-PAH HAPs	Benzene	0.00039	lb/ton	78.0	1.12E-03	3.90E-02	4.91E-03	29.0
	Ethylbenzene	0.00024	lb/ton	48.0	6.90E-04	2.40E-02	3.02E-03	17.8
	Formaldehyde	0.0031	lb/ton	620	8.92E-03	0.310	3.91E-02	230.3
	Hexane	0.00092	lb/ton	184	2.65E-03	0.092	1.16E-02	68.3
	Methyl chloroform	0.000048	lb/ton	9.60	1.38E-04	4.80E-03	6.05E-04	3.6
	Toluene	0.00015	lb/ton	30.0	4.32E-04	1.50E-02	1.89E-03	11.1
	Xylene	0.0002	lb/ton	40.0	5.75E-04	2.00E-02	2.52E-03	14.9
PAH HAPs	2-Methylnaphthalene	7.40E-05	lb/ton	14.8	2.13E-04	7.40E-03	9.32E-04	5.5
	Acenaphthene	1.40E-06	lb/ton	0.280	4.03E-06	1.40E-04	1.76E-05	1.04E-01
	Acenaphthylene	8.60E-06	lb/ton	1.72	2.47E-05	8.60E-04	1.08E-04	6.39E-01
	Anthracene	2.20E-07	lb/ton	4.40E-02	6.33E-07	2.20E-05	2.77E-06	1.63E-02
	Benzo(a)anthracene	2.10E-07	lb/ton	4.20E-02	6.04E-07	2.10E-05	2.65E-06	1.56E-02
	Benzo(a)pyrene	1.10E-07	lb/ton	2.20E-02	3.16E-07	1.10E-05	1.39E-06	8.17E-03
	Benzo(b)flroranthene	1.00E-07	lb/ton	2.00E-02	2.88E-07	1.00E-05	1.26E-06	7.43E-03
	Benzo(ghi)perylene	4.00E-08	lb/ton	8.00E-03	1.15E-07	4.00E-06	5.04E-07	2.97E-03
	Benzo(k)fluoranthene	4.10E-08	lb/ton	8.20E-03	1.18E-07	4.10E-06	5.17E-07	3.05E-03
	Chrysene	1.80E-07	lb/ton	3.60E-02	5.18E-07	1.80E-05	2.27E-06	1.34E-02
	Fluoranthene	6.10E-07	lb/ton	0.122	1.75E-06	6.10E-05	7.69E-06	4.53E-02
	Fluorene	3.80E-06	lb/ton	0.760	1.09E-05	3.80E-04	4.79E-05	2.82E-01
	Indeno(123-cd)pyrene	7.00E-09	lb/ton	1.40E-03	2.01E-08	7.00E-07	8.82E-08	5.20E-04
	Naphthalene	9.00E-05	lb/ton	18.0	2.59E-04	9.00E-03	1.13E-03	6.69E+00
	Phenanthrene	7.60E-06	lb/ton	1.52	2.19E-05	7.60E-04	9.58E-05	5.65E-01
	Pyrene	5.40E-07	lb/ton	1.08E-01	1.55E-06	5.40E-05	6.80E-06	4.01E-02
	Perylene	8.80E-09	lb/ton	1.76E-03	2.53E-08	8.80E-07	1.11E-07	6.54E-04
Metals	Arsenic	5.60E-07	lb/ton	1.12E-01	1.61E-06	5.60E-05	7.06E-06	4.16E-02
	Barium	5.80E-06	lb/ton	1.160	1.67E-05	5.80E-04	7.31E-05	4.31E-01
	Beryllium		lb/ton					
	Cadmium	4.10E-07	lb/ton	8.20E-02	1.18E-06	4.10E-05	5.17E-06	3.05E-02
	Chromium	5.50E-06	lb/ton	1.100	1.58E-05	5.50E-04	6.93E-05	4.09E-01
	Chromium VI	4.50E-07	lb/ton	9.00E-02	1.29E-06	4.50E-05	5.67E-06	3.34E-02
	Copper	3.10E-06	lb/ton	0.620	8.92E-06	3.10E-04	3.91E-05	2.30E-01
	Lead	6.20E-07	lb/ton	0.124	1.78E-06	6.20E-05	7.81E-06	4.61E-02
	Manganese	7.70E-06	lb/ton	1.54	2.22E-05	7.70E-04	9.70E-05	5.72E-01
	Mercury	2.40E-07	lb/ton	4.80E-02	6.90E-07	2.40E-05	3.02E-06	1.78E-02
	Nickel	6.30E-05	lb/ton	12.6	1.81E-04	6.30E-03	7.94E-04	4.68E+00
	Selenium	3.50E-07	lb/ton	7.00E-02	1.01E-06	3.50E-05	4.41E-06	2.60E-02
	Zinc	6.10E-05	lb/ton	12.2	1.75E-04	6.10E-03	7.69E-04	4.53E+00
	Antimony	1.80E-07	lb/ton	3.60E-02	5.18E-07	1.80E-05	2.27E-06	1.34E-02
	Cobalt	2.60E-08	lb/ton	5.20E-03	7.48E-08	2.60E-06	3.28E-07	1.93E-03
	Phospherous	2.80E-05	lb/ton	5.60	8.05E-05	2.80E-03	3.53E-04	2.08E+00
	Silver	4.80E-07	lb/ton	9.60E-02	1.38E-06	4.80E-05	6.05E-06	3.57E-02
	Thallium	4.10E-09	lb/ton	8.20E-04	1.18E-08	4.10E-07	5.17E-08	3.05E-04

Table C-6
Asphalt Plant - Existing Conditions

200,000 ton/year						112 MMBTU/year						
100 tons/hr		2000 hours/year				0.0560 MMBTU/hr						
												70 yr
Drum Mix Hot Mix Natural Gas fired (AP42 11.1)			ton/year	lb/day	lbs/hr	g/s	Heater (AP42 1.4)		ton/year	lb/day	lbs/hr	g/s	lbs/yr
PM	0.033	lb/ton	3.30	26.4	3.30	0.416	0.00745	lb/mmbtu	4.17E-04	0.003	4.17E-04	5.26E-05	
PM10	0.0042	lb/ton	0.42	3.36	0.420	0.053	0.00745	lb/mmbtu	4.17E-04	0.003	4.17E-04	5.26E-05	
PM2.5	0.0029	lb/ton	0.290	2.32	0.290	0.037	0.00745	lb/mmbtu	4.17E-04	0.003	4.17E-04	5.26E-05	
CO	0.13	lb/ton	13.0	104	13.0	1.64	0.08235	lb/mmbtu	0.005	0.04	0.005	5.81E-04	
Nox	0.026	lb/ton	2.60	20.8	2.60	0.328	0.09804	lb/mmbtu	0.005	0.04	0.005	6.92E-04	
SO2	0.0034	lb/ton	0.34	2.72	0.340	4.28E-02	0.00059	lb/mmbtu	3.29E-05	2.64E-04	3.29E-05	4.15E-06	
TOC (50% CE)	0.022	lb/ton	2.20	17.6	2.20	0.277							
VOC (50% CE)	0.016	lb/ton	1.60	12.8	1.60	0.202	0.00539	lb/mmbtu	3.02E-04	0.002	3.02E-04	3.80E-05	
H2S	0.005	lb/ton	0.500	4.00	0.50	0.063							42.86

Table C-6
Asphalt Plant - Existing Conditions

				lbs/yr	g/s	lbs/hr	g/s	70 yr lbs/yr
Non-PAH HAPs	Benzene	0.00039	lb/ton	78.0	1.12E-03	3.90E-02	4.91E-03	3.34
	Ethylbenzene	0.00024	lb/ton	48.0	6.90E-04	2.40E-02	3.02E-03	2.1
	Formaldehyde	0.0031	lb/ton	620	8.92E-03	0.310	3.91E-02	26.6
	Hexane	0.00092	lb/ton	184	2.65E-03	0.092	1.16E-02	7.9
	Methyl chloroform	0.000048	lb/ton	9.60	1.38E-04	4.80E-03	6.05E-04	0.4
	Toluene	0.00015	lb/ton	30.0	4.32E-04	1.50E-02	1.89E-03	1.3
	Xylene	0.0002	lb/ton	40.0	5.75E-04	2.00E-02	2.52E-03	1.7
PAH HAPs	2-Methylnaphthalene	7.40E-05	lb/ton	14.8	2.13E-04	7.40E-03	9.32E-04	6.34E-01
	Acenaphthene	1.40E-06	lb/ton	0.280	4.03E-06	1.40E-04	1.76E-05	1.20E-02
	Acenaphthylene	8.60E-06	lb/ton	1.72	2.47E-05	8.60E-04	1.08E-04	7.37E-02
	Anthracene	2.20E-07	lb/ton	4.40E-02	6.33E-07	2.20E-05	2.77E-06	1.89E-03
	Benzo(a)anthracene	2.10E-07	lb/ton	4.20E-02	6.04E-07	2.10E-05	2.65E-06	1.80E-03
	Benzo(a)pyrene	1.10E-07	lb/ton	2.20E-02	3.16E-07	1.10E-05	1.39E-06	9.43E-04
	Benzo(b)flroranthene	1.00E-07	lb/ton	2.00E-02	2.88E-07	1.00E-05	1.26E-06	8.57E-04
	Benzo(ghi)perylene	4.00E-08	lb/ton	8.00E-03	1.15E-07	4.00E-06	5.04E-07	3.43E-04
	Benzo(k)fluoranthene	4.10E-08	lb/ton	8.20E-03	1.18E-07	4.10E-06	5.17E-07	3.51E-04
	Chrysene	1.80E-07	lb/ton	3.60E-02	5.18E-07	1.80E-05	2.27E-06	1.54E-03
	Fluoranthene	6.10E-07	lb/ton	0.122	1.75E-06	6.10E-05	7.69E-06	5.23E-03
	Fluorene	3.80E-06	lb/ton	0.760	1.09E-05	3.80E-04	4.79E-05	3.26E-02
	Indeno(123-cd)pyrene	7.00E-09	lb/ton	1.40E-03	2.01E-08	7.00E-07	8.82E-08	6.00E-05
	Naphthalene	9.00E-05	lb/ton	18.0	2.59E-04	9.00E-03	1.13E-03	7.71E-01
	Phenanthrene	7.60E-06	lb/ton	1.52	2.19E-05	7.60E-04	9.58E-05	6.51E-02
	Pyrene	5.40E-07	lb/ton	1.08E-01	1.55E-06	5.40E-05	6.80E-06	4.63E-03
	Perylene	8.80E-09	lb/ton	1.76E-03	2.53E-08	8.80E-07	1.11E-07	7.54E-05
Metals	Arsenic	5.60E-07	lb/ton	1.12E-01	1.61E-06	5.60E-05	7.06E-06	4.80E-03
	Barium	5.80E-06	lb/ton	1.160	1.67E-05	5.80E-04	7.31E-05	4.97E-02
	Beryllium		lb/ton					
	Cadmium	4.10E-07	lb/ton	8.20E-02	1.18E-06	4.10E-05	5.17E-06	3.51E-03
	Chromium	5.50E-06	lb/ton	1.100	1.58E-05	5.50E-04	6.93E-05	4.71E-02
	Chromium VI	4.50E-07	lb/ton	9.00E-02	1.29E-06	4.50E-05	5.67E-06	3.86E-03
	Copper	3.10E-06	lb/ton	0.620	8.92E-06	3.10E-04	3.91E-05	2.66E-02
	Lead	6.20E-07	lb/ton	0.124	1.78E-06	6.20E-05	7.81E-06	5.31E-03
	Manganese	7.70E-06	lb/ton	1.54	2.22E-05	7.70E-04	9.70E-05	6.60E-02
	Mercury	2.40E-07	lb/ton	4.80E-02	6.90E-07	2.40E-05	3.02E-06	2.06E-03
	Nickel	6.30E-05	lb/ton	12.6	1.81E-04	6.30E-03	7.94E-04	5.40E-01
	Selenium	3.50E-07	lb/ton	7.00E-02	1.01E-06	3.50E-05	4.41E-06	3.00E-03
	Zinc	6.10E-05	lb/ton	12.2	1.75E-04	6.10E-03	7.69E-04	5.23E-01
	Antimony	1.80E-07	lb/ton	3.60E-02	5.18E-07	1.80E-05	2.27E-06	1.54E-03
	Cobalt	2.60E-08	lb/ton	5.20E-03	7.48E-08	2.60E-06	3.28E-07	2.23E-04
	Phospherous	2.80E-05	lb/ton	5.60	8.05E-05	2.80E-03	3.53E-04	2.40E-01
	Silver	4.80E-07	lb/ton	9.60E-02	1.38E-06	4.80E-05	6.05E-06	4.11E-03
	Thallium	4.10E-09	lb/ton	8.20E-04	1.18E-08	4.10E-07	5.17E-08	3.51E-05

Table C-7
Asphalt Plant - Proposed Conditions

200,000 ton/year						112 MMBTU/year							
100 tons/hr		2000 hours/year				0.0560 MMBTU/hr							
													70 yr
Drum Mix Hot Mix Natural Gas fired (AP42 11.1)			ton/year	lb/day	lbs/hr	g/s	Heater (AP42 1.4)		ton/year	lb/day	lbs/hr	g/s	lbs/yr
PM	0.033	lb/ton	3.30	26.4	3.30	0.416	0.00745	lb/mmbtu	4.17E-04	0.003	4.17E-04	5.26E-05	
PM10	0.0042	lb/ton	0.42	3.36	0.420	0.053	0.00745	lb/mmbtu	4.17E-04	0.003	4.17E-04	5.26E-05	
PM2.5	0.0029	lb/ton	0.290	2.32	0.290	0.037	0.00745	lb/mmbtu	4.17E-04	0.003	4.17E-04	5.26E-05	
CO	0.13	lb/ton	13.0	104	13.0	1.64	0.08235	lb/mmbtu	0.005	0.04	0.005	5.81E-04	
Nox	0.026	lb/ton	2.60	20.8	2.60	0.328	0.09804	lb/mmbtu	0.005	0.04	0.005	6.92E-04	
SO2	0.0034	lb/ton	0.34	2.72	0.340	4.28E-02	0.00059	lb/mmbtu	3.29E-05	2.64E-04	3.29E-05	4.15E-06	
TOC (50% CE)	0.022	lb/ton	2.20	17.6	2.20	0.277							
VOC (50% CE)	0.016	lb/ton	1.60	12.8	1.60	0.202	0.00539	lb/mmbtu	3.02E-04	0.002	3.02E-04	3.80E-05	
H2S	0.005	lb/ton	0.500	4.00	0.50	0.063							243

Table C-7
Asphalt Plant - Proposed Conditions

				lbs/yr	g/s	lbs/hr	g/s	70 yr lbs/yr
Non-PAH HAPs	Benzene	0.00039	lb/ton	78.0	1.12E-03	3.90E-02	4.91E-03	18.9
	Ethylbenzene	0.00024	lb/ton	48.0	6.90E-04	2.40E-02	3.02E-03	11.7
	Formaldehyde	0.0031	lb/ton	620	8.92E-03	0.310	3.91E-02	150.6
	Hexane	0.00092	lb/ton	184	2.65E-03	0.092	1.16E-02	44.7
	Methyl chloroform	0.000048	lb/ton	9.60	1.38E-04	4.80E-03	6.05E-04	2.3
	Toluene	0.00015	lb/ton	30.0	4.32E-04	1.50E-02	1.89E-03	7.3
	Xylene	0.0002	lb/ton	40.0	5.75E-04	2.00E-02	2.52E-03	9.7
PAH HAPs	2-Methylnaphthalene	7.40E-05	lb/ton	14.8	2.13E-04	7.40E-03	9.32E-04	3.59E+00
	Acenaphthene	1.40E-06	lb/ton	0.280	4.03E-06	1.40E-04	1.76E-05	6.80E-02
	Acenaphthylene	8.60E-06	lb/ton	1.72	2.47E-05	8.60E-04	1.08E-04	4.18E-01
	Anthracene	2.20E-07	lb/ton	4.40E-02	6.33E-07	2.20E-05	2.77E-06	1.07E-02
	Benzo(a)anthracene	2.10E-07	lb/ton	4.20E-02	6.04E-07	2.10E-05	2.65E-06	1.02E-02
	Benzo(a)pyrene	1.10E-07	lb/ton	2.20E-02	3.16E-07	1.10E-05	1.39E-06	5.34E-03
	Benzo(b)flroranthene	1.00E-07	lb/ton	2.00E-02	2.88E-07	1.00E-05	1.26E-06	4.86E-03
	Benzo(ghi)perylene	4.00E-08	lb/ton	8.00E-03	1.15E-07	4.00E-06	5.04E-07	1.94E-03
	Benzo(k)fluoranthene	4.10E-08	lb/ton	8.20E-03	1.18E-07	4.10E-06	5.17E-07	1.99E-03
	Chrysene	1.80E-07	lb/ton	3.60E-02	5.18E-07	1.80E-05	2.27E-06	8.74E-03
	Fluoranthene	6.10E-07	lb/ton	0.122	1.75E-06	6.10E-05	7.69E-06	2.96E-02
	Fluorene	3.80E-06	lb/ton	0.760	1.09E-05	3.80E-04	4.79E-05	1.85E-01
	Indeno(123-cd)pyrene	7.00E-09	lb/ton	1.40E-03	2.01E-08	7.00E-07	8.82E-08	3.40E-04
	Naphthalene	9.00E-05	lb/ton	18.0	2.59E-04	9.00E-03	1.13E-03	4.37E+00
	Phenanthrene	7.60E-06	lb/ton	1.52	2.19E-05	7.60E-04	9.58E-05	3.69E-01
	Pyrene	5.40E-07	lb/ton	1.08E-01	1.55E-06	5.40E-05	6.80E-06	2.62E-02
	Perylene	8.80E-09	lb/ton	1.76E-03	2.53E-08	8.80E-07	1.11E-07	4.27E-04
Metals	Arsenic	5.60E-07	lb/ton	1.12E-01	1.61E-06	5.60E-05	7.06E-06	2.72E-02
	Barium	5.80E-06	lb/ton	1.160	1.67E-05	5.80E-04	7.31E-05	2.82E-01
	Beryllium		lb/ton					
	Cadmium	4.10E-07	lb/ton	8.20E-02	1.18E-06	4.10E-05	5.17E-06	1.99E-02
	Chromium	5.50E-06	lb/ton	1.100	1.58E-05	5.50E-04	6.93E-05	2.67E-01
	Chromium VI	4.50E-07	lb/ton	9.00E-02	1.29E-06	4.50E-05	5.67E-06	2.19E-02
	Copper	3.10E-06	lb/ton	0.620	8.92E-06	3.10E-04	3.91E-05	1.51E-01
	Lead	6.20E-07	lb/ton	0.124	1.78E-06	6.20E-05	7.81E-06	3.01E-02
	Manganese	7.70E-06	lb/ton	1.54	2.22E-05	7.70E-04	9.70E-05	3.74E-01
	Mercury	2.40E-07	lb/ton	4.80E-02	6.90E-07	2.40E-05	3.02E-06	1.17E-02
	Nickel	6.30E-05	lb/ton	12.6	1.81E-04	6.30E-03	7.94E-04	3.06E+00
	Selenium	3.50E-07	lb/ton	7.00E-02	1.01E-06	3.50E-05	4.41E-06	1.70E-02
	Zinc	6.10E-05	lb/ton	12.2	1.75E-04	6.10E-03	7.69E-04	2.96E+00
	Antimony	1.80E-07	lb/ton	3.60E-02	5.18E-07	1.80E-05	2.27E-06	8.74E-03
	Cobalt	2.60E-08	lb/ton	5.20E-03	7.48E-08	2.60E-06	3.28E-07	1.26E-03
	Phospherous	2.80E-05	lb/ton	5.60	8.05E-05	2.80E-03	3.53E-04	1.36E+00
	Silver	4.80E-07	lb/ton	9.60E-02	1.38E-06	4.80E-05	6.05E-06	2.33E-02
	Thallium	4.10E-09	lb/ton	8.20E-04	1.18E-08	4.10E-07	5.17E-08	1.99E-04

Table C-8
Asphalt Fugitive - Past Conditions

200,000	ton/year	
100	tons/hr	2000 hours/year

			tons/yr	lb/day	lb/hr	g/s	70 yr lbs/yr	lbs/yr
Loadout PM10/PM2.5	0.00030	lb/ton	0.0297	0.713	2.97E-02	3.74E-03		
Loadout TOC	0.00142	lb/ton	0.142	3.40	1.42E-01	1.79E-02		
Loadout VOC	0.00133	lb/ton	0.133	3.20	1.33E-01	1.68E-02		
Loadout CO	0.00046	lb/ton	4.60E-02	1.103	4.60E-02	5.79E-03		
Silo Filling PM10/PM2.5	0.00042	lb/ton	4.18E-02	1.004	4.18E-02	5.27E-03		
Silo Filling TOC	0.00415	lb/ton	0.415	9.96	0.415	5.23E-02		
Silo Filling VOC	0.00390	lb/ton	0.390	9.37	0.390	4.92E-02		
Silo Filling CO	0.00040	lb/ton	4.02E-02	0.965	4.02E-02	5.06E-03		
Storage Tank TOC	1.37E-05	lb/ton	1.37E-03	3.29E-02	1.37E-03	1.73E-04		
Storage Tank VOC	0.00001	lb/ton	1.29E-03	3.09E-02	1.29E-03	1.62E-04		
Storage Tank CO	1.33E-06	lb/ton	1.33E-04	3.19E-03	1.33E-04	1.67E-05		
Storage Tank H2S	0.0049	lb/ton	0.490	11.76	0.490	6.17E-02	364	364

		Loadout	Silo/Storage		lbs/yr	g/s	lb/hr	g/s	70 yr lbs/yr
	Benzene	0.052%	0.032%	lb/ton	0.414	5.95E-06	2.07E-04	2.61E-05	1.54E-01
Non-PAH HAPs	Ethylbenzene	0.28%	0.038%	lb/ton	1.110	1.60E-05	5.55E-04	6.99E-05	4.12E-01
TOC	Formaldehyde	0.088%	0.69%	lb/ton	6.00	8.63E-05	3.00E-03	3.78E-04	2.23E+00
	Hexane	0.15%	0.10%	lb/ton	1.26	1.81E-05	6.29E-04	7.93E-05	4.67E-01
	Toluene	0.21%	0.062%	lb/ton	1.112	1.60E-05	5.56E-04	7.00E-05	4.13E-01
	Xylene	0.41%	0.20%	lb/ton	2.83	4.07E-05	1.41E-03	1.78E-04	1.05E+00
	Bromomethane	0.0096%	0.0049%	lb/ton	6.80E-02	9.78E-07	3.40E-05	4.29E-06	2.53E-02
	2-Butanone	0.049%	0.039%	lb/ton	0.464	6.67E-06	2.32E-04	2.92E-05	1.72E-01
	Carbon Disulfide	0.013%	0.016%	lb/ton	0.170	2.45E-06	8.51E-05	1.07E-05	6.32E-02
	Chloroethane	0.00021%	0.004%	lb/ton	3.39E-02	4.88E-07	1.70E-05	2.14E-06	1.26E-02
	Chloromethane	0.015%	0.023%	lb/ton	0.234	3.37E-06	1.17E-04	1.47E-05	8.70E-02
	Cumene	0.11%		lb/ton	0.312	4.48E-06	1.56E-04	1.96E-05	1.16E-01
	Methylene Chloride		0.00027%	lb/ton	2.25E-03	3.24E-08	1.12E-06	1.42E-07	8.35E-04
	Styrene	0.0073%	0.0054%	lb/ton	6.57E-02	9.45E-07	3.28E-05	4.14E-06	2.44E-02
	Tetrachloroethane	0.0077%		lb/ton	2.18E-02	3.14E-07	1.09E-05	1.37E-06	8.10E-03
PAH HAPs	2-Methylnaphthalene	2.38%	5.27%	lb/ton	50.6	7.28E-04	2.91E-03	3.67E-04	18.8
PM	Acenaphthene	0.26%	0.47%	lb/ton	4.65	6.69E-05	2.74E-04	3.45E-05	1.73E+00
	Acenaphthylene	0.028%	0.014%	lb/ton	0.196	2.82E-06	1.42E-05	1.79E-06	7.28E-02
	Anthracene	0.07%	0.13%	lb/ton	1.28	1.84E-05	7.52E-05	9.48E-06	4.76E-01
	Benzo(a)anthracene	0.019%	0.056%	lb/ton	0.520	7.48E-06	2.91E-05	3.66E-06	1.93E-01
	Benzo(a)pyrene	0.0078%	0.0095%	lb/ton	1.01E-01	1.46E-06	6.29E-06	7.93E-07	3.76E-02
	Benzo(b)flroranthene	0.0076%		lb/ton	2.15E-02	3.10E-07	2.26E-06	2.85E-07	8.00E-03
	Benzo(ghi)perylene	0.0019%		lb/ton	5.38E-03	7.74E-08	5.65E-07	7.11E-08	2.00E-03
	Benzo(k)fluoranthene	0.0022%		lb/ton	6.23E-03	8.97E-08	6.54E-07	8.24E-08	2.32E-03
	Chrysene	0.103%	0.21%	lb/ton	2.04	2.94E-05	1.18E-04	1.49E-05	7.58E-01
	Dibenzo(ah)anthracene	0.00037%		lb/ton	1.05E-03	1.51E-08	1.10E-07	1.39E-08	3.89E-04
	Fluoranthene	0.05%	0.15%	lb/ton	1.39	2.00E-05	7.76E-05	9.78E-06	5.17E-01
	Fluorene	0.77%	1.01%	lb/ton	10.60	1.52E-04	6.51E-04	8.21E-05	3.94E+00
	Indeno(123-cd)pyrene	0.00047%		lb/ton	1.33E-03	1.92E-08	1.40E-07	1.76E-08	4.95E-04
	Naphthalene	1.25%	1.82%	lb/ton	18.7	2.69E-04	1.13E-03	1.43E-04	6.95E+00
	Phenanthrene	0.81%	1.80%	lb/ton	17.3	2.49E-04	9.94E-04	1.25E-04	6.42E+00
	Pyrene	0.15%	0.40%	lb/ton	3.76	5.40E-05	2.12E-04	2.67E-05	1.40E+00
	Perylene	0.022%	0.03%	lb/ton	0.312	4.49E-06	1.91E-05	2.41E-06	1.16E-01
	Phenol	1.18%		lb/ton	3.34	4.81E-05	3.51E-04	4.42E-05	1.24E+00

Table C-9
Asphalt Fugitive - Existing Conditions

200,000	ton/year	
100	tons/hr	2000 hours/year

			tons/yr	lb/day	lb/hr	g/s	70 yr lbs/yr	lbs/yr
Loadout PM10/PM2.5	0.00030	lb/ton	0.0297	0.713	2.97E-02	3.74E-03		
Loadout TOC	0.00142	lb/ton	0.142	3.40	1.42E-01	1.79E-02		
Loadout VOC	0.00133	lb/ton	0.133	3.20	1.33E-01	1.68E-02		
Loadout CO	0.00046	lb/ton	4.60E-02	1.103	4.60E-02	5.79E-03		
Silo Filling PM10/PM2.5	0.00042	lb/ton	4.18E-02	1.004	4.18E-02	5.27E-03		
Silo Filling TOC	0.00415	lb/ton	0.415	9.96	0.415	5.23E-02		
Silo Filling VOC	0.00390	lb/ton	0.390	9.37	0.390	4.92E-02		
Silo Filling CO	0.00040	lb/ton	4.02E-02	0.965	4.02E-02	5.06E-03		
Storage Tank TOC	1.37E-05	lb/ton	1.37E-03	3.29E-02	1.37E-03	1.73E-04		
Storage Tank VOC	0.00001	lb/ton	1.29E-03	3.09E-02	1.29E-03	1.62E-04		
Storage Tank CO	1.33E-06	lb/ton	1.33E-04	3.19E-03	1.33E-04	1.67E-05		
Storage Tank H2S	0.0049	lb/ton	0.490	11.76	0.490	6.17E-02	42	364

		Loadout	Silo/Storage		lbs/yr	g/s	lb/hr	g/s	70 yr lbs/yr
	Benzene	0.052%	0.032%	lb/ton	0.414	5.95E-06	2.07E-04	2.61E-05	1.77E-02
Non-PAH HAPs	Ethylbenzene	0.28%	0.038%	lb/ton	1.110	1.60E-05	5.55E-04	6.99E-05	4.76E-02
TOC	Formaldehyde	0.088%	0.69%	lb/ton	6.00	8.63E-05	3.00E-03	3.78E-04	2.57E-01
	Hexane	0.15%	0.10%	lb/ton	1.26	1.81E-05	6.29E-04	7.93E-05	5.39E-02
	Toluene	0.21%	0.062%	lb/ton	1.112	1.60E-05	5.56E-04	7.00E-05	4.76E-02
	Xylene	0.41%	0.20%	lb/ton	2.83	4.07E-05	1.41E-03	1.78E-04	1.21E-01
	Bromomethane	0.0096%	0.0049%	lb/ton	6.80E-02	9.78E-07	3.40E-05	4.29E-06	2.92E-03
	2-Butanone	0.049%	0.039%	lb/ton	0.464	6.67E-06	2.32E-04	2.92E-05	1.99E-02
	Carbon Disulfide	0.013%	0.016%	lb/ton	0.170	2.45E-06	8.51E-05	1.07E-05	7.29E-03
	Chloroethane	0.00021%	0.004%	lb/ton	3.39E-02	4.88E-07	1.70E-05	2.14E-06	1.45E-03
	Chloromethane	0.015%	0.023%	lb/ton	0.234	3.37E-06	1.17E-04	1.47E-05	1.00E-02
	Cumene	0.11%		lb/ton	0.312	4.48E-06	1.56E-04	1.96E-05	1.34E-02
	Methylene Chloride		0.00027%	lb/ton	2.25E-03	3.24E-08	1.12E-06	1.42E-07	9.64E-05
	Styrene	0.0073%	0.0054%	lb/ton	6.57E-02	9.45E-07	3.28E-05	4.14E-06	2.81E-03
	Tetrachloroethane	0.0077%		lb/ton	2.18E-02	3.14E-07	1.09E-05	1.37E-06	9.35E-04
PAH HAPs	2-Methylnaphthalene	2.38%	5.27%	lb/ton	50.6	7.28E-04	2.91E-03	3.67E-04	2.17E+00
PM	Acenaphthene	0.26%	0.47%	lb/ton	4.65	6.69E-05	2.74E-04	3.45E-05	1.99E-01
	Acenaphthylene	0.028%	0.014%	lb/ton	0.196	2.82E-06	1.42E-05	1.79E-06	8.40E-03
	Anthracene	0.07%	0.13%	lb/ton	1.28	1.84E-05	7.52E-05	9.48E-06	5.49E-02
	Benzo(a)anthracene	0.019%	0.056%	lb/ton	0.520	7.48E-06	2.91E-05	3.66E-06	2.23E-02
	Benzo(a)pyrene	0.0078%	0.0095%	lb/ton	1.01E-01	1.46E-06	6.29E-06	7.93E-07	4.34E-03
	Benzo(b)flroranthene	0.0076%		lb/ton	2.15E-02	3.10E-07	2.26E-06	2.85E-07	9.23E-04
	Benzo(ghi)perylene	0.0019%		lb/ton	5.38E-03	7.74E-08	5.65E-07	7.11E-08	2.31E-04
	Benzo(k)fluoranthene	0.0022%		lb/ton	6.23E-03	8.97E-08	6.54E-07	8.24E-08	2.67E-04
	Chrysene	0.103%	0.21%	lb/ton	2.04	2.94E-05	1.18E-04	1.49E-05	8.75E-02
	Dibenzo(ah)anthracene	0.00037%		lb/ton	1.05E-03	1.51E-08	1.10E-07	1.39E-08	4.49E-05
	Fluoranthene	0.05%	0.15%	lb/ton	1.39	2.00E-05	7.76E-05	9.78E-06	5.96E-02
	Fluorene	0.77%	1.01%	lb/ton	10.60	1.52E-04	6.51E-04	8.21E-05	4.54E-01
	Indeno(123-cd)pyrene	0.00047%		lb/ton	1.33E-03	1.92E-08	1.40E-07	1.76E-08	5.71E-05
	Naphthalene	1.25%	1.82%	lb/ton	18.7	2.69E-04	1.13E-03	1.43E-04	8.02E-01
	Phenanthrene	0.81%	1.80%	lb/ton	17.3	2.49E-04	9.94E-04	1.25E-04	7.41E-01
	Pyrene	0.15%	0.40%	lb/ton	3.76	5.40E-05	2.12E-04	2.67E-05	1.61E-01
	Perylene	0.022%	0.03%	lb/ton	0.312	4.49E-06	1.91E-05	2.41E-06	1.34E-02
	Phenol	1.18%		lb/ton	3.34	4.81E-05	3.51E-04	4.42E-05	1.43E-01

Table C-10
Asphalt Fugtive - Proposed Conditions

200,000	ton/year
100	tons/hr

2000 hours/year

			tons/yr	lb/day	lb/hr	g/s	70 yr lbs/yr	lbs/yr
Loadout PM10/PM2.5	0.00030	lb/ton	0.0297	0.713	2.97E-02	3.74E-03		
Loadout TOC	0.00142	lb/ton	0.142	3.40	1.42E-01	1.79E-02		
Loadout VOC	0.00133	lb/ton	0.133	3.20	1.33E-01	1.68E-02		
Loadout CO	0.00046	lb/ton	4.60E-02	1.103	4.60E-02	5.79E-03		
Silo Filling PM10/PM2.5	0.00042	lb/ton	4.18E-02	1.004	4.18E-02	5.27E-03		
Silo Filling TOC	0.00415	lb/ton	0.415	9.96	0.415	5.23E-02		
Silo Filling VOC	0.00390	lb/ton	0.390	9.37	0.390	4.92E-02		
Silo Filling CO	0.00040	lb/ton	4.02E-02	0.965	4.02E-02	5.06E-03		
Storage Tank TOC	1.37E-05	lb/ton	1.37E-03	3.29E-02	1.37E-03	1.73E-04		
Storage Tank VOC	0.00001	lb/ton	1.29E-03	3.09E-02	1.29E-03	1.62E-04		
Storage Tank CO	1.33E-06	lb/ton	1.33E-04	3.19E-03	1.33E-04	1.67E-05		
Storage Tank H2S	0.0049	lb/ton	0.490	11.76	0.490	6.17E-02	238	364

		Loadout	Silo/Storage		lbs/yr	g/s	lb/hr	g/s	70 yr lbs/yr
	Benzene	0.052%	0.032%	lb/ton	0.414	5.95E-06	2.07E-04	2.61E-05	1.01E-01
Non-PAH HAPs	Ethylbenzene	0.28%	0.038%	lb/ton	1.110	1.60E-05	5.55E-04	6.99E-05	2.70E-01
TOC	Formaldehyde	0.088%	0.69%	lb/ton	6.00	8.63E-05	3.00E-03	3.78E-04	1.46E+00
	Hexane	0.15%	0.10%	lb/ton	1.26	1.81E-05	6.29E-04	7.93E-05	3.06E-01
	Toluene	0.21%	0.062%	lb/ton	1.112	1.60E-05	5.56E-04	7.00E-05	2.70E-01
	Xylene	0.41%	0.20%	lb/ton	2.83	4.07E-05	1.41E-03	1.78E-04	6.87E-01
	Bromomethane	0.0096%	0.0049%	lb/ton	6.80E-02	9.78E-07	3.40E-05	4.29E-06	1.65E-02
	2-Butanone	0.049%	0.039%	lb/ton	0.464	6.67E-06	2.32E-04	2.92E-05	1.13E-01
	Carbon Disulfide	0.013%	0.016%	lb/ton	0.170	2.45E-06	8.51E-05	1.07E-05	4.13E-02
	Chloroethane	0.00021%	0.004%	lb/ton	3.39E-02	4.88E-07	1.70E-05	2.14E-06	8.24E-03
	Chloromethane	0.015%	0.023%	lb/ton	0.234	3.37E-06	1.17E-04	1.47E-05	5.69E-02
	Cumene	0.11%		lb/ton	0.312	4.48E-06	1.56E-04	1.96E-05	7.57E-02
	Methylene Chloride		0.00027%	lb/ton	2.25E-03	3.24E-08	1.12E-06	1.42E-07	5.46E-04
	Styrene	0.0073%	0.0054%	lb/ton	6.57E-02	9.45E-07	3.28E-05	4.14E-06	1.59E-02
	Tetrachloroethane	0.0077%		lb/ton	2.18E-02	3.14E-07	1.09E-05	1.37E-06	5.30E-03
PAH HAPs	2-Methylnaphthalene	2.38%	5.27%	lb/ton	50.6	7.28E-04	2.91E-03	3.67E-04	12.3
PM	Acenaphthene	0.26%	0.47%	lb/ton	4.65	6.69E-05	2.74E-04	3.45E-05	1.13E+00
	Acenaphthylene	0.028%	0.014%	lb/ton	0.196	2.82E-06	1.42E-05	1.79E-06	4.76E-02
	Anthracene	0.07%	0.13%	lb/ton	1.28	1.84E-05	7.52E-05	9.48E-06	3.11E-01
	Benzo(a)anthracene	0.019%	0.056%	lb/ton	0.520	7.48E-06	2.91E-05	3.66E-06	1.26E-01
	Benzo(a)pyrene	0.0078%	0.0095%	lb/ton	1.01E-01	1.46E-06	6.29E-06	7.93E-07	2.46E-02
	Benzo(b)flroranthene	0.0076%		lb/ton	2.15E-02	3.10E-07	2.26E-06	2.85E-07	5.23E-03
	Benzo(ghi)perylene	0.0019%		lb/ton	5.38E-03	7.74E-08	5.65E-07	7.11E-08	1.31E-03
	Benzo(k)fluoranthene	0.0022%		lb/ton	6.23E-03	8.97E-08	6.54E-07	8.24E-08	1.51E-03
	Chrysene	0.103%	0.21%	lb/ton	2.04	2.94E-05	1.18E-04	1.49E-05	4.96E-01
	Dibenzo(ah)anthracene	0.00037%		lb/ton	1.05E-03	1.51E-08	1.10E-07	1.39E-08	2.55E-04
	Fluoranthene	0.05%	0.15%	lb/ton	1.39	2.00E-05	7.76E-05	9.78E-06	3.38E-01
	Fluorene	0.77%	1.01%	lb/ton	10.60	1.52E-04	6.51E-04	8.21E-05	2.57E+00
	Indeno(123-cd)pyrene	0.00047%		lb/ton	1.33E-03	1.92E-08	1.40E-07	1.76E-08	3.23E-04
	Naphthalene	1.25%	1.82%	lb/ton	18.7	2.69E-04	1.13E-03	1.43E-04	4.54E+00
	Phenanthrene	0.81%	1.80%	lb/ton	17.3	2.49E-04	9.94E-04	1.25E-04	4.20E+00
	Pyrene	0.15%	0.40%	lb/ton	3.76	5.40E-05	2.12E-04	2.67E-05	9.12E-01
	Perylene	0.022%	0.03%	lb/ton	0.312	4.49E-06	1.91E-05	2.41E-06	7.58E-02
	Phenol	1.18%		lb/ton	3.34	4.81E-05	3.51E-04	4.42E-05	8.12E-01

Table C-11
Brickkiln -Past Conditions

Emission Factors and Rates

Pollutant	EF lb/ton	lb/hr	lb/day	ton/year
SO2	0.67	3.64	88	15.97
PM10/2.5	0.87	4.73	114	20.7
NOx	0.35	1.90	46	8.34
CO	1.2	6.53	157	28.61
CO2	400	2,176	52,256	9,536
VOC	0.054	0.29	7	1.29

Operating Assumptions

47,680	tons brick fired per year	
365	days per year	
131	tons brick fired per day	
24	hours per day	8760 hours/year
5.44	tons brick fired per hour	

Emission Factors and Rates

Pollutant	EF lb/ton	lb/hr	lb/day	ton/year	lb/yr (70-yr)	lb/yr
Hydrogen Fluoride	0.23	1.25	30	5.48	4.07E+03	1.10E+04
1,1,1-trichloroethane	4.70E-06	2.56E-05	6.14E-04	1.12E-04	8.32E-02	2.24E-01
2-butanone	0.00022	1.20E-03	2.87E-02	5.24E-03	3.90E+00	1.05E+01
benzene	0.0029	1.58E-02	3.79E-01	6.91E-02	5.14E+01	1.38E+02
bis(2-ethylhexy)phthalate	0.002	1.09E-02	2.61E-01	4.77E-02	3.54E+01	9.54E+01
carbon disulfide	4.30E-05	2.34E-04	5.62E-03	1.03E-03	7.62E-01	2.05E+00
chlorine	0.0013	7.07E-03	1.70E-01	3.10E-02	2.30E+01	6.20E+01
chloroethane	0.00057	3.10E-03	7.45E-02	1.36E-02	1.01E+01	2.72E+01
chloromethane	0.00067	3.64E-03	8.75E-02	1.60E-02	1.19E+01	3.19E+01
di-n-butylphthalate	0.00014	7.62E-04	1.83E-02	3.34E-03	2.48E+00	6.68E+00
ethylbenzene	4.40E-05	2.39E-04	5.75E-03	1.05E-03	7.79E-01	2.10E+00
m-/p-xylene	6.70E-05	3.64E-04	8.75E-03	1.60E-03	1.19E+00	3.19E+00
iodomethane	9.30E-05	5.06E-04	1.21E-02	2.22E-03	1.65E+00	4.43E+00
naphthalene	6.50E-05	3.54E-04	8.49E-03	1.55E-03	1.15E+00	3.10E+00
o-xylene	5.80E-05	3.16E-04	7.58E-03	1.38E-03	1.03E+00	2.77E+00
phenol	8.60E-05	4.68E-04	1.12E-02	2.05E-03	1.52E+00	4.10E+00
styrene	2.00E-05	1.09E-04	2.61E-03	4.77E-04	3.54E-01	9.54E-01
tetrachloroethene	2.80E-06	1.52E-05	3.66E-04	6.68E-05	4.96E-02	1.34E-01
toluene	0.00016	8.70E-04	2.09E-02	3.81E-03	2.83E+00	7.63E+00
antimony	2.70E-05	1.47E-04	3.53E-03	6.44E-04	4.78E-01	1.29E+00
cadmium	1.50E-05	8.16E-05	1.96E-03	3.58E-04	2.66E-01	7.15E-01
chromium	5.10E-05	2.77E-04	6.66E-03	1.22E-03	9.03E-01	2.43E+00
cobalt	2.10E-06	1.14E-05	2.74E-04	5.01E-05	3.72E-02	1.00E-01
lead	1.50E-04	8.16E-04	1.96E-02	3.58E-03	2.66E+00	7.15E+00
nickel	7.20E-05	3.92E-04	9.41E-03	1.72E-03	1.28E+00	3.43E+00
selenium	2.30E-04	1.25E-03	3.00E-02	5.48E-03	4.07E+00	1.10E+01
arsenic	3.10E-05	1.69E-04	4.05E-03	7.39E-04	5.49E-01	1.48E+00
beryllium	4.20E-07	2.28E-06	5.49E-05	1.00E-05	7.44E-03	2.00E-02
manganese	2.90E-04	1.58E-03	3.79E-02	6.91E-03	5.14E+00	1.38E+01
mercury	7.50E-06	4.08E-05	9.80E-04	1.79E-04	1.33E-01	3.58E-01

Exhaust Parameters

Temperature	280	F	411	K
Flow Rate	10,631	cfm	11.0	m/s
Diameter	30	in	0.762	m
Area			4.91	ft2

Table C-12
Brickkiln - Existing Conditions

Emission Factors and Rates

Pollutant	EF lb/ton	lb/hr	lb/day	ton/year
SO2	0.67	3.64	88	15.97
PM10/2.5	0.87	4.73	114	20.7
NOx	0.35	1.90	46	8.34
CO	1.2	6.53	157	28.61
CO2	400	2,176	52,256	9,536
VOC	0.054	0.29	7	1.29

Operating Assumptions

47,680	tons brick fired per year	
365	days per year	
131	tons brick fired per day	
24	hours per day	8760 hours/year
5.44	tons brick fired per hour	

Emission Factors and Rates

Pollutant	EF lb/ton	lb/hr	lb/day	ton/year	lb/yr (70-yr)	lb/yr
Hydrogen Fluoride	0.23	1.25	30	5.48	4.70E+02	1.10E+04
1,1,1-trichloroethane	4.70E-06	2.56E-05	6.14E-04	1.12E-04	9.60E-03	2.24E-01
2-butanone	0.00022	1.20E-03	2.87E-02	5.24E-03	4.50E-01	1.05E+01
benzene	0.0029	1.58E-02	3.79E-01	6.91E-02	5.93E+00	1.38E+02
bis(2-ethylhexy)phthalate	0.002	1.09E-02	2.61E-01	4.77E-02	4.09E+00	9.54E+01
carbon disulfide	4.30E-05	2.34E-04	5.62E-03	1.03E-03	8.79E-02	2.05E+00
chlorine	0.0013	7.07E-03	1.70E-01	3.10E-02	2.66E+00	6.20E+01
chloroethane	0.00057	3.10E-03	7.45E-02	1.36E-02	1.16E+00	2.72E+01
chloromethane	0.00067	3.64E-03	8.75E-02	1.60E-02	1.37E+00	3.19E+01
di-n-butylphthalate	0.00014	7.62E-04	1.83E-02	3.34E-03	2.86E-01	6.68E+00
ethylbenzene	4.40E-05	2.39E-04	5.75E-03	1.05E-03	8.99E-02	2.10E+00
m-/p-xylene	6.70E-05	3.64E-04	8.75E-03	1.60E-03	1.37E-01	3.19E+00
iodomethane	9.30E-05	5.06E-04	1.21E-02	2.22E-03	1.90E-01	4.43E+00
naphthalene	6.50E-05	3.54E-04	8.49E-03	1.55E-03	1.33E-01	3.10E+00
o-xylene	5.80E-05	3.16E-04	7.58E-03	1.38E-03	1.19E-01	2.77E+00
phenol	8.60E-05	4.68E-04	1.12E-02	2.05E-03	1.76E-01	4.10E+00
styrene	2.00E-05	1.09E-04	2.61E-03	4.77E-04	4.09E-02	9.54E-01
tetrachloroethene	2.80E-06	1.52E-05	3.66E-04	6.68E-05	5.72E-03	1.34E-01
toluene	0.00016	8.70E-04	2.09E-02	3.81E-03	3.27E-01	7.63E+00
antimony	2.70E-05	1.47E-04	3.53E-03	6.44E-04	5.52E-02	1.29E+00
cadmium	1.50E-05	8.16E-05	1.96E-03	3.58E-04	3.07E-02	7.15E-01
chromium	5.10E-05	2.77E-04	6.66E-03	1.22E-03	1.04E-01	2.43E+00
cobalt	2.10E-06	1.14E-05	2.74E-04	5.01E-05	4.29E-03	1.00E-01
lead	1.50E-04	8.16E-04	1.96E-02	3.58E-03	3.07E-01	7.15E+00
nickel	7.20E-05	3.92E-04	9.41E-03	1.72E-03	1.47E-01	3.43E+00
selenium	2.30E-04	1.25E-03	3.00E-02	5.48E-03	4.70E-01	1.10E+01
arsenic	3.10E-05	1.69E-04	4.05E-03	7.39E-04	6.33E-02	1.48E+00
beryllium	4.20E-07	2.28E-06	5.49E-05	1.00E-05	8.58E-04	2.00E-02
manganese	2.90E-04	1.58E-03	3.79E-02	6.91E-03	5.93E-01	1.38E+01
mercury	7.50E-06	4.08E-05	9.80E-04	1.79E-04	1.53E-02	3.58E-01

Exhaust Parameters

Temperature	280	F	411	K
Flow Rate	10,631	cfm	11.0	m/s
Diameter	30	in	0.762	m
Area			4.91	ft2

Table C-13
Brickkiln - Proposed Conditions

Emission Factors and Rates

Pollutant	EF lb/ton	lb/hr	lb/day	ton/year
SO2	0.67	3.64	88	15.97
PM10/2.5	0.87	4.73	114	20.7
NOx	0.35	1.90	46	8.34
CO	1.2	6.53	157	28.61
CO2	400	2,176	52,256	9,536
VOC	0.054	0.29	7	1.29

Operating Assumptions

47,680	tons brick fired per year	
365	days per year	
131	tons brick fired per day	
24	hours per day	8760 hours/year
5.44	tons brick fired per hour	

Emission Factors and Rates

Pollutant	EF lb/ton	lb/hr	lb/day	ton/year	lb/yr (70-yr)	lb/yr
Hydrogen Fluoride	0.23	1.25	30	5.48	2.66E+03	1.10E+04
1,1,1-trichloroethane	4.70E-06	2.56E-05	6.14E-04	1.12E-04	5.44E-02	2.24E-01
2-butanone	0.00022	1.20E-03	2.87E-02	5.24E-03	2.55E+00	1.05E+01
benzene	0.0029	1.58E-02	3.79E-01	6.91E-02	3.36E+01	1.38E+02
bis(2-ethylhexy)phthalate	0.002	1.09E-02	2.61E-01	4.77E-02	2.32E+01	9.54E+01
carbon disulfide	4.30E-05	2.34E-04	5.62E-03	1.03E-03	4.98E-01	2.05E+00
chlorine	0.0013	7.07E-03	1.70E-01	3.10E-02	1.51E+01	6.20E+01
chloroethane	0.00057	3.10E-03	7.45E-02	1.36E-02	6.60E+00	2.72E+01
chloromethane	0.00067	3.64E-03	8.75E-02	1.60E-02	7.76E+00	3.19E+01
di-n-butylphthalate	0.00014	7.62E-04	1.83E-02	3.34E-03	1.62E+00	6.68E+00
ethylbenzene	4.40E-05	2.39E-04	5.75E-03	1.05E-03	5.09E-01	2.10E+00
m-/p-xylene	6.70E-05	3.64E-04	8.75E-03	1.60E-03	7.76E-01	3.19E+00
iodomethane	9.30E-05	5.06E-04	1.21E-02	2.22E-03	1.08E+00	4.43E+00
naphthalene	6.50E-05	3.54E-04	8.49E-03	1.55E-03	7.53E-01	3.10E+00
o-xylene	5.80E-05	3.16E-04	7.58E-03	1.38E-03	6.72E-01	2.77E+00
phenol	8.60E-05	4.68E-04	1.12E-02	2.05E-03	9.96E-01	4.10E+00
styrene	2.00E-05	1.09E-04	2.61E-03	4.77E-04	2.32E-01	9.54E-01
tetrachloroethene	2.80E-06	1.52E-05	3.66E-04	6.68E-05	3.24E-02	1.34E-01
toluene	0.00016	8.70E-04	2.09E-02	3.81E-03	1.85E+00	7.63E+00
antimony	2.70E-05	1.47E-04	3.53E-03	6.44E-04	3.13E-01	1.29E+00
cadmium	1.50E-05	8.16E-05	1.96E-03	3.58E-04	1.74E-01	7.15E-01
chromium	5.10E-05	2.77E-04	6.66E-03	1.22E-03	5.91E-01	2.43E+00
cobalt	2.10E-06	1.14E-05	2.74E-04	5.01E-05	2.43E-02	1.00E-01
lead	1.50E-04	8.16E-04	1.96E-02	3.58E-03	1.74E+00	7.15E+00
nickel	7.20E-05	3.92E-04	9.41E-03	1.72E-03	8.34E-01	3.43E+00
selenium	2.30E-04	1.25E-03	3.00E-02	5.48E-03	2.66E+00	1.10E+01
arsenic	3.10E-05	1.69E-04	4.05E-03	7.39E-04	3.59E-01	1.48E+00
beryllium	4.20E-07	2.28E-06	5.49E-05	1.00E-05	4.86E-03	2.00E-02
manganese	2.90E-04	1.58E-03	3.79E-02	6.91E-03	3.36E+00	1.38E+01
mercury	7.50E-06	4.08E-05	9.80E-04	1.79E-04	8.68E-02	3.58E-01

Exhaust Parameters

Temperature	280	F	411	K
Flow Rate	10,631	cfm	11.0	m/s
Diameter	30	in	0.762	m
Area			4.91	ft2

Table C-14
Portable Generator

Operating Assumptions

1,200	horsepower	200	day per year
8	hours per day	294	gal per day
2,088	hours per year	58,875	gal per year

Emission Factors and Rates

Pollutant	lb/hp-hr	lb/hr	lb/day	tons/year
NOx	1.54E-02	19	148	19.3
CO	6.17E-03	7.41	59.26	7.73
CO2	1.16E+00	1392	11,136	1,453
CH4	7.05E-04	0.846	6.77	0.883
SO2	2.05E-03	2.46	19.7	2.57
PM10/2.5	4.01E-04	0.481	3.85	0.502
TOC	3.31E-03	3.968	31.75	4.143

Table C-15
Harborcraft - Past Conditions

Emission Factors

Pollutant	gm/kW-hr
CO	1.20
HC	0.114
Nox	10.7
PM10/2.5	0.265
SO2	14.48
CO2	712

Operation Assumptions

1	Barges per day
6	hours per day per barge
400	Barges per year
4,268	Ave tug engine size (hp)
0.7	Average load
226	Fuel Consumption (g/kW-hr)

Emission factors from U.S. EPA Analysis of Commercial Marine Vessels Emissions and Fuel Consumption Data February 2000

Fractional load assumption: 80 percent cruise, 10 percent slow cruise, 10 percent manuevering

Tug Emission Rates

Pollutant	gm/hr	lb/hr	lb/day	tons/yr
CO	2,668	5.87	39	7.7
HC	254	0.559	3.67	0.73
Nox	23,776	52.3	344	69
PM10/2.5	591	1.30	8.5	1.71
SO2	32,275	71.00	466	93
CO2	1,586,549	3,490	22,928	4,581

Tug Emission Rates for DPM

Pollutant	gm/hr	lb/hr	lb/day	tons/yr	lb/yr (70-yr)	lb/yr
DPM	591	1.30	0.71	0.14	106	285

Manuevering	0.2	0.26	0.14	0.03	21	57	1	Barges per day
Cruise	0.8	1.04	0.57	0.11	85	228	0.5	hours per day per barge
	Usage Factor						400	Barges per year

Table C-16
Harborcraft - Existing Conditions

Emission Factors

Pollutant	gm/kW-hr
CO	1.20
HC	0.114
Nox	10.7
PM10/2.5	0.265
SO2	14.48
CO2	712

Operation Assumptions

2	Barges per day
6	hours per day per barge
730	Barges per year
4,268	Ave tug engine size (hp)
0.7	Average load
226	Fuel Consumption (g/kW-hr)

Emission factors from U.S. EPA Analysis of Commercial Marine Vessels Emissions and Fuel Consumption Data February 2000

Fractional load assumption: 80 percent cruise, 10 percent slow cruise, 10 percent manuevering

Tug Emission Rates

Pollutant	gm/hr	lb/hr	lb/day	tons/yr
CO	2,668	5.87	70.4	25.7
HC	254	0.559	6.70	2.45
Nox	23,776	52.3	628	229
PM10/2.5	591	1.30	15.6	5.70
SO2	32,275	71.00	852	311
CO2	1,586,549	3,490	41,885	15,288

Tug Emission Rates for DPM

Pollutant	gm/hr	lb/hr	lb/day	tons/yr	lb/yr (70-yr)	lb/yr
DPM	591	1.30	1.30	0.47	41	949

Manuevering	0.2	0.26	0.26	0.09	8	190	2	Barges per day
Cruise	0.8	1.04	1.04	0.38	33	760	0.5	hours per day per barge
Usage Factor							730	Barges per year

Tabe C-17
Harborcraft - Proposed Conditions

Emission Factors

Pollutant	gm/kW-hr
CO	1.20
HC	0.114
Nox	10.7
PM10/2.5	0.265
SO2	14.48
CO2	712

Operation Assumptions

3	Barges per day
6	hours per day per barge
983	Barges per year
4,268	Ave tug engine size (hp)
0.7	Average load
226	Fuel Consumption (g/kW-hr)

Emission factors from U.S. EPA Analysis of Commercial Marine Vessels Emissions and Fuel Consumption Data February 2000

Fractional load assumption: 80 percent cruise, 10 percent slow cruise, 10 percent manuevering

Tug Emission Rates

Pollutant	gm/hr	lb/hr	lb/day	tons/yr
CO	2,668	5.87	95	46.7
HC	254	0.559	9.03	4.44
Nox	23,776	52.3	845	416
PM10/2.5	591	1.30	21.0	10.34
SO2	32,275	71.00	1,148	564
CO2	1,586,549	3,490	56,419	27,739

Tug Emission Rates for DPM

Pollutant	gm/hr	lb/hr	lb/day	tons/yr	lb/yr (70-yr)	lb/yr
DPM	591	1.30	1.75	0.86	418	1,723

Manuevering	0.2	0.26	0.35	0.17	83.7	345	3	Barges per day
Cruise	0.8	1.04	1.40	0.69	335	1,378	0.5	hours per day per barge
	Usage Factor						983	Barges per year

Table C-18
Harborcraft - Proposed at 1982 Production Conditions

Emission Factors

Pollutant	gm/kW-hr
CO	1.20
HC	0.114
Nox	10.7
PM10/2.5	0.265
SO2	14.48
CO2	712

Operation Assumptions

2	Barges per day
6	hours per day per barge
730	Barges per year
4,268	Ave tug engine size (hp)
0.7	Average load
226	Fuel Consumption (g/kW-hr)

Emission factors from U.S. EPA Analysis of Commercial Marine Vessels Emissions and Fuel Consumption Data February 2000

Fractional load assumption: 80 percent cruise, 10 percent slow cruise, 10 percent manuevering

Tug Emission Rates

Pollutant	gm/hr	lb/hr	lb/day	tons/yr
CO	2,668	5.87	70	25.7
HC	254	0.559	6.70	2.45
Nox	23,776	52.3	628	229
PM10/2.5	591	1.30	15.6	5.70
SO2	32,275	71.00	852	311
CO2	1,586,549	3,490	41,885	15,288

Tug Emission Rates for DPM

Pollutant	gm/hr	lb/hr	lb/day	tons/yr	lb/yr (70-yr)	lb/yr
DPM	591	1.30	1.30	0.47	231	949

Manuevering	0.2	0.26	0.26	0.09	46	190	2	Barges per day
Cruise	0.8	1.04	1.04	0.38	184	760	0.5	hours per day per barge
Usage Factor							730	Barges per year

Table C-19
Fugitive Dust - Past Conditions

Trucks on Unpaved Surfaces

Operating Assumptions

Haul road length =	0.25 mile	8,000	tons/day	
Trucks/day =	150	4,444	cy/day	
VMT =	37.5 miles/day	1,414,667	tons/year	
Days/year	260 days	785,926	cy/year	2080 hours/year

Calculated Emission Factor for travel on unpaved roads
F = 2.1*(G/12)*(H/30)*[(I/3)^0.7]*[(J/4)^0.5]*[(365-K)/365]

G = silt content :Mining Haul Road, 8%
H = Mean vehicle speed, 15 mph
I = Mean vehicle weight, 33 tons unloded per cat 735 web site , 69 tons when loaded
J = Mean # of wheels, 6
K = Mean # of days with rain above 0.01 inches, 66

Loaded Emission Factor = 6.31 pounds pm10/vmt
Unloaded Emission Factor = 3.76 pounds pm10/vmt

	PM10		PM2.5		Silica	
	Uncontrolled	Controlled	Uncontrolled	Controlled	Uncontrolle	Controlled
Unpaved Fugitive Emissions (pounds/day)	378	113	57	17	212	64
Unpaved Fugitive Emissions (tons/year)	49.1	15	7	2	28	8
Unpaved Fugitive Emissions (pounds/year)	98,166	29,450	14,725	4,417	55,081	16,524
Unpaved Fugitive Emissions (pounds/70-year)	36,462	10,939	5,469	1,641	20,459	6,138

	pounds/hr	pounds/70-year	pounds/year
Antimony	9.49E-06	7.33E-03	1.97E-02
Arsenic	9.63E-05	7.44E-02	2.00E-01
Barium	9.91E-03	7.66E+00	2.06E+01
Beryllium	1.70E-05	1.31E-02	3.53E-02
Cadmium	0.00E+00	0.00E+00	0.00E+00
Chromium	2.27E-04	1.75E-01	4.71E-01
Cobalt	3.11E-04	2.41E-01	6.48E-01
Copper	1.84E-04	1.42E-01	3.83E-01
Lead	3.40E-04	2.63E-01	7.07E-01
Mercury	5.95E-05	4.59E-02	1.24E-01
Molybdenun	1.23E-05	9.52E-03	2.56E-02
Nickel	3.82E-04	2.95E-01	7.95E-01
Selenium	8.50E-06	6.56E-03	1.77E-02
Silver	0.00E+00	0.00E+00	0.00E+00
Thallium	0.00E+00	0.00E+00	0.00E+00
Vanadium	4.11E-04	3.17E-01	8.54E-01
Zinc	8.50E-04	6.56E-01	1.77E+00

Table C-19
Fugitive Dust - Past Conditions

Fugitive PM10 emissions from material handling

E = [0.00112*({[G/5]^1.3}/{[H/2]^1.4})]*[I]

G = Mean wind speed in miles per hour, 13 mph
H = Moisture Content of soil, 2.0 (dry) 2.0 (dry)
I = lbs of material handled
J = 2,000 (conversion factor, lbs to tons)

	PM10		PM2.5		Silica	
	Uncontrolled	Controlled	Uncontrolled	Controlled	Uncontrolle	Controlled
Material Handling Fugitive Emissions (pounds/day)	31.0	9.3	4.7	1.4	17.4	5.2
Material Handling Fugitive Emissions (tons/year)	4.0	1.2	0.6	0.2	2.3	0.7
Material Handling Fugitive Emissions (pounds/year)	8,068	2,420	1210	363	4,527	1,358
Material Handling Fugitive Emissions (pounds/70-year)	2,996.6	899	449	135	1,681	504

Blasting

E = 0.000014 (A)^1.5 from AP-42 11.9

E= PM30 emissions
A = horizontal area

PM -10 emissions = 0.52 x E

From 8/24/06 blast chart : two areas of adjacent benches with shots 15' apart
Approx area = 6750 sf

E= 7.76 pounds of TSP/blast
PM10 = 4.04 pounds/blast
606 pounds/year 150 blasts/year
PM2.5 = 0.61 pounds/blast
91 pounds/year
Silica 2.27 **pounds/blast**
339.8 pounds/year
126.2 pounds/70-year

	pounds/hr	pounds/70-year	pounds/year
Antimony	7.80E-07	6.02E-04	1.62E-03
Arsenic	7.91E-06	6.11E-03	1.65E-02
Barium	8.15E-04	6.29E-01	1.69E+00
Beryllium	1.40E-06	1.08E-03	2.90E-03
Cadmium	0.00E+00	0.00E+00	0.00E+00
Chromium	1.86E-05	1.44E-02	3.87E-02
Cobalt	2.56E-05	1.98E-02	5.32E-02
Copper	1.51E-05	1.17E-02	3.15E-02
Lead	2.79E-05	2.16E-02	5.81E-02
Mercury	4.89E-06	3.78E-03	1.02E-02
Molybdenun	1.01E-06	7.82E-04	2.11E-03
Nickel	3.14E-05	2.43E-02	6.53E-02
Selenium	6.98E-07	5.39E-04	1.45E-03
Silver	0.00E+00	0.00E+00	0.00E+00
Thallium	0.00E+00	0.00E+00	0.00E+00
Vanadium	3.37E-05	2.61E-02	7.02E-02
Zinc	6.98E-05	5.39E-02	1.45E-01
Antimony	2.70E-06	8.46E-05	4.06E-04
Arsenic	2.75E-05	8.58E-04	4.12E-03
Barium	2.83E-03	8.83E-02	4.24E-01
Beryllium	4.84E-06	1.51E-04	7.27E-04
Cadmium	0.00E+00	0.00E+00	0.00E+00
Chromium	6.46E-05	2.02E-03	9.69E-03
Cobalt	8.88E-05	2.78E-03	1.33E-02
Copper	5.25E-05	1.64E-03	7.87E-03
Lead	9.69E-05	3.03E-03	1.45E-02
Mercury	1.70E-05	5.30E-04	2.54E-03
Molybdenun	3.51E-06	1.10E-04	5.27E-04
Nickel	1.09E-04	3.41E-03	1.64E-02
Selenium	2.42E-06	7.57E-05	3.63E-04
Silver	0.00E+00	0.00E+00	0.00E+00
Thallium	0.00E+00	0.00E+00	0.00E+00
Vanadium	1.17E-04	3.66E-03	1.76E-02
Zinc	2.42E-04	7.57E-03	3.63E-02

Table C-20
Fugitive Dust - Existing Conditions

Trucks on Unpaved Surfaces

Operating Assumptions

Haul road length =	0.25 mile	8,000	tons/day	
Trucks/day =	125	4,444	cy/day	
VMT =	31.3 miles/day	1,414,667	tons/year	
Days/year	260 days	785,926	cy/year	2080 hours/year

Calculated Emission Factor for travel on unpaved roads
F = 2.1*(G/12)*(H/30)*[(I/3)^0.7]*[(J/4)^0.5]*[(365-K)/365]

G = silt content :Mining Haul Road, 8%
H = Mean vehicle speed, 15 mph
I = Mean vehicle weight, 33 tons unloded per cat 735 web site , 69 tons when loaded
J = Mean # of wheels, 6
K = Mean # of days with rain above 0.01 inches, 66

Loaded Emission Factor = 6.31 pounds pm10/vmt
Unloaded Emission Factor = 3.76 pounds pm10/vmt

	PM10		PM2.5		Silica	
	Uncontrolled	Controlled	Uncontrolled	Controlled	Uncontrolled	Controlled
Unpaved Fugitive Emissions (pounds/day)	315	94	47	14	177	53
Unpaved Fugitive Emissions (tons/year)	40.9	12.3	6	2	23	7
Unpaved Fugitive Emissions (pounds/year)	81,805	24,542	12271	3681	45,901	13,770
Unpaved Fugitive Emissions (pounds/70-year)	3,506	1052	526	158	1,967	590

	pounds/hr	pounds/70-year	pounds/year
Antimony	7.91E-06	7.05E-04	1.64E-02
Arsenic	8.02E-05	7.15E-03	1.67E-01
Barium	8.26E-03	7.36E-01	1.72E+01
Beryllium	1.42E-05	1.26E-03	2.94E-02
Cadmium	0.00E+00	0.00E+00	0.00E+00
Chromium	1.89E-04	1.68E-02	3.93E-01
Cobalt	2.60E-04	2.31E-02	5.40E-01
Copper	1.53E-04	1.37E-02	3.19E-01
Lead	2.83E-04	2.52E-02	5.89E-01
Mercury	4.96E-05	4.42E-03	1.03E-01
Molybdenun	1.03E-05	9.15E-04	2.14E-02
Nickel	3.19E-04	2.84E-02	6.63E-01
Selenium	7.08E-06	6.31E-04	1.47E-02
Silver	0.00E+00	0.00E+00	0.00E+00
Thallium	0.00E+00	0.00E+00	0.00E+00
Vanadium	3.42E-04	3.05E-02	7.12E-01
Zinc	7.08E-04	6.31E-02	1.47E+00

Table C-20
Fugitive Dust - Existing Conditions

Fugitive PM10 emissions from material handling

E = [0.00112*({[G/5]^1.3}/{[H/2]^1.4})]*[I/J]

G = Mean wind speed in miles per hour, 13 mph
H = Moisture Content of soil, 2.0 (dry)
I = lbs of material handled
J = 2,000 (conversion factor, lbs to tons)

	PM10		PM2.5		Silica	
	Uncontrolled	Controlled	Uncontrolled	Controlled	Uncontrolle	Controlled
Material Handling Fugitive Emissions (pounds/day)	31.0	9.3	4.7	1.4	17.4	5.2
Material Handling Fugitive Emissions (tons/year)	4.0	1.2	0.6	0.2	2.3	0.7
Material Handling Fugitive Emissions (pounds/year)	8,068	2,420	1210	363	4,527	1,358
Material Handling Fugitive Emissions (pounds/70-year)	345.8	104	52	16	194	58

Blasting 346 104 52

E = 0.000014 (A)^1.5 from AP-42 11.9

E= PM30 emissions
A = horizontal area

PM -10 emissions = 0.52 x E

From 8/24/06 blast chart : two areas of adjacent benches with shots 15' apart
Approx area = 6750 sf

E= 7.76 pounds of TSP/blast
PM10 = 4.04 pounds/blast
606 pounds/year 150 blasts/year
PM2.5 = 0.61 pounds/blast
91 pounds/year
Silica 2.27 **pounds/blast**
340 pounds/year
14.6 pounds/70-year

	pounds/hr	pounds/70-year	pounds/year
Antimony	7.80E-07	6.95E-05	1.62E-03
Arsenic	7.91E-06	7.05E-04	1.65E-02
Barium	8.15E-04	7.26E-02	1.69E+00
Beryllium	1.40E-06	1.24E-04	2.90E-03
Cadmium	0.00E+00	0.00E+00	0.00E+00
Chromium	1.86E-05	1.66E-03	3.87E-02
Cobalt	2.56E-05	2.28E-03	5.32E-02
Copper	1.51E-05	1.35E-03	3.15E-02
Lead	2.79E-05	2.49E-03	5.81E-02
Mercury	4.89E-06	4.36E-04	1.02E-02
Molybdenun	1.01E-06	9.02E-05	2.11E-03
Nickel	3.14E-05	2.80E-03	6.53E-02
Selenium	6.98E-07	6.22E-05	1.45E-03
Silver	0.00E+00	0.00E+00	0.00E+00
Thallium	0.00E+00	0.00E+00	0.00E+00
Vanadium	3.37E-05	3.01E-03	7.02E-02
Zinc	6.98E-05	6.22E-03	1.45E-01
Antimony	2.70E-06	9.76E-06	4.06E-04
Arsenic	2.75E-05	9.90E-05	4.12E-03
Barium	2.83E-03	1.02E-02	4.24E-01
Beryllium	4.84E-06	1.75E-05	7.27E-04
Cadmium	0.00E+00	0.00E+00	0.00E+00
Chromium	6.46E-05	2.33E-04	9.69E-03
Cobalt	8.88E-05	3.20E-04	1.33E-02
Copper	5.25E-05	1.89E-04	7.87E-03
Lead	9.69E-05	3.50E-04	1.45E-02
Mercury	1.70E-05	6.12E-05	2.54E-03
Molybdenun	3.51E-06	1.27E-05	5.27E-04
Nickel	1.09E-04	3.93E-04	1.64E-02
Selenium	2.42E-06	8.74E-06	3.63E-04
Silver	0.00E+00	0.00E+00	0.00E+00
Thallium	0.00E+00	0.00E+00	0.00E+00
Vanadium	1.17E-04	4.22E-04	1.76E-02
Zinc	2.42E-04	8.74E-04	3.63E-02

Table C-21
Fugitive Dust - Proposed Conditions

Trucks on Unpaved Surfaces

Operating Assumptions

Haul road length =	0.25 mile	9,600	tons/day	
Trucks/day =	125	5,333	cy/day	
VMT =	31.3 miles/day	1,697,600	tons/year	
Days/year	260 days	943,111	cy/year	2080 hours/year

Calculated Emission Factor for travel on unpaved roads
F = 2.1*(G/12)*(H/30)*[(I/3)^0.7]*[(J/4)^0.5]*[(365-K)/365]

G = silt content :Mining Haul Road, 8%
H = Mean vehicle speed, 15 mph
I = Mean vehicle weight, 33 tons unloded per cat 735 web site , 69 tons when loaded
J = Mean # of wheels, 6
K = Mean # of days with rain above 0.01 inches, 66

Loaded Emission Factor = 6.31 pounds pm10/vmt
Unloaded Emission Factor = 3.76 pounds pm10/vmt

	PM10		PM2.5		Silica	
	Uncontrolled	Controlled	Uncontrolled	Controlled	Uncontrolle	Controlled
Unpaved Fugitive Emissions (pounds/day)	315	94	47	14	177	53
Unpaved Fugitive Emissions (tons/year)	40.9	12.3	6	2	23	7
Unpaved Fugitive Emissions (pounds/year)	81,805	24,542	12,271	3,681	45,901	13,770
Unpaved Fugitive Emissions (pounds/70-year)	19,867	5,960	2,980	894	11,147	3,344

	pounds/hr	pounds/70-year	pounds/year
Antimony	7.91E-06	3.99E-03	1.64E-02
Arsenic	8.02E-05	4.05E-02	1.67E-01
Barium	8.26E-03	4.17E+00	1.72E+01
Beryllium	1.42E-05	7.15E-03	2.94E-02
Cadmium	0.00E+00	0.00E+00	0.00E+00
Chromium	1.89E-04	9.54E-02	3.93E-01
Cobalt	2.60E-04	1.31E-01	5.40E-01
Copper	1.53E-04	7.75E-02	3.19E-01
Lead	2.83E-04	1.43E-01	5.89E-01
Mercury	4.96E-05	2.50E-02	1.03E-01
Molybdenun	1.03E-05	5.19E-03	2.14E-02
Nickel	3.19E-04	1.61E-01	6.63E-01
Selenium	7.08E-06	3.58E-03	1.47E-02
Silver	0.00E+00	0.00E+00	0.00E+00
Thallium	0.00E+00	0.00E+00	0.00E+00
Vanadium	3.42E-04	1.73E-01	7.12E-01
Zinc	7.08E-04	3.58E-01	1.47E+00

Table C-21
Fugitive Dust - Proposed Conditions

Fugitive PM10 emissions from material handling

E = [0.00112*({[G/5]^1.3}/{[H/2]^1.4})]*[I/J]

G = Mean wind speed in miles per hour, 13 mph
H = Moisture Content of soil, 2.0 (dry)
I = lbs of material handled
J = 2,000 (conversion factor, lbs to tons)

	PM10		PM2.5		Silica	
	Uncontrolled	Controlled	Uncontrolled	Controlled	Uncontrolle	Controlled
Material Handling Fugitive Emissions (pounds/day)	37.2	11.2	5.6	1.7	20.9	6.3
Material Handling Fugitive Emissions (tons/year)	4.8	1.5	0.7	0.2	2.7	0.8
Material Handling Fugitive Emissions (pounds/year)	9,681	2,904	1,452	436	5,432	1,630
Material Handling Fugitive Emissions (pounds/70-year)	2,351	705	353	106	1,319	396

Blasting

E = 0.000014 (A)^1.5 from AP-42 11.9

E= PM30 emissions
A = horizontal area

PM -10 emissions = 0.52 x E

From 8/24/06 blast chart : two areas of adjacent benches with shots 15' apart
Approx area = 6750 sf

E= 7.76 pounds of TSP/blast
PM10 = 4.04 pounds/blast
727 pounds/year 180 blasts/year **0.4**
PM2.5 = 0.61 pounds/blast
109 pounds/year
Silica 2.27 **pounds/blast**
408 pounds/year
99.0 pounds/70-year

	pounds/hr	pounds/70-year	pounds/year
Antimony	9.36E-07	4.73E-04	1.95E-03
Arsenic	9.49E-06	4.80E-03	1.97E-02
Barium	9.77E-04	4.94E-01	2.03E+00
Beryllium	1.68E-06	8.46E-04	3.49E-03
Cadmium	0.00E+00	0.00E+00	0.00E+00
Chromium	2.23E-05	1.13E-02	4.65E-02
Cobalt	3.07E-05	1.55E-02	6.39E-02
Copper	1.82E-05	9.17E-03	3.78E-02
Lead	3.35E-05	1.69E-02	6.97E-02
Mercury	5.86E-06	2.96E-03	1.22E-02
Molybdenun	1.21E-06	6.14E-04	2.53E-03
Nickel	3.77E-05	1.90E-02	7.84E-02
Selenium	8.38E-07	4.23E-04	1.74E-03
Silver	0.00E+00	0.00E+00	0.00E+00
Thallium	0.00E+00	0.00E+00	0.00E+00
Vanadium	4.05E-05	2.05E-02	8.42E-02
Zinc	8.38E-05	4.23E-02	1.74E-01

Antimony	2.70E-06	6.63E-05	4.87E-04
Arsenic	2.75E-05	6.73E-04	4.94E-03
Barium	2.83E-03	6.93E-02	5.09E-01
Beryllium	4.84E-06	1.19E-04	8.72E-04
Cadmium	0.00E+00	0.00E+00	0.00E+00
Chromium	6.46E-05	1.58E-03	1.16E-02
Cobalt	8.88E-05	2.18E-03	1.60E-02
Copper	5.25E-05	1.29E-03	9.45E-03
Lead	9.69E-05	2.38E-03	1.74E-02
Mercury	1.70E-05	4.16E-04	3.05E-03
Molybdenun	3.51E-06	8.62E-05	6.32E-04
Nickel	1.09E-04	2.67E-03	1.96E-02
Selenium	2.42E-06	5.94E-05	4.36E-04
Silver	0.00E+00	0.00E+00	0.00E+00
Thallium	0.00E+00	0.00E+00	0.00E+00
Vanadium	1.17E-04	2.87E-03	2.11E-02
Zinc	2.42E-04	5.94E-03	4.36E-02

Table C-22
Fugitive Dust - Proposed at 1982 Production Conditions

Trucks on Unpaved Surfaces

Operating Assumptions

Haul road length =	0.25	mile	8,000	tons/day	
Trucks/day =	125		4,444	cy/day	
VMT =	31.3	miles/day	1,414,667	tons/year	
Days/year	260	days	785,926	cy/year	2080 hours/year

Calculated Emission Factor for travel on unpaved roads

F = 2.1*(G/12)*(H/30)*[(I/3)^0.7]*[(J/4)^0.5]*[(365-K)/365]

G = silt content :Mining Haul Road, 8%
H = Mean vehicle speed, 15 mph
I = Mean vehicle weight, 33 tons unloded per cat 735 web site , 69 tons when loaded
J = Mean # of wheels, 6
K = Mean # of days with rain above 0.01 inches, 66

Loaded Emission Factor = 6.31 pounds pm10/vmt
Unloaded Emission Factor = 3.76 pounds pm10/vmt

	PM10		PM2.5		Silica	
	Uncontrolled	Controlled	Uncontrolled	Controlled	Uncontrolled	Controlled
Unpaved Fugitive Emissions (pounds/day)	315	94	47	14	177	53
Unpaved Fugitive Emissions (tons/year)	40.9	12	6	2	23	7
Unpaved Fugitive Emissions (pounds/year)	81,805	24,542	12271	3681	45,901	13,770
Unpaved Fugitive Emissions (pounds/70-year)	19,867	5960	2980	894	11,147	3,344

	pounds/hr	pounds/70-year	pounds/year
Antimony	7.91E-06	3.99E-03	1.64E-02
Arsenic	8.02E-05	4.05E-02	1.67E-01
Barium	8.26E-03	4.17E+00	1.72E+01
Beryllium	1.42E-05	7.15E-03	2.94E-02
Cadmium	0.00E+00	0.00E+00	0.00E+00
Chromium	1.89E-04	9.54E-02	3.93E-01
Cobalt	2.60E-04	1.31E-01	5.40E-01
Copper	1.53E-04	7.75E-02	3.19E-01
Lead	2.83E-04	1.43E-01	5.89E-01
Mercury	4.96E-05	2.50E-02	1.03E-01
Molybdenun	1.03E-05	5.19E-03	2.14E-02
Nickel	3.19E-04	1.61E-01	6.63E-01
Selenium	7.08E-06	3.58E-03	1.47E-02
Silver	0.00E+00	0.00E+00	0.00E+00
Thallium	0.00E+00	0.00E+00	0.00E+00
Vanadium	3.42E-04	1.73E-01	7.12E-01
Zinc	7.08E-04	3.58E-01	1.47E+00

Table C-22
Fugitive Dust - Proposed at 1982 Production Conditions

Fugitive PM10 emissions from material handling

E = [0.00112*({[G/5]^1.3}/{[H/2]^1.4})]*[I/J]

G = Mean wind speed in miles per hour, 13 mph
H = Moisture Content of soil, 2.0 (dry)
I = lbs of material handled
J = 2,000 (conversion factor, lbs to tons)

	PM10		PM2.5		Silica	
	Uncontrolled	Controlled	Uncontrolled	Controlled	Uncontrolled	Controlled
Material Handling Fugitive Emissions (pounds/day)	31.0	9.3	4.7	1.4	17.4	5.2
Material Handling Fugitive Emissions (tons/year)	4.0	1.2	0.6	0.2	2.3	0.7
Material Handling Fugitive Emissions (pounds/year)	8,068	2,420	1210	363	4,527	1,358
Material Handling Fugitive Emissions (pounds/70-year)	1,959	588	294	88	1,099	330

Blasting

E = 0.000014 (A)^1.5 from AP-42 11.9

E= PM30 emissions
A = horizontal area

PM -10 emissions = 0.52 x E

From 8/24/06 blast chart : two areas of adjacent benches with shots 15' apart
Approx area = 6750 sf

E= 7.76 pounds of TSP/blast
PM10 = 4.04 pounds/blast
606 pounds/year 150 blasts/year
PM2.5 = 0.61 pounds/blast
91 pounds/year
Silica 2.27 **pounds/blast**
340 pounds/year
82.5 pounds/70-year

	pounds/hr	pounds/70-year	pounds/year
Antimony	7.80E-07	3.94E-04	1.62E-03
Arsenic	7.91E-06	4.00E-03	1.65E-02
Barium	8.15E-04	4.11E-01	1.69E+00
Beryllium	1.40E-06	7.05E-04	2.90E-03
Cadmium	0.00E+00	0.00E+00	0.00E+00
Chromium	1.86E-05	9.40E-03	3.87E-02
Cobalt	2.56E-05	1.29E-02	5.32E-02
Copper	1.51E-05	7.64E-03	3.15E-02
Lead	2.79E-05	1.41E-02	5.81E-02
Mercury	4.89E-06	2.47E-03	1.02E-02
Molybdenun	1.01E-06	5.11E-04	2.11E-03
Nickel	3.14E-05	1.59E-02	6.53E-02
Selenium	6.98E-07	3.53E-04	1.45E-03
Silver	0.00E+00	0.00E+00	0.00E+00
Thallium	0.00E+00	0.00E+00	0.00E+00
Vanadium	3.37E-05	1.70E-02	7.02E-02
Zinc	6.98E-05	3.53E-02	1.45E-01

Antimony	2.70E-06	5.53E-05	4.06E-04
Arsenic	2.75E-05	5.61E-04	4.12E-03
Barium	2.83E-03	5.78E-02	4.24E-01
Beryllium	4.84E-06	9.90E-05	7.27E-04
Cadmium	0.00E+00	0.00E+00	0.00E+00
Chromium	6.46E-05	1.32E-03	9.69E-03
Cobalt	8.88E-05	1.82E-03	1.33E-02
Copper	5.25E-05	1.07E-03	7.87E-03
Lead	9.69E-05	1.98E-03	1.45E-02
Mercury	1.70E-05	3.47E-04	2.54E-03
Molybdenun	3.51E-06	7.18E-05	5.27E-04
Nickel	1.09E-04	2.23E-03	1.64E-02
Selenium	2.42E-06	4.95E-05	3.63E-04
Silver	0.00E+00	0.00E+00	0.00E+00
Thallium	0.00E+00	0.00E+00	0.00E+00
Vanadium	1.17E-04	2.39E-03	1.76E-02
Zinc	2.42E-04	4.95E-03	3.63E-02

Table C-23
Reclamation - Phase 1

Exhaust Emissions

Operating Assumtions

Cut and Fill Volume	416,900	cy
Cut and fill per day	1,737	cy
Cut and fill per day	6,253,500	pounds
Years	5	
Years	2008-2012	cy
Days per year	48	

480 Hours per year

Exhaust Emision Rate (g/yd) (from BAAQMD Table 7 and CARB OFFROAD2007)

PM10	CO	ROG	NOx	SOX	DPM
2.2	138	9.2	42.4	4.6	0.78

Phase 1 exhaust emissions (gm/day)	3,822	239,718	15,981	73,652	7,991	1,356

Phase 1 Exhaust Emissions (pounds/day)	8.41	527	35.2	162	17.6	2.98
Phase 1 Exhaust Emissions (tons/year)	0.20	12.7	0.84	3.89	0.42	0.07
Phase 1 Exhaust Emissions (pounds/year)	404	25,314	1,688	7,778	844	143
Phase 1 Exhaust Emissions (pounds/70-year)						10.2

Table C-23
Reclamation - Phase 1

Fugitive Dust Emissions

Trucks on Unpaved Surfaces

Operating Assumptions

Haul road length =	0.5	mile (approx. length across each quadrant)
Number of trucks/day =	174	(1737 cy excavated per day in Phase 1 / 20cy per truck x 2 trips per load)
VMT =	86.9	miles/day

Calculated Emission Factor for travel on unpaved roads
F = 2.1*(G/12)*(H/30)*[(I/3)^0.7]*[(J/4)^0.5]*[(365-K)/365]

G = silt content :Mining Haul Road, 8%
H = Mean vehicle speed, 15 mph
I = Mean vehicle weight, 33 tons unloded per cat 735 web site , 69 tons when loaded
J = Mean # of wheels, 6
K = Mean # of days with rain above 0.01 inches, 0 (dry season work only)

Loaded Emission Factor =	7.70	pounds pm10/vmt
Unloaded Emission Factor =	4.59	pounds pm10/vmt

	PM10		PM2.5		Silica	
	Uncontrolled	Controlled	Uncontrolled	Controlled	Uncontrolled	Controlled
Phase 1 Unpaved Fugitive Emissions (pounds/day)	534	160	80.1	24.0	299	89.8
Phase 1 Unpaved Fugitive Emissions (tons/year)	12.8	3.84	1.92	0.58	7.19	2.16
Phase 1 Unpaved Fugitive Emissions (pounds/year)	25,620	7,686	3843	1153	14,376	4,313
Phase 1 Unpaved Fugitive Emissions (pounds/70-year)	1,830	549	275	82	1,027	308

	pounds/hr	pounds/70-year	pounds/yea
Antimony	1.34E-05	3.68E-04	5.15E-03
Arsenic	1.36E-04	3.73E-03	5.23E-02
Barium	1.40E-02	3.84E-01	5.38E+00
Beryllium	2.40E-05	6.59E-04	9.22E-03
Cadmium	0.00E+00	0.00E+00	0.00E+00
Chromium	3.20E-04	8.78E-03	1.23E-01
Cobalt	4.40E-04	1.21E-02	1.69E-01
Copper	2.60E-04	7.14E-03	9.99E-02
Lead	4.80E-04	1.32E-02	1.84E-01
Mercury	8.41E-05	2.31E-03	3.23E-02
Molybdenun	1.74E-05	4.78E-04	6.69E-03
Nickel	5.40E-04	1.48E-02	2.08E-01
Selenium	1.20E-05	3.29E-04	4.61E-03
Silver	0.00E+00	0.00E+00	0.00E+00
Thallium	0.00E+00	0.00E+00	0.00E+00
Vanadium	5.80E-04	1.59E-02	2.23E-01
Zinc	1.20E-03	3.29E-02	4.61E-01

Table C-23
Reclamation - Phase 1

Fugitive PM10 emissions from material handling

E = [0.00112*({[G/5]^1.3}/{[H/2]^1.4})]*[I/J]

G = Mean wind speed in miles per hour, 13 mph
H = Moisture Content of soil, 2.0 (dry)
I = lbs of material handled
J = 2,000 (conversion factor, lbs to tons)

	PM10		PM2.5		Silica	
	Uncontrolled	Controlled	Uncontrolled	Controlled	Uncontrolled	Controlled
Phase 1 Material Handling Fugitive Emissions (pounds/day)	12.1	3.64	1.82	0.55	6.80	2.04
Phase 1 Material Handling Fugitive Emissions (tons/year)	0.29	0.09	0.04	0.01	0.16	0.05
Phase 1 Material Handling Fugitive Emissions (pounds/year)	582	175	87.3	26.2	327	98.0
Phase 1 Material Handling Fugitive Emissions (pounds/70-year)	41.6	12.5	6.24	1.87	23.3	7.00

	pounds/hr	pounds/70-year	pounds/yea
Antimony	3.05E-07	8.36E-06	1.17E-04
Arsenic	3.09E-06	8.48E-05	1.19E-03
Barium	3.18E-04	8.73E-03	1.22E-01
Beryllium	5.46E-07	1.50E-05	2.10E-04
Cadmium	0.00E+00	0.00E+00	0.00E+00
Chromium	7.28E-06	2.00E-04	2.79E-03
Cobalt	1.00E-05	2.74E-04	3.84E-03
Copper	5.91E-06	1.62E-04	2.27E-03
Lead	1.09E-05	2.99E-04	4.19E-03
Mercury	1.91E-06	5.24E-05	7.33E-04
Molybdenun	3.96E-07	1.09E-05	1.52E-04
Nickel	1.23E-05	3.37E-04	4.72E-03
Selenium	2.73E-07	7.48E-06	1.05E-04
Silver	0.00E+00	0.00E+00	0.00E+00
Thallium	0.00E+00	0.00E+00	0.00E+00
Vanadium	1.32E-05	3.62E-04	5.06E-03
Zinc	2.73E-05	7.48E-04	1.05E-02

Truck Exhaust

A. Emissions from on-site truck travel exhaust

				emission factor (lb/hour) /a/						
Equipment/l	#	Hours/b/	Total hrs	CO	ROG	NOx	SOx	PM10	DPM	
735 Truck	4	10	40	4.11	1.36	12.65	0.0146	0.4758	0.604	g/mile (CARB EMFAC2007)

Daily Emissions			lb/day		
CO	ROG	NOx	SOx	PM10	DPM
164	54	506	1	19	1.60

	PM10	CO	ROG	NOx	SOX	DPM
Phase 1 Exhaust Emissions (pounds/day)	27.4	692	89.6	668	18.2	4.58
Phase 1 Exhaust Emissions (tons/year)	0.66	16.6	2.15	16.0	0.44	0.11
Phase 1 Exhaust Emissions (pounds/year)	1,317	33,205	4,299	32,066	872	220
Phase 1 Exhaust Emissions (pounds/70-year)						15.7

Table C-24
Reclamation - Phase 2

Exhaust Emissions

Operating Assumtions				**Exhaust Emision Rate (g/yd) (from BAAQMD Table 7 and CARB OFFROAD2007)**					
				PM10	CO	ROG	NOx	SOX	DPM
Cut and Fill Volume	448,400	cy		2.2	138	9.2	42.4	4.6	0.63
Cut and fill per day	1,868	cy							
Cut and fill per day	6,726,000	pounds							
Years	5								
Years	2010-2015	cy							
Days per year	48		480 Hours per year						
Phase 2 exhaust emissions (gm/day)				4,110	257,830	17,189	79,217	8,594	1,185
Phase 2 Exhaust Emissions (pounds/day)				9.04	567	37.8	174	18.9	2.61
Phase 2 Exhaust Emissions (tons/year)				0.22	13.6	0.91	4.18	0.45	0.06
Phase 2 Exhaust Emissions (pounds/year)				434	27,227	1,815	8,365	908	125
Phase 2 Exhaust Emissions (pounds/70-year)									8.94

Table C-24
Reclamation - Phase 2

Fugitive Dust Emissions

Trucks on Unpaved Surfaces

Operating Assumptions

Haul road length =	0.5	mile (approx. length across each quadrant)
Number of trucks/day :	187	(1737 cy excavated per day in Phase 2 / 20cy per truck x 2 trips per load)
VMT =	93.4	miles/day

Calculated Emission Factor for travel on unpaved roads
F = 2.1*(G/12)*(H/30)*[(I/3)^0.7]*[(J/4)^0.5]*[(365-K)/365]

G = silt content :Mining Haul Road, 8%
H = Mean vehicle speed, 15 mph
I = Mean vehicle weight, 33 tons unloded per cat 735 web site , 69 tons when loaded
J = Mean # of wheels, 6
K = Mean # of days with rain above 0.01 inches, 0 (dry season work only)

Loaded Emission Factor =	7.70	pounds pm10/vmt
Unloaded Emission Factor =	4.59	pounds pm10/vmt

	PM10		PM2.5		Silica	
	Uncontrolled	Controlled	Uncontrolled	Controlled	Uncontrolle	Controlled
Phase 2 Unpaved Fugitive Emissions (pounds/day)	574	172	86.1	25.8	322	96.6
Phase 2 Unpaved Fugitive Emissions (tons/year)	13.8	4.13	2.07	0.62	7.73	2.32
Phase 2 Unpaved Fugitive Emissions (pounds/year)	27,556	8,267	4,133	1,240	15,462	4,639
Phase 2 Unpaved Fugitive Emissions (pounds/70-year)	1,968	590	295	89	1,104	331

	pounds/hr	pounds/70-year	pounds/yea
Antimony	1.44E-05	3.96E-04	5.54E-03
Arsenic	1.46E-04	4.02E-03	5.62E-02
Barium	1.51E-02	4.13E-01	5.79E+00
Beryllium	2.58E-05	7.09E-04	9.92E-03
Cadmium	0.00E+00	0.00E+00	0.00E+00
Chromium	3.44E-04	9.45E-03	1.32E-01
Cobalt	4.74E-04	1.30E-02	1.82E-01
Copper	2.80E-04	7.68E-03	1.07E-01
Lead	5.17E-04	1.42E-02	1.98E-01
Mercury	9.04E-05	2.48E-03	3.47E-02
Molybdenum	1.87E-05	5.14E-04	7.19E-03
Nickel	5.81E-04	1.59E-02	2.23E-01
Selenium	1.29E-05	3.54E-04	4.96E-03
Silver	0.00E+00	0.00E+00	0.00E+00
Thallium	0.00E+00	0.00E+00	0.00E+00
Vanadium	6.24E-04	1.71E-02	2.40E-01
Zinc	1.29E-03	3.54E-02	4.96E-01

Fugitive PM10 emissions from material handling

E = [0.00112*({[G/5]^1.3}/{[H/2]^1.4})]*[I/J]

G = Mean wind speed in miles per hour, 13 mph
H = Moisture Content of soil, 2.0 (dry)
I = lbs of material handled
J = 2,000 (conversion factor, lbs to tons)

	PM10		PM2.5		Silica	
	Uncontrolled	Controlled	Uncontrolled	Controlled	Uncontrolle	Controlled
Phase 2 Material Handling Fugitive Emissions (pounds/day)	13.0	3.91	1.96	0.59	7.32	2.20
Phase 2 Material Handling Fugitive Emissions (tons/year)	0.31	0.09	0.05	0.01	0.18	0.05
Phase 2 Material Handling Fugitive Emissions (pounds/year)	626	188	93.9	28.2	351	105
Phase 2 Material Handling Fugitive Emissions (pounds/70-year)	44.7	13.4	6.71	2.01	25.1	7.53

	pounds/hr	pounds/70-year	pounds/yea
Antimony	3.28E-07	8.99E-06	1.26E-04
Arsenic	3.33E-06	9.12E-05	1.28E-03
Barium	3.42E-04	9.39E-03	1.31E-01
Beryllium	5.87E-07	1.61E-05	2.25E-04
Cadmium	0.00E+00	0.00E+00	0.00E+00
Chromium	7.83E-06	2.15E-04	3.01E-03
Cobalt	1.08E-05	2.95E-04	4.13E-03
Copper	6.36E-06	1.74E-04	2.44E-03
Lead	1.17E-05	3.22E-04	4.51E-03
Mercury	2.05E-06	5.64E-05	7.89E-04
Molybdenum	4.26E-07	1.17E-05	1.63E-04
Nickel	1.32E-05	3.62E-04	5.07E-03
Selenium	2.93E-07	8.05E-06	1.13E-04
Silver	0.00E+00	0.00E+00	0.00E+00
Thallium	0.00E+00	0.00E+00	0.00E+00
Vanadium	1.42E-05	3.89E-04	5.45E-03
Zinc	2.93E-05	8.05E-04	1.13E-02

Truck Exhaust

A. Emissions from on-site truck travel exhaust

				emission factor (lb/hour) /a/						
Equipment/l	#	Hours/b/	Total hrs	CO	ROG	NOx	SOx	PM10	DPM	
735 Truck	4	10	40	3.47	1.18	9.68	0.0146	0.3453	0.483	g/mile (CARB EMFAC2007)

Daily Emissions			lb/day		
CO	ROG	NOx	SOx	PM10	DPM
139	47	387	1	14	1.28

	PM10	CO	ROG	NOx	SOX	DPM
Phase 2 Exhaust Emissions (pounds/day)	22.9	706	85.0	561	19.5	3.88
Phase 2 Exhaust Emissions (tons/year)	0.55	16.9	2.04	13.5	0.47	0.09
Phase 2 Exhaust Emissions (pounds/year)	1,097	33,889	4,081	26,951	936	186
Phase 2 Exhaust Emissions (pounds/70-year)						13.3

Table C-25
Reclamation - Phase 3

Exhaust Emissions

Operating Assumtions		
Cut and Fill Volume	569,500	cy
Cut and fill per day	2,373	cy
Cut and fill per day	8,542,500	pounds
Years	5	
Years	2013-2020	cy
Days per year	48	
	480	Hours per year

Exhaust Emision Rate (g/yd) (from BAAQMD Table 7 and CARB OFFROAD2007)					
PM10	CO	ROG	NOx	SOX	DPM
2.2	138	9.2	42.4	4.6	0.29

Phase 3 exhaust emissions (gm/day)	5,220	327,463	21,831	100,612	10,915	678

Phase 3 Exhaust Emissions (pounds/day)	11.5	720	48.0	221	24.0	1.49
Phase 3 Exhaust Emissions (tons/year)	0.28	17.3	1.15	5.31	0.58	0.04
Phase 3 Exhaust Emissions (pounds/year)	551	34,580	2,305	10,625	1,153	71.6
Phase 3 Exhaust Emissions (pounds/70-year)						5.12

Table C-25
Reclamation - Phase 3

Fugitive Dust Emissions

Trucks on Unpaved Surfaces

Operating Assumptions

Haul road length =	0.5	mile (approx. length across each quadrant)
Number of trucks/day =	237	(1737 cy excavated per day in Phase 3 / 20cy per truck x 2 trips per load)
VMT =	118.6	miles/day

Calculated Emission Factor for travel on unpaved roads
F = 2.1*(G/12)*(H/30)*[(I/3)^0.7]*[(J/4)^0.5]*[(365-K)/365]

G = silt content :Mining Haul Road, 8%
H = Mean vehicle speed, 15 mph
I = Mean vehicle weight, 33 tons unloded per cat 735 web site , 69 tons when loaded
J = Mean # of wheels, 6
K = Mean # of days with rain above 0.01 inches, 0 (dry season work only)

Loaded Emission Factor =	7.70	pounds pm10/vmt
Unloaded Emission Factor =	4.59	pounds pm10/vmt

	PM10		PM2.5		Silica	
	Uncontrolled	Controlled	Uncontrolled	Controlled	Uncontrolle	Controlled
Phase 3 Unpaved Fugitive Emissions (pounds/day)	729	219	109	33	409	123
Phase 3 Unpaved Fugitive Emissions (tons/year)	17.5	5.25	2.62	0.79	9.8	2.95
Phase 3 Unpaved Fugitive Emissions (pounds/year)	34,998	10,499	5,250	1,575	19,637	5,891
Phase 3 Unpaved Fugitive Emissions (pounds/70-year)	2,500	750	375	112	1,403	421

	pounds/hr	pounds/70-year	pounds/yea
Antimony	1.83E-05	5.02E-04	7.03E-03
Arsenic	1.86E-04	5.10E-03	7.14E-02
Barium	1.91E-02	5.25E-01	7.35E+00
Beryllium	3.28E-05	9.00E-04	1.26E-02
Cadmium	0.00E+00	0.00E+00	0.00E+00
Chromium	4.37E-04	1.20E-02	1.68E-01
Cobalt	6.02E-04	1.65E-02	2.31E-01
Copper	3.55E-04	9.75E-03	1.36E-01
Lead	6.56E-04	1.80E-02	2.52E-01
Mercury	1.15E-04	3.15E-03	4.41E-02
Molybdenum	2.38E-05	6.52E-04	9.13E-03
Nickel	7.38E-04	2.02E-02	2.83E-01
Selenium	1.64E-05	4.50E-04	6.30E-03
Silver	0.00E+00	0.00E+00	0.00E+00
Thallium	0.00E+00	0.00E+00	0.00E+00
Vanadium	7.93E-04	2.17E-02	3.04E-01
Zinc	1.64E-03	4.50E-02	6.30E-01

Fugitive PM10 emissions from material handling

E = [0.00112*({[G/5]^1.3}/{[H/2]^1.4})]*[I/J]

G = Mean wind speed in miles per hour, 13 mph
H = Moisture Content of soil, 2.0 (dry)
I = lbs of material handled
J = 2,000 (conversion factor, lbs to tons)

	PM10		PM2.5		Silica	
	Uncontrolled	Controlled	Uncontrolled	Controlled	Uncontrolle	Controlled
Phase 3 Material Handling Fugitive Emissions (pounds/day)	16.6	4.97	2.49	0.75	9.30	2.79
Phase 3 Material Handling Fugitive Emissions (tons/year)	0.40	0.12	0.06	0.02	0.22	0.07
Phase 3 Material Handling Fugitive Emissions (pounds/year)	795	239	119	35.8	446	134
Phase 3 Material Handling Fugitive Emissions (pounds/70-year)	56.8	17.0	8.52	2.56	31.9	9.6

	pounds/hr	pounds/70-year	pounds/yea
Antimony	4.16E-07	1.14E-05	1.60E-04
Arsenic	4.22E-06	1.16E-04	1.62E-03
Barium	4.35E-04	1.19E-02	1.67E-01
Beryllium	7.46E-07	2.04E-05	2.86E-04
Cadmium	0.00E+00	0.00E+00	0.00E+00
Chromium	9.94E-06	2.73E-04	3.82E-03
Cobalt	1.37E-05	3.75E-04	5.25E-03
Copper	8.08E-06	2.22E-04	3.10E-03
Lead	1.49E-05	4.09E-04	5.73E-03
Mercury	2.61E-06	7.16E-05	1.00E-03
Molybdenum	5.40E-07	1.48E-05	2.08E-04
Nickel	1.68E-05	4.60E-04	6.44E-03
Selenium	3.73E-07	1.02E-05	1.43E-04
Silver	0.00E+00	0.00E+00	0.00E+00
Thallium	0.00E+00	0.00E+00	0.00E+00
Vanadium	1.80E-05	4.94E-04	6.92E-03
Zinc	3.73E-05	1.02E-03	1.43E-02

Truck Exhaust

A. Emissions from on-site truck travel exhaust

				emission factor (lb/hour) /a/						
Equipment/t	#	Hours/b/	Total hrs	CO	ROG	NOx	SOx	PM10	DPM	
735 Truck	5	10	50	3.15	1.01	6.69	0.0145	0.2438	0.249	g/mile (CARB EMFAC2007)

Daily Emissions			lb/day		
CO	ROG	NOx	SOx	PM10	DPM
158	51	335	1	12	0.82

	PM10	CO	ROG	NOx	SOX	DPM
Phase 3 Exhaust Emissions (pounds/day)	23.7	878	98.5	556	24.7	2.32
Phase 3 Exhaust Emissions (tons/year)	0.57	21.1	2.36	13.3	0.59	0.06
Phase 3 Exhaust Emissions (pounds/year)	1,136	42,140	4,729	26,681	1,187	111
Phase 3 Exhaust Emissions (pounds/70-year)						7.94

Table C-26
Reclamation - Phase 4

Exhaust Emissions

Operating Assumtions		
Cut and Fill Volume	865,500	cy
Cut and fill per day	3,606	cy
Cut and fill per day	12,982,500	pounds
Years	5	
Years	2018-2024	cy
Days per year	48	
	480	Hours per year

Exhaust Emision Rate (g/yd) (from BAAQMD Table 7 and CARB OFFROAD2007)

PM10	CO	ROG	NOx	SOX	DPM
2.2	138	9.2	42.4	4.6	0.09

Phase 4 exhaust emissions (gm/day)	7,934	497,663	33,178	152,905	16,589	319

Phase 4 Exhaust Emissions (pounds/day)	17.5	1,095	73.0	336	36.5	0.70
Phase 4 Exhaust Emissions (tons/year)	0.42	26.3	1.75	8.07	0.88	0.02
Phase 4 Exhaust Emissions (pounds/year)	838	52,553	3,504	16,147	1,752	33.7
Phase 4 Exhaust Emissions (pounds/70-year)						2.40

Table C-26
Reclamation - Phase 4

Fugitive Dust Emissions

Trucks on Unpaved Surfaces

Operating Assumptions

Haul road length =	0.5	mile (approx. length across each quadrant)
Number of trucks/day =	361	(1737 cy excavated per day in Phase 4 / 20cy per truck x 2 trips per load)
VMT =	180	miles/day

Calculated Emission Factor for travel on unpaved roads
F = 2.1*(G/12)*(H/30)*[(I/3)^0.7]*[(J/4)^0.5]*[(365-K)/365]

G = silt content :Mining Haul Road, 8%
H = Mean vehicle speed, 15 mph
I = Mean vehicle weight, 33 tons unloded per cat 735 web site , 69 tons when loaded
J = Mean # of wheels, 6
K = Mean # of days with rain above 0.01 inches, 0 (dry season work only)

Loaded Emission Factor = 7.70 pounds pm10/vmt
Unloaded Emission Factor = 4.59 pounds pm10/vmt

	PM10		PM2.5		Silica	
	Uncontrolled	Controlled	Uncontrolled	Controlled	Uncontrolle	Controlled
Phase 4 Unpaved Fugitive Emissions (pounds/day)	1,108	332	166	49.9	622	187
Phase 4 Unpaved Fugitive Emissions (tons/year)	26.6	7.98	3.99	1.20	14.9	4.48
Phase 4 Unpaved Fugitive Emissions (pounds/year)	53,188	15,957	7,978	2,393	29,844	8,953
Phase 4 Unpaved Fugitive Emissions (pounds/70-year)	3,799	1140	570	171	2,132	640

	pounds/hr	pounds/70-year	pounds/yea
Antimony	2.78E-05	7.64E-04	1.07E-02
Arsenic	2.83E-04	7.75E-03	1.09E-01
Barium	2.91E-02	7.98E-01	1.12E+01
Beryllium	4.99E-05	1.37E-03	1.91E-02
Cadmium	0.00E+00	0.00E+00	0.00E+00
Chromium	6.65E-04	1.82E-02	2.55E-01
Cobalt	9.14E-04	2.51E-02	3.51E-01
Copper	5.40E-04	1.48E-02	2.07E-01
Lead	9.97E-04	2.74E-02	3.83E-01
Mercury	1.75E-04	4.79E-03	6.70E-02
Molybdenum	3.62E-05	9.92E-04	1.39E-02
Nickel	1.12E-03	3.08E-02	4.31E-01
Selenium	2.49E-05	6.84E-04	9.57E-03
Silver	0.00E+00	0.00E+00	0.00E+00
Thallium	0.00E+00	0.00E+00	0.00E+00
Vanadium	1.21E-03	3.31E-02	4.63E-01
Zinc	2.49E-03	6.84E-02	9.57E-01

Table C-26
Reclamation - Phase 4

Fugitive PM10 emissions from material handling

E = [0.00112*({[G/5]^1.3}/{[H/2]^1.4})]*[I/J]

G = Mean wind speed in miles per hour, 13 mph
H = Moisture Content of soil, 2.0 (dry)
I = lbs of material handled
J = 2,000 (conversion factor, lbs to tons)

	PM10		PM2.5		Silica	
	Uncontrolled	Controlled	Uncontrolled	Controlled	Uncontrolle	Controlled
Phase 4 Material Handling Fugitive Emissions (pounds/day)	25.18	7.55	3.78	1.13	14.1	4.24
Phase 4 Material Handling Fugitive Emissions (tons/year)	0.604	0.18	0.09	0.03	0.34	0.10
Phase 4 Material Handling Fugitive Emissions (pounds/year)	1,209	363	181	54.4	678	203
Phase 4 Material Handling Fugitive Emissions (pounds/70-year)	86.3	25.9	12.9	3.88	48.4	14.5

	pounds/hr	pounds/70-year	pounds/yea
Antimony	6.33E-07	1.74E-05	2.43E-04
Arsenic	6.42E-06	1.76E-04	2.47E-03
Barium	6.61E-04	1.81E-02	2.54E-01
Beryllium	1.13E-06	3.11E-05	4.35E-04
Cadmium	0.00E+00	0.00E+00	0.00E+00
Chromium	1.51E-05	4.14E-04	5.80E-03
Cobalt	2.08E-05	5.70E-04	7.98E-03
Copper	1.23E-05	3.37E-04	4.71E-03
Lead	2.27E-05	6.22E-04	8.70E-03
Mercury	3.97E-06	1.09E-04	1.52E-03
Molybdenum	8.21E-07	2.25E-05	3.15E-04
Nickel	2.55E-05	6.99E-04	9.79E-03
Selenium	5.66E-07	1.55E-05	2.18E-04
Silver	0.00E+00	0.00E+00	0.00E+00
Thallium	0.00E+00	0.00E+00	0.00E+00
Vanadium	2.74E-05	7.51E-04	1.05E-02
Zinc	5.66E-05	1.55E-03	2.18E-02

Truck Exhaust

A. Emissions from on-site truck travel exhaust

				emission factor (lb/hour) /a/						
Equipment/t	#	Hours/b/	Total hrs	CO	ROG	NOx	SOx	PM10	DPM	
735 Truck	5	10	50	2.99	0.85	4.5	0.0145	0.1683	0.133	g/mile (CARB EMFAC2007)

Daily Emissions			lb/day		
CO	ROG	NOx	SOx	PM10	DPM
150	43	225	1	8	0.44

	PM10	CO	ROG	NOx	SOX	DPM
Phase 4 Exhaust Emissions (pounds/day)	25.9	1244	115	561	37.2	1.14
Phase 4 Exhaust Emissions (tons/year)	0.62	29.9	2.77	13.5	0.89	0.03
Phase 4 Exhaust Emissions (pounds/year)	1,242	59,729	5,544	26,947	1,787	54.8
Phase 4 Exhaust Emissions (pounds/70-year)						3.91

Table C-27
Hual Trucks - Past Conditions

		DPM	1982	1985	1990	1995	2000	2005	lbs/hr	lbs/yr	70-year lbs/yr
Quarry Haul											
Number of Sources	from AERMOD		46	46	46	46	46	46			
Link Length (meters)	from AERMOD		1040	1040	1040	1040	1040	1040			
Volume (VPH)			37	37	37	37	37	37			
Mass Emission Rate (gr/mi)	from EMFAC		2.477	2.442	2.479	1.496	1.166	0.793			
Emission Rate (gr/sec) = ((Mass Emission Rate x Volume)/(1609.3 m/mile) x (3600 sec/hr)) x (Link Length)											
									0.132	274.6	80.7
Emission Rate (gr/sec)			1.66E-02	1.64E-02	1.66E-02	1.00E-02	7.82E-03	5.32E-03		1.66E-02	4.89E-03
Emission Rate (gr/sec/source)			3.61E-04	3.56E-04	3.62E-04	2.18E-04	1.70E-04	1.16E-04			
Quarry Unpaved											
Number of Sources	from AERMOD		22	22	22	22	22	22			
Link Length (meters)	from AERMOD		480	480	480	480	480	480			
Volume (VPH)			37	37	37	37	37	37			
Mass Emission Rate (gr/mi)	from EMFAC		2.477	2.442	2.479	1.496	1.166	0.793			
Emission Rate (gr/sec) = ((Mass Emission Rate x Volume)/(1609.3 m/mile) x (3600 sec/hr)) x (Link Length)											
									0.061	126.7	37.2
Emission Rate (gr/sec)			7.67E-03	7.56E-03	7.68E-03	4.63E-03	3.61E-03	2.46E-03		7.68E-03	2.26E-03
Emission Rate (gr/sec/source)			3.49E-04	3.44E-04	3.49E-04	2.11E-04	1.64E-04	1.12E-04			
Brickyard Haul											
Number of Sources	from AERMOD		63	63	63	63	63	63			
Link Length (meters)	from AERMOD		1310	1310	1310	1310	1310	1310			
Volume (VPH)			4	4	4	4	4	4			
Mass Emission Rate (gr/mi)	from EMFAC		2.477	2.442	2.479	1.496	1.166	0.793			
Emission Rate (gr/sec) = ((Mass Emission Rate x Volume)/(1609.3 m/mile) x (3600 sec/hr)) x (Link Length)											
									0.018	37.0	10.9
Emission Rate (gr/sec)			2.24E-03	2.21E-03	2.24E-03	1.35E-03	1.05E-03	7.17E-04		2.24E-03	6.59E-04
Emission Rate (gr/sec/source)			3.56E-05	3.51E-05	3.56E-05	2.15E-05	1.67E-05	1.14E-05			
Haul Route											
Number of Sources	from AERMOD		197	197	197	197	197	197			
Link Length (meters)	from AERMOD		4700	4700	4700	4700	4700	4700			
Volume (VPH)			41	41	41	41	41	41			
Mass Emission Rate (gr/mi)	from EMFAC		2.477	2.442	2.479	1.496	1.166	0.793			
Emission Rate (gr/sec) = ((Mass Emission Rate x Volume)/(1609.3 m/mile) x (3600 sec/hr)) x (Link Length)											
									0.660	1373.6	403.7
Emission Rate (gr/sec)			8.31E-02	8.20E-02	8.32E-02	5.02E-02	3.91E-02	2.66E-02		8.32E-02	2.45E-02
Emission Rate (gr/sec/source)			4.22E-04	4.16E-04	4.22E-04	2.55E-04	1.99E-04	1.35E-04			

Table C-28
Hual Trucks - Existing Conditions

		DPM 2008	lbs/hr	lbs/yr	70-year lbs/yr
Quarry Haul					
Number of Sources	from AERMOD	46			
Link Length (meters)	from AERMOD	1040			
Volume (VPH)		31			
Mass Emission Rate (gr/mi)	from EMFAC	0.604			
Emission Rate (gr/sec) = ((Mass Emission Rate x Volume)/(1609.3 m/mile) x (3600 sec/hr)) x (Link Length)					
			0.027	55.9	2.4
Emission Rate (gr/sec)		3.39E-03		3.39E-03	1.45E-04
Emission Rate (gr/sec/source)		7.37E-05			
Quarry Unpaved					
Number of Sources	from AERMOD	22			
Link Length (meters)	from AERMOD	480			
Volume (VPH)		31			
Mass Emission Rate (gr/mi)	from EMFAC	0.604			
Emission Rate (gr/sec) = ((Mass Emission Rate x Volume)/(1609.3 m/mile) x (3600 sec/hr)) x (Link Length)					
			0.012	25.8	1.1
Emission Rate (gr/sec)		1.56E-03		1.56E-03	6.70E-05
Emission Rate (gr/sec/source)		7.11E-05			
Brickyard Haul					
Number of Sources	from AERMOD	63			
Link Length (meters)	from AERMOD	1310			
Volume (VPH)		4			
Mass Emission Rate (gr/mi)	from EMFAC	0.604			
Emission Rate (gr/sec) = ((Mass Emission Rate x Volume)/(1609.3 m/mile) x (3600 sec/hr)) x (Link Length)					
			0.004	9.0	0.4
Emission Rate (gr/sec)		5.46E-04		5.46E-04	2.34E-05
Emission Rate (gr/sec/source)		8.67E-06			
Haul Route					
Number of Sources	from AERMOD	197			
Link Length (meters)	from AERMOD	4700			
Volume (VPH)		35			
Mass Emission Rate (gr/mi)	from EMFAC	0.604			
Emission Rate (gr/sec) = ((Mass Emission Rate x Volume)/(1609.3 m/mile) x (3600 sec/hr)) x (Link Length)					
			0.137	285.1	12.2
Emission Rate (gr/sec)		1.73E-02		1.73E-02	7.40E-04
Emission Rate (gr/sec/source)		8.77E-05			

Table C-29
Hual Trucks - Proposed Conditions

		DPM	2008	2010	2015	2020	2024	lbs/hr	lbs/yr	70-year lbs/yr
Quarry Haul										
Number of Sources	from AERMOD		46	46	46	46	46			
Link Length (meters)	from AERMOD		1040	1040	1040	1040	1040			
Volume (VPH)			31	31	31	31	31			
Mass Emission Rate (gr/mi)	from EMFAC		0.604	0.483	0.249	0.133	0.091			
Emission Rate (gr/sec) = ((Mass Emission Rate x Volume)/(1609.3 m/mile) x (3600 sec/hr)) x (Link Length)										
								0.027	55.9	8.7
Emission Rate (gr/sec)			3.39E-03	2.71E-03	1.40E-03	7.46E-04	5.10E-04		3.39E-03	5.30E-04
Emission Rate (gr/sec/source)			7.37E-05	5.89E-05	3.04E-05	1.62E-05	1.11E-05			
Quarry Unpaved										
Number of Sources	from AERMOD		22	22	22	22	22			
Link Length (meters)	from AERMOD		480	480	480	480	480			
Volume (VPH)			31	31	31	31	31			
Mass Emission Rate (gr/mi)	from EMFAC		0.604	0.483	0.249	0.133	0.091			
Emission Rate (gr/sec) = ((Mass Emission Rate x Volume)/(1609.3 m/mile) x (3600 sec/hr)) x (Link Length)										
								0.012	25.8	4.0
Emission Rate (gr/sec)			1.56E-03	1.25E-03	6.45E-04	3.44E-04	2.36E-04		1.56E-03	2.44E-04
Emission Rate (gr/sec/source)			7.11E-05	5.68E-05	2.93E-05	1.57E-05	1.07E-05			
Brickyard Haul										
Number of Sources	from AERMOD		63	63	63	63	63			
Link Length (meters)	from AERMOD		1310	1310	1310	1310	1310			
Volume (VPH)			4	4	4	4	4			
Mass Emission Rate (gr/mi)	from EMFAC		0.604	0.483	0.249	0.133	0.091			
Emission Rate (gr/sec) = ((Mass Emission Rate x Volume)/(1609.3 m/mile) x (3600 sec/hr)) x (Link Length)										
								0.004	9.0	1.4
Emission Rate (gr/sec)			5.46E-04	4.37E-04	2.25E-04	1.20E-04	8.23E-05		5.46E-04	8.54E-05
Emission Rate (gr/sec/source)			8.67E-06	6.93E-06	3.57E-06	1.91E-06	1.31E-06			
Haul Route										
Number of Sources	from AERMOD		197	197	197	197	197			
Link Length (meters)	from AERMOD		4700	4700	4700	4700	4700			
Volume (VPH)			35	35	35	35	35			
Mass Emission Rate (gr/mi)	from EMFAC		0.604	0.483	0.249	0.133	0.091			
Emission Rate (gr/sec) = ((Mass Emission Rate x Volume)/(1609.3 m/mile) x (3600 sec/hr)) x (Link Length)										
								0.137	285.1	44.6
Emission Rate (gr/sec)			1.73E-02	1.38E-02	7.12E-03	3.80E-03	2.60E-03		1.73E-02	2.70E-03
Emission Rate (gr/sec/source)			8.77E-05	7.01E-05	3.61E-05	1.93E-05	1.32E-05			

Table C-30
Hula Trucks - Proposed at 1982 Production Conditions

	DPM	2008	2010	2015	2020	2024	lbs/hr	lbs/yr	70-year lbs/yr
Quarry Haul									
Number of Sources	from AERMOD	46	46	46	46	46			
Link Length (meters)	from AERMOD	1040	1040	1040	1040	1040			
Volume (VPH)		31	31	31	31	31			
Mass Emission Rate (gr/mi)	from EMFAC	0.604	0.483	0.249	0.133	0.091			
Emission Rate (gr/sec) = ((Mass Emission Rate x Volume)/(1609.3 m/mile) x (3600 sec/hr)) x (Link Length)									
							0.027	55.9	8.7
Emission Rate (gr/sec)		3.39E-03	2.71E-03	1.40E-03	7.46E-04	5.10E-04		3.39E-03	5.30E-04
Emission Rate (gr/sec/source)		7.37E-05	5.89E-05	3.04E-05	1.62E-05	1.11E-05			
Quarry Unpaved									
Number of Sources	from AERMOD	22	22	22	22	22			
Link Length (meters)	from AERMOD	480	480	480	480	480			
Volume (VPH)		31	31	31	31	31			
Mass Emission Rate (gr/mi)	from EMFAC	0.604	0.483	0.249	0.133	0.091			
Emission Rate (gr/sec) = ((Mass Emission Rate x Volume)/(1609.3 m/mile) x (3600 sec/hr)) x (Link Length)									
							0.012	25.8	4.0
Emission Rate (gr/sec)		1.56E-03	1.25E-03	6.45E-04	3.44E-04	2.36E-04		1.56E-03	2.44E-04
Emission Rate (gr/sec/source)		7.11E-05	5.68E-05	2.93E-05	1.57E-05	1.07E-05			
Brickyard Haul									
Number of Sources	from AERMOD	63	63	63	63	63			
Link Length (meters)	from AERMOD	1310	1310	1310	1310	1310			
Volume (VPH)		4	4	4	4	4			
Mass Emission Rate (gr/mi)	from EMFAC	0.604	0.483	0.249	0.133	0.091			
Emission Rate (gr/sec) = ((Mass Emission Rate x Volume)/(1609.3 m/mile) x (3600 sec/hr)) x (Link Length)									
							0.004	9.0	1.4
Emission Rate (gr/sec)		5.46E-04	4.37E-04	2.25E-04	1.20E-04	8.23E-05		5.46E-04	8.54E-05
Emission Rate (gr/sec/source)		8.67E-06	6.93E-06	3.57E-06	1.91E-06	1.31E-06			
Haul Route									
Number of Sources	from AERMOD	197	197	197	197	197			
Link Length (meters)	from AERMOD	4700	4700	4700	4700	4700			
Volume (VPH)		35	35	35	35	35			
Mass Emission Rate (gr/mi)	from EMFAC	0.604	0.483	0.249	0.133	0.091			
Emission Rate (gr/sec) = ((Mass Emission Rate x Volume)/(1609.3 m/mile) x (3600 sec/hr)) x (Link Length)									
							0.137	285.1	44.6
Emission Rate (gr/sec)		1.73E-02	1.38E-02	7.12E-03	3.80E-03	2.60E-03		1.73E-02	2.70E-03
Emission Rate (gr/sec/source)		8.77E-05	7.01E-05	3.61E-05	1.93E-05	1.32E-05			

Table C-31
Offroad Equipment - Past Conditions

tons/year	Year	ROG-Exhaus	CO-Exhaus	NOx-Exhaus	CO2 Exhaust	SOx-Exhaus	M10-Exhau	M2.5-Exhau	PM-Exhaus	N2O Exhau	CH4 Exhau
Total Onsite	1982	9.88	72.51	63.09	2,355.81	4.16	4.53	4.52	4.52	0.03	0.89
Total Offsite	1982	21.68	105.31	178.67	16,040.05	29.71	22.98	20.82	20.65	-	1.01
Total	1982	31.56	177.82	241.76	18,395.86	33.87	27.51	25.34	25.16	0.03	1.90
Total Onsite	1985	9.06	65.02	61.95	2,339.84	2.93	4.34	4.33	4.32	0.03	0.83
Total Offsite	1985	21.31	103.56	178.42	16,040.05	30.63	22.67	20.53	20.36	-	0.99
Total	1985	30.37	168.58	240.37	18,379.89	33.56	27.00	24.86	24.68	0.03	1.82
Total Onsite	1990	6.96	50.90	52.85	2,316.68	2.63	3.52	3.51	3.51	0.03	0.65
Total Offsite	1990	21.13	102.65	178.16	16,040.05	30.63	23.00	20.84	20.66	-	0.98
Total	1990	28.09	153.55	231.01	18,356.73	33.26	26.51	24.35	24.17	0.03	1.64
Total Onsite	1995	5.12	31.63	37.74	2,306.69	0.21	2.01	2.01	2.01	0.03	0.49
Total Offsite	1995	13.66	85.96	168.16	16,040.05	1.43	14.09	12.65	12.47	-	0.63
Total	1995	18.78	117.59	205.90	18,346.74	1.64	16.10	14.66	14.48	0.03	1.12
Total Onsite	2000	3.80	18.56	31.84	2,295.97	0.19	1.51	1.50	1.50	0.03	0.37
Total Offsite	2000	12.45	74.31	172.28	16,040.05	1.43	11.09	9.89	9.72	-	0.58
Total	2000	16.26	92.86	204.13	18,336.02	1.62	12.60	11.40	11.22	0.03	0.94
Total Onsite	2005	2.72	11.20	25.07	2,289.00	0.19	1.12	1.11	1.11	0.03	0.26
Total Offsite	2005	10.38	57.12	163.43	16,040.05	1.43	7.72	6.79	6.61	-	0.48
Total	2005	13.09	68.32	188.50	18,329.04	1.62	8.84	7.90	7.72	0.03	0.74

pounds/day	Year	ROG-Exhaus	CO-Exhaus	NOx-Exhaus	CO2 Exhaust	SOx-Exhaus	M10-Exhau	M2.5-Exhau	PM-Exhaus	N2O Exhau	CH4 Exhau
Total Onsite	1982	63.11	463.32	403.11	15,053.12	26.56	28.95	28.88	28.85	0.18	5.68
Total Offsite	1982	138.54	672.94	1,141.66	102,492.32	189.83	146.85	133.05	131.93	-	6.44
Total	1982	201.65	1,136.26	1,544.77	117,545.45	216.39	175.80	161.93	160.79	0.18	12.12
Total Onsite	1985	57.89	415.44	395.86	14,951.05	18.75	27.72	27.66	27.63	0.18	5.30
Total Offsite	1985	136.20	661.75	1,140.06	102,492.32	195.69	144.82	131.19	130.07	-	6.34
Total	1985	194.09	1,077.19	1,535.93	117,443.37	214.44	172.55	158.85	157.70	0.18	11.64
Total Onsite	1990	44.48	325.25	337.68	14,803.07	16.81	22.46	22.45	22.43	0.18	4.18
Total Offsite	1990	135.02	655.89	1,138.41	102,492.32	195.69	146.96	133.16	132.04	-	6.29
Total	1990	179.51	981.14	1,476.09	117,295.40	212.50	169.42	155.61	154.47	0.18	10.46
Total Onsite	1995	32.70	202.12	241.16	14,739.21	1.36	12.86	12.86	12.83	0.18	3.11
Total Offsite	1995	87.30	549.26	1,074.49	102,492.32	9.11	90.02	80.80	79.68	-	4.05
Total	1995	120.00	751.37	1,315.65	117,231.53	10.47	102.88	93.66	92.51	0.18	7.16
Total Onsite	2000	24.30	118.57	203.48	14,670.74	1.24	9.62	9.62	9.59	0.18	2.33
Total Offsite	2000	79.58	474.79	1,100.86	102,492.32	9.11	70.89	63.22	62.11	-	3.68
Total	2000	103.88	593.37	1,304.34	117,163.06	10.34	80.52	72.84	71.69	0.18	6.01
Total Onsite	2005	17.35	71.57	160.21	14,626.17	1.23	7.17	7.11	7.09	0.18	1.66
Total Offsite	2005	66.31	364.96	1,044.29	102,492.32	9.11	49.32	43.36	42.24	-	3.09
Total	2005	83.67	436.54	1,204.50	117,118.50	10.34	56.49	50.47	49.33	0.18	4.75

Total Onsite	lb/hr	3.61
	lb/year (70-yr)	2,200
	lb/year	9,031

Table C-32
Offroad Equipment - Existing Conditions

tons/year	Year	ROG-Exhaus	CO-Exhaus	NOx-Exhaus	CO2 Exhaust	SOx-Exhaus	PM10-Exhau	PM2.5-Exhau	PM-Exhaus	N2O Exhau	CH4 Exhau
Total Onsite	2008	1.47	7.54	21.08	2,287.03	0.02	0.70	0.69	0.69	0.03	0.22
Total Offsite	2008	7.63	39.74	119.13	13,384.41	0.13	5.02	4.35	4.20	-	0.35
Total	2008	9.10	47.28	140.21	15,671.44	0.15	5.72	5.04	4.89	0.03	0.57

pounds/day	Year	ROG-Exhaus	CO-Exhaus	NOx-Exhaus	CO2 Exhaust	SOx-Exhaus	PM10-Exhau	PM2.5-Exhau	PM-Exhaus	N2O Exhau	CH4 Exhau
Total Onsite	2008	11.60	52.98	132.05	14,613.60	0.15	5.08	5.03	5.00	0.18	1.38
Total Offsite	2008	48.76	253.92	761.22	85,523.40	0.80	32.05	27.78	26.85	-	2.27
Total	2008	60.36	306.90	893.27	100,136.99	0.95	37.12	32.81	31.85	0.18	3.65

Total Onsite	lb/hr	0.63
	lb/year (70-yr)	59.10
	lb/year	1,379.05

Table C-33
Offroad Equipment - Proposed Conditions

tons/year	Year	ROG-Exhaus	CO-Exhaus	NOx-Exhaus	CO2 Exhaust	SOx-Exhaus	M10-Exhau	M2.5-Exhau	PM-Exhaus	N2O Exhau	CH4 Exhau
Total Onsite	2008	1.75	8.64	25.25	2,704.50	0.03	0.84	0.83	0.83	0.03	0.26
Total Offsite	2008	7.63	39.74	119.13	13,384.41	0.13	5.02	4.35	4.20	-	0.35
Total	2008	9.38	48.38	144.38	16,088.91	0.15	5.85	5.18	5.03	0.03	0.61
Total Onsite	2010	1.56	7.55	21.92	2,703.20	0.03	0.74	0.73	0.73	0.03	0.23
Total Offsite	2010	6.66	33.28	101.16	13,384.41	0.13	4.10	3.51	3.36	-	0.31
Total	2010	8.22	40.83	123.08	16,087.61	0.15	4.84	4.24	4.09	0.03	0.53
Total Onsite	2015	1.16	5.98	13.28	2,701.37	0.03	0.42	0.42	0.41	0.03	0.17
Total Offsite	2015	4.35	19.47	56.85	13,384.41	0.13	2.33	1.88	1.73	-	0.20
Total	2015	5.50	25.45	70.13	16,085.78	0.15	2.75	2.30	2.15	0.03	0.37
Total Onsite	2020	0.84	5.37	7.02	2,700.70	0.03	0.21	0.21	0.21	0.03	0.12
Total Offsite	2020	2.94	12.03	32.82	13,384.41	0.13	1.45	1.07	0.93	-	0.14
Total	2020	3.79	17.40	39.84	16,085.11	0.15	1.66	1.28	1.13	0.03	0.26
Total Onsite	2024	0.70	5.16	4.40	2,700.39	0.03	0.13	0.12	0.12	0.03	0.10
Total Offsite	2024	2.36	9.17	23.80	13,384.41	0.13	1.13	0.78	0.63	-	0.11
Total	2024	3.06	14.34	28.20	16,084.80	0.15	1.26	0.90	0.75	0.03	0.21

pounds/day	Year	ROG-Exhaus	CO-Exhaus	NOx-Exhaus	CO2 Exhaust	SOx-Exhaus	M10-Exhau	M2.5-Exhau	PM-Exhaus	N2O Exhau	CH4 Exhau
Total Onsite	2008	13.83	61.01	158.22	17,281.17	0.17	6.07	6.02	5.99	0.18	1.63
Total Offsite	2008	48.76	253.92	761.22	85,523.40	0.80	32.05	27.78	26.85	-	2.27
Total	2008	62.58	314.92	919.44	102,804.57	0.97	38.12	33.80	32.84	0.18	3.90
Total Onsite	2010	12.34	53.44	137.35	17,272.84	0.17	5.38	5.33	5.30	0.18	1.46
Total Offsite	2010	42.58	212.63	646.37	85,523.40	0.80	26.18	22.40	21.47	-	1.96
Total	2010	54.92	266.07	783.72	102,796.24	0.97	31.56	27.73	26.77	0.18	3.41
Total Onsite	2015	9.20	42.65	83.23	17,261.13	0.17	3.04	3.03	3.01	0.18	1.08
Total Offsite	2015	27.78	124.40	363.25	85,523.40	0.80	14.89	12.00	11.07	-	1.29
Total	2015	36.97	167.05	446.48	102,784.53	0.97	17.93	15.03	14.07	0.18	2.37
Total Onsite	2020	6.73	38.46	43.99	17,256.84	0.17	1.55	1.54	1.52	0.18	0.79
Total Offsite	2020	18.80	76.85	209.69	85,523.40	0.80	9.24	6.84	5.91	-	0.89
Total	2020	25.53	115.30	253.69	102,780.24	0.97	10.80	8.39	7.43	0.18	1.68
Total Onsite	2024	5.55	37.07	27.57	17,254.86	0.17	0.90	0.89	0.87	0.18	0.65
Total Offsite	2024	15.11	58.62	152.09	85,523.40	0.80	7.24	4.98	4.04	-	0.71
Total	2024	20.67	95.69	179.66	102,778.25	0.97	8.14	5.87	4.91	0.18	1.37

Total Onsite	lb/hr	0.75
	lb/year (70-yr)	258
	lb/year	1,653

Table C-34
Offroad Equipment - Proposed at 1982 Production Conditions

tons/year	Year	ROG-Exhau	CO-Exhaus	NOx-Exhaus	CO2 Exhaust	SOx-Exhaus	PM10-Exhau	PM2.5-Exhau	PM-Exhaus	N2O Exhau	CH4 Exhau
Total Onsite	2008	1.47	7.54	21.08	2,287.03	0.02	0.70	0.69	0.69	0.03	0.22
Total Offsite	2008	7.63	39.74	119.13	13,384.41	0.13	5.02	4.35	4.20	-	0.35
Total	2008	9.10	47.28	140.21	15,671.44	0.15	5.72	5.04	4.89	0.03	0.57
Total Onsite	2010	1.31	6.56	18.29	2,285.72	0.02	0.62	0.61	0.61	0.03	0.19
Total Offsite	2010	6.66	33.28	101.16	13,384.41	0.13	4.10	3.51	3.36	-	0.31
Total	2010	7.97	39.83	119.45	15,670.14	0.15	4.72	4.12	3.97	0.03	0.50
Total Onsite	2015	0.97	5.14	11.08	2,283.89	0.02	0.35	0.35	0.35	0.03	0.14
Total Offsite	2015	4.35	19.47	56.85	13,384.41	0.13	2.33	1.88	1.73	-	0.20
Total	2015	5.31	24.61	67.93	15,668.30	0.15	2.68	2.23	2.08	0.03	0.34
Total Onsite	2020	0.71	4.58	5.85	2,283.22	0.02	0.18	0.18	0.18	0.03	0.10
Total Offsite	2020	2.94	12.03	32.82	13,384.41	0.13	1.45	1.07	0.93	-	0.14
Total	2020	3.65	16.60	38.67	15,667.63	0.15	1.63	1.25	1.10	0.03	0.24
Total Onsite	2025	0.58	4.38	3.67	2,282.91	0.02	0.11	0.10	0.10	0.03	0.09
Total Offsite	2025	2.36	9.17	23.80	13,384.41	0.13	1.13	0.78	0.63	-	0.11
Total	2025	2.95	13.55	27.48	15,667.32	0.15	1.24	0.88	0.73	0.03	0.20

pounds/day	Year	ROG-Exhau	CO-Exhaus	NOx-Exhaus	CO2 Exhaust	SOx-Exhaus	PM10-Exhau	PM2.5-Exhau	PM-Exhaus	N2O Exhau	CH4 Exhau
Total Onsite	2008	11.60	52.98	132.05	14,613.60	0.15	5.08	5.03	5.00	0.18	1.38
Total Offsite	2008	48.76	253.92	761.22	85,523.40	0.80	32.05	27.78	26.85	-	2.27
Total	2008	60.36	306.90	893.27	100,136.99	0.95	37.12	32.81	31.85	0.18	3.65
Total Onsite	2010	10.34	46.23	114.61	14,605.26	0.15	4.51	4.45	4.42	0.18	1.23
Total Offsite	2010	42.58	212.63	646.37	85,523.40	0.80	26.18	22.40	21.47	-	1.96
Total	2010	52.92	258.86	760.98	100,128.66	0.95	30.68	26.85	25.89	0.18	3.19
Total Onsite	2015	7.69	36.53	69.44	14,593.56	0.15	2.54	2.54	2.51	0.18	0.91
Total Offsite	2015	27.78	124.40	363.25	85,523.40	0.80	14.89	12.00	11.07	-	1.29
Total	2015	35.47	160.93	432.69	100,116.95	0.95	17.43	14.54	13.58	0.18	2.20
Total Onsite	2020	5.62	32.69	36.66	14,589.26	0.15	1.30	1.30	1.27	0.18	0.67
Total Offsite	2020	18.80	76.85	209.69	85,523.40	0.80	9.24	6.84	5.91	-	0.89
Total	2020	24.42	109.54	246.36	100,112.66	0.95	10.55	8.14	7.18	0.18	1.56
Total Onsite	2025	4.64	31.39	23.01	14,587.28	0.15	0.76	0.75	0.73	0.18	0.55
Total Offsite	2025	15.11	58.62	152.09	85,523.40	0.80	7.24	4.98	4.04	-	0.71
Total	2025	19.75	90.01	175.11	100,110.68	0.95	8.01	5.73	4.77	0.18	1.26

Total Onsite	lb/hr	6.25E-01
	lb/year (70-yr)	2.16E+02
	lb/year	1,379.05

Soil Samples from November 20, 2007

Samples analyzed by McCampbell analytical, Inc.

Table 1 Inorganic chemical concentration of soil samples collected on November 20, 2007

Inorganic Chemicals (mg/Kg)	SRRQ Samples			Background Samples			Screening Levels		Reporting Limit (mg/Kg)
	South Hill 4 (soil)	South Hill 5 (soil)	Bag House -1 (powder)	North Brick-1 (soil)	Heritage Drive (soil)	N. San Pedro Rd (soil)	SFRWQCB[1]	California EPA[2]	
Antimony	0.67	ND	ND	ND	ND	ND	NC	30	0.5
Arsenic	6.8	2.5	4.7	4.1	4.1	4.3	0.06	0.07	0.5
Barium	360	140	520	700	120	120	NC	5,200	5
Beryllium	1.2	0.8	1.1	0.83	0.65	0.51	1,100	1,500	0.5
Cadmium	ND	ND	ND	ND	ND	ND	1.7	1.7	0.25
Chromium	9.2	9.3	16	11	15	9.4	NC[3]	NC[4]	0.5
Cobalt	22	4.9	12	7.1	4.2	3.4	910	660	0.5
Copper	12	7.4	13	11	11	16	NC	3,000	0.5
Lead	24	9	14	10	9.3	9.7	NC	150	0.5
Mercury	4.2	0.085	2.1	3.4	0.13	0.27	NC	18	0.05
Molybdenum	0.72	0.87	0.85	0.64	ND	ND	NC	380	0.5
Nickel	27	11	26	18	14	11	9,800	1,600	0.5
Selenium	0.6	ND	ND	ND	ND	ND	NC	380	0.5
Silver	ND	ND	ND	ND	ND	ND	NC	380	0.5
Thallium	ND	ND	ND	ND	ND	ND	NC	5	0.5
Vanadium	26	19	29	21	27	16	NC	530	0.5
Zinc	60	30	58	47	29	33	NC	23,000	5

Notes:

NC = no carcinogenic level identified; ND = not detectable

No asbestos was detected in any of the samples

Acid digestion extraction was used for all samples

[1]SF Bay RWQCB Residential Exposure Screening Levels, Carcinogens (Risk = 10-6) (Table K-1, February 2005)

[2]California EPA Exposure Screening Levels, Carcinogens (Risk = 10-6) (Table K-1, February 2005)

[3]Cr6 = 16 mg/kg; Cr3 = NC

[4]Cr6 = 17 mg/kg; Cr3 = 100,000

BIODIESEL EMISSIONS

Biodiesel is the first and only alternative fuel to have a complete evaluation of emission results and potential health effects submitted to the U.S. Environmental Protection Agency (EPA) under the Clean Air Act Section 211(b). These programs include the most stringent emissions testing protocols ever required by EPA for certification of fuels or fuel additives. The data gathered complete the most thorough inventory of the environmental and human health effects attributes that current technology will allow.

EPA has surveyed the large body of biodiesel emissions studies and averaged the Health Effects testing results with other major studies. The results are seen in the table below. To view EPA's report titled "A Comprehensive Analysis of Biodiesel Impacts on Exhaust Emissions" visit: www.epa.gov/otaq/models/analysis/biodsl/p02001.pdf.

AVERAGE BIODIESEL EMISSIONS COMPARED TO CONVENTIONAL DIESEL, ACCORDING TO EPA

Emission Type	B100	B20
Regulated		
Total Unburned Hydrocarbons	-67%	-20%
Carbon Monoxide	-48%	-12%
Particulate Matter	-47%	-12%
Nox	+10%	+2% to -2%
Non-Regulated		
Sulfates	-100%	-20%*
PAH (Polycyclic Aromatic Hydrocarbons)**	-80%	-13%
nPAH (nitrated PAH's)**	-90%	-50%***
Ozone potential of speciated HC	-50%	-10%

*** Estimated from B100 result**
**** Average reduction across all compounds measured**
***** 2-nitroflourine results were within test method variability**

(more)

The ozone (smog) forming potential of biodiesel hydrocarbons is less than diesel fuel. The ozone forming potential of the speciated hydrocarbon emissions is 50 percent less than that measured for diesel fuel.

Sulfur emissions are essentially eliminated with pure biodiesel. The exhaust emissions of sulfur oxides and sulfates (major components of acid rain) from biodiesel are essentially eliminated compared to diesel.

Criteria pollutants are reduced with biodiesel use. Tests show the use of biodiesel in diesel engines results in substantial reductions of unburned hydrocarbons, carbon monoxide, and particulate matter. Emissions of nitrogen oxides stay the same or are slightly increased.

Carbon Monoxide -- The exhaust emissions of carbon monoxide (a poisonous gas) from biodiesel are on average 48 percent lower than carbon monoxide emissions from diesel.

Particulate Matter -- Breathing particulate has been shown to be a human health hazard. The exhaust emissions of particulate matter from biodiesel are about 47 percent lower than overall particulate matter emissions from diesel.

Hydrocarbons -- The exhaust emissions of total hydrocarbons (a contributing factor in the localized formation of smog and ozone) are on average 67 percent lower for biodiesel than diesel fuel.

Nitrogen Oxides -- NOx emissions from biodiesel increase or decrease depending on the engine family and testing procedures. NOx emissions (a contributing factor in the localized formation of smog and ozone) from pure (100%) biodiesel increase on average by 10 percent. However, biodiesel's lack of sulfur allows the use of NOx control technologies that cannot be used with conventional diesel. Additionally, some companies have successfully developed additives to reduce Nox emissions in biodiesel blends.

Biodiesel reduces the health risks associated with petroleum diesel. Biodiesel emissions show decreased levels of polycyclic aromatic hydrocarbons (PAH) and nitrated polycyclic aromatic hydrocarbons (nPAH), which have been identified as potential cancer causing compounds. In Health Effects testing, PAH compounds were reduced by 75 to 85 percent, with the exception of benzo(a)anthracene, which was reduced by roughly 50 percent. Targeted nPAH compounds were also reduced dramatically with biodiesel, with 2-nitrofluorene and 1-nitropyrene reduced by 90 percent, and the rest of the nPAH compounds reduced to only trace levels.

APPENDIX E
Biological Resources

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TABLE E-1
SPECIAL STATUS SPECIES CONSIDERED IN THE EVALUATION OF THE PROJECT SITE

Common Name *Scientific Name*	Listing Status USFWS/ CDFG/CNPS[1]	General Habitat	Potential for Species Occurrence Within the Project Area	Period of Identification
Species Listed or Proposed for Listing				
ANIMALS				
Invertebrates				
California freshwater shrimp *Syncaris pacifica*	FE/--	Low elevation, low gradient, small, perennial coastal streams.	**Low.** No suitable habitat available.	Year-round
Myrtle's silverspot butterfly *Speyeria zerene myrtleae*	FE/--	Dunes, scrub, and grasslands adjacent to the coast.	**Low.** Limited, marginally suitable habitat present, but only known populations in north Marin county.	June-September
Fish				
Sacramento winter-run Chinook salmon *Oncorhynchus tshawytscha*	FE/CE	Spawns and rears in Sacramento River and tributaries where gravelly substrate and shaded riparian habitat occurs.	**Moderate.** Migrates through project vicinity. May occasionally stray into project area.	Year-round
Central Valley spring-run Chinook salmon *Oncorhynchus tshawytscha*	FT/CT	Spawns and rears in Sacramento River and tributaries where gravelly substrate and shaded riparian habitat occurs.	**Moderate.** Migrates through project vicinity. May occasionally stray into project area.	Year-round
Central California coast steelhead *Oncorhynchus mykiss*	FT/CSC	Spawns and rears in coastal streams between the Russian River and Aptos Creek, as well as drainages of the SF and San Pablo Bays, where gravelly substrate and shaded riparian habitat occurs.	**Moderate.** Migrates through project vicinity. May occasionally stray into project area.	Year-round
California Central Valley steelhead *Oncorhynchus mykiss*	FT/CSC	Spawns and rears in the Sacramento/ San Joaquin River systems and tributaries where gravelly substrate and shaded riparian habitat occurs.	**Moderate.** Migrates through project vicinity. May occasionally stray into project area.	Year-round

[1] Key to listing status codes can be found at the end of Table1.

TABLE E-1
SPECIAL STATUS SPECIES CONSIDERED IN THE EVALUATION OF THE PROJECT SITE (CONT.)

Common Name *Scientific Name*	Listing Status USFWS/ CDFG/CNPS	General Habitat	Potential for Species Occurrence Within the Project Area	Period of Identification
Species Listed or Proposed for Listing (cont.)				
ANIMALS (CONT.)				
Fish (cont.)				
Delta smelt *Hypomesus transpacificus*	FT/CT	Restricted to the Sacramento-San Joaquin Delta from San Pablo Bay upstream through the Delta in Contra Costa, Sacramento, San Joaquin, Solano and Yolo counties.	**Moderate.** May be present in project vicinity.	Year-round
Southern DPS green sturgeon *Acipenser medirostris*	FT/CSC	Inhabit near-shore marine waters from Mexico to the Bering Sea. Utilize the waters of the Delta for juvenile rearing, adult holding, and migratory movements to and from Upper Sacramento River spawning grounds.	**Moderate.** May use project vicinity as migratory, rearing, or resting habitat. Juveniles may be present year-round.	Year-round
Amphibians				
California tiger salamander *Ambystoma californiense*	FE/CSC	Wintering sites occur in grasslands occupied by burrowing mammals; breed in ponds and vernal pools	**Low.** Several ponds on site, however limited grassland habitat is only marginally suitable. There are no records for this species in Marin County.	Winter rains and March-April
California red-legged frog *Rana aurora draytonii*	FT/CSC	Breed in stock ponds, pools, and slow-moving streams	**Low to Moderate.** Potentially suitable aquatic habitat present, documented in Tiburon.	May-August
Birds				
Western snowy plover *Charadrius alexandrius nivosus*	FT/CSC	Sandy coastal beaches, salt pans, coastal dredged spoils sites, dry salt ponds, salt pond levees and gravel bars. Nests in sandy substrate and forages in sandy marine and estuarine bodies.	**Low**. No nesting habitat in or adjacent to project area. Potential foraging habitat along the tidal areas of the S.F. Bay.	Year-round
Short-tailed albatross *Diomedea albatrus*	FE/--	Pelagic bird with breeding colonies limited to 2 Japanese islands.	**Low**. No wintering or nesting habitat, ~~however may forage~~ species is highly unlikely to occur in the project area.	June-October
American peregrine falcon *Falco peregrinus anatum*	--/CE	Nests in cliffs and outcrops	**Low.** Marginally suitable habitat available, but located in close proximity to high levels of disturbance.	Year-round

TABLE E-1
SPECIAL STATUS SPECIES CONSIDERED IN THE EVALUATION OF THE PROJECT SITE (CONT.)

Common Name *Scientific Name*	Listing Status USFWS/ CDFG/CNPS	General Habitat	Potential for Species Occurrence Within the Project Area	Period of Identification
Species Listed or Proposed for Listing (cont.)				
ANIMALS (CONT.)				
Birds (cont.)				
California black rail *Laterallus jamaicensis coturniculus*	--/CT	Salt marshes along large bays, also freshwater marshes	**Low.** Marginally suitable habitat present. Not expected to inhabit smaller marshes in proximity to urban uses (PRBO, 2002). Recorded in China Camp Marsh and Muzzi Marsh, Corte Madera.	Year-round
Brown pelican *Pelecanus occidentalis*	FE/CE	Nests on protected islets near freshwater lakes.	**Low to Moderate.** No suitable nesting habitat present, may forage in bay adjacent to project site.	May-July
California clapper rail *Rallus longirostrus obsoletus*	FE/CE	Salt-water and brackish marshes with tidal sloughs.	**Low.** Marginally suitable breeding and foraging habitat present. Multiple sightings in San Pablo Bay, Richardson Bay and Novato Creek. However, not detected locally during recent protocol level surveys (ISP, 2004).	Year-round
Northern spotted owl *Strix occidentalis caurina*	FT/--	Old-growth or mature trees in forested habitats with multi-story canopy.	**Low.** No suitable habitat present.	Year-round
Mammals				
Salt marsh harvest mouse *Reithrodontomys raviventris*	FE/CE	Saline emergent wetlands of San Francisco Bay and tributaries.	**Low.** Occurrences of salt marsh harvest mouse have been recorded in diked and tidal marshes from Corte Madera Tubbs Island to the northeast of SRRQ (CNDDB, 2006). However, SRRQ marshes provide only marginally suitable habitat for the species due to their relatively small size, the length of time they have been cut off from tidal influence, and their isolation from other salt marshes (USFWS, 1984).	Year-round
PLANTS				
Tiburon mariposa lily *Calochortus tiburonensis*	FT/CT/1B.1	Valley and foothill grassland. On open, rocky slopes in serpentine grassland, 50-150m.	**Low.** Recorded on Tiburon peninsula. However, no serpentine grasslands present on project site.	March-June
Tiburon paintbrush *Castilleja affinis ssp. neglecta*	FE/CT/1B.2	Valley and foothill grassland, rocky serpentine sites, 75-400m.	**Low.** Recorded on Tiburon peninsula. However, no serpentine grasslands present on project site.	April-June

TABLE E-1
SPECIAL STATUS SPECIES CONSIDERED IN THE EVALUATION OF THE PROJECT SITE (CONT.)

Common Name *Scientific Name*	Listing Status USFWS/ CDFG/CNPS	General Habitat	Potential for Species Occurrence Within the Project Area	Period of Identification
Species Listed or Proposed for Listing (cont.)				
PLANTS (CONT.)				
Marin dwarf-flax *Hesperolinon congestum*	FT/CT/1B.1	Chaparral, valley and foothill grassland. In serpentine barrens and in serpentine grassland and chaparral, 30-365m.	**Low.** Recorded on Tiburon peninsula. However, no serpentine soils present on project site.	May-July
Santa Cruz tarplant *Holocarpha macradenia*	FE/CE/1B.1	Grassland, coastal prairie; often with non-natives in light sandy or sandy clay soil; 30 to 850 feet..	**Low.** All San Francisco Bay area populations thought to have been extirpated. Last seen in Marin County in 1938.	June-October
White-rayed pentachaeta *Pentachaeta bellidiflora*	FE/CE/1B.1	Grasslands, usually dry rocky or grassy slopes with serpentine soils; 115 to 2030 feet.	**Low.** Serpentine soils not present at site.	March-May
Tiburon jewelflower *Streptanthus niger*	FE/CE/1B.1	Valley and foothill grassland, shallow, rocky serpentine slopes, 30-150m.	**Low.** Recorded on Tiburon peninsula. However, serpentine soils not present on project site.	May-June
Showy Indian clover *Trifolium amoenum*	FE/--/1B.1	Grasslands, sometimes serpentine soils; swales; 15 to 1840 feet.	**Low.** Preferred habitat not present at site. No recorded observations in quad (nearest historic record is 6 miles southwest in Corte Madera).	April-June
Other Special Status Species				
Animals				
Invertebrates				
Marin blind harvestman *Calicina diminua*	FSC/*	Harvestmen are generally restricted to microhabitats exhibiting high humidity, total darkness, and warmth in a variety of mesic habitat types. This species is restricted to serpentine soils.	**Low.** Known only from two serpentine outcroppings at Burdell Mountain near Novato. Species is endemic to serpentine soils, which do not occur at the project site.	Coincident with rainy season
Monarch butterfly *Danaus plexippus*	--/* Wintering sites only	Winter roosts located in wind-protected tree groves (eucalyptus, Monterey pine, cypress) with nectar and water sources nearby.	**Low.** Migratory stopover site is documented at McNear County Park. However, no known wintering sites have been documented in the San Pedro Point area.	Fall through Spring
Tiburon microblind harvestman *Microcina tiburona*	FSC/*	Harvestmen are generally restricted to microhabitats exhibiting high humidity, total darkness, and warmth in a variety of mesic habitat types. This species is restricted to serpentine soils.	**Low.** Known only from two occurrences in serpentine grasslands on the Tiburon Peninsula. Species is endemic to serpentine soils, which do not occur at the project site.	Coincident with rainy season

TABLE E-1
SPECIAL STATUS SPECIES CONSIDERED IN THE EVALUATION OF THE PROJECT SITE (CONT.)

Common Name *Scientific Name*	Listing Status USFWS/ CDFG/CNPS	General Habitat	Potential for Species Occurrence Within the Project Area	Period of Identification
Other Special Status Species (cont.)				
Animals (cont.)				
Invertebrates (cont.)				
Mimic tryonia *Tryonia imitator*	--/*	Found only in permanently submerged areas of coastal lagoons, estuaries, and salt marshes. Inhabits a variety of sediments and tolerates a wide range of salinities.	**Moderate.** Documented occurrences include San Rafael Bay coast line to west and south of SRRQ. May occur in marshes in the northern portion of the project site and along the coast line of the site.	Unknown
Fish				
Central Valley fall/late fall-run Chinook salmon *Oncorhynchus tshawytscha*	FSC/CSC	Spawns and rears in Sacramento River and tributaries where gravelly substrate and shaded riparian habitat occurs.	**Moderate.** Migrates through project vicinity. May occasionally stray into project area.	Year-round
Sacramento splittail *Pogonichthys macrolepidotus*	FSC/CSC	Endemic to the sloughs, rivers, and lakes of the Central Valley. Once common in San Pablo Bay, the species is no largely confined to the Delta, Suisun Bay, Suisun Marsh, lower Napa River, and lower Petaluma River.	**Moderate.** Project area is within historic range of the species and within close proximity of its current range.	Year-round
Longfin smelt *Spirinchus thaleichthyes*	--/CSC	Occur in the middle or bottom of water column in salt or brackish water. Concentrated in Suisun Bay, Montezuma Slough, and the lower reaches of the Sacramento and San Joaquin Rivers, but may be found throughout San Francisco Bay.	**Moderate.** May stray into project area.	Year-round
Reptiles				
Northwestern pond turtle *Actinemys* (= *Emys) marmorata marmorata*	FSC/CSC	Freshwater ponds and slow streams edged with sandy soils for laying eggs.	**Low to moderate.** Aquatic habitat available in process ponds but not ideal	Year-round
Birds				
Cooper's hawk *Accipiter cooperii*	--/CSC 3503.5	Nests in conifers or deciduous stands near riparian areas	**Low.** Marginally suitable nesting habitat present, but high levels of disturbance likely preclude nesting activity.	March-August

TABLE E-1
SPECIAL STATUS SPECIES CONSIDERED IN THE EVALUATION OF THE PROJECT SITE (CONT.)

Common Name *Scientific Name*	Listing Status USFWS/ CDFG/CNPS	General Habitat	Potential for Species Occurrence Within the Project Area	Period of Identification
Other Special Status Species (cont.)				
Animals (cont.)				
Birds (cont.)				
Northern goshawk *Accipiter gentilis*	--/CSC	Prefers coniferous forest but also inhabits deciduous and mixed forests.	**Low.** Do not generally breed in the region. May winter in the area.	Winter
Sharp-shinned hawk *Accipiter striatus*	--/CSC 3503.5	Nests in forest canopy	**Low.** Do not generally breed in the region. May winter in the area.	Winter
Golden eagle *Aquila chrysaetos*	--/CSC 3503.5	Nests in large trees, snags, and cliffs, winters on lakes and reservoirs.	**Low.** Marginally suitable nesting habitat present, but high levels of disturbance likely preclude nesting activity.	Year-round
Great egret *Ardea alba*	--/* Rookeries only	Nest colonially in groves of trees. Rookery sites located near marshes, tide-flats, irrigated pastures, and margins of rivers and lakes.	**Low.** May forage in the marshes in the northern portions of the site and along the shoreline at low tide. While suitable nesting habitat is available in large eucalyptus at margins of site high levels of disturbance likely preclude nesting activity. No rookeries are recorded in the immediate vicinity.	Year-round
Great blue heron *Ardea herodias*	--/* Rookeries only	Nest colonially in groves of trees. Rookery sites located near marshes, tide-flats, irrigated pastures, and margins of rivers and lakes.	**Low.** May forage in the marshes in the northern portions of the site and along the shoreline at low tide. While suitable nesting habitat is available in large eucalyptus at margins of site high levels of disturbance likely preclude nesting activity. No rookeries are recorded in the immediate vicinity	Year-round
Short-eared owl *Asio flammeus*	--/CSC	Nests in fresh and salt marshes with tules or tall grasses, in depression on ground concealed by vegetation.	**Low.** Potentially suitable foraging habitat present in marshes at northern end of site. Not expected to nest in the region.	Winter
Burrowing owl *Athene cunicularia*	--/CSC	Nests and forages in low-growing grasslands that support burrowing mammals	**Low.** Limited and only marginally suitable grassland habitat present.	Year-round
Great horned owl *Bubo virginianus*	--/3503.5	Often uses abandoned nests of corvids or squirrels; nests in large oaks, conifers, eucalyptus	**Low to Moderate.** Suitable nesting habitat occurs in eucalyptus on and adjacent to the project site. However, regular disturbance due to quarrying activities likely precludes nesting.	Year-round

TABLE E-1
SPECIAL STATUS SPECIES CONSIDERED IN THE EVALUATION OF THE PROJECT SITE (CONT.)

Common Name *Scientific Name*	Listing Status USFWS/ CDFG/CNPS	General Habitat	Potential for Species Occurrence Within the Project Area	Period of Identification
Other Special Status Species (cont.)				
Animals (cont.)				
Birds (cont.)				
Red-shouldered hawk *Buteo lineatus*	--/3503.5	Usually nests in large trees, often in woodland or riparian deciduous habitats. Forages over open grasslands and woodlands	**Low to Moderate.** Suitable nesting habitat occurs in eucalyptus on and adjacent to the project site. However, regular disturbance due to quarrying activities likely precludes nesting.	Year-round
Red-tailed hawk *Buteo jamaicensis*	--/3503.5	Usually nests in large trees, often in woodland or riparian deciduous habitats	**Low to Moderate.** Suitable nesting habitat occurs in eucalyptus on and adjacent to the project site. However, regular disturbance due to quarrying activities likely precludes nesting.	Year-round
Ferruginous hawk *Buteo regalis*	--/CSC	Occur in semiarid grasslands, rocky outcrops and shallow canyons. Nests on rocky outcrops, hillsides, rock pinnacles, or in trees.	**Low.** Not known to breed in the region. No suitable foraging habitat available.	Winter
Northern harrier *Circus cyaneus*	--/CSC	Mostly nests in emergent vegetation, wet meadows or near rivers and lakes, but may nest in grasslands away from water.	**Low to moderate.** Potentially suitable nesting and foraging habitat present in marshes in northern portion of property. However, disturbance from vehicular traffic may preclude nesting.	Year-round
Yellow warbler *Dendroica petechia*	--/CSC	Nest in shrubby growth by swamps and watercourses, in wet scrub, tree foliage, gardens, shrubberies and berry patches.	**Low.** No suitable habitat present.	Summer
Snowy egret *Egretta thula*	--/* Rookeries only	Nest colonially in groves of trees. Rookery sites located near marshes, tide-flats, irrigated pastures, and margins of rivers and lakes.	**Low.** May forage in the marshes in the northern portions of the site and along the shoreline at low tide. While suitable nesting habitat is available in large eucalyptus at margins of site high levels of disturbance likely preclude nesting activity. No rookeries are recorded in the immediate vicinity	Year-round
White-tailed kite *Elanus leucurus*	FSC/Fully Protected	Nests in trees adjacent to grasslands, forages over grasslands and agricultural lands	**Low.** Eucalyptus provide suitable nesting habitat but foraging habitat is limited in the vicinity.	Year-round
Horned lark *Eremophila alpestris*	--/CSC	Nest in desert brush lands, dry grasslands, and similar open habitats	**Low.** No suitable habitat present.	Year-round

TABLE E-1
SPECIAL STATUS SPECIES CONSIDERED IN THE EVALUATION OF THE PROJECT SITE (CONT.)

Common Name *Scientific Name*	Listing Status USFWS/ CDFG/CNPS	General Habitat	Potential for Species Occurrence Within the Project Area	Period of Identification
Other Special Status Species (cont.)				
Animals (cont.)				
Birds (cont.)				
Merlin *Falco columbarius*	--/CSC	Nest on cliff ledges, natural cavities or old nests of crows, magpies and hawks.	**Low.** Not known to breed in Marin County. Low potential for winter foraging.	Winter
Salt-marsh common yellowthroat *Geothlypis trichas sinuosa*	FSC/CSC	Emergent wetlands	**Moderate.** Resident of S.F. Bay region salt and fresh water marshes.	Year-round
San Pablo song sparrow *Melospiza melodia samuelis*	--/CSC	Salt marshes along the north side of S.F. and San Pablo Bays.	**Moderate.** Suitable habitat present, recorded in San Rafael and mouth of Gallinas Creek.	Year-round
Long-billed curlew *Numenius americanus*	--/CSC	Nests near water in prairies and grassy meadows in northeastern California. Wintering habitat includes coastal estuaries, tidal mudflats, upland herbaceous areas, and croplands.	**Low.** Do not nest in area, marginally suitable wintering habitat present.	Winter
Osprey *Pandion haliaetus*	--/CSC	Nests on man-made structures and elevated platforms or on the ground.	**Low.** May forage over bay waters but high disturbance levels likely preclude nesting at the site.	Summer
Double-crested cormorant *Phalacrocorax auritus*	--/CSC	Nests colonially on coastal cliffs, offshore islands & along lake margins.	**Low.** Nesting on the San Rafael-Richmond bridge, 2mi. west of Richmond. Foraging habitat available in site vicinity but no suitable breeding habitat on site.	Year-round
Mammals				
Pacific western big-eared bat *Corynorhinus townsendii townsendii*	FSC/CSC	Inhabits a variety of habitats, requires caves or man-made structures for roosting	**Moderate.** Abandoned buildings and oak woodlands onsite may provide suitable habitat.	April–August
San Pablo vole *Microtus californicus sanpabloensis*	--/CSC	Salt marshes of San Pablo Creek, San Pablo Bay.	**Low.** Suitable habitat present, but not recorded in Marin County.	Year-round
Hoary bat *Lasiurus cinereus*	--/CSC	Most widespread North American bat species. Primarily inhabits coniferous and deciduous forests. Roosts in trees, prefers riparian areas.	**Low.** Suitable habitat not present at SRRQ. Known from Muir Woods but thought to be only migratory in Marin County.	Spring and Fall
Long-eared myotis *Myotis evotis*	FSC/--	Inhabits woodlands and forests up to approximately 8,200 feet in elevation; roosts in crevices and snags	**Moderate.** Suitable foraging ~~habitat over open bay waters.~~ Rand roosting habitat available ~~availbale~~ in Eucalyptus and oak woodlands onsite.	March–August

TABLE E-1
SPECIAL STATUS SPECIES CONSIDERED IN THE EVALUATION OF THE PROJECT SITE (CONT.)

Common Name *Scientific Name*	Listing Status USFWS/ CDFG/CNPS	General Habitat	Potential for Species Occurrence Within the Project Area	Period of Identification
Other Special Status Species (cont.)				
Animals (cont.)				
Mammals				
Fringed myotis *Myotis thysanodes*	FSC/--	Inhabits a variety of woodland habitats, roosts in crevices or caves, and forages over water and open habitats	**Moderate.** Suitable ~~foraging habitat over open bay waters.~~ ~~R~~and roosting habitat available ~~availbale~~ in Eucalyptus and oak woodlands onsite.	March–August
Yuma myotis *Myotis yumanensis*	FSC/CSC	Open forests and woodlands below 8,000 feet in close association with water bodies	**Moderate.** Vacant structures on the project site may provide roosting habitat.	March–August
Dusky-footed woodrat *Neotoma fuscipes*	FSC/CSC	Woodlands with well developed shrubby understory, build houses from plant materials and man-made debris.	**Low.** Only marginally suitable habitat present. No dens observed during site surveys.	Year-round
Harbor seal *Phoca vitulina richardsi*	MMPA/--	Only permanent resident marine mammals in S.F.Bay. Haul out sites are used for pupping and are primarily located in the north central and south Bay. Use deep water for foraging and feed primarily on fish.	**Low.** Low potential for foraging in offshore waters but no suitable haul out sites exist at SRRQ.	Year-round
Suisun shrew *Sorex ornatus sinuousus*	--/CSC	Tidal marshes of the northern shores of San Pablo and Suisun Bays.	**Low.** Suitable habitat present, however not known to occur west of Sonoma Creek and closest recorded presence is Tubbs island, north of San Pablo Bay.	Year-round
Saltmarsh wandering shrew *Sorex vagrans halicoetes*	--/CSC	Salt marshes of the south arm of San Francisco Bay.	**Low.** Suitable habitat present, however project site is outside kown distribution range for the species and closest recorded location is San Pablo Salt Creek Marsh.	Year-round
California sea lion *Zalophus californianus*	MMPA/--	Occur along west coast from Vancouver to the Gulf of California. In the S.F. Bay use deep waters and haul out sites at Pier 39, Angel Island, and Seal Rock.	**Low.** Presence in Bay tied to that of Pacific herring. No breeding or pupping known to occur within the Estuary. No suitable haul sites present at SRRQ.	Year-round
Plants				
Napa false indigo *Amorpha californica* var. *napensis*	--/--/1B.2	Prefers open slopes in chaparral but can be found in broadleafed upland forest, chaparral, and cismontane woodland	**Low.** Marginally suitable habitat present in oak woodlands of project site. All Marin County records are historical.	April-July
San Francisco Bay spineflower *Chorizanthe cuspidata var. cuspidata*	--/--/1B.2	Coastal bluff scrub, coastal dunes, coastal prairie, coastal scrub.	**Low.** Limited and only marginally suitable habitat present.	March-June

TABLE E-1
SPECIAL STATUS SPECIES CONSIDERED IN THE EVALUATION OF THE PROJECT SITE (CONT.)

Common Name *Scientific Name*	Listing Status USFWS/ CDFG/CNPS	General Habitat	Potential for Species Occurrence Within the Project Area	Period of Identification
Other Special Status Species (cont.)				
Plants (cont.)				
Mt. Tamalpais thistle *Cirsium hydrophilum* var. *vaseyi*	--/--/1B.2	Serpentine seeps in broadleafed upland forest, chaparral, and meadows	**Low.** No suitable habitat within the project site.	May-August
Point Reyes bird's-beak *Cordylanthus maritimus* ssp. *palustris*	--/--/1B.2	Coastal salt marsh	**Low to moderate.** Potentially suitable habitat present. Recorded in Richardson Bay and Corte Madera Ecological Reserve.	June-October
San Francisco wallflower *Erysimum franciscanum*	FSC/--/4	Often serpentinite or granitic soils in coastal scub and dunes; grassland; 0 to 1705 ft.	**Low.** Preferred habitat not present in project site.	March-June
Marin checker lily *Fritillaria lanceolata* var. *tristulis*	--/--/1B.1	Coastal scrub, coastal prairie, 30-300m.	**Low.** Limited suitable habitat present, however, known only from western Marin County.	March-June
Fragrant fritillary *Fritillaria liliacea*	FSC/--/1B	Coastal prairie and scrub, grasslands, often on serpentine soils; 10 to 1350 feet.	**Low.** Preferred habitat not present. Nearest recorded observation is across the bay in Point Richmond.	February-April
Bluehead gilia *Gilia capitata ssp. tomentosa*	--/--/1B.1	Rocky outcrops in coastal bluff scrub	**Low.** While limited habitat is available at the project site, the species is known only historically in Marin County and only from western Marin.	May-July
Diablo helianthella *Helianthella castanea*	--/--/1B.2	Broadleaved upland forest, chaparral, cismontane woodland, coastal scrub, riparian woodland, valley and foothill grassland.	**Low.** Limited suitable habitat present. Recorded in Mill Valley.	March-June
Thin-lobed horkelia *Horkelia tenuiloba*	--/--/1B.2	Coastal scrub, chaparral, sandy soils, mesic openings, from 45-500m in elevation.	**Low.** Limited suitable habitat present.	April-June
Tamalpais lessingia *Lessingia micradenia* var. *micradenia*	--/--/1B.2	Gravelly serpentine slopes and roadcuts in chaparral or grasslands, from 100 to 500 meters in elevation	**Low.** Suitable habitat is not present onsite, site is below known elevational distribution	July-October
Marsh microseris *Microseris paludosa*	--/--/1B.2	Closed-cone coniferous forest, cismontane woodland, coastal scrub, valley and foothill grassland.	**Low.** Limited suitable habitat present.	March-May
Baker's navarretia *Navarretia leucocephala* ssp. *bakeri*	--/--/1B.1	Usually in adobe or alkaline soils in vernal pools, swales, and wet areas in woodlands, in meadows and seeps, in grassland, and in coniferous forest; 15 to 3115 feet.	**Low**. Marginal habitat for the species present in the site's seasonal wetland areas and seeps. Site is outside the species documented range, nearest documented occurrence is on Mt. Burdell, 10 miles north of site.	May-July

TABLE E-1
SPECIAL STATUS SPECIES CONSIDERED IN THE EVALUATION OF THE PROJECT SITE (CONT.)

Common Name *Scientific Name*	Listing Status USFWS/ CDFG/CNPS	General Habitat	Potential for Species Occurrence Within the Project Area	Period of Identification
Other Special Status Species (cont.)				
Plants (cont.)				
Gairdner's yampah *Perideridia gairdneri* ssp. *gairdneri*	FSC/--/4	Mesic habitats in broadleafed upland forest, chaparral, coastal prairie, grassland and vernal pools; 0 to 1200 feet	**Low to moderate**. Limited areas of suitable grassland are present at site. Species noted to be relatively common locally in this part of its range.	June-October
Hairless popcorn-flower *Plagiobothrys glaber*	--/--/1A	Meadows, seeps, marshes, swamps, coastal salt marshes and alkaline meadows, 5-180 meters.	**Low.** Suitable habitat present, however, the species is thought to be extinct in California	April-June
Santa Cruz microseris *Stebbinsoseris decipiens*	--/--/1B.2	Open areas on sandy or shale derived soils (sometimes on serpentine) in valley and foothill grassland, coastal prairie, and coastal scrub.	**Low.** While limited suitable habitat is available at the project site, the species is known only from western Marin County and Santa Cruz County.	April-May
Mt. Tamalpais jewel flower *Streptanthus glandulosus* ssp. *pulchellus*	--/--/1B.2	Serpentine soils in valley and foothill grasslands or chaparral habitat at elevations ranging from 150 to 800 meters	**Low.** No serpentine soils have been identified on the project site, site lies below the elevational range for the species	May-July
Suisun marsh aster *Symphyotrichum lentum (=Aster lentus)*	--/--/1B.2	Marshes and swamps (brackish and freshwater).	**Low**. Suitable habitat present, however closest recorded location is West Richmond, Point Molate. Not known from Marin County.	May-July
San Francisco gumplant *Grindelia hirsutula* var. *maritima*	--/--/List 1B.2	Occupies sandy or serpentine soils on coastal bluffs and slopes in coastal scrub or valley and foothill grassland.	**Low.** While small areas of coastal scrub and somewhat larger areas of grassland still persist at SRRQ, these areas were surveyed by LSA in 2004 and by ESA in 2005. This perennial species would have been noted and was not observed on the site.	June-September

STATUS CODES:

FEDERAL: (U.S. Fish and Wildlife Service)
FE = Listed as Endangered (in danger of extinction) by the Federal Government.
FT = Listed as Threatened (likely to become Endangered within the foreseeable future) by the Federal Government.
FP = Proposed for Listing as Endangered or Threatened.
FC = Candidate to become a *proposed* species.
FSC = Former FWS Species of Concern. The USFWS no longer lists Species of Concern but recommends that species considered to be at potential risk by a number of organizations and agencies be addressed during project environmental review. Also may be NMFS Species of Concern, which are still listed.
MMPA = Marine Mammal Protection Act

STATE: (California Department of Fish and Game)
CE = Listed as Endangered by the State of California
CT = Listed as Threatened by the State of California
CR = Listed as Rare by the State of California (plants only)

CSC = California Species of Special Concern
3503.5=Protection for nesting species of Falconiformes (hawks) and Strigiformes (owls)
*Special animal—listed on CDFG's Special Animals List

California Native Plant Society
List 1A=Plants presumed extinct in California
List 1B=Plants rare, Threatened, or Endangered in California and elsewhere
List 2= Plants rare, Threatened, or Endangered in California but more common elsewhere
List 3= Plants about which more information is needed
List 4= Plants of limited distribution

An extension reflecting the level of threat to each species is appended to each rarity category as follows:
.1 – Seriously endangered in California
.2 – Fairly endangered in California
.3 – Not very endangered in California

SOURCE: CNDDB, 2007; CNPS, 2007; USFWS, 2007

California Department of Fish and Game
Natural Diversity Database
Selected Elements by Scientific Name - Landscape
Data Request for San Rafael, San Quentin, Petaluma Point, and Novato Quads

	Scientific Name	Common Name	Element Code	Federal Status	State Status	Global Rank	State Rank	CNPS	CDFG
1	Actinemys marmorata marmorata	northwestern pond turtle	ARAAD02031			G3G4T3	S3		SC
2	Amorpha californica var. napensis	Napa false indigo	PDFAB08012			G4T2	S2.2	1B.2	
3	Amsinckia lunaris	bent-flowered fiddleneck	PDBOR01070			G2	S2.2	1B.2	
4	Antrozous pallidus	pallid bat	AMACC10010			G5	S3		SC
5	Arctostaphylos hookeri ssp. montana	Mt. Tamalpais manzanita	PDERI040J5			G3T2	S2.2	1B.3	
6	Arctostaphylos virgata	Marin manzanita	PDERI041K0			G2	S2.2	1B.2	
7	Ardea alba	great egret	ABNGA04040			G5	S4		
8	Ardea herodias	great blue heron	ABNGA04010			G5	S4		
9	Asio flammeus	short-eared owl	ABNSB13040			G5	S3		SC
10	Athene cunicularia	burrowing owl	ABNSB10010			G4	S2		SC
11	Boschniakia hookeri	small groundcone	PDORO01010			G5	S1S2	2.3	
12	Calicina diminua	Marin blind harvestman	ILARAU8040			G1	S1		
13	Callophrys mossii bayensis	San Bruno elfin butterfly	IILEPE2202	Endangered		G4T1	S1		
14	Calochortus tiburonensis	Tiburon mariposa-lily	PMLIL0D1C0	Threatened	Threatened	G1	S1.2	1B.1	
15	Castilleja affinis ssp. neglecta	Tiburon paintbrush	PDSCR0D013	Endangered	Threatened	G4G5T1	S1.2	1B.2	
16	Chorizanthe cuspidata var. cuspidata	San Francisco Bay spineflower	PDPGN04081			G2T2	S2.2	1B.2	
17	Circus cyaneus	northern harrier	ABNKC11010			G5	S3		SC
18	Cirsium hydrophilum var. vaseyi	Mt. Tamalpais thistle	PDAST2E1G2			G1T1	S1.2	1B.2	
19	Coastal Brackish Marsh	Coastal Brackish Marsh	CTT52200CA			G2	S2.1		
20	Coastal Terrace Prairie	Coastal Terrace Prairie	CTT41100CA			G2	S2.1		
21	Cordylanthus maritimus ssp. palustris	Point Reyes bird's-beak	PDSCR0J0C3			G4?T2	S2.2	1B.2	
22	Danaus plexippus	monarch butterfly	IILEPP2010			G5	S3		
23	Egretta thula	snowy egret	ABNGA06030			G5	S4		
24	Elanus leucurus	white-tailed kite	ABNKC06010			G5	S3		
25	Eriogonum luteolum var. caninum	Tiburon buckwheat	PDPGN083S1			G5T3	S3.2	1B.2	
26	Eucyclogobius newberryi	tidewater goby	AFCQN04010	Endangered		G3	S2S3		SC
27	Fissidens pauperculus	minute pocket moss	NBMUS2W0U0			G3?	S1.2	1B.2	
28	Fritillaria lanceolata var. tristulis	Marin checker lily	PMLIL0V0P1			G5T1	S1.1	1B.1	
29	Fritillaria liliacea	fragrant fritillary	PMLIL0V0C0			G2	S2.2	1B.2	
30	Geothlypis trichas sinuosa	saltmarsh common yellowthroat	ABPBX1201A			G5T2	S2		SC
31	Helianthella castanea	Diablo helianthella	PDAST4M020			G3	S3.2	1B.2	
32	Hesperolinon congestum	Marin western flax	PDLIN01060	Threatened	Threatened	G2	S2.1	1B.1	
33	Holocarpha macradenia	Santa Cruz tarplant	PDAST4X020	Threatened	Endangered	G1	S1.1	1B.1	

	Scientific Name	Common Name	Element Code	Federal Status	State Status	Global Rank	State Rank	CNPS	CDFG
34	Horkelia tenuiloba	thin-lobed horkelia	PDROS0W0E0			G2	S2.2	1B.2	
35	Lasiurus cinereus	hoary bat	AMACC05030			G5	S4?		SC
36	Laterallus jamaicensis coturniculus	California black rail	ABNME03041		Threatened	G4T1	S1		
37	Lessingia micradenia var. micradenia	Tamalpais lessingia	PDAST5S063			G2T1	S1.1	1B.2	
38	Melospiza melodia pusillula	Alameda song sparrow	ABPBXA301S			G5T2?	S2?		SC
39	Melospiza melodia samuelis	San Pablo song sparrow	ABPBXA301W			G5T2?	S2?		SC
40	Microcina tiburona	Tiburon micro-blind harvestman	ILARA47060			G1	S1		
41	Microseris paludosa	marsh microseris	PDAST6E0D0			G2	S2.2	1B.2	
42	Microtus californicus sanpabloensis	San Pablo vole	AMAFF11034			G5T1T2	S1S2		SC
43	Navarretia leucocephala ssp. bakeri	Baker's navarretia	PDPLM0C0E1			G4T2	S2.1	1B.1	
44	Navarretia rosulata	Marin County navarretia	PDPLM0C0Z0			G2?	S2?	1B.2	
45	Northern Coastal Salt Marsh	Northern Coastal Salt Marsh	CTT52110CA			G3	S3.2		
46	Nycticorax nycticorax	black-crowned night heron	ABNGA11010			G5	S3		
47	Oncorhynchus kisutch	coho salmon - central California ESU	AFCHA02034	Endangered	Endangered	G4	S2?		
48	Pentachaeta bellidiflora	white-rayed pentachaeta	PDAST6X030	Endangered	Endangered	G1	S1.1	1B.1	
49	Phalacrocorax auritus	double-crested cormorant	ABNFD01020			G5	S3		SC
50	Plagiobothrys glaber	hairless popcorn-flower	PDBOR0V0B0			GH	SH	1A	
51	Pleuropogon hooverianus	North Coast semaphore grass	PMPOA4Y070		Threatened	G1	S1.1	1B.1	
52	Pogonichthys macrolepidotus	Sacramento splittail	AFCJB34020			G2	S2		SC
53	Polygonum marinense	Marin knotweed	PDPGN0L1C0			G1Q	S1.1	3.1	
54	Pomatiopsis binneyi	robust walker	IMGASJ9010			G1	S1		
55	Quercus parvula var. tamalpaisensis	Tamalpais oak	PDFAG051Q3			G4T1	S1.3	1B.3	
56	Rallus longirostris obsoletus	California clapper rail	ABNME05016	Endangered	Endangered	G5T1	S1		
57	Rana aurora draytonii	California red-legged frog	AAABH01022	Threatened		G4T2T3	S2S3		SC
58	Rana boylii	foothill yellow-legged frog	AAABH01050			G3	S2S3		SC
59	Reithrodontomys raviventris	salt-marsh harvest mouse	AMAFF02040	Endangered	Endangered	G1G2	S1S2		
60	Serpentine Bunchgrass	Serpentine Bunchgrass	CTT42130CA			G2	S2.2		
61	Sidalcea calycosa ssp. rhizomata	Point Reyes checkerbloom	PDMAL11012			G5T2	S2.2	1B.2	
62	Sidalcea hickmanii ssp. viridis	Marin checkerbloom	PDMAL110A4			G3T2	S2.2?	1B.3	
63	Sorex ornatus sinuosus	Suisun shrew	AMABA01103			G5T1	S1		SC
64	Sorex vagrans halicoetes	salt-marsh wandering shrew	AMABA01071			G5T1	S1		SC
65	Stebbinsoseris decipiens	Santa Cruz microseris	PDAST6E050			G2	S2.2	1B.2	
66	Streptanthus batrachopus	Tamalpais jewel-flower	PDBRA2G050			G1	S1.2	1B.3	

	Scientific Name	Common Name	Element Code	Federal Status	State Status	Global Rank	State Rank	CNPS	CDFG
67	Streptanthus glandulosus ssp.	Mt. Tamalpais jewel-flower	PDBRA2G0J2			G4T1	S1.2	1B.2	
68	Streptanthus niger	Tiburon jewel-flower	PDBRA2G0T0	Endangered	Endangered	G1	S1.1	1B.1	
69	Symphyotrichum lentum	Suisun Marsh aster	PDASTE8470			G2	S2.2	1B.2	
70	Talanites ubicki	Ubick's gnaphosid spider	ILARA98030			G1	S1		
71	Trachusa gummifera	A leaf-cutter bee	IIHYM80010			G1	S1		
72	Trifolium amoenum	two-fork clover	PDFAB40040	Endangered		G1	S1.1	1B.1	
73	Tryonia imitator	mimic tryonia (=California brackishwater snail)	IMGASJ7040			G2G3	S2S3		
74	Vespericola marinensis	Marin hesperian	IMGASA4140			G2G3	S2S3		

CNPS Inventory of Rare and Endangered Plants

Status: Plant Press Manager window with 35 items - Thu, Dec. 20, 2007 15:05 c

Reformat list as: Standard List - with Plant Press controls

ECOLOGICAL REPORT

scientific	family	life form	blooming	communities	elevation	CNPS
Amorpha californica var. napensis	Fabaceae	perennial deciduous shrub	Apr-Jul	•Broadleafed upland forest (BUFrs)(openings) •Chaparral (Chprl) •Cismontane woodland (CmWld)	120 - 2000 meters	List 1B.2
Arctostaphylos hookeri ssp. montana	Ericaceae	perennial evergreen shrub	Feb-Apr	•Chaparral (Chprl) •Valley and foothill grassland (VFGrs)/serpentinite, rocky	160 - 760 meters	List 1B.3
Arctostaphylos virgata	Ericaceae	perennial evergreen shrub	Jan-Mar	•Broadleafed upland forest (BUFrs) •Closed-cone coniferous forest (CCFrs) •Chaparral (Chprl) •North Coast coniferous forest (NCFrs)/sandstone or granitic	60 - 700 meters	List 1B.2
Boschniakia hookeri	Orobanchaceae	perennial rhizomatous herb parasitic	Apr-Aug	•North Coast coniferous forest (NCFrs)	90 - 885 meters	List 2.3
Calochortus tiburonensis	Liliaceae	perennial bulbiferous herb	Mar-Jun	•Valley and foothill grassland (VFGrs)(serpentinite)	50 - 150 meters	List 1B.1
Castilleja affinis ssp. neglecta	Scrophulariaceae	perennial herb hemiparasiticsitic	Apr-Jun	•Valley and foothill grassland (VFGrs)(serpentinite)	60 - 400 meters	List 1B.2
Chorizanthe cuspidata var. cuspidata	Polygonaceae	annual herb	Apr-Jul(Aug) Months in parentheses are uncommon.	•Coastal bluff scrub (CBScr) •Coastal dunes (CoDns) •Coastal prairie (CoPrr) •Coastal scrub (CoScr)/sandy	3 - 215 meters	List 1B.2

Cirsium hydrophilum var. vaseyi	Asteraceae	perennial herb	May-Aug	•Broadleafed upland forest (BUFrs) •Chaparral (Chprl) •Meadows and seeps (Medws)/serpentinite seeps	240 - 620 meters	List 1B.2
Cordylanthus maritimus ssp. palustris	Scrophulariaceae	annual herb hemiparasiticsitic	Jun-Oct	•Marshes and swamps (MshSw)(coastal salt)	0 - 10 meters	List 1B.2
Eriogonum luteolum var. caninum	Polygonaceae	annual herb	(May)Jun-Sep Months in parentheses are uncommon.	•Chaparral (Chprl) •Cismontane woodland (CmWld) •Coastal prairie (CoPrr) •Valley and foothill grassland (VFGrs)/serpentinite, sandy to gravelly	0 - 700 meters	List 1B.2
Fissidens pauperculus	Fissidentaceae	moss	•North Coast coniferous forest (NCFrs)(damp coastal soil)	10 - 100 meters	List 1B.2	
Fritillaria lanceolata var. tristulis	Liliaceae	perennial bulbiferous herb	Feb-Apr	•Coastal bluff scrub (CBScr) •Coastal prairie (CoPrr) •Coastal scrub (CoScr)	15 - 150 meters	List 1B.1
Fritillaria liliacea	Liliaceae	perennial bulbiferous herb	Feb-Apr	•Cismontane woodland (CmWld) •Coastal prairie (CoPrr) •Coastal scrub (CoScr) •Valley and foothill grassland (VFGrs)/often serpentinite	3 - 410 meters	List 1B.2
Gilia capitata ssp. tomentosa	Polemoniaceae	annual herb	May-Jul	•Coastal bluff scrub (CBScr)(rocky, outcrops)	15 - 155 meters	List 1B.1
Grindelia hirsutula var. maritima	Asteraceae	perennial herb	Jun-Sep	•Coastal bluff scrub (CBScr) •Coastal scrub (CoScr) •Valley and foothill grassland (VFGrs)/sandy or serpentinite	15 - 400 meters	List 1B.2

Helianthella castanea	Asteraceae	perennial herb	Mar-Jun	•Broadleafed upland forest (BUFrs) •Chaparral (Chprl) •Cismontane woodland (CmWld) •Coastal scrub (CoScr) •Riparian woodland (RpWld) •Valley and foothill grassland (VFGrs)	60 - 1300 meters	List 1B.2
Hemizonia congesta ssp. leucocephala	Asteraceae	annual herb	Apr-Oct	•Coastal scrub (CoScr) •Valley and foothill grassland (VFGrs)/sometimes roadsides	25 - 455 meters	List 3
Hesperolinon congestum	Linaceae	annual herb	Apr-Jul	•Chaparral (Chprl) •Valley and foothill grassland (VFGrs)/serpentinite	5 - 370 meters	List 1B.1
Holocarpha macradenia	Asteraceae	annual herb	Jun-Oct	•Coastal prairie (CoPrr) •Coastal scrub (CoScr) •Valley and foothill grassland (VFGrs)/often clay, sandy	10 - 220 meters	List 1B.1
Horkelia tenuiloba	Rosaceae	perennial herb	May-Jul	•Broadleafed upland forest (BUFrs) •Chaparral (Chprl) •Valley and foothill grassland (VFGrs)/mesic openings, sandy	50 - 500 meters	List 1B.2
Lessingia hololeuca	Asteraceae	annual herb	Jun-Oct	•Broadleafed upland forest (BUFrs) •Coastal scrub (CoScr) •Lower montane coniferous forest (LCFrs) •Valley and foothill grassland (VFGrs)/clay, serpentinite	15 - 305 meters	List 3
Lessingia micradenia var. micradenia	Asteraceae	annual herb	(Jun)Jul-Oct Months in parentheses are uncommon.	•Chaparral (Chprl) •Valley and foothill grassland (VFGrs)/usually serpentinite,	100 - 500 meters	List 1B.2

				often roadsides		
Micropus amphibolus	Asteraceae	annual herb	Mar-May	•Broadleafed upland forest (BUFrs) •Chaparral (Chprl) •Cismontane woodland (CmWld) •Valley and foothill grassland (VFGrs)/rocky	45 - 825 meters	List 3.2
Microseris paludosa	Asteraceae	perennial herb	Apr-Jun(Jul) Months in parentheses are uncommon.	•Closed-cone coniferous forest (CCFrs) •Cismontane woodland (CmWld) •Coastal scrub (CoScr) •Valley and foothill grassland (VFGrs)	5 - 300 meters	List 1B.2
Navarretia leucocephala ssp. bakeri	Polemoniaceae	annual herb	Apr-Jul	•Cismontane woodland (CmWld) •Lower montane coniferous forest (LCFrs) •Meadows and seeps (Medws) •Valley and foothill grassland (VFGrs) •Vernal pools (VnPls)/mesic	5 - 1740 meters	List 1B.1
Navarretia rosulata	Polemoniaceae	annual herb	May-Jul	•Closed-cone coniferous forest (CCFrs) •Chaparral (Chprl)/serpentinite, rocky	200 - 635 meters	List 1B.2
Pentachaeta bellidiflora	Asteraceae	annual herb	Mar-May	•Cismontane woodland (CmWld) •Valley and foothill grassland (VFGrs)(often serpentinite)	35 - 620 meters	List 1B.1
Plagiobothrys glaber	Boraginaceae	annual herb	Mar-May	•Meadows and seeps (Medws)(alkaline) •Marshes and swamps (MshSw)(coastal salt)	15 - 180 meters	List 1A

Pleuropogon hooverianus	Poaceae	perennial rhizomatous herb	Apr-Aug	•Broadleafed upland forest (BUFrs) •Meadows and seeps (Medws) •North Coast coniferous forest (NCFrs)/open areas, mesic	10 - 671 meters	List 1B.1
Polygonum marinense	Polygonaceae	annual herb	(Apr)May-Aug(Oct) Months in parentheses are uncommon.	•Marshes and swamps (MshSw)(coastal salt or brackish)	0 - 10 meters	List 3.1
Stebbinsoseris decipiens	Asteraceae	annual herb	Apr-May	•Broadleafed upland forest (BUFrs) •Closed-cone coniferous forest (CCFrs) •Chaparral (Chprl) •Coastal prairie (CoPrr) •Coastal scrub (CoScr) •Valley and foothill grassland (VFGrs)/open areas, sometimes serpentinite	10 - 500 meters	List 1B.2
Streptanthus glandulosus ssp. pulchellus	Brassicaceae	annual herb	May-Jul(Aug) Months in parentheses are uncommon.	•Chaparral (Chprl) •Valley and foothill grassland (VFGrs)/serpentinite	150 - 800 meters	List 1B.2
Streptanthus niger	Brassicaceae	annual herb	May-Jun	•Valley and foothill grassland (VFGrs)(serpentinite)	30 - 150 meters	List 1B.1
Symphyotrichum lentum	Asteraceae	perennial rhizomatous herb	May-Nov	•Marshes and swamps (MshSw)(brackish and freshwater)	0 - 3 meters	List 1B.2
Trifolium amoenum	Fabaceae	annual herb	Apr-Jun	•Coastal bluff scrub (CBScr) •Valley and foothill grassland (VFGrs)(sometimes serpentinite)	5 - 415 meters	List 1B.1

United States Department of the Interior

FISH AND WILDLIFE SERVICE

Sacramento Fish and Wildlife Office
2800 Cottage Way, Room W-2605
Sacramento, California 95825

December 20, 2007

Document Number: 071220051104

Martha Lowe
ESA
350 Frank H. Ogawa Plaza
Suite 300
Oakland, CA 94612

Subject: Species List for San Rafael Rock Quarry Amended Qaurry Permit and Reclamation Plan

Dear: Ms. Lowe

We are sending this official species list in response to your December 20, 2007 request for information about endangered and threatened species. The list covers the California counties and/or U.S. Geological Survey 7½ minute quad or quads you requested.

Our database was developed primarily to assist Federal agencies that are consulting with us. Therefore, our lists include all of the sensitive species that have been found in a certain area *and also ones that may be affected by projects in the area*. For example, a fish may be on the list for a quad if it lives somewhere downstream from that quad. Birds are included even if they only migrate through an area. In other words, we include all of the species we want people to consider when they do something that affects the environment.

Please read Important Information About Your Species List (below). It explains how we made the list and describes your responsibilities under the Endangered Species Act.

Our database is constantly updated as species are proposed, listed and delisted. If you address proposed and candidate species in your planning, this should not be a problem. However, we recommend that you get an updated list every 90 days. That would be March 19, 2008.

Please contact us if your project may affect endangered or threatened species or if you have any questions about the attached list or your responsibilities under the Endangered Species Act. A list of Endangered Species Program contacts can be found at www.fws.gov/sacramento/es/branches.htm.

Endangered Species Division

TAKE PRIDE IN AMERICA

Federal Endangered and Threatened Species that Occur in or may be Affected by Projects in the Counties and/or U.S.G.S. 7 1/2 Minute Quads you requested

Document Number: 071220051104

Database Last Updated: December 12, 2007

Quad Lists

Listed Species

Invertebrates

Haliotes sorenseni
white abalone (E) (NMFS)

Speyeria zerene myrtleae
Myrtle's silverspot butterfly (E)

Syncaris pacifica
California freshwater shrimp (E)

Fish

Acipenser medirostris
green sturgeon (T) (NMFS)

Eucyclogobius newberryi
tidewater goby (E)

Hypomesus transpacificus
delta smelt (T)

Oncorhynchus kisutch
coho salmon - central CA coast (E) (NMFS)
Critical habitat, coho salmon - central CA coast (X) (NMFS)

Oncorhynchus mykiss
Central California Coastal steelhead (T) (NMFS)
Central Valley steelhead (T) (NMFS)
Critical habitat, Central California coastal steelhead (X) (NMFS)
Critical habitat, Central Valley steelhead (X) (NMFS)

Oncorhynchus tshawytscha
California coastal chinook salmon (T) (NMFS)
Central Valley spring-run chinook salmon (T) (NMFS)
Critical habitat, winter-run chinook salmon (X) (NMFS)
winter-run chinook salmon, Sacramento River (E) (NMFS)

Amphibians

Rana aurora draytonii
California red-legged frog (T)

Birds

Brachyramphus marmoratus
Critical habitat, marbled murrelet (X)
marbled murrelet (T)

Charadrius alexandrinus nivosus
western snowy plover (T)

Diomedea albatrus
short-tailed albatross (E)

Pelecanus occidentalis californicus
California brown pelican (E)

Rallus longirostris obsoletus
California clapper rail (E)

Sternula antillarum (=Sterna, =albifrons) browni
California least tern (E)

Strix occidentalis caurina
northern spotted owl (T)

Mammals

Arctocephalus townsendi
Guadalupe fur seal (T) (NMFS)

Balaenoptera borealis
sei whale (E) (NMFS)

Balaenoptera musculus
blue whale (E) (NMFS)

Balaenoptera physalus
finback (=fin) whale (E) (NMFS)

Eubalaena (=Balaena) glacialis
right whale (E) (NMFS)

Physeter catodon (=macrocephalus)
sperm whale (E) (NMFS)

Reithrodontomys raviventris
salt marsh harvest mouse (E)

Plants

Calochortus tiburonensis
Tiburon mariposa lily (T)

Castilleja affinis ssp. neglecta
Tiburon paintbrush (E)

Hesperolinon congestum
Marin dwarf-flax (=western flax) (T)

Streptanthus niger
Tiburon jewelflower (E)

Candidate Species

Invertebrates

Haliotes cracherodii
black abalone (C) (NMFS)

Quads Containing Listed, Proposed or Candidate Species:

SAN QUENTIN (466B)

SAN RAFAEL (467A)

PETALUMA POINT (483C)

NOVATO (484D)

County Lists

No county species lists requested.

Key:

(E) *Endangered* - Listed as being in danger of extinction.

(T) *Threatened* - Listed as likely to become endangered within the foreseeable future.

(P) *Proposed* - Officially proposed in the Federal Register for listing as endangered or threatened.

(NMFS) Species under the Jurisdiction of the National Oceanic & Atmospheric Administration Fisheries Service. Consult with them directly about these species.

Critical Habitat - Area essential to the conservation of a species.

(PX) *Proposed Critical Habitat* - The species is already listed. Critical habitat is being proposed for it.

(C) *Candidate* - Candidate to become a proposed species.

(V) Vacated by a court order. Not currently in effect. Being reviewed by the Service.

(X) *Critical Habitat* designated for this species

Important Information About Your Species List

How We Make Species Lists

We store information about endangered and threatened species lists by U.S. Geological Survey 7½ minute quads. The United States is divided into these quads, which are about the size of San Francisco.

The animals on your species list are ones that occur within, **or may be affected by** projects within, the quads covered by the list.

- Fish and other aquatic species appear on your list if they are in the same watershed as your quad or if water use in your quad might affect them.
- Amphibians will be on the list for a quad or county if pesticides applied in that area may be carried to their habitat by air currents.
- Birds are shown regardless of whether they are resident or migratory. Relevant birds on the county list should be considered regardless of whether they appear on a quad list.

Plants

Any plants on your list are ones that have actually been observed in the area covered by the list. Plants may exist in an area without ever having been detected there. You can find out what's in the surrounding quads through the California Native Plant Society's online Inventory of Rare and Endangered Plants.

Surveying

Some of the species on your list may not be affected by your project. A trained biologist or botanist, familiar with the habitat requirements of the species on your list, should determine whether they or habitats suitable for them may be affected by your project. We recommend that your surveys include any proposed and candidate species on your list.

For plant surveys, we recommend using the Guidelines for Conducting and Reporting Botanical Inventories. The results of your surveys should be published in any environmental documents prepared for your project.

Your Responsibilities Under the Endangered Species Act

All animals identified as listed above are fully protected under the Endangered Species Act of 1973, as amended. Section 9 of the Act and its implementing regulations prohibit the take of a federally listed wildlife species. Take is defined by the Act as "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect" any such animal.

> Take may include significant habitat modification or degradation where it actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding, or shelter (50 CFR §17.3).

Take incidental to an otherwise lawful activity may be authorized by one of two procedures:

- If a Federal agency is involved with the permitting, funding, or carrying out of a project that may result in take, then that agency must engage in a formal consultation with the Service.

  During formal consultation, the Federal agency, the applicant and the Service work together to avoid or minimize the impact on listed species and their habitat. Such consultation would result in a biological opinion by the Service addressing the anticipated effect of the project on listed and proposed species. The opinion may authorize a limited level of incidental take.

- If no Federal agency is involved with the project, and federally listed species may be taken as part of the project, then you, the applicant, should apply for an incidental take permit. The Service may issue such a permit if you submit a satisfactory conservation plan for the species that would be affected by your project.

  Should your survey determine that federally listed or proposed species occur in the area and are likely to be affected by the project, we recommend that you work with this office and the California Department of Fish and Game to develop a plan that minimizes the project's direct and indirect impacts to listed species and compensates for project-related loss of habitat. You should include the plan in any environmental documents you file.

Critical Habitat

When a species is listed as endangered or threatened, areas of habitat considered essential to its conservation may be designated as critical habitat. These areas may require special management considerations or protection. They provide needed space for growth and normal behavior; food, water, air, light, other nutritional or physiological requirements; cover or shelter; and sites for breeding, reproduction, rearing of offspring, germination or seed dispersal.

Although critical habitat may be designated on private or State lands, activities on these lands are not restricted unless there is Federal involvement in the activities or direct harm to listed wildlife.

If any species has proposed or designated critical habitat within a quad, there will be a separate line for this on the species list. Boundary descriptions of the critical habitat may be found in the Federal Register. The information is also reprinted in the Code of Federal Regulations (50 CFR 17.95). See our critical habitat page for maps.

Candidate Species

We recommend that you address impacts to candidate species. We put plants and animals on our candidate list when we have enough scientific information to eventually propose them for listing as threatened or endangered. By considering these species early in your planning process you may be able to avoid the problems that could develop if one of these candidates was listed before the end of your project.

Species of Concern

The Sacramento Fish & Wildlife Office no longer maintains a list of species of concern. However, various other agencies and organizations maintain lists of at-risk species. These lists provide essential information for land management planning and conservation efforts. More info

Wetlands

If your project will impact wetlands, riparian habitat, or other jurisdictional waters as defined by section 404 of the Clean Water Act and/or section 10 of the Rivers and Harbors Act, you will need to obtain a permit from the U.S. Army Corps of Engineers. Impacts to wetland habitats require site specific mitigation and monitoring. For questions regarding wetlands, please contact Mark Littlefield of this office at (916) 414-6580.

Updates

Our database is constantly updated as species are proposed, listed and delisted. If you address proposed and candidate species in your planning, this should not be a problem. However, we recommend that you get an updated list every 90 days. That would be March 19, 2008.

APPENDIX F
Notices of Preparation

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MARIN COUNTY
COMMUNITY DEVELOPMENT AGENCY
ALEX HINDS, DIRECTOR

NOTICE OF PREPARATION

ENVIRONMENTAL IMPACT REPORT
FOR
SAN RAFAEL ROCK QUARRY AMENDED RECLAMATION PLAN

Marin County will be preparing a Draft Environmental Impact Report (EIR) for environmental review of the San Rafael Rock Quarry 2004 Amended Reclamation Plan (ARP) submitted by the applicant Dutra Materials. The ARP EIR is part of a two-part environmental review process for two projects on the same site, in which a separate Initial Study is being prepared for environmental review of the San Rafael Rock Quarry Surface Mining and Quarrying Permit Amendment (AQP) submitted concurrently by Dutra Materials. This Notice of Preparation is being circulated to solicit comments on the EIR for the ARP. If you would like to be on the mailing list for notices regarding the AQP Initial Study, please submit a request to the address below, or indicate such in your comments submitted on this Notice of Preparation.

The proposed ARP for the Quarry incorporates a final grading plan, drainage system, harbor, and revegetation. After completion of the mining operation, all structures, equipment and storage facilities would be removed, and the site reclaimed and revegetated in accordance with the reclamation and revegetation plan. The major project components of the ARP include: cutting the channel to the bay and flooding the Quarry bowl; creating three stockpile areas, stockpiling overburden 40 feet high and mixing pond fines into the soil in the northeast quadrant; creating a surcharge berm in the northwest quadrant; creating the South Hill soil cover; and general revegetation. The applicant has proposed to continue mining operations for 17 more years beyond approval of the submitted ARP, currently estimated to be approximately 2023. Following termination of quarrying activities, the Quarry owner proposes to level the visual mitigation stockpiles, and flood the Quarry pit and connect it to San Francisco Bay to create a marina, suitable for commercial and residential development on the property.

The San Rafael Rock Quarry property and project site are wholly within unincorporated County of Marin and are located on a promontory point in San Francisco Bay known as Point San Pedro. San Francisco Bay and Point San Pedro Road encircles approximately 290 acres of the property. The site is comprised of marshlands, an existing, separate brick manufacturing facility, a hill approximately 250 feet high known as South Hill, a quarry bowl that has been excavated to approximately 250 feet below sea level, rock crushing and segregation processing facility, an asphalt production plant, docks, and various office and residential buildings. The site is bounded to the north by Point San Pedro Road, McNear's Beach County Park, and residences located in the City of San Rafael. The subject property is located at **1000 Point San Pedro Road, San Rafael**, and is further identified as **Assessor's Parcels 184-010-09, -15, -16, -51, -52**. (Refer to attached map for geographic location).

Pursuant to state and local guidelines implementing the California Environmental Quality Act (CEQA), please be advised that the Marin County Department of Public Works will be the lead agency for the project. The Marin County Environmental Coordinator has determined that an EIR is required for the ARP. Therefore, pursuant to CEQA Guidelines Section 15060(c) an Initial Study has not been prepared for the ARP. The EIR will be a full scope EIR and include the following topical issues:

1)	Land Use & Planning	6)	Transportation/Circulation	11)	Public Services
2)	Population & Housing	7)	Biological Resources	12)	Utilities & Service Systems
3)	Geophysical	8)	Energy & Natural Resources	13)	Aesthetics/Visual Resources
4)	Water	9)	Hazards	14)	Cultural Resources
5)	Air Quality	10)	Noise	15)	Social &Economic Effects Related to Physical Impacts

To ensure that the EIR for this project is thorough and adequate, and meets the needs of all agencies reviewing it, we are soliciting comments on specific issues to be included in the environmental review. Public comments on the scope of issues to be evaluated in the EIR are encouraged. Details of the applicant's proposed project and application, including project design and mapped location, are on file with the office of the Marin County Community Development Agency, 3501 Civic Center Drive, Room 308, San Rafael, CA 94903-4157, and are available for public review between the hours of 8:00 a.m. to 4:00 p.m., Monday through Friday.

Please submit your written comments to the Community Development Agency by November 30, 2005. Comments by FAX or E-mail may not be able to be confirmed as officially received and accepted before the end of the comment period deadline. Commentors are advised to mail written comments postmarked on or before November 30, 2005. Please direct questions about the project itself to Rachel Warner, Environmental Planning Aide, CDA, at 415-499-6863, or Eric Steger, Senior Civil Engineer, DPW, 415/507-2754.

Tim Haddad
Environmental Coordinator

MARIN COUNTY
COMMUNITY DEVELOPMENT AGENCY

ALEX HINDS, DIRECTOR

M E M O R A N D U M

TO:
State Clearinghouse
ABAG Clearinghouse
Project Sponsor
Marin Municipal Water District
City of San Rafael
City of San Rafael Planning Department
Pt. San Pedro Road Coalition*
Sonoma County Permit & Resource Mngmt. Dept.
Alameda County CAO
City of Petaluma
Contra Costa County CAO
State Dept. of Health Services*
BAAQMD*
Interested Parties
US Army Corps of Engineers *
U.S. Fish & Wildlife Service *
CA Air Resources Board*
CA Dept. of Toxic Substances*
CA State Lands Commission*
CA State Water Resources Cont. Bd.*
CA Dept. of Boating & Waterways*
State Department of Parks & Recreation*
State Regional Water Quality Control Board *
State Department of Fish and Game *
Caltrans District 4*
SF Bay Conserv. & Dev. Comm.*
State Office of Historic Preservation*

RE: Notice of Preparation of an Environmental Impact Report for the San Rafael Rock Quarry Amended Reclamation Plan; 1000 Point San Pedro Road, San Rafael; Assessor's Parcels 184-010-09, -15, -16, -51, -52.

DATE: October 26, 2005

Pursuant to state and local guidelines implementing the California Environmental Quality Act, please be advised that the Marin County Department of Public Works will be the lead agency and will prepare an Environmental Impact Report (EIR) for the San Rafael Rock Quarry Amended Reclamation Plan submittal. We need to know the views of your agency as to the scope and content of the environmental information which is germane to your agency's statutory responsibilities in connection with the proposed project. Your agency may need to use the Project EIR prepared by this agency when considering your permit or other approval for the project.

A summary of the project description, location and the potential environmental effects is contained in the attached materials. Please note that the EIR on the Reclamation Plan is part of a two-part environmental review process for two projects on the same site, as indicated in the attached Notice of Preparation project description.

Due to time limits mandated by State law, your response must be sent at the earliest possible date, but not later than 30 days from the date identified below. Comments by FAX or E-mail may not be able to be confirmed as officially received and accepted before the end of the comment period deadline. Commentors are advised to mail written comments postmarked on or before November 30, 2005.

Please send your response to Tim Haddad at the address shown below. We will need the name of a contact person in your agency and also please indicate your interest in being on the mailing list for the separate Quarry Permit Initial Study.

PROJECT TITLE: San Rafael Rock Quarry Amended Reclamation Plan submittal
Assessor's Parcels 184-010-09, -15, -16, -51, -52.

DATE: October 26, 2005

PREPARED BY: _____
Tim Haddad
TITLE: Environmental Coordinator
TELEPHONE: (415) 499-6269

3501 CIVIC CENTER DRIVE, ROOM 308 – SAN RAFAEL, CA 94903-4157 – 415-499-6269 – FAX 415-499-7880

MARIN COUNTY
COMMUNITY DEVELOPMENT AGENCY
ALEX HINDS, DIRECTOR

NOTICE OF PREPARATION
AND
NOTICE OF PUBLIC SCOPING MEETING
FOR THE
SAN RAFAEL ROCK QUARRY AMENDED QUARRY PERMIT
ENVIRONMENTAL IMPACT REPORT

Marin County is preparing a Draft Environmental Impact Report (EIR) for the San Rafael Rock Quarry, (SRRQ) Amended Quarry Permit (AQP) project submitted by the applicant, Dutra Materials. The AQP is part of a two part environmental review process to separately evaluate two projects on the same site, pursuant to the California Environmental Quality Act, (CEQA). At the request of Dutra Materials and their attorneys, and pursuant to established Appellate court precedent, Marin County is conducting CEQA environmental review of SRRQ's proposed AQP project separately from Dutra Materials' proposed Amended Reclamation Plan, (ARP) project. The ARP project environmental review analysis is currently in progress, with a scoping session having previously been held on January 25, 2006. A seperate Initial Study on the amended quarry permit was recently completed with a finding by the County Environmental Coordinator that that the proposed project may have a significant effect on the environment and an Environmental Impact Report is required. This Notice of Preparation and Scoping meeting is being held to solicit comments on the EIR for the AQP project. (For administrative efficiency and to ease public availability and review, following the completion of both of the EIR's, they will be combined in a single document and circulated for public review and comment on each project environmental analysis).

A Surface Mining and Quarrying Permit (#Q-72-03) was issued by the Department of Public Works on April 10, 1972. Attached to the permit were General Provisions but no specific operating conditions. As a result of a court order in 2005, the San Rafael Rock Quarry submitted a project description that allows the County to consider, and if deemed appropriate, amend Permit #Q72-03 wherein all operating issues associated with quarry's mining operations may be considered.

Quarrying use of the property has existed since the mid-nineteenth century. The primary products currently produced at the Quarry include, rock, concrete aggregate, sand, asphaltic concrete and rip rap products that are used for road, dike, and infrastructure construction. In summary, the project sponsor proposes to continue quarrying within certain areas of site, including to blast, excavate and transport rock and earth from the Main Quarry Bowl to a depth of –400' MSL, consistent with the submitted 2004 ARP and from the South Hill consistent with Figure 4 of the 1982 ARP. The Quarry will continue to: crush, sort, and stockpile earth and rock quarried from the site, dock and load barges with earth, sand and rock quarried from the site, operate an asphalt batch plant, and load and weigh commercial trucks that export and transport material over Point San Pedro Road. Hours of proposed operation for the crushing plant are 7 a.m. to 5 p.m., December 1 through April 30, and 7 a.m. to 10 p.m., May 1 through November 30 (no crushing on Sat. or Sun.). Barge loading hours of operations are proposed year long as 7 a.m. to 10 p.m. Quarry material truck traffic is proposed to be limited to 250 one way trips (125 round trips), Monday through Friday (except holidays), between 7 a.m. to 5 p.m., except in declared public emergencies. Not a part of this project proposal is the manufacture of brick products still occurs on a portion of the property, currently leased by the San Rafael Rock Quarry to the McNear Brick Company.

San Rafael Rock Quarry property and project site are wholly within unincorporated County of Marin and are located on a promontory point in San Francisco Bay known as Point San Pedro. San Francisco Bay and Point San Pedro Road encircles approximately 290 acres of the property. The site is comprised of marshlands, an existing, separate brick manufacturing facility, a hill approximately 250 feet high known as South Hill, a quarry bowl that has been excavated to approximately 250 feet below sea level, rock crushing and segregation processing facility, an asphalt production plant, docks, and various office and residential buildings. The site is bounded to the north by Point San Pedro Road, McNear's Beach County Park, and residences located in the City of San Rafael. The subject property is located at **1000 Point San Pedro Road, San Rafael**, and is further identified as **Assessor's Parcels 184-010-09, -15, -16, -51, -52**.

Pursuant to state and local guidelines implementing the California Environmental Quality Act (CEQA), please be advised that the Marin County Community Development Agency - Planning Division will be

the lead agency for the project. The Marin County Environmental Coordinator has determined that a focused EIR is required for the project based on the AQP project Initial Study prepared pursuant to CEQA Guidelines 15063. The EIR will focus on the following topical issues 1, 5, 7, 9, 10, 13 & 14:

1) Land Use & Planning	6) Transportation/Circulation	11) Public Services
2) Population & Housing	7) Biological Resources	12) Utilities & Service Systems
3) Geophysical	8) Energy & Natural Resources	13) Aesthetics/Visual Resources
4) Water	9) Hazards	14) Cultural Resources
5) Air Quality	10) Noise	15) Social & Economic Effects Related to Physical Impacts

To ensure that the EIR for this project is thorough and adequate, and meets the needs of all agencies reviewing it, we are soliciting comments on specific issues to be included in the environmental review. Public comments on the scope of issues to be evaluated in the EIR are also encouraged. Details of the project sponsor's project description and application, including project design and mapped location, are contained in the Initial Study on file with the office of the Marin County Community Development Agency, 3501 Civic Center Drive, Room 308, San Rafael, CA 94903-4157, and are available for public review between the hours of 8:00 a.m. to 4:00 p.m., Monday through Friday. Hard copies or CDs of the initial study can be obtained at the Community Development Agency Office, or the document can be accessed online at http://www.co.marin.ca.us/depts/CD/main/comdev/eir.cfm.

So that the EIR will address any additional issues that may be of concern to the public for this proposed project, the County will also conduct the public scoping meeting on **Wednesday, September 12, 2007 from 6:00 p.m. to 9:00 p.m., at Glenwood Elementary School, 25 West Castlewood Drive, San Rafael, CA 94901**. Public Agencies, Community Groups and interested members of the public are invited to attend this meeting and present oral or written comments they may have on this proposed project EIR. Due to scheduling conflicts and availability of a facility to conduct an evening scoping meeting in the community in the vicinity of the project, it is unfortunately necessary to schedule the meeting on a holiday evening. We extend our sincere apologies to those who may be inconvenienced by the scheduled meeting date. Additional time to comment on the scope of issues for the project EIR have therefore been provided.

If you wish to comment during the NOP review period, or if you cannot attend the scoping meeting we will accept written comments about the scope of the environmental report until the close of the NOP comment period at **4:00 pm on Monday, September 17, 2007**. Commentors are advised to mail written comments postmarked on or before September 17, 2007 to the attention of Tim Haddad at 3501 Civic Center Drive, Room 308, San Rafael, CA 94903. Comments by FAX or E-mail may not be able to be confirmed as officially received and accepted before the end of the comment period deadline. Comment letters should clearly identify and include in the subject heading Comments on the San Rafael Rock Quarry AQP Notice of Preparation in order to distinguish these comments from any comments previously submitted on the ARP. If you have any questions, or want additional information concerning the scoping meeting, please contact Rachel Warner, Environmental Planner, CDA, at 415-499-6863. Please direct questions about the project, the project application and design, or processing to the application to Eric Steger, Senior Civil Engineer, DPW, 415-507-2754.

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NOPandScopingNot.doc
8/17/07

Tim Haddad,
Environmental Coordinator





Glenwood Elementary School is accessible to persons with disabilities. If you require ASL interpreters, assistive listening devices or other accommodations, you may request them by calling (415) 499-6172 (TDD) or (415) 499-6104 (TDD & Voice) or dialing 711 (California Relay Service) to connect to the telephone listed above. **Requests must be received no less than four working days** prior to the meeting to help to ensure availability.

MARIN COUNTY
COMMUNITY DEVELOPMENT AGENCY

ALEX HINDS, DIRECTOR

MEMORANDUM

TO:
State Clearinghouse
ABAG Clearinghouse
Project Sponsor
Marin Municipal Water District
City of San Rafael
City of San Rafael Planning Department
Pt. San Pedro Road Coalition*
Sonoma County Permit & Resource Mngmt. Dept.
Alameda County CAO
City of Petaluma
Contra Costa County CAO
State Dept. of Health Services*
BAAQMD*
Interested Parties
US Army Corps of Engineers *
U.S. Fish & Wildlife Service *
CA Air Resources Board*
CA Dept. of Toxic Substances*
CA State Lands Commission*
CA State Water Resources Cont. Bd.*
CA Dept. of Boating & Waterways*
State Department of Parks & Recreation*
State Regional Water Quality Control Board *
State Department of Fish and Game *
Caltrans District 4*
SF Bay Conserv. & Dev. Comm.*
State Office of Historic Preservation*

RE: Notice of Preparation and Notice of Scoping Session of an Environmental Impact Report for the San Rafael Rock Quarry Amended Quarry Permit; 1000 Point San Pedro Road, San Rafael; Assessor's Parcels 184-010-09, -15, -16, -51, -52.

DATE: August 17, 2007

Pursuant to state and local guidelines implementing the California Environmental Quality Act (CEQA), please be advised that the Marin County Department of Public Works will be the lead agency and will prepare an Environmental Impact Report (EIR) for the San Rafael Rock Quarry Amended Quarry Permit (AQP) submittal. We need to know the views of your agency as to the scope and content of the environmental information which is germane to your agency's statutory responsibilities in connection with the proposed project. Your agency may need to use the Project EIR prepared by this agency when considering your permit or other approval for the project. A focused EIR is required for the project based on the AQP project Initial Study prepared pursuant to CEQA Guidelines 15063. A summary of the issues to be discussed in the focused EIR are included in the attached table from the initial study. Details of the project sponsor's project description and application, including project design and mapped location, are contained in the Initial Study on file with the office of the Marin County Community Development Agency, 3501 Civic Center Drive, Room 308, San Rafael, CA 94903-4157, and are available for public review between the hours of 8:00 a.m. to 4:00 p.m., Monday through Friday. Hard copies or CDs of the initial study can be obtained at the Community Development Agency Office, or the document can be accessed online at http://www.co.marin.ca.us/depts/CD/main/comdev/eir.cfm.

The AQP is part of a two part environmental review process to separately evaluate two projects on the same site, pursuant to the California Environmental Quality Act, (CEQA). At the request of Dutra Materials and their attorneys, and pursuant to established Appellate court precedent, Marin County is conducting CEQA environmental review of SRRQ's proposed AQP project separately from Dutra Materials' proposed Amended Reclamation Plan, (ARP) project. The ARP project environmental review analysis is currently in progress, with a scoping session having previously been held on January 25, 2006. The initial study on the AQP noted above was

completed with a finding by the County Environmental Coordinator that that the proposed project may have a significant effect on the environment and an Environmental Impact Report is required. Comment letters should clearly identify and include in the subject heading Comments on the San Rafael Rock Quarry AQP Notice of Preparation in order to distinguish these comments from any comments previously submitted on the ARP.

Due to time limits mandated by State law, your response must be sent at the earliest possible date, but not later than 30 days from the date identified below. Comments by FAX or E-mail may not be able to be confirmed as officially received and accepted before the end of the comment period deadline. Commentors are advised to mail written comments postmarked on or before September 17, 2007. The County will also conduct the public scoping meeting on **Wednesday, September 12, 2007 from 6:00 p.m. to 9:00 p.m., at Glenwood Elementary School, 25 West Castlewood Drive, San Rafael, CA 94901.** Public Agencies, Community Groups and interested members of the public are invited to attend this meeting and present oral or written comments they may have on this proposed project EIR.

Please send your response to Tim Haddad at the address shown below. We will need the name of a contact person in your agency.

PROJECT TITLE: San Rafael Rock Quarry Amended Quarry Permit and Reclamation Plan
Assessor's Parcels 184-010-09, -15, -16, -51, -52.

DATE: August 17, 2007

PREPARED BY: _____
Tim Haddad
TITLE: Environmental Coordinator
ADDRESS: 3501 Civic Center Drive, Room 308
San Rafael, CA 94903-4157
TELEPHONE: (415) 499-6269

Attachments: NOP Project Description and Geographic Location Map
**Certified*
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APPENDIX G1

Comments on the NOP and Public Scoping Comments on the ARP

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Scoping Comment Log
San Rafael Rock Quarry Amended Reclamation Plan EIR

	Name of Commentor	Affiliation of Commentor	Comment Letter Designation	Comment Number	Section Where Addressed in EIR
State Agency					
	James S. Pompy	Department of Conservation, Office of Mine Reclamation	A	1	Geology
	Scott Morgan	California State Clearinghouse and Planning Unit	B	1	Introduction
	Timothy C. Sable	California Department of Transportation	C	1	Transportation and Traffic
	Robert W. Floerke	California Department of Fish and Game	D	1	Biological Resources
			D	2	Land Use and Planning
Local Govt					
	City of San Rafael	Robert M. Brown	E	1	Public Services, Utilities, and Energy
			E	2	Transportation and Traffic
			E	3	Population and Housing
			E	4	Project Description
			E	5	Transportation and Traffic
	Art Brook	Marin County Department of Public Works	F	1	Transportation and Traffic
Local Group					
	Jeanne Cohn	Loch Lomond Homeowners Association	G	1	Environmental Setting, Impacts, and Mitigation Measures
			G	2	Project Description
			G	3	Transportation and Traffic
	Leo Isotalo	Peacock Gap Homeowners Association	H	1	Merits of the Project are not addressed in the EIR
			H	2	Air Quality
			H	3	Noise
			H	4	Transportation and Traffic
			H	5	Land Use and Planning
			H	6	Population and Housing
			H	7	Aesthetics
			H	8	Transportation and Traffic
Local Environ Group					
	Barbara Salzman and Philip Peterson	Marin Audubon Society	I	1	Biological Resources; Hydrology and Water Quality
			I	2	Biological Resources
			I	3	Hydrology and Water Quality
			I	4	Biological Resources
			I	5	Population and Housing
			I	6	Land Use and Planning
			I	7	Alternatives
	Jana Haehl	Marin Conservation League	J	1	Project Description
			J	2	Environmental Setting, Impacts and Mitigation Measures
			J	3	Land Use and Planning
			J	4	Alternatives
			J	5	Hydrology and Water Quality
			J	6	Geology, Soils, and Seismicity
	Trip Allen	Point San Pedro Road Coalition	K	1	Land Use and Planning
			K	2	Population and Housing; Transportation and Traffic
			K	3	Hydrology and Water Quality; Geology, Soils, and Seismicity
			K	4	Air Quality; Hydrology and Water Quality
			K	5	Transportation and Traffic
			K	6	Biological Resources
			K	7	Public Services, Utilities and Energy
			K	8	Hazardous Materials
			K	9	Noise
			K	10	Public Services, Utilities and Energy
			K	11	Aesthetics
			K	12	Cultural Resources
			K	13	Cultural Resources
	Maureen Gaffney	The Bay Trail Project--Association of Bay Area Governments	L	1	Land Use
	Michele Barni	Sierra Club Marin Group	M	1	Introduction
Individuals			M	2	Project Description
			M	3	Transportation and Traffic
			M	4	Hydrology and Water Quality
			M	5	Land Use
			M	6	Geology, Soils and Seismicity; Air Quality; Hydrology and Wa
			M	7	Aesthetics
			M	8	Transportation and Traffic
			M	9	Public Services, Utilities, and Energy
	Andrew Stokes and Ingrid Cornelissen	Individuals	N	1	Land Use
			N	2	Population and Housing
			N	3	Hydrology and Water Quality; Geology, Soils and Seismicity
			N	4	Geology, Soils and Seismicity
			N	5	Hydrology and Water Quality
			N	6	Air Quality
			N	7	Transportation and Traffic
			N	8	Biological Resources
			N	9	Public Services, Utilities and Energy
			N	10	Hazardous Materials
			N	11	Noise
			N	12	Public Services, Utilities and Energy
			N	13	Public Services, Utilities and Energy
			N	14	Aesthetics
			N	15	Cultural Resources
			N	16	Cultural Resources
			N	17	Project Description

Scoping Comment Log
San Rafael Rock Quarry Amended Reclamation Plan EIR

Name of Commentor	Affiliation of Commentor	Comment Letter Designation	Comment Number	Section Where Addressed in EIR
David F. Crutcher	Individual	O	1	Population and Housing; Noise
William E. Hosken and James Dillon	Individual (appended results from RAM Environmental Engineering Services, Inc.)	P	1	Transportation and Traffic
		P	2	Project Description
		P	3	Hydrology and Water Quality
		P	4	Project Description
		P	5	Project Description
		P	6	Project Description; Hydrology and Water Quality; Biological
		P	7	Project Description
		P	8	Biological Resources; Hydrology and Water Quality
		P	9	Noise, Air Quality, Aesthetics
		P	10	Alternatives
		P	11	Introduction
Kevin and Patricia O'Keefe	Individuals	Q	1	Air Quality
		Q	2	Noise; Population and Housing; Air Quality
		Q	3	Aesthetics
		Q	4	Transportation and Traffic
Public Scoping Session written comment form				
Arlette Cohen	Individual	R	1	Hydrology and Water Quality
Ruth Anne Hosken	Individual	S	1	Hydrology and Water Quality; Biological Resources
William Hosken	Individual	T	1	Introduction
		T	2	Biological Resources; Hydrology and Water Quality
		T	3	Introduction; Project Description
		T	4	Project Description
		T	5	Geology, Soils and Seismicity
		T	6	Land Use
		T	7	Public Services, Utilities and Energy; Transportation and Tra
		T	8	Biological Resources
		T	9	Cultural Resources
		T	10	Noise; Air Quality
		T	11	Geology, Soils and Seismicity; Hydrology and Water Quality
Nicholas D. James	Individual	U	1	Merits of the Project are not addressed in the EIR
Amanda Metcalf	Individual	V	1	Air Quality
		V	2	Noise
		V	3	Noise; Air Quality; Transportation and Traffic
		V	4	Merits of the Project are not addressed in the EIR
		V	5	Aesthetics
		V	6	Merits of the Project are not addressed in the EIR
Jeffrey Moss	Individual	W	1	Land Use; Aesthetics; Cultural Resources
Kathleen T. Peters	Individual	X	1	Geology, Soils and Sesmicity; Transportation and Traffic
		X	2	Transportation and Traffic
		X	3	Air Quality
		X	4	Hazardous Materials; Population and Housing
		X	5	Merits of the Project are not addressed in the EIR
		X	6	Aesthetics; Biological Resources; Hydrology and Water Qual
Julie Schlein	Individual	Y	1	Aesthetics; Air Quality; Land Use; Biological Resources
Donald Widder	Individual	Z	1	Aesthetics
		Z	2	Noise; Air Quality
		Z	3	Land Use
		Z	4	Noise; Air Quality
		Z	5	Air Quality
		Z	6	Introduction; Project Description
		Z	7	Noise
		Z	8	Air Quality

Scoping Comment Log
San Rafael Rock Quarry Amended Reclamation Plan EIR

Name of Commentor	Affiliation of Commentor	Comment Letter Designation	Comment Number	Section Where Addressed in EIR
ARP Public Scoping Session Oral Comment Summary Minutes, January 25, 2006		AA		
Michael Nelson	San Pedro Homeowner's Assoc.	AA	1	Traffic, Air Quality, Noise
			2	Alternatives
Jonathan Frieman	Point San Pedro Road Coalition	AA	3	Air Quality, Noise
			4	Merits of the Project are not addressed in the EIR
John Shook	Individual	AA	5	Noise, Alternatives
			6	Aesthetics
Bob Brown	City of San Rafael	AA	7	Land Use and Planning
			8	Land Use and Planning
			9	Traffic
			10	Land Use and Planning
Jim Dillon	Individual	AA	11	Noise, Traffic, Air Quality
			12	Aesthetics, Noise, Alternatives
			13	Comment not specific
			14	Alternatives
			15	Alternatives
			16	Land Use and Planning
			17	Economic analysis is beyond the scope of an EIR
Gary Ghilotti	Individual	AA	18	Alternatives
Trip Allen , Sierra Club and San	Pedro Road Environmental Committee	AA	19	Project Description
			20	Alternatives
			21	Project Description
			22	Alternatives
			23	Alternatives
			24	Biological Resources; Alternatives
			25	Alternatives
Amanda Metcalf	Individual	AA	26	Addresses past condition
			27	Air Quality
			28	Economic analysis is beyond the scope of an EIR
			29	Hydrology and Water Quality
			30	Biological Resources; Cumulative Effects
			31	Noise, Air Quality
Mary Rabb	Individual	AA	32	Noise, Appendix J
Bonnie Marmor	Point San Pedro Road Coalition	AA	33	Air Quality, Noise, Land Use and Planning
			34	Air Quality, Noise
			35	Alternatives
			36	Hydrology and Water Quality, Biological Resources
			37	Air Quality
			38	Geology and Seismicity
			39	Baseline discussion in Chapter 1
			40	Alternatives
			41	Project Description
Jeanne Chn	Loch Lomond Homeowners	AA	42	Traffic, Alternatives
Denise Lucy	Point San Pedro Road Coalition	AA	43	Alternatives
			44	Noise, Cumulative Effects
			45	Land Use and Planning
			46	Traffic
Roger Roberts	Marin Conservation League	AA	47	Comment not specific
			48	Traffic
Barbara Salzman	Marin Audobon Society	AA	49	Biological Resources
			50	Biological Resources
			51	Biological Resources
			52	Biological Resources
Jennifer Connor	Individual	AA	53	Traffic
			54	Baseline discussion in Chapter 1
Arlette Cohen	Individual	AA	55	Biological Resources
			56	Biological Resources

A

DEPARTMENT OF CONSERVATION

OFFICE OF MINE RECLAMATION

801 K STREET • MS 09-06 • SACRAMENTO, CALIFORNIA 95814

PHONE 916 / 323-9198 • **FAX** 916 / 322-4862 • **TDD** 916 / 324-2555 • **WEB SITE** conservation.ca.gov

November 30, 2005

VIA FAX: (415) 499-7880
CONFIRMATION MAILED

Tim Haddad
County of Marin
Community Development Agency
3501 Civic Center Drive, Room 308
San Rafael, CA 94903-4157

Dear Mr. Haddad:

San Rafael Rock Quarry Amended Reclamation Plan NOP
CA Mine ID# # 91-21-0008

The Department of Conservation's Office of Mine Reclamation (OMR) has reviewed the Notice of Preparation (NOP) for the amended reclamation plan for San Rafael Rock Quarry. OMR has been working with Dutra Materials and their consultants to address issues related to reclamation of the mine site. OMR had raised concerns about the long-term stability of mine quarry slopes in a letter to Marin County dated February 17, 2005. A recent April 11, 2005 geotechnical report by ENGEO, Inc., titled *Supplemental Geotechnical Data Report Proposed Changes to Mining Plan, San Rafael Quarry, Marin County, California* has addressed OMR's concerns, provided the geotechnical engineer's recommendations are incorporated in the reclamation plan. When available, please provide OMR a copy of the Draft Environmental Impact Report for the Amended Reclamation Plan for review. 1

If you have any questions on these comments or require any assistance with other mine reclamation issues, please contact me at (916) 323-8565.

Sincerely,

James S. Pompy, Manager
Reclamation Unit

B

STATE OF CALIFORNIA

Governor's Office of Planning and Research

State Clearinghouse and Planning Unit

Arnold Schwarzenegger
Governor

Sean Walsh
Director

Notice of Preparation

October 31, 2005

To: Reviewing Agencies

Re: San Rafael Rock Quarry Amended Reclamation Plan
SCH# 2005102122

Attached for your review and comment is the Notice of Preparation (NOP) for the San Rafael Rock Quarry Amended Reclamation Plan draft Environmental Impact Report (EIR).

Responsible agencies must transmit their comments on the scope and content of the NOP, focusing on specific information related to their own statutory responsibility, within 30 days of receipt of the NOP from the Lead Agency. This is a courtesy notice provided by the State Clearinghouse with a reminder for you to comment in a timely manner. We encourage other agencies to also respond to this notice and express their concerns early in the environmental review process.

Please direct your comments to:

Tim Haddad
Marin County
3501 Civic Center Drive, Room 308
San Rafael, CA 94903-4157

with a copy to the State Clearinghouse in the Office of Planning and Research. Please refer to the SCH number noted above in all correspondence concerning this project.

If you have any questions about the environmental document review process, please call the State Clearinghouse at (916) 445-0613.

Sincerely,

Scott Morgan
Associate Planner, State Clearinghouse

Attachments
cc: Lead Agency

1

1400 TENTH STREET P.O. BOX 3044 SACRAMENTO, CALIFORNIA 95812-3044
TEL (916) 445-0613 FAX (916) 323-3018 www.opr.ca.gov

Document Details Report
State Clearinghouse Data Base

B

SCH# 2005102122
Project Title San Rafael Rock Quarry Amended Reclamation Plan
Lead Agency Marin County

Type NOP Notice of Preparation

Description Project components include: cutting the channel to the bay and flooding the Quarry bowl; creating stockpile areas, stockpiling overburden and mixing pond fines; creating surcharge berm, soil cover, and general revegetation. This EIR is part of a two-part environmental review process for two projects on the same site; in which a separate Initial Study is being prepared for environmental review of the San Rafael Rock Quarry Surface Mining and Quarry Permit Amendment.

Lead Agency Contact

Name Tim Haddad
Agency Marin County
Phone (415) 499-6269 **Fax**
email
Address 3501 Civic Center Drive, Room 308
City San Rafael **State** CA **Zip** 94903-4157

Project Location

County Marin
City San Rafael
Region
Cross Streets Point San Pedro Road
Parcel No. 184-010-09, 15, 16, 51, 52
Township **Range** **Section** **Base**

Proximity to:

Highways
Airports
Railways
Waterways San Francisco Bay
Schools
Land Use Multi-Family Residential; single-family residential (vacant); mixed use, unimproved industrial

Project Issues Aesthetic/Visual; Air Quality; Archaeologic-Historic; Biological Resources; Drainage/Absorption; Noise; Minerals; Geologic/Seismic; Flood Plain/Flooding; Soil Erosion/Compaction/Grading; Toxic/Hazardous; Traffic/Circulation; Vegetation; Water Quality; Water Supply; Wetland/Riparian; Wildlife; Landuse; Cumulative Effects

Reviewing Agencies Resources Agency; Department of Conservation; Office of Historic Preservation; Department of Parks and Recreation; Department of Water Resources; San Francisco Bay Conservation and Development Commission; Department of Fish and Game, Region 3; Department of Fish and Game, Marine Region; Native American Heritage Commission; Caltrans, District 4; California Highway Patrol; State Lands Commission; Air Resources Board, Major Industrial Projects; Integrated Waste Management Board; Regional Water Quality Control Board, Region 2

1

Date Received 10/28/2005 **Start of Review** 10/28/2005 **End of Review** 11/28/2005

Note: Blanks in data fields result from insufficient information provided by lead agency.

sources Agency

Resources Agency
Nadell Gayou

Dept. of Boating & Waterways
David Johnson

California Coastal Commission
Elizabeth A. Fuchs

Colorado River Board
Gerald R. Zimmerman

Dept. of Conservation
Roseanne Taylor

California Energy Commission
Roger Johnson

Dept. of Forestry & Fire Protection
Allen Robertson

Office of Historic Preservation
Wayne Donaldson

Dept of Parks & Recreation
Environmental Stewardship Section

Reclamation Board
DeeDee Jones

S.F. Bay Conservation & Dev't. Comm.
Steve McAdam

Dept. of Water Resources
Resources Agency
Nadell Gayou

Conservancy

n and Game

Depart. of Fish & Game
Scott Flint
Environmental Services Division

Fish & Game Region 1
Donald Koch

Fish & Game Region 2
Banky Curtis

Fish & Game Region 3
Robert Floerke

Fish & Game Region 4
Mike Mulligan

Fish & Game Region 5
Don Chadwick
Habitat Conservation Program

Fish & Game Region 6
Gabrina Gatchel
Habitat Conservation Program

Fish & Game Region 6 I/M
Tammy Allen
Inyo/Mono, Habitat Conservation Program

Dept. of Fish & Game M
George Isaac
Marine Region

Other Departments

Food & Agriculture
Steve Shaffer
Dept. of Food and Agriculture

Depart. of General Services
Public School Construction

Dept. of General Services
Robert Sleppy
Environmental Services Section

Dept. of Health Services
Veronica Rameriz
Dept. of Health/Drinking Water

Independent Commissions,Boards

Delta Protection Commission
Debby Eddy

Office of Emergency Services
Dennis Castrillo

Governor's Office of Planning & Research
State Clearinghouse

Native American Heritage Comm.
Debbie Treadway

Public Utilities Commission
Ken Lewis

State Lands Commission
Jean Sarino

Tahoe Regional Planning Agency (TRPA)
Cherry Jacques

Business, Trans & Housing

Caltrans - Division of Aeronautics
Sandy Hesnard

Caltrans - Planning
Terri Pencovic

California Highway Patrol
John Olejnik
Office of Special Projects

Housing & Community Development
Lisa Nichols
Housing Policy Division

Dept. of Transportation

Caltrans, District 1
Rex Jackman

Caltrans, District 2
Marcelino Gonzalez

Caltrans, District 3
Katherine Eastham

Caltrans, District 4
Tim Sable

Caltrans, District 5
David Murray

Caltrans, District 6
Marc Birnbaum

Caltrans, District 7
Cheryl J. Powell

Caltrans, District 8
Dan Kopulsky

Caltrans, District 9
Gayle Rosander

Caltrans, District 10
Tom Dumas

Caltrans, District 11
Mario Orso

Caltrans, District 12
Bob Joseph

Cal EPA

Air Resources Board

Airport Projects
Jim Lerner

Transportation Projects
Kurt Karperos

Industrial Projects
Mike Tollstrup

California Integrated Waste Management Board
Sue O'Leary

State Water Resources Control Board
Jim Hockenberry
Division of Financial Assistance

State Water Resources Control Board
Student Intern, 401 Water Quality Certification Unit
Division of Water Quality

State Water Resouces Control Board
Steven Herrera
Division of Water Rights

Dept. of Toxic Substances Control
CEQA Tracking Center

Department of Pesticide Regulation

Regional Water Quality Control Board (RWQCB)

RWQCB 1
Cathleen Hudson
North Coast Region (1)

RWQCB 2
Environmental Document Coordinator
San Francisco Bay Region (2)

RWQCB 3
Central Coast Region (3)

RWQCB 4
Jonathan Bishop
Los Angeles Region (4)

RWQCB 5S
Central Valley Region (5)

RWQCB 5F
Central Valley Region (5)
Fresno Branch Office

RWQCB 5R
Central Valley Region (5)
Redding Branch Office

RWQCB 6
Lahontan Region (6)

RWQCB 6V
Lahontan Region (6)
Victorville Branch Office

RWQCB 7
Colorado River Basin Region (7

RWQCB 8
Santa Ana Region (8)

RWQCB 9
San Diego Region (9)

Other _____

_____

_____

Last Updated on 08/10/05

B

1

C

DEPARTMENT OF TRANSPORTATION
111 GRAND AVENUE
P. O. BOX 23660
OAKLAND, CA 94623-0660
PHONE (510) 286-5505
FAX (510) 286-5559
TTY (800) 735-2929

Flex your power!
Be energy efficient!

November 3, 2005

MRN000060
SCH# 2005102122

Mr. Tim Haddad
Marin County
3501 Civic Center Drive, Room 308
San Rafael, CA 94903-4157

Dear Mr. Haddad:

San Rafael Rock Quarry Amended Reclamation Plan – Notice of Preparation (NOP)

Thank you for including the California Department of Transportation (Department) in the environmental review process for the above-referenced project.

Traffic Analysis

The Department is primarily concerned with impacts to the State Highway System. Please ensure that the environmental analysis evaluates the project's impacts by applying the following criteria to determine if a traffic analysis for State highway facilities is warranted:

1. The project will generate over 100 peak hour trips assigned to a State highway facility.

2. The project will generate between 50 to 100 peak hour trips assigned to a State highway facility, and the affected highway facilities are experiencing noticeable delay; approaching unstable traffic flow (level of service (LOS) "C" or "D") conditions.

3. The project will generate between 1 to 49 peak hour trips assigned to a State highway facility, and the affected highway facilities are experiencing significant delay; unstable or forced traffic flow (LOS "E" or "F") conditions.

1

We recommend using the Department's Guide for the Preparation of Traffic Impact Studies for determining which scenarios and methodologies to use in the analysis. It is available at the following website address:
http://www.dot.ca.gov/hq/traffops/developserv/operationalsystems/reports/tisguide.pdf

If the project will not generate the amount of trips needed to meet the Department's trip generation thresholds, an explanantion of how this conclusion was reached should be provided.

Should you require further information or have any questions regarding this letter, please call Ina Gerhard of my staff at (510) 286-5737.

Sincerely,

Timothy C. Sable

TIMOTHY C. SABLE
District Branch Chief
IGR/CEQA

c: State Clearinghouse

State of California – The Resources Agency ARNOLD SCHWARZENEGGER, Governor
DEPARTMENT OF FISH AND GAME
http://www.dfg.ca.gov
POST OFFICE BOX 47
YOUNTVILLE, CALIFORNIA 94599
(707) 944-5500

D

January 30, 2006

Mr. Tim Haddad
Environmental Coordinator
Marin County Community Development Agency
3501 Civic Center Drive, Room 308
San Rafael, CA 94903-4157

Dear Mr. Haddad:

Scoping for the preparation of a Draft Environmental Impact Report for the San Rafael Rock Quarry 2004 Amendment Reclamation Plan Marin County

The Department of Fish and Game (DFG) appreciates the opportunity to comment on the scope of work to be conducted in preparation of a Draft Environmental Impact Report for the San Rafael Rock Quarry 2004 Amendment Reclamation Plan (ARP). This project will result in changes to fish and wildlife resources as described in Title 14, California Code of Regulations (14 CCR), Section 753.5(d)(1)(A)-(G)[1]. You are preparing a Draft Environmental Impact Report (EIR) for this project, therefore a de minimis determination is not appropriate and an environmental filing fee as required under Fish and Game Code Section 711.4(d) should be paid to the Marin County Clerk on or before filing of the Notice of Determination for this project.

The areas enclosed within and adjacent to those outlined in the San Rafael Rock Quarry 2004 ARP potentially provide habitat for a number of species including California clapper rail (*Rallus longirostris obsoletus*), salt-marsh harvest mouse (*Reithrodontomys raviventris*), California black rail (*Latterallus jamaicensis coturnictulas*), Monarch butterfly (*Danaus plexipuss*), and a number of other plants, animals and habitats. 1

In order for DFG to provide meaningful review and comment, a complete assessment (including but not limited to type, quantity, and locations) of the habitats, fauna and flora within and adjacent to the project area, including endangered, threatened, locally unique species and sensitive habitats should be disclosed within the draft EIR. Rare, threatened and endangered species to be addressed should include all those which meet the California Environmental Quality Act (CEQA) definition (see CEQA Guidelines, Section 15380). The assessment should identify any rare plants and

[1] http://ccr.oal.ca.gov/. Find California Code of Regulations, Title 14 Natural Resources, Division 1, Section 753

rare natural communities, following DFG's Guidelines for Assessing the Effects of Proposed Projects on Rare, Threatened, and Endangered Plants and Natural Communities (revised May 8, 2000). The Guidelines are available at www.dfg.ca.gov/whdab/pdfs/guideplt.pdf

1

The proposed project has the potential to impact wetland and salt marsh habitat within the project area. California's remaining wetlands provide significant and essential habitat for a wide variety of fish and wildlife species. Development in or conversion of wetlands is discouraged and retaining existing wetland habitat through avoidance is recommended. If it is necessary to develop wetland habitat, DFG's no ne loss policy requires that the converted wetland habitat be mitigated for on an acre-for-acre basis.

For any activity as outlined in the San Rafael Rock Quarry 2004 ARP that will divert or obstruct the natural flow, or change the bed, channel, or bank (which may include associated riparian resources) of a river or stream, or use material from a streambed, DFG may require a Streambed Alteration Agreement (SAA), pursuant to Section 1600 et seq. of the Fish and Game Code, with the applicant. Issuance of an SAA is subject to the California Environmental Quality Act (CEQA). DFG, as a responsible agency under CEQA, will consider the CEQA document for the project. The CEQA document should fully identify the potential impacts to the stream or riparian resources and provide adequate avoidance, mitigation, monitoring and reporting commitments for completion of the agreement. To obtain information about the SAA notification process, please access our website at www.dfg.ca.gov/1600; or to reques a notification package, contact the Streambed Alteration Program at (707) 944-5520.

2

We appreciate your consideration of our comments. DFG personnel are available for consultation regarding resources and strategies to minimize impacts. If you have questions regarding our comments, please contact Mr. Jeremy Sarrow, Environmental Scientist, at (707) 944-5573; or Mr. Scott Wilson, Habitat Conservation Supervisor, at (707) 944-5584.

Sincerely,

Robert W. Floerke
Regional Manager
Central Coast Region

E

CITY OF San Rafael

January 25, 2006

Tim Haddad
Environmental Coordinator
Marin County Community Development Agency
3501 Civic Center Drive, Room 308
San Rafael, CA 94903

Re: EIR Scoping for San Rafael Rock Quarry Amended Reclamation Plan

Dear Mr. Haddad:

The City of San Rafael recognizes that, with the Quarry Reclamation Plan, we have a bit of a chicken-and-egg situation. The Reclamation Plan is supposed to approve regrading and landscaping the quarry site in anticipation of a redevelopment plan for the property. But it's not approving that redevelopment plan – those entitlements would occur years from now. The City's concern is with the feasibility of the redevelopment plan which leads to the proposed Reclamation Plan that will be analyzed in the forthcoming EIR.

In considering the Reclamation Plan, the County must show that the Quarry is "readily adaptable to alternate land uses." The City's concerns about the feasibility of the reuse plan aren't based on the physical properties of the quarry site, but on the available infrastructure capacity to serve the proposed reuse plan. 1

We understand that the County's position is that a traffic study of the reuse plan isn't required in this EIR since the proposal isn't for entitlements for redevelopment of the site. We believe that a study of the capacity of Pt. San Pedro Road and the intersections leading to Highway 101 to accommodate the conceptual reuse plan is essential if we are to plan for the regrading and improvement of the quarry for a future building site. 2

The conceptual plan that the Quarry proposes encompasses a 600 slip marina, 42 acres of neighborhood commercial, administrative and professional offices and residential mixed use, and 103 acres of single-family homes, townhouses and what's described as "a denser type of housing". The problem is that Pt. San Pedro Road is nearly at the limits of congestion that the City's General Plan allows. 3

Community Development Department
1400 Fifth Avenue, P.O. Box 151560, San Rafael, CA 94915-1560
Phone: (415) 485-3085 Facsimile: (415) 485-3184

E

I need to make a couple of corrections to statements in the proposed Reclamation Plan, which states that its land use proposal is based on allowances in the 1982 Peacock Gap Neighborhood Plan. The Peacock Gap Neighborhood Plan designated the Quarry as a mineral resource since the life of the quarry was estimated at 10-12 years. It went on to state that "the magnitude of the entire development would be further defined at the time of application. The primary factor in defining the intensity of development will be the traffic capacity of Point San Pedro Road and Highway 101."

However, the Peacock Gap Neighborhood Plan is no longer in effect, having been superseded by the City's new General Plan. Here's what the new General Plan says about the Quarry: 4

> "Consider the County's approved reclamation plan in future land use considerations. The current reclamation plan indicates a mixture of single-family and townhouse units, a marina, commercial recreation or hospitality and neighborhood-serving commercial uses. A revised reclamation plan is anticipated during the timeframe of the General Plan," and
>
> "Consider redevelopment of the site only if traffic capacity is available and can meet the City's level of service standards, including all intersections to and from the Downtown and freeway on- and off-ramps." 5

Based on the need to define a feasible reuse plan upon which to base a Reclamation Plan, the City strongly encourages the preparation of an adequate traffic analysis of the proposed conceptual land uses on local streets and intersections.

Sincerely,

Robert M. Brown, AICP
Community Development Director

cc: City Manager
City Attorney

Community Development Department
1400 Fifth Avenue, P.O. Box 151560, San Rafael, CA 94915-1560
Phone: (415) 485-3085 Facsimile: (415) 485-3184

F

INTER-OFFICE MEMORANDUM

DEPARTMENT OF PUBLIC WORKS

November 10, 2005

To: Tim Haddad, Environmental Coordinator

From: Art Brook, Transportation Engineer

Re: San Rafael Rock Quarry Amended Reclamation Plan EIR

Thank you for the opportunity to comment on the scope of the proposed ARP EIR. The Marin County Department of public Works Traffic Division on recommends that the proposed EIR include a detailed description of the existing site's traffic coming to and going from the quarry site in daily, in the AM peak hour of the adjoining road network, and in the PM peak hour. The effects of that traffic on critical facilities should be evaluated and quantified (Level of Service contributions should be calculated). Similar evaluations and calculations of the proposed reuse should be provided. Critical facilities should at least include intersections at Second / Grand, Second / Hetherton, Third / Grand, Third / Hetherton, and northbound and southbound highway ramps and the highway mainline. 1

If the consultant needs future traffic projections, he should contact us to get projected traffic volumes for the Point San Pedro Road segments. For questions call Art Brook at (415) 499-6752 or email abrook@co.marin.ca.us.

c: Craig Tackabery, Assistant Director
Eric Steger, Land Development Engineer
Jack Baker, Senior Engineer
Tho Do, Associate Engineer
Amanuel Haile, Associate Engineer

F:traffic\brook\devrev\srquarryarpeir .doc

G

Loch Lomond Homeowners Association

Post Office Box 2368 • San Rafael, CA 94912-2368

2005 NOV 30 A 12:57

MARIN COUNTY
COMMUNITY DEVELOPMENT

November 29, 2005

Tim Haddad, Environmental Coordinator
Marin Community Development Agency
3501 Civic Center Drive, Room 308
San Rafael, CA 94903

Dear Mr. Haddad:

Re: San Rafael Rock Quarry Amended Reclamation Plan EIR Scoping

Residents in the Loch Lomond neighborhood are concerned about the reclamation plan for the quarry. There is a proposed development at the Loch Lomond Marina, and the combination of traffic from these two sources would cause undue traffic on Pt. San Pedro Road.

Even though the proposed reuse plan is conceptual in nature, we are concerned that whatever is approved in this reclamation plan would gain a measure of credibility. Therefore it is important that the EIR very critically examine impacts of this proposal as if they were part of a Master Plan application, and that the plan eventually approved by the county is one that would be suitable in the community. 1,2

We are also concerned about impacts of the mining and reuse plan on the city's downtown, particularly the traffic in the vicinity of Third Street intersections at Union and Grant, but also in the entire downtown area. The EIR should analyze how this area would be affected. 3

Thank you,
Jeanne Cohn
President Loch Lomond Homeowners Association

Jeanne Cohn

H

Peacock Gap Homeowners Association

November 29, 2005

Tim Haddad, Environmental Coordinator
Marin Community Development Agency
3501 Civic Center Drive, Room #308
San Rafael, CA 94903

Dear Mr. Haddad,

Re: San Rafael Rock Quarry Amended Reclamation Plan EIR Scoping

We are an association of 427 homeowners situated very close by the Quarry (see highlighter approximation on map) including all the homes on Riviera and San Marino Drives and Lagoon Road, most of the homes on Peacock and Fernwood Drives, McNear Drive up to #78, plus all the associated cul de sac "Places", and the adjoining Riviera Manor and Biscayne Court.

Due the aforementioned proximity, members of our association, as well as other residents of the greater Peacock Gap neighborhood have long been affected by activities related to Quarry operations and, to a lesser extent, the activities of the Quarry's brickyard lessee.

The many problems caused by Quarry operations have been well documented and described during the many proceedings and hearings of the past several years: noise; dust; debris; blasting vibrations; excessive and untimely truck traffic.

It seems that conducting a full EIR on the ARP is putting the cart before the priority horse, i.e., the operating condition impacts during the presumed long 17 year stretch to the ultimate reclamation program actions. It doesn't seem logical that an EIR on the ARP can ignore the continuing noxious impacts our neighborhood experiences from dust and debris, blasting and vibrations, and noise and traffic. Those issues must be addressed. 1,2,3,4

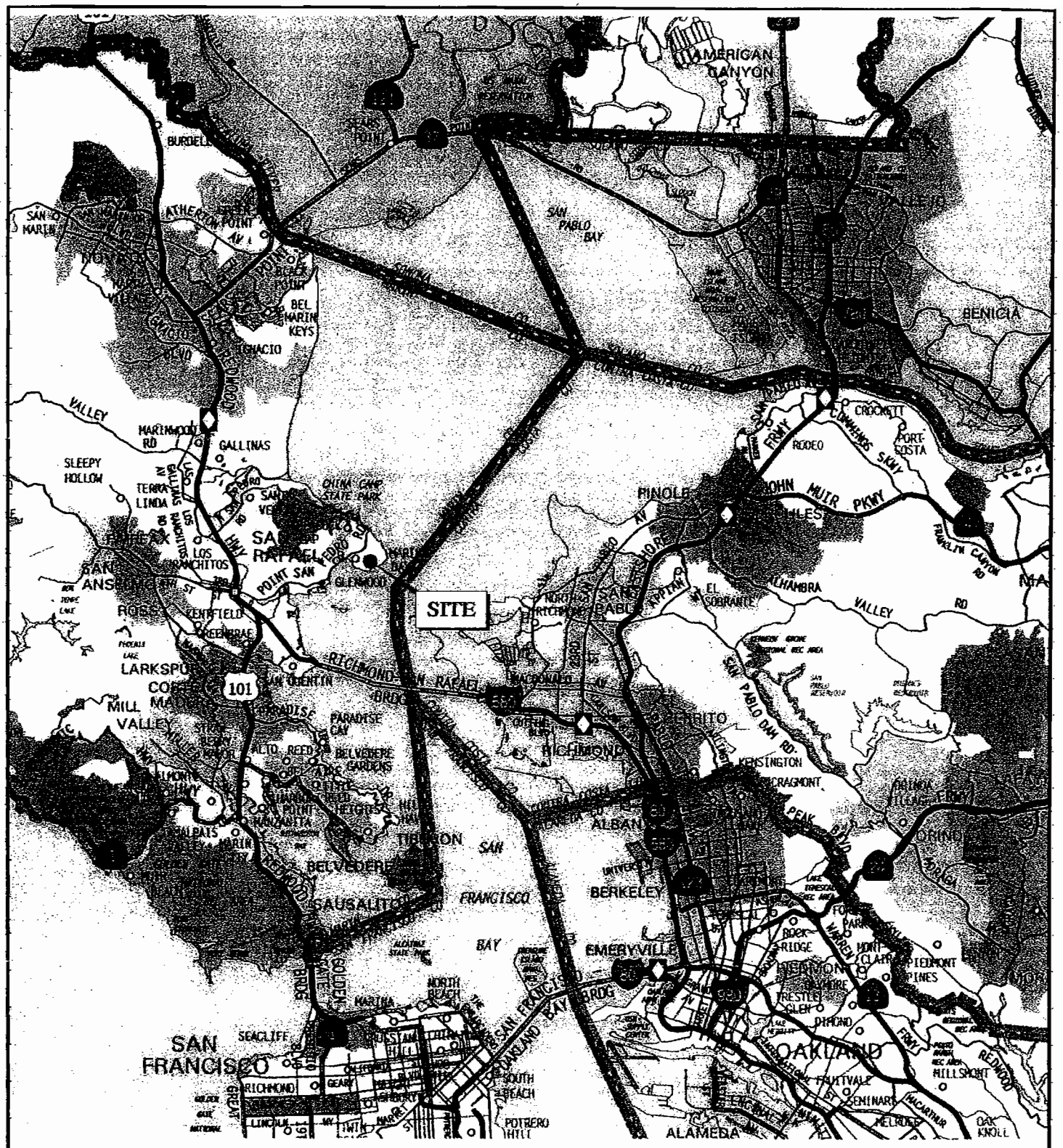
At any rate, any reclamation and reuse of the Quarry property needs to recognize, finally, that the property is in a largely low density residential neighborhood: Peacock Gap. The EIR must assure that any proposed re-use harmonizes the outcome with local norms of land use, housing density, building heights, types of businesses, view protections and improvements, parking requirements, and traffic impacts throughout San Pedro Road, 3rd Street and downtown San Rafael. Moreover, questions of public access for recreational uses should be raised. 5,6,7

8

The EIR should address whether the property could be switched from County to City of San Rafael to best assure the local extended neighborhood's influence over its development and its integration into the larger San Rafael community. Finally, is it possible within the EIR context to evaluate whether the crater and rubble of 17 additional years of mining can ever be restored to a Marin quality visual and view resource?

Sincerely,

Leo Isotalo, President PGHA



BASE MAP SOURCE: THOMAS BROTHERS

ENGEO INCORPORATED EXCELLENT SERVICE SINCE 1971	**SITE VICINITY MAP** **SAN RAFAEL QUARRY** **SAN RAFAEL, CALIFORNIA**	PROJECT NO.: 6261.1.001.01 DATE: SEPTEMBER 2004 DRAWN BY: PC CHECKED BY: PJS	FIGURE NO. **1**

ORIGINAL FIGURE PRINTED IN COLOR

G:\Drafting\DRAFTING2_Dwg\6261\001\6261100101-1VicMap-0904.dwg 10-06-04 04:20:29 PM

Marin Audubon Society

P.O. Box 599 | Mill Valley, CA 94942-0599 | marinaudubon.org

November 25, 2005

Tim Haddad, Environmental Coordinator
Marin County Community Development Agency
3801 Civic Center Drive
San Rafael, CA 94902

RE: Scoping Comments for San Rafael Quarry Project

Dear Mr. Haddad,

The Marin Audubon Society requests that the following issues and questions be addressed in the Draft Environmental Impact Report for the San Rafael Quarry Project:

- What are the existing conditions? Describe the project setting with particular attention to areas of native vegetation. All undeveloped areas on the site should be discussed from a habitat perspective including, ponds, wetlands, drainageways/streams, and shoreline habitats. Their wildlife habitat value and value for other public purposes should be addressed. Habitat values should be discussed from a national, regional and local perspective. 1

- Birds and other wildlife that use the property should be identified, particularly endangered and other special status species. 2

- All wetlands should be delineated and characterized. There are three wetland cells exist adjacent to San Pedro Road separated by roads accessing the site. The natural condition was that the marshes were one continuous marsh.

- Open water habitat adjacent and near the site should be described and species found using this habitat should be identified. What project components including marina, piers, recreational piers, potential boat use, etc. would be expected to impact these habitats? 3

- All drainages and creeks should be identified, mapped and described. How is the project proposing to treat these waterways?

- All native trees should be identified and mapped. Native trees provide important habitat for native wildlife and also add value to property. All should be preserved.

- The project as proposed will result in direct habitat loss, indirect short term impacts due to construction and long term impacts resulting from use of the site. These should be identified and mitigation proposed for direct and indirect impacts. Any portions of the project that will directly impact wetlands or other habitat should be mitigated by avoiding the impact by modifying the 4

project design or other means. 4

• The adequacy of buffer/transition zones adjacent to all wetlands, ponds, drainageways, and bay habitats should be should be evaluated. The project appears to locate houses immediately adjacent to marshes. . These should be moved so that they are at least 300 feet between any developed uses, including trails, and marsh. The buffers should follow the guidelines as set forth in the *Baylands Habitat Goals Report.* How would be buffers be vegetated? Uplands adjacent to the marsh are an important part of wetland habitats and should be vegetated with appropriate native plants to provide cover, nesting and foraging habitat. 5

• Access to the public lands adjacent to the property should be addressed. Is access being proposed? Where is it located and what parking is being provided, if any? 6

• An Environmentally Superior Alternative should be developed that mitigates all impacts from the increased development and use of the site. It should at least include the following: 7

- Protection and enhancement of all native plants, drainageways/creeks, and other habitats
- Inclusion of adequate buffers around all wetlands, creeks and other habitats.
- Replacement of the access roads and culverts to the wetlands with bridges and sized to ensure that adequate tidal flows enter the wetlands to sustain the vegetative and other species.
- Measures that will ensure protection of water quality on the wetlands, sloughs, swales and the Bay.

Thank you for addressing our issues

Sincerely,

Barbara Salzman, Co-chair
Conservation Committee

Philip Peterson, Co-chair
Conservation Committee

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MARIN CONSERVATION LEAGUE

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November 28, 2005

Mr. Tim Haddad, Environmental Coordinator
Marin Community Development Agency
3501 Civic Center Drive, Room 308
San Rafael, California 94903

Subject: Scoping Comments for The Environmental Impact Report (EIR): San Rafael Rock Quarry Amended Reclamation Plan

Dear Mr. Haddad:

In response to the County's Notice of Preparation for the San Rafael Rock Quarry Amended Reclamation Plan, Marin Conservation League requests that the following comments be considered in developing the scope of the Draft Environmental Impact Report.

First, we note that the proposed Reclamation Plan is a rolling reclamation process that will take place during the continuation of quarrying operations for a period of years. This will lead to a specified mix of land uses in designated areas of the site as is shown in Drawing E-6. These future land uses, as described in the Amended Reclamation Plan, are as follows:

Residential:	102.9 acres
Commercial & Mixed Use:	42 acres including the Marina
Community Facilities:	10.6 acres
Open Space:	69.3 acres including 49 marsh acres
Perimeter Tree Grove:	3.3 acres

1

We note that these various land uses are precisely identified and located on the site along with the planned major access routes. This Future Land Use Map constitutes a conceptual Master Plan for the site, and it is obvious that the proposed Reclamation Plan is designed with these particular land uses in mind at the locations described. The merits of this proposed Future Land Use Map are not a matter for debate at this time. Nonetheless, we request that the EIR thoroughly determine and analyze the full range of potential environmental impacts associated with the quarrying operations and the implementation of the rolling reclamation plan itself, as well as those associated with the intended ultimate mix of land uses proposed for the site. In short, we believe that the EIR must address the environmental impacts of the process of combined quarrying and reclamation of the site and its planned future land uses.

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In this connection, the EIR must also be prepared in the context of the Draft 2005 Countywide Plan now being reviewed for adoption; the existing Peacock Gap Neighborhood Community Plan; and the City of San Rafael General Plan, within whose planning jurisdiction this site also lies. This is absolutely necessary to ensure that the Reclamation Plan is consistent with all the relevant local land use planning policies.

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We question whether the rolling reclamation plan as proposed is in the best interest of the community, in that it will involve continuous quarrying along with unrelenting spoil-generating earth moving activities for the duration of the quarry's operations. The DEIR should consider alternative quarrying and reclamation plans that would have fewer potential environmental impacts on the community. For example, an alternative plan with fewer impacts might be accomplished by restricting the increased rock mining operations during the early years to the existing quarry pit, and delaying the quarrying contemplated for the South Hill area until the later years of operations. South Hill overburden could then be placed directly into the Main Quarry Bowl rather than moved back and forth across the site as is proposed in this Reclamation Plan. The topsoil of the South Hill area could still be used periodically as blending material for the rock fines as planned on a batched basis and placed in a single stockpile for later use. We urge that the County and its EIR Consulting team also identify and analyze an environmentally preferable mitigated alternative Reclamation Plan that minimizes the overall impacts of the Reclamation Plan as currently proposed. 4

We agree with the many specific EIR scoping issues identified by the San Pedro Road Coalition (incorporated herein by reference). We do not wish to repeat their comments here. We do want to underline, however, the need to protect, preserve, and restore the entire marsh and bayfront areas as delineated in the Draft 2005 Countywide Plan. First, we believe that restoration of the marshlands on the site should be implemented immediately rather than delayed to some indeterminate future date. 5

Second, all precautions must be taken to prevent any degradation of these areas. The proposed stockpiles of spoil material in the Northeast Quadrant of the site, as proposed in the Reclamation Plan, raise concerns over the risk of sedimentation and water runoff effects in the marsh area, in adjacent County Parklands, and in other bayfront lands. Another area of concern is the long range potential for sedimentation in the Marina Harbor itself and its entrance, inasmuch as the Marina Harbor will be a natural stillwater trap for both tidal waters and sediment over time. These areas should all be preserved and protected, and the risks must be clearly defined, understood, and strictly controlled. The DEIR should detail how this will be accomplished and not leave it for future studies to determine. 6

We look forward to the DEIR's analysis of the potential impacts we have outlined above, and its recommendations for effective mitigation measures.

Thank you for your consideration.

Sincerely yours,

Jana Haehl, President

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POINT SAN PEDRO ROAD COALITION

369-B Third Street, #449, San Rafael, CA 94901 ◆ www.sprcoalition.org

Board of Directors

Christine Christiansen, Marie Fisher, Jonathan Frieman, Denise M. Lucy, Bonnie Marmor, Amanda Metcalf

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Committee on Environment: Trip Allen, Chair; ***Webmaster:*** Alan Schaevitz

November 28, 2005

Tim Haddad, Environmental Coordinator
Marin Community Development Agency
3501 Civic Center Drive, Room 308
San Rafael, CA 94903

Dear Mr. Haddad:

Re: EIR for San Rafael Rock Quarry Amended Reclamation Plan

This Point San Pedro Road Coalition has the following comments on the scope of the Environmental Impact Report (EIR) for the San Rafael Rock Quarry's proposed Amended Reclamation Plan.

General Comments

The proposed Amended Reclamation Plan 04 (ARP) would increase earthmoving activities far beyond present levels. This would create unnecessary and intensified impacts on the community and the environment due to a massive and continuous earth-moving program, relocating some two million tons of dirt closer to adjacent properties and increasing associated noise and dust impacts well above their present levels.

Reducing the current 1,200-foot lineal buffer would expose a larger neighborhood to direct contact with the mining operation. A proposed berm in what has been a buffer zone would be built up and torn down under the pretext of shielding neighbors, but in actuality it would be a processing system for disposal of fines and temporary storage of overburden from the quarry's operation and would have the effect of expanding the footprint of the mining activity.

The baseline for the northeast quadrant area should be Judge Sutro's ruling that prohibited dumping of any material in the quadrant. As discussed in the letter dated March 22, 2005 from our attorney John Edgcomb to County DPW Director Farhad Mansourian, the Point San Pedro Road Coalition believes the ARP 2004 violates the court order prohibiting further placement of overburden or pond fines in the Brick Resource Area of the Northeast quadrant. In spite of this the ARP 2004 proposes moving the center of earth-moving activities from the existing quarry pit into the northeast quadrant with a great deal of activity on South Hill as well.

Extraction of minerals from the Brick Resource Area was performed as a separate operation and that extraction ceased in the early 1990's. Reclamation of this area should have begun then. Instead this area is being co-opted as a processing and stockpile area for fines from the quarry. It is the intention of legislation to promote a rolling reclamation process. The ARP appears to be an attempt to circumvent this. Remediation of the marshes and adjacent Brick Resource Area in the northeast quadrant is time-critical as habitat degradation is proceeding rapidly. We see no explanation for why this remediation should not now proceed. Adequate tidal flow to the marshes should be re-established and re-vegetation of a buffer zone including much of the Brick Resource Area should be done at once.

We believe it is possible to conduct the activities in a far more expeditious manner that focuses on one area at a time and not on all areas at all times as the ARP proposes. Additionally, we feel improved planning and earthmoving practices can reduce impacts to neighbors, wildlife and the environment while perhaps reducing expenditures. We have included an alternative proposal for EIR analysis that we believe does just this.

Scoping Issues

Land Use and Planning/Population and Housing

The EIR should evaluate the proposed development and reclamation under the draft CWP 2005, the San Rafael 2020 General Plan and the Peacock Gap Neighborhood Plan. The overarching theme of sustainability in the draft CWP underscores the need to seek out ways to limit additional extraction of mineral resources and use construction and extraction methods that conserve energy and resources. 1

The proposed buildout in the ARP 2004 would substantially alter the character of the Peacock Gap community with the addition of a large marina, office/commercial area and what amounts to a new community of up to a thousand residents. The impacts of this change, including traffic, recreational and service needs, should be evaluated. 2

Geophysical/Water

Some of the most significant impacts from the ARP 2004 would result from the changes proposed in the site's terrain as a result of earth-moving activities. The plan proposes the following: moving up to two million tons of dirt within the site; taking down an approximately 1,200 foot long berm; creating a new berm closer to adjacent properties that appears to be about 600 feet long, 300 feet wide and 175 feet high; taking the limits of grading to what appears to be within 150 feet of the nearest private property line; mining in the existing pit to a depth of 400 feet at lowest level, creation of a large extension of the Bay and generally reforming the land throughout the site. 3

We recommend evaluating carefully the sequence for removal of South Hill. Option to consider would include beginning along the Bay in what is called SW-3 and moving toward SW -1 as well as beginning in what is called SW-2 and working outward toward SW-1 and SW-3. The mining sequence should be designed to minimize total impact for the removal of this feature. It seems that there is little reason to favor the proposed

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sequence that protects the house on the quarry property at the expense of the neighborhood next door. With the use of non-marketable material overburden and fines as backfill as the mining progresses, another sequencing would appear to have economic and ecological advantages, namely:

- It might significantly reduce transport of materials back and forth across the site. Materials would be moved one time and less than a quarter of the distance.
- Allowing existing natural topography to reduce visual, noise and emissions impacts to critical habitat and adjacent public areas and residences.

A meteorological study should be done to ensure that wind and rainfall patterns would not be altered due to geophysical changes.

The EIR should identify the following:

1. The appropriate sequence for the removal of portions of South Hill.
2. Potential landsliding, erosion and sediment deposition and their impacts to th Bay, the marshes and adjacent properties.
3. Discharge of process solutions, pollutants and dispersal pattern into surface o ground waters from the mining activity. Identify pollution sources. Would there be point source discharges into the Bay?
4. Would the proposed mining alter surface or groundwater flow and recharge, and what would be the impact on the proposed reuse as well as on adjacent properties?
5. The quantity of fines that would be mixed throughout the duration of the operation.
6. The effects of vibration caused by blasting on nearby homes. This will vary depending on proximity to the quarry and the characteristics of the ground beneath the structure. A map or overlay should indicate soil types and the level of vibration impact typical of each area that is affected by the quarry.
7. A thorough analysis of the effects of the proposed marina harbor.

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Air/Water Quality

Dust and emission, including diesel emissions, traveling through the air to land on driveways, landscaping, pools, and structures has been an ongoing nuisance and cost for residents near the quarry. The EIR should provide information on the following:

1. Dust from blasting, crushing or vehicle traffic exiting the site.
2. Means that could be provided for controlling fugitive dust emissions.
3. Quantification of dust emissions in total and estimate of seasonal variations associated with changing weather patterns.
4. Does this dust contain water-soluble salts that have the potential to pollute run-off water or alter the chemistry of wetland areas?
5. Are dust and vehicle fluids carried from the causeway into the adjacent wetlands?
6. Will continued excavation of South Hill result in alterations of wind or precipitation patterns in the local area?
7. Description of the mixing process for fines, how this will affect air and runoff and how this process would be shielded.

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8. Provide an overlay map of the dispersal pattern for substances from the quarry and loaded trucks traveling from the quarry onto roadways, resident properties, schools and the adjacent McNears Park. Describe types of debris.
9. Provide maps of the internal haul roads associated with overburden, fines and rock movement.

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Transportation/Circulation

This plan includes vehicle travel that would substantially increase vehicle trips and levels of service (LOS) all along Pt. San Pedro Road but notably at the Third Street intersections with Grand, Union and Irwin where there is already extreme congestion. There are no mitigation measures that can reduce the congestion at these intersections.

Although the reclamation plan proposes that some people who live in the development would also be employed there and that the uses proposed would serve local neighborhoods such that there will be minimal impacts on rush hour traffic, there is no evidence that this phenomenon takes place. Even if some residents were employed in the area that only accounts for home to work traffic; people driving to schools, medical and professional appointments, recreational trips, meetings, etc. generate far more trips.

5

The EIR should fully analyze traffic that would result from the proposed mining business and also from the suggested reuse scenario. This should include impacts of early and late traffic to and from the quarry and also weekday and weekend AM and PM peaks. A previous traffic study at Third and Union conducted by the City of San Rafael was done when San Rafael High was not in session and may have grossly underestimated the traffic volume. A new traffic study must be completed to evaluate this and other critical intersections. The LOS at the three downtown intersections should be evaluated and the analysis must include cumulative effects from the proposed Loch Lomond Marina redevelopment, and all the buildout in the vicinity of the quarry site and the downtown that could theoretically take place under the San Rafael 2020 Plan and the draft revised Countywide Plan.

The following should be provided:

1. Internal and external trucking schedules for the proposed mining and reclamation activities.
2. The types of earth-moving equipment that will be used.
3. Impact of fully laden trucks on road surfaces.

Biological Resources

The EIR should analyze the impacts of the mining operation and conceptual development on all the natural communities on the site, including aquatic communities in the Bay that would be affected.

6

Any of the following that could be found on site should be identified, using CDFG/ USF&WS protocol surveys: species listed, proposed for listing, or candidates under the

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federal and state endangered species acts, species listed as fully protected under the California Fish and Game Code, species identified as of Special Concern by the California Department of Fish and Game, including but not limited to the Red-Legged Frog, and birds protected under the Migratory Bird Treaty Act. Evaluate the proposed grading and South Hill mining activities relative to breeding/migrations of species.

The EIR should also inventory non-native species, particularly noting the non-native *Spartina* if it occurs. This non-native *Spartina* is known to be rapidly colonizing the Loch Lomond Marina Area. Invasive *Spartina* spread to the quiescent waters of the quarry marshes is likely and imminent. Water flow to these marshes has been greatly restricted by inadequate drainage under the causeways and promotes *Spartina* takeover. *Spartina* takeover may be a major factor in reduction in habitat utilization by waterfowl. 6

Describe the impacts that public access, including traffic to and from the quarry, and all internal operational traffic of the quarry and the brickyard and their associated haul roads, could have on marsh, Bay and any wildlife habitats. Measures should be taken to avoid impacts.

An evaluation of blasting effects on marine mammals of the Bay should be done with special attention paid to the opening of the marina entrance.

Describe any impacts on the adjacent Marin Islands National Wildlife Refuge habitat and wildlife.

Energy and Natural Resources

1. What are the energy/cost needs for proposed operations including water pumping and blasting and are there alternative technologies to reduce these energy needs?
2. What would be energy and cost expenditures for the proposed grading and earth movement within the site? Provide an alternative, which reduces the movement and transport needs, thereby also reducing impacts on nearby residents. 7
3. Determine how many internal truck trips are required to move the two million tons of material –it appears to be something on the order of 80,000 truck-loads or 160,000 internal truck trips, assuming 25 tons per truckload.

Hazards/Noise

Many assume that blasting is the only alternative for quarrying of stone, however it is not. We recommend the evaluation of the use of expansive media as an alternative to blasting. Expansive media is a chemical compound placed in drill holes instead of explosives. Its volume increases on curing to fracture stone quietly and safely. Expansive media is used extensively to fracture granite to form blocks in very large quarrying operations world-wide. Could the quarry use this media to greatly reduce the quantity of explosives used? Expansive media could be used to liberate large stone sheets that could be dropped onto benches or shelves for further size reduction by small blasts or crushing equipment. Expansive media allows fracture of very large areas of stone in a more surgical manner without blasting, noise or dust. 8

Blasting, crushing and associated truck traffic release a number of pollutants into the air and the groundwater. Their effects should be carefully tracked and analyzed. Storage and transportation of hazardous materials, such as fuels and explosives, should also be examined. 8

The ARP 2004 proposes reclamation activities to occur in summer months, which is the time of year when it would most interfere with nearby residents' enjoyment of their properties: the time of year when they would normally spend the most time outside.

Because of the close proximity of this operation to residential communities, there are considerable off-site noise impacts from operating equipment, blasting, processing and truck traffic. Analyze the noise impacts, including from equipment back-up beepers. 9

It appears that in phase one the mixing pond is not screened by a berm (F). Please analyze the view, dust and noise impacts.

Public Services/Utilities and Service Systems

Describe the public services that would be needed to serve the proposed quarrying business and redevelopment and their impacts. 10

Aesthetics/Visual Resource

Neither the mining process nor the proposed reclamation plan should present an eyesore to the surrounding community. The new approximately 175-foot high berm in the northeast quadrant would be about 40 feet higher than the existing berm, and the new berm would be closer to neighbors. Analyze the visual, dust and noise impacts of this change.

A variety of methods could be used to demonstrate the visual effects of the plan. 11

1. Use story poles, balloons or some comparable marking strategy to show the effect of removing 150 feet from the top of South Hill.
2. Provide montages or computer simulations from varied locations that show the visual impact of the proposed plan. The following locations are suggested: McNears Park, McNear and Woodside, the chapel at Chapel Cove, Point San Pedro at Peacock Drive and at Knight Drive, and San Marino Drive at Via Montebello.

Cultural Resources

The brickyard is a part of early Marin history. There should be a discussion about its historic value and preserving components of the brickyard buildings in site reuse. 12

Social and Economic Effects

Commercial development described in the reuse scenario would have effects on the existing San Rafael business areas. The office/administrative area could compete with downtown and Loch Lomond areas by providing alternatives for tenants and customers. Describe any changes these impacts would bring about. 13

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Proposed Alternative

The EIR will study alternatives in tandem with the proposed plan. The Coalition requests that an alternative be studied which includes the following features:

1. Finish mining in the southeast (main pit) quadrant before beginning operations in South Hill (southwest quadrant) and use the main quarry pit for disposal of overburden from later mining. This would eliminate the need for an enormous amount of trucking across the site to dump it in the northeast quadrant.
2. Stay out of the northeast quadrant. Rather than relocating the existing berm, leave it in place. Don't relocate the berm to proposed fill (F) areas as this moves activity closer to residents. Leave proposed cut areas (C) alone until the end of operations.
3. Immediately begin reclamation of the marsh areas and brick resource area of the northeast quadrant
4. Connect the marsh areas, open them to the Bay tidal action and maintain a minimum 300-foot buffer from developed activity. The dike isolating marsh #3 from the Bay should be removed. A large bridge should replace the barrier road, which is the entrance to the brickyard and marsh #2 should be opened to the larger marsh #1 by constructing a second bridge sufficient to support enhanced wildlife movement and increased tidal flow. A minimum 300-foot buffer to minimize negative effects of adjacent land uses is recommended by the *Baylands Ecosystem Habitat Goals*, published by the San Francisco Bay Area Wetlands Ecosystem Goals Project. The Goals Project also recommends restoration of tidal marsh where possible because San Francisco Bay has lost about two thirds of its historic tidal wetlands, and this is an excellent opportunity to restore this dwindling habitat.
5. Eliminate the residential sites north of the frontage road in the northwest quadrant and maintain a minimum 300-foot buffer along the marsh. Provide a viewing area for marsh habitat and wildlife without direct public access into the habitat areas.
6. Include only neighborhood serving commercial and marine related commercial in the southeast quadrant with a club house/community center to serve residents.
7. Include access along the Bay from Pt. San Pedro Road to the southern tip of McNears to provide an entrance to the Starvation Gulch area.

Thank you for this opportunity to comment.

Yours truly,

Trip Allen,
Chairman,
San Pedro Road Coalition Environmental Committee

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November 14, 2005

Mr. Tim Haddad
Environmental Coordinator
Marin County Community Development Agency
3501 Civic Center Drive, Room 308
San Rafael, CA 94903-4157

Re: Notice of Preparation of Environmental Impact Report for the San Rafael Rock Quarry Amended Reclamation Plan

Dear Mr. Haddad:

Thank you for the opportunity to provide comments on the above referenced project. The Bay Trail Project is a nonprofit organization administered by the Association of Bay Area Governments (ABAG) that plans, promotes and advocates for the implementation of a continuous 500-mile bicycling and hiking path around San Francisco Bay. When complete, the trail will pass through 47 cities, all nine Bay Area counties, and cross seven toll bridges. To date, slightly more than half the length of the Bay Trail alignment has been developed. Approximately 39 of the 68 miles of the Bay Trail spine in Marin County are complete.

The Bay Trail Project would like to be on the mailing list for notices regarding this project, and will be particularly interested in those issues relating to land use and planning, transportation/circulation, and aesthetics/visual resources. The EIR should discuss in detail how the Amended Reclamation Plan (ARP) for the San Rafael Rock Quarry site will incorporate the Bay Trail, and should address any potential impacts to the proposed shoreline pathway. The Bay Trail Plan and Policies have been adopted by the County of Marin, and are available for review on our website at www.baytrail.org. 1

Thank you for the opportunity to comment on this important project. If I can be of any assistance, please do not hesitate to contact me at (510) 464-7909 or via e-mail at maureeng@abag.ca.gov.

Sincerely,

Maureen Gaffney
Bay Trail Planner

Administered by the Association of Bay Area Governments
P.O. Box 2050 • Oakland California 94604-2050
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SIERRA CLUB MARIN GROUP
Box 3058 San Rafael CA 94912 sanfranciscobay.sierraclub.org/marin

November 30, 2005

Tim Haddad, Environmental Coordinator
Marin Community Development Agency
3501 Civic Center Drive, Room 308
San Rafael, CA 94903

Dear Mr. Haddad:

Re: EIR for San Rafael Rock Quarry Amended Reclamation Plan

On behalf of the Sierra Club's 7,000 Marin County members, we submit the following comments on the scope of the Environmental Impact Report (EIR) for the San Rafael Rock Quarry's proposed Amended Reclamation Plan.

General Comments:

We note that the Quarry was required to remedy illegal uses and remove or correct un-permitted structures prior to the Notice of Preparation (NoP) so that the CEQA baseline for the Quarry will include only legal and permitted uses; this is inconsistent with the NoP for Lawson's Landing, whose CEQA baseline included illegal uses and un-permitted structures. We believe this raises the issue of either selective enforcement of Marin's Codes or selective discretion in its CEQA judgments. We believe that all CEQA baselines should include only legal and permitted uses and structures as they exist "on the ground" at the time of the NoP.

We also wish to raise the question of what constitutes "existing use" at the Quarry. According to the Lawson's Landing DEIR, the proposed CEQA baseline would be the peak use at Lawson's. Is it your intention to define Quarry's CEQA baseline as peak use or will you use the Quarry existing pattern of use in the season preceding the date of the NoP. If you intend to use the Quarry's peak use, will you allow the Quarry's attorney to define that peak use, as was done for Lawson's Landing, or will you rely on other independently verifiable sources. If you are going to use peak use, do you intend to let the applicant shop backwards over several years to select the peakest of the peak use, or will you constrain the period within which a peak use is selected to a time reasonably related to the date of Preparation of the NoP? 1

Lastly, we believe that SMARA's "rolling reclamation provision" mandates remediation of the Brick Resource Area and marshes. If the Quarry's CEQA Baseline is to include on legal and permitted uses, then mining from the Brick Resource Area (performed by a separate entity) has ceased and reclamation should be completed. We believe the proposal to conduct mining in all areas at all times is simply a fig leaf to delay implementation of any remediation at all in any place for as long as a possible. This circumvents the law's rolling reclamation retirement and thus this remediation should be required just as the removal of the Quarry's illegal buildings was required. 2

We are concerned about the following specifics:

1) That the Amended Reclamation Plan proposes mining to be conducted for 17 years in a manner that could potentially worsen, rather than improve, impacts on the community and the environment and that it describes an unrealistically intense reuse scenario. 3

2) Nuisance impacts on nearby residents could be increased by the ongoing trucking of overburden from one part of the quarry site to another and shaping and reshaping the terrain close to nearby properties. That, along with truck traffic, blasting and crushing and sediment runoff could further degrade the Bay and marsh. 4

3) We understand that approval of the amended reclamation plan would not approve the suggested development scheme, but that the ultimate land use would be decided at the time a Development Plan is filed with the County or the City as part of the land use and environmental review entitlements process at conclusion of mining. However, it would make sense to have in the reclamation plan a scenario that approximates a reuse that would be workable in the community. 5

The Sierra Club requests that the EIR analyze an alternative that includes the following characteristics: complete mining in the active pit before working elsewhere on site thus lessening the need to move the fines back and forth across the site; provide for marsh restoration and enhancement, including the 300 foot buffer recommended by the *Baylands Ecosystem Habitat Goals;* reduce the proposed reclamation design by eliminating the commercial development, except for neighborhood-serving uses, and ferry terminal and showing further enhancement of the marsh.

We ask the EIR analyze the following:

Geophysical/Air/Water 6

- Effects of blasting and processing on residents and Bay wildlife.
- Impacts to the Bay and marshes from erosion and sediment deposition.
- Emission of pollutants such as diesel into the air, surface and ground waters.
- How emissions and noise from the quarry affects the nearby McNears Park.

Aesthetic 7

- Photo simulations from key locations to show the effect of the terrain changes and proposed reuse, and also the enormous reshaping of the South Hill. Simulations should not assume that existing vegetation would continue to screen the site in perpetuity.

Traffic 8

- Levels of service (LOS) at Third Street intersections with Grand, Union and Irwin.
- Traffic that would result from the ongoing mining and from the reclamation scenario.
- Include cumulative impacts from foreseeable development at Loch Lomond and that approved in the Countywide Plan that would generate traffic through the critical downtown intersections.

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- Impacts that traffic into and exiting the quarry could have on nearby properties, the marsh and Bay. 8

Energy

- Alternative technologies for blasting, processing and reclamation activities that would reduce the need for fuel and energy. 9

Sincerely,

Michele Barni

Michele Barni
Sierra Club Marin Group

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MARIN COUNTY
COMMUNITY DEVELOPMENT

Marin County Community Development Agency
3501 Civic Center Drive, Room 308
San Rafael, CA 94903-4157

November 15, 2005

Attention: Tim Haddad, Environmental Coordinator

Sirs,

Re: Environmental Impact Report (EIR) for San Rafael Rock Quarry (SRRQ) Amended Reclamation Plan (ARP)

Thank you for the opportunity to comment on the specific issues to be included in the EIR and additionally for allowing comment on the scope of the issues to be considered.

As residents of the area since 2001, we have seen many changes in the Quarry's operations and that of its tenant, McNear Brickworks. None of those changes are consistent or compatible with the predominantly residential nature of the area.

We will present our comments in the order of the topical issues outlined in the recently received Notice of Preparation. Note that we will use the term "Quarry" to encompass all operations on the site including those of McNear's Brickworks.

Of course, many of the topics are inter-related and therefore our comments may seem repetitive in places. We also have some general comments which do not fit neatly into any of the categories so we have presented a section at the end to include those.

1) Land Use & Planning

The EIR needs to review the compatibility of the plan with the various City and County produced documents prepared for planning purposes, identify discrepancies and inconsistencies.

The EIR should also review comments received as a result of the proposed Loch Lomond development as many, if not all, of the concerns also apply to this proposal.

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The EIR should take note of the persistent violations of planning rules by the Dutra Group e.g. illegally constructed buildings and address the future compliance. 1

2) Population & Housing

It has been well established that higher density housing, especially when mixed with predominantly single-family residences, has been a spectacular failure. For example, the tower blocks of outer London, the south-side projects of Chicago and, here in Marin, the Canal district. All such projects have lead to increased criminal activity.

It is easy to dismiss these complaints as "NIMBYism" but as a property manager and developer with interests in low-income housing in other states, I can personally attest to the difficulties involved in maintaining a safe environment both within the development and in nearby residential areas. Increased drug trafficking, illegal aliens, physical & domestic violence and robbery are but some of the problems we face, placing not only an increased burden on us as managers but also on local services such as police, EMT and fire departments. 2

All of these issues must be examined by the EIR.

3) Geophysical

The proposal calls for a large amount of material to be excavated from the site. The EIR will need to address a number of issues such as impact on groundwater, flow impacts, erosion, and blasting impacts on the surrounding residential and rural environments.

As we live in an earthquake zone, the EIR must also address whether increasing the pit depth will create potential hazards in the event of a quake. 3

4) Water

The San Rafael General Plan 2020 has as its number 1 goal, Clean Air and Water. Our comments in relation to Air Quality are set out in the next section.

With regard to water quality, we are concerned with the following aspects of the Quarry's operation:-

- Soil erosion.
    - Clearly any mining operation contributes substantially to soil erosion. The latest example of which is the mining of the South Hill which has resulting in the removal of large numbers of trees, leaving exposed and barren dirt ready to be blown into the Bay. 4
- Stormwater run-off
    - The quality of run-off affects the local biology of San Pablo Bay and the greater Bay area. Industrial run-off needs tighter control. 5

These issues will need to be addressed by the EIR in detail in respect of both the current operations and in respect of the proposed future development.

5) Air Quality

The activities of the Quarry produce large volumes of airborne pollution primarily in the form of dust resulting from blasting, drilling and excavation. Additionally, trucking contributes significant levels of diesel fumes to the air.

We reside less than 1 mile from the Quarry and continually notice rapid and substantial build-up of dust within our home, regardless of whether our doors and windows are open or shut, as well as in our yard areas and on cars.

On occasion, we also visit McNear Park which backs onto the Quarry property. If you walk to the end near the volleyball courts, you will see that the trees in the area are coated with dust. The role of trees in protecting the environment is well-known and we are concerned to see the damage that is being done to the trees in the area.

The diesel emissions of the trucks also causes concern. It has been shown that diesel fumes are carcinogenic. Given the volume of activity, this represents a significant long-term health risk with its attendant costs on the both the individual and the community.

The EIR also needs to examine the efficacy of existing dust mitigation efforts. For example, the road sweeper currently used by Dutra does not appear adequate. From personal observation, I have seen the dust thrown out behind the vehicle as it supposedly sweeps clean the roads.

We are concerned that this pollution has adverse health effects. As a runner I can feel the effects on my breathing, something I have never suffered from before I moved to the area.

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6) Transportation/Circulation

The EIR needs to take into account the following factors:

- numbers of traffic violations occurring along Pt San Pedro road, classified by type
- speed data that is collected by local police departments
- existing traffic volumes not just in the peak hours of morning and evening, but also during the day
- forecast traffic volumes assuming full build-out
- the impact fully-laden trucks have on road surface condition and the cost of maintaining the roads which are barely adequate at present
- the need for public transport to support the proposed development and how it might be provided especially in the light of the recent cancellations of service by the Golden Gate Transport Authority
- how the additional traffic will add to the already untenable congestion at the freeway end of Pt San Pedro road

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7) Biological Resources

The EIR should evaluate the impact of the Quarry and proposed development on all the natural resources within the area and nearby Bay. This would include such considerations as endangered species, native flora and fauna, migratory bird-life, marsh-life and fish/other marine animals.

The EIR should also describe the impact that public access, including traffic to and from the quarry, could have on marsh, Bay and any wildlife habitats including the nearby Marin Islands National Wildlife Refuge.

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8) Energy & Natural Resources

The EIR should fully scope out the existing energy usage of the current operations and how these are expected to change over the remainder of the proposed period of operation, the source of such energy supplies and what alternatives could be utilized.

The EIR must also address the forecast energy needs and how these will be met for the proposed development.

9

9) Hazards

The EIR needs to consider the following hazardous issues:

- emissions of dust into the air in the neighborhood
- the discharge of carcinogenic diesel fumes by the trucking activities
- the transportation, storage and security of hazardous materials on site including blasting equipment, chemicals and other noxious materials

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10) Noise

The existing operations of the Quarry and Brickworks generate substantial amounts of noise both at the locations themselves, such as blasting noise, general extraction noise, and processing noise, as well as the noise generated by the truck traffic on the road. The EIR must address these issues.

In particular, the Brickworks has equipment operating throughout the night which they have no plans to remediate (based on my discussions with Jeff McNear of the Company) but cause us great distress. There appears to be no local noise laws preventing this activity according to the police.

Additionally, the proposed development will expose residents to continued noise issues for many years while the development is under construction & after cessation of mining activities. The EIR must address these concerns.

11

11) Public Services

The EIR needs to study the impact on already stretched public services that would be caused by the addition of such a large residential/commercial development. Such a study should also include emergency response times, both current & forecast, together with the forecast future requirement for fire, police and EMT services.

The EIR also needs to address the capacity of existing schools to handle the additional pupils that would result from the increased population mass.

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12) Utilities & Service Systems

The EIR must consider the additional infrastructure needed to support the development. In particular, the water demands likely to be required and how sewer and waste will be dealt with given the larger population expected.

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13) Aesthetics/Visual Resources

Clearly the existing berms are a visual eyesore. Further, the Brickwork operations are clearly visible from both Pt San Pedro Road and San Marino Drive – they are not attractive.

The partial denudation of the South Hill is also an eyesore and while its eventual removal would open up additional Bay views, this is a long way into the future and it will present a mess for many years.

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14) Cultural Resources

The Quarry is shown on the City of San Rafael's website as a potential film location. The EIR should review how often it has been used as such and whether any economic benefit has been obtained by the City as a result.

The Brickworks also has 2 smokestacks, no longer in use, which date back many years and do represent a link to our past. The EIR should consider whether there is architectural or historic merit to retaining these structures.

Nearby is the China Camp State Park, which is an important site for both Native American history and also Chinese American History. The EIR should evaluate the impact on this Park.

McNear's Beach Park is also a cultural resource in that it provides space for families to get together, barbecue, swim and play tennis. The EIR needs to consider the impact of existing and future developments.

15

15) Social & Economic Effects Related to Physical Impacts

The proposed development includes commercial activity which may have adverse impacts on the downtown area of San Rafael (which currently has many unoccupied buildings). The EIR will need to address the potential problems.

The EIR should also prepare a study which shows the net economic impacts to the City and County of the Quarry operations i.e. revenues, expenses and employment and the change expected as a result of the proposed development.

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16) General Comments

We believe that the timescale proposed by Dutra is too long. To have to suffer through another 17 or so years of mining activity and then a further number if years while the proposed remediations take place to facilitate the development and then the actual construction of the development is too much to ask of residents.

We believe that some items should already have commenced including remediation of the Brick Resource Area and marshes under SMARA's rolling reclamation provision.

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Once again we thank you for the opportunity to comment. Should you have any questions on the materials submitted, please feel free to contact us.

Yours truly,

Andrew Stokes & Ingrid Cornelissen
54 San Marino Drive
San Rafael CA 94901.

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David and Meredee Crutcher
28 Marin Bay Park Court
San Rafael, CA 94901

November 27, 2005

Tim Haddad, Environmental Coordinator
Marin Community Development Agency
3501 Civic Center Drive, Room 308
San Rafael, CA 94903

Subject: San Rafael Rock Quarry Amended Reclamation Plan EIR

Dear Mr. Haddad:

This letter comments on the scoping for the proposed Environmental Impact Report (EIR) for the San Rafael Rock Quarry's Amended Reclamation Plan.

Our residence lies just a few hundred feet from the border of the northeast quadrant of the Quarry property. Alarmingly, the proposed Amended Reclamation Plan would have millions of cubic yards of earth moved from South Hill to the site within the Quarry that is closest to our home. Having endured many days and nights of the sounds of grinding rock crushers periodically drowned out by the beeping of trucks driving in reverse, it is horrifying to imagine years and years of even worse industrial clatter sourced no more than a stone's throw away from our bedroom window.

Since moving to Marin Bay Park in 1998, my wife Meredee and I (and more recently our 6 year old daughter, Mia) have been very tolerant of Quarry activities. On the whole, we don't think much about it, and we can fairly be expected to put up with a certain amount of annoyance as the inevitable cost of acquiring a residence next to a Quarry.

However, we have great fear that the proposal to move an immense amount of earth so close to us will destroy the liveability of our home. We had no reason to expect that such a change in Quarry operations would occur. Although the Quarry has justified the earth relocation on the basis of creating a berm to shield my and my neighbors' homes from Quarry operations, the Quarry's real motivation is to facilitate other Quarry objectives. And once the process begins and its real impact on homes are felt, it will be next to impossible to stop.

The EIR should thoroughly examine the consequences to homes nearby of relocating earth to the northeast quadrant of the Quarry, and consider the feasibility of alternatives. 1

Thank you for considering our comments.

Sincerely,

David F. Crutcher

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WILLIAM E. HOSKEN

William E Hosken
16 Marin Bay Park Ct

James Dillon
20 Marin Bay Park Ct.

San Rafael, Ca. 94901
November 30, 2005

Mr. Tim Haddad , Environmental Coordinator
Marin Community Development Agency
3501 Civic Center Drive Room 308
San Rafael Ca 94903

Subject: Environmental Impact Report (EIR)
San Rafael Rock Quarry Amended Reclamation Plan

Dear Mr. Haddad

By this letter we wish to comment on the scope of the proposed EIR for the San Rafael Rock Quarry . Attached to this letter and made a part of our comment is a letter report to us from RAM Environmental Engineering Services Inc.

Since the ruling of Judge Sutro prohibiting the dumping of any material in the northeast quadrant we have found that the negative impacts of the quarry on our lives has been reduced with the exception of the operating conditions of certain overly noisy pieces of equipment, back up beepers and blasting. To now come out with a Reclamation Plan which will be greater in extent, duration , volume and closer to us then we have ever experienced makes an alternative to the proposed Reclamation Plan an absolute necessity if the neighbors

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of the quarry are to have any possibility of the quiet and peaceful enjoyment of their properties,

The proposal to build a new berm to "protect the neighbors" is fatally flawed. There is now a protective berm situated between Quarry operations and its neighbors.This berm is about 1000 feet from neighboring residential properties. The toe of the new 175 foot elevation berm proposed by the Amended Rec. Plan will be in the range of 200 feet from the neighbors properties. This is a giant step backward in our view an the negative impacts of construction and operation of this berm and the associated fines disposal and stockpiling scheme over a 17 year period must be fully evaluated and mitigated. This can best be done by eliminating the use of the Northeast Quadrant as a dumping and storage stockpile site .

The EIR needs to delineate, document, and evaluate the number of internal truck trips and haul roads over what period of time will be required to move 2 million tons of material back and forth across the Quarry property . 1

The plan as published expands the activity of the mining operation over its present site under the guise of reclamation. Alternatives must be developed which keeps the operation out of the northeast quadrant except for a one time tightly scheduled event that occurs over a short time span and is for true reclamation .

Sincerely yours,

William E Hosken

James Dillon

RAM ENVIRONMENTAL ENGINEERING SERVICES, INC.

November 29, 2005

Mr. William E. Hosken
16 Marin Bay Park Court
San Rafael, CA 94901

Subject: Environmental Impact Report (EIR)
San Rafael Rock Quarry Amended Reclamation Plan

Dear Mr. Hosken:

In response to the Notice of Preparation of the subject document, RAM Environmental Engineering Services, Inc. (RAM) herein submits the following comments for consideration in development of the scope of evaluation for the EIR. Our review and comments were conducted on your behalf as residents of the Marin Bay Park neighborhood immediately north of the McNear's Beach access road, and whose property line is approximately 200 feet from the northeast property line of the San Rafael Rock Quarry (the Quarry).

With this letter, we would like to emphasize several critical issues and recommend that you request the Marin County Community Development Agency (MCCDA) to give adequate consideration to and conduct appropriate scientific evaluation of these issues in preparation of the EIR. Our comments are based on a limited review of the proposed Amended Reclamation Plan and historical information relayed by you.

The concerns summarized herein are based on the current and proposed Quarry operations relative to the existing, approved Quarry Reclamation Plan (1982) [1982 Reclamation Plan]; the Amended Reclamation Plan (2004); documented non-compliance with the 1982 Reclamation Plan; SMARA requirements for reclamation plans and activities; and CEQA requirements for evaluation of environmental impacts.

1.0 Existing Conditions and Non-Compliance

There are several areas of concern at the Quarry that have been identified as not in compliance with the existing 1982 Reclamation Plan. The most important of these concerns are described in the following subsections 1.1 through 1.3. 2

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Mr. William Hosken, Marin Bay Park
EIR for the San Rafael Rock Quarry ARP
November 29, 2005

1.1 Wetlands
The wetlands, or Marsh areas, shown in the proposed Amended Reclamation Plan (ARP) were identified in the 1982 Reclamation Plan as wetlands and were designated to be maintained as such. It is evidenced by existing conditions and SRRQ documents that portions of the wetlands have been cut off from natural tidal flow by the SRRQ access road and the permanent closing of the flood gates to the San Francisco Bay proper. Residents and visitors to the area, and environmental organizations can attest to the degradation of this wetland habitat over recent years as a result of the diversion of natural Bay water ebb and flow by the SRRQ. 3

The operators of the SRRQ have not met the stated objectives of the approved 1982 Reclamation Plan and certainly have not met the goals of State and Federal agencies for the protection of this most sensitive habitat (Coastal Zone, San Francisco Bay Plan, Clean Water Act, Endangered Species Act, CESA, etc.).

1.2 Stockpiling and Dumping in the Northeast Quadrant (Brick Resource Area)
The SRRQ has constructed berms of non-marketable material, fines, and overburden in the Northeast Quadrant of the SRRQ property. In a recent ruling by Judge Sutro of Marin Superior Court, the "dumping" of material in this area was prohibited. The current berm area is approximately 1,200 feet from the residences immediately north of McNear's Beach access road. Dumping in this area was accomplished using multiple trucks carrying and dumping loads of overburden and fines, and subsequent grading with earthmoving equipment. The truck traffic and dumping operation had a noticeable adverse impact on the residential environment as a result of dust and noise well above ambient levels and above levels prior to dumping and fines-ponding. 4

1.3 Mining Operations Beyond Permitted Duration
The approved 1982 Reclamation Plan calls for a termination of mining in the year 1993. This termination date is approximately 12 years past and there is no indication that any reclamation, as defined in the approved 1982 Reclamation Plan, has taken place. The stated objectives of SMARA include assurances that "adverse environmental effects are prevented or minimized and that mined lands are reclaimed to a usable condition which is readily adaptable for alternative land uses" (Section 2712). Furthermore, Section 3704(c) requires that "Piles or dumps of mining waste shall be stockpiled in such a manner as to facilitate phased reclamation." 5

The existing conditions of the SRRQ and the proposed ARP document that there is no reasonable reclamation phasing taking place or planned which meets the stated objectives of SMARA and CEQA. The ARP proposed Phases 1 through 4 are documented as "Grading" phases, not reclamation phases. Approximately 2,000,000 tons of materials are moved, blended, graded, and moved again in the proposed ARP. With the exception of a few small areas, the bulk of these materials are not permanently placed for final reclamation grading until Phase 4 – approximately 15 to 17 years after initiation of Phase 1 grading.

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2.0 Considerations for the Proposed ARP EIR

Current operating practices at the SRRQ have resulted in significant unmitigated impacts to the surrounding environment, including, but not limited to degradation of the wetland habitat and the resultant impact on sensitive species populations; noise and dust pollution from earthmoving that have impacted habitat and local residents; and berm construction that has degraded views of local residents. Mining operations as described in the proposed ARP, particularly in the Northeast and Southwest Quadrants, will exacerbate all of these impacts. It is imperative that the MCCDA develop the scope of the EIR to evaluate potential impacts relative to baseline conditions that are representative of mining activities that are compliant with SMARA and CEQA – that is, what was the state of the wetlands had the SRRQ not diverted flow and allowed it to degrade to conditions prior to Judge Sutro's ruling; what was the view prior to dumping in the Northeast Quadrant; and what noise and dust levels are reasonable for operations within sensitive habitat and populated areas rather than what the levels were during operations prior to Judge Sutro's ruling. 6

It is also critical that the mitigation measures considered in the development of the EIR are consistent with the goals of SMARA and CEQA. To this end, we recommend that the scope of the EIR diligently evaluate the following: 7

2.1 Impacts to and Restoration of the Wetlands

The EIR should include appropriate historic, regional (Natural Diversity Data Base, etc), and field surveys, including CDFG protocol surveys if indicated by potential species lists. The EIR should include immediate actions to begin restoration of the marsh areas and define measures to mitigate and protect the habitat from noise, dust, traffic vibration, and runoff. Monitoring, including appropriate field biological surveys, should be performed on an annual basis to ensure that mitigation measures are effective. Compensation for disturbance of the wetlands to date should be in accordance with the Clean Water Act, and the California Fish and Game Code. 8

2.2 Reclamation Phasing and Surface Disturbance in the Northeast Quadrant

The ARP proposes construction of a temporary visual barrier berm, grading, mixing, and removal of the berm over Grading Phases 1 through 4. The EIR should evaluate noise, air, and visual impacts resulting from these prolonged earth-working activities adjacent to the wetlands, public park, and residential areas. Mitigation measures must be consistent with SMARA's requirements for "a time schedule that will provide for the completion of surface mining on each segment of the mined lands so that reclamation can be initiated at the earliest possible time on those portions of the mined lands that will not be subject to further disturbance by the surface mining operation." [Section 2772 (c) (6)] Design of the grading phases so that all are continually disturbed does not meet the intention of SMARA. 9

Construction of a temporary 175-foot elevation berm as mitigation for visual impacts to neighbors will not mitigate for the lost vistas. The berm is proposed to be placed

approximately 900 feet closer to the residential properties and have an additional 25-foot minimum height over the existing berm in this quadrant, which will serve to enlarge it in the relative view frame. The process of constructing the berm closer will also result in increased noise levels and dust emissions in the neighborhoods. 9

It is apparent the proposed ARP should be revised to present alternative mining and reclamation design/phases that meet the stated objectives of SMARA. However, if the MCCDA proceeds with an EIR on the current proposed ARP, the EIR should describe a reasonable on-site alternative which includes the following elements: 10

1) Reclamation phasing so that overburden, fines, and non-marketable material from the mining of South Hill are placed directly in their final reclaimed location (e.g., backfill as mining progresses in the Southwest Quadrant), initiating reclamation at the "earliest possible time."
2) Fines from the Northeast Quadrant should be brought to their final reclamation area and mixed in place there rather than mixed in the Northeast Quadrant with material imported from other quadrants and then exported out in larger volumes. This has traffic, noise, dust, and economic benefits.
3) Initiate grading, revegetation, and restoration of the Northeast Quadrant using materials currently there with no addition of materials, in the earliest possible mine phase, with no further disturbance until final reclamation. Planting of certain trees and shrubs on the existing berm and areas surrounding the marshes may sufficiently mitigate noise, visual, and air quality impacts. Restoration should include monitoring and maintenance, including removal of exotic or invasive species.
4) Remove/regrade the existing berm in the Northeast Quadrant at the final phase of reclamation, and only to the extent necessary to meet future uses of this area.

It bears repeating that it is imperative when establishing baseline conditions for the EIR that the MCCDA recognize conditions of the environment *prior to non-compliant activities*. That is, impacts to the wetlands should be relative to the habitat conditions and population health prior to their degradation; and impacts to the environment, including adverse effects on human beings, from earth-work and dumping and fines disposal activities in the Northeast quadrant should be relative to the environment prior to the earth-work activities that Judge Sutro prohibited. To do otherwise may result in a finding of "no significant increase over baseline" and thus "no significant impact". 11

We appreciate the opportunity to provide comments as to the scope of the EIR for the SRRQ proposed ARP. The above comments are limited to emphasize those elements that are most evident in the human environment. We expect that agencies and environmental organizations will provide additional comment, each with focus based on their relative area of concern. We hope the MCCDA will develop a comprehensive scope of the EIR

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through the process of addressing solicited comments, following the CEQA guidelines and incorporating SMARA requirements.

We respectfully submit the above comments in consideration of the CEQA Guidelines and expect that the MCCDA will meet its obligations as Lead Agency under CEQA.

Sincerely,

Sarah H. Bartling
Professional Geologist #4705

Cc: Mr. Richard Casagrande, President, RAM
file

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Kevin & Patricia O'Keefe
130 San Marino Drive
San Rafael, California 94901
(415) 453-5257, fax (415) 453-1822
Cellular (415) 613-3313
Kevin@kcokeefe.org

November 15, 2005

TO: Tim Haddad
Marin County Community Development Agency

FAX: 499-7880 and mail

Re: EIR SR Rock Quarry

Dear Mr. Haddad:

We have owned our home at 130 San Marino Drive since 1987. We love our home and our neighborhood. Unfortunately, the San Rafael Rock Quarry operation has severely impacted the quality of our enjoyment of our home.

We urge that the following short list of topics be included in the EIR. We are sure we are not the only ones with this list.

Air Quality: Dust from blasting, rock crushing, "normal" operations, trucks idling and moving on San Pedro Road. 1

Damage to houses: Blasting: Shaking of the house. Structural damage. Deck and patio furniture continually covered with dust and dirt. 2

Damage to Views: A lovely hillside covered with trees, is now an open sore that blasts us with dust and dirt. Aesthetics have changed immeasurably. 3

Traffic: Impact on San Pedro Road. The trucks that service the Quarry are noisy. They drop materials, dirt and dust after they are loaded. Their emissions are severe and they do substantial damage to San Pedro road. 4

Noise: Blasting, trucks.

Very truly yours,

R. Corey and Patricia O'Keefe

Kevin and Patricia O'Keefe

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MARIN COUNTY COMMUNITY DEVELOPMENT AGENCY
PLANNING DIVISION

PUBLIC SCOPING SESSION

ENVIRONMENTAL IMPACT REPORT FOR
SAN RAFAEL ROCK QUARRY AMENDED RECLAMATION PLAN

WRITTEN COMMENT FORM
January 25, 2006

Name/Affiliation: Arlette Golen

Address: 33 Heritage Dr.

City: San Rafael Zip Code: 94901 Telephone: 457-9176

Please provide comments and concerns regarding the environmental effects of the proposed project or the environmental process below.

Please consider, in addition to the issues with the diking of the marsh ~~and~~ (probably illegally) & turning it from salt to fresh water, that wetlands provide crucial flood protection. The water from the bay should be allowed to flow naturally & the quarry & brickyard are not ~~respon~~ to be trusted to manage sensitive lands.

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Thank you!

Please use backside of page for additional comments, if needed. This comment form may be handed in at the scoping session to County Staff or mailed to the attention of Tim Haddad, prior to **January 30, 2006**, at the Marin County Community Development Agency - Planning Division, 3501 Civic Center Drive, Room 308, San Rafael, CA 94903.

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MARIN COUNTY COMMUNITY DEVELOPMENT AGENCY
PLANNING DIVISION

PUBLIC SCOPING SESSION

ENVIRONMENTAL IMPACT REPORT FOR
SAN RAFAEL ROCK QUARRY AMENDED RECLAMATION PLAN

WRITTEN COMMENT FORM
January 25, 2006

Name/Affiliation: Ruth Anne Hasken

Address: 16 Marin Bay Park Ct.

City: San Rafael, Ca. Zip Code: 94901 Telephone: (415) 459-0927

Please provide comments and concerns regarding the environmental effects of the proposed project or the environmental process below.

On March 16, 1990 I moved to Marin Bay Park in San Rafael. At that time as we passed the marsh on Pt. San Pedro Rd there were thousands of raucous chirping Red-winged blackbirds on the wires above and in the tules around the marsh. Between ten and fifteen egrets waded in the water there. A small blue Kestrel was seen daily on one wire along the road. Occasionally we sighted a Great Blue Heron. 1

Today there is virtually no life in the marsh.

I would like the EIR to address the viability of this natural resource for the benefit of all Marin residents.

Ruth Anne Hasken

Please use backside of page for additional comments, if needed. This comment form may be handed in at the scoping session to County Staff or mailed to the attention of Tim Haddad, prior to **January 30, 2006**, at the Marin County Community Development Agency - Planning Division, 3501 Civic Center Drive, Room 308, San Rafael, CA 94903.

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MARIN COUNTY COMMUNITY DEVELOPMENT AGENCY
PLANNING DIVISION

PUBLIC SCOPING SESSION

ENVIRONMENTAL IMPACT REPORT FOR
SAN RAFAEL ROCK QUARRY AMENDED RECLAMATION PLAN

WRITTEN COMMENT FORM
January 25, 2006

Name/Affiliation: William Hosken

Address: 16 Marin Bay Park Ct

City: San Rafael Zip Code: 94901 Telephone: 415 459 0927

Please provide comments and concerns regarding the environmental effects of the proposed project or the environmental report. Dear Mr. Haddad

Re: Written comments as part of Public Scoping session EIR SRRQ Amended Reclamation Plan Jan. 25, 2006

General Comment:

1 It is difficult to imagine or conceive a Reclamation Plan for the Quarry as presented that could have greater adverse continuous degrading impacts by its implementation on the surrounding community and McNears Beach Park – for example , noise, dust, internal and external truck traffic, blasting, destruction of the natural environment and views, degraded air and water quality, and aesthetics/visual resources The EIR must produce and evaluate economically viable alternatives that by design reduces and mitigates the adverse impacts of the mining and reclamation activities proposed

2 The plan as presented is essentially a description of an expanded mining operations with little or no reclamation till the so-called fourth phase and even that is an incomplete reclamation particularly with respect to the "preserved Marsh" The Marsh was supposedly preserved in the 1982 plan. Even casual observation will show that the marsh has not been preserved but has degraded severely. There is no provision in the current plan for reclaiming the Marsh. The current iteration of the Quarry Plan continues the same program of neglect and deterioration. The EIR should examine in detail the deterioration of the Marsh with appropriate surveys and studies and produce recommendations for restoration of the marshland including the

Please use backside of page for additional comments, if needed. This comment form may be handed in at the scoping session to County Staff or mailed to the attention of Tim Haddad, prior to **January 30, 2006**, at the Marin County Community Development Agency - Planning Division, 3501 Civic Center Drive, Room 308, San Rafael, CA 94903.

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elimination of exotic species now present. There is no reason under SMARA why such a program should not begin immediately upon approval of a new Reclamation Plan. The Northeast Quadrant of the property (clay resource area) was mined out by the McNear Brick Co in the early 1990's. Why under SMRA was reclamation not completed at that time—it is long overdue . 2

3 The present so called reclamation submission is essentially a description of a program of pre production stripping to expose the rock ore body of South HILL and the disposal of the resulting waste in unconsolidated stockpiles and mixing ponds for tailings from the washing operation. Because of this the Rec Plan is inextricably mixed with an expanded mining operation Thus operating conditions for the mine and the rec plan need to be viewed as one unit not separate entities as now appears to be the case. For example the pre productions stripping of South Hill involves the movement of an estimated 2 million tons of material into the northeast quadrant of the property (incidentally prohibited by Judge Sutro's order) which is a mining operation (not reclamation) and yet no operating conditions are imposed re noise, dust, blasting, hours of operations, number of truck used , internal haul roads, type of equipment used etc This is characterized as reclamation – it is not- it is part and parcel of the mining operations and requires operating conditions spelled out in enforceable detail. 3

4 The Quarry property contains the McNear Brick and Block operation The Rec Plan proposed makes no mention beyond ultimate tear down of facilities as to what will be going on with this entity during the 17 years of operation of the Quarry. McNears imports and stores raw material on the property—creates dust noise and is immediately adjacent to the "preserved" marsh. What are the economic, biological, air and water quality ,noise aesthetics/visual impacts over time of this activity on Quarry property? 4

Specific comments

A Geophysical—what are the geologic hazards and risks of massive quarry wall failure on the bay side of the pit in event of a major earthquake on the Hayward or Rodgers Faults? 5

B Land Use and Planning—the Rec Plan envisions major development on the property after cessation of operations. Whether or not this "vision" will ever come to pass in its present fom seems questionable but what is the 6

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impact and the manner in which it drives the Reclamation Plan ? Would alternate use of the land for example in part as park or open space change the need for the massive repetitive earth movement now contemplated? 6

C Energy and natural resources / transportation /circulation The deepening of the pit to 400 feet will increase the amount of energy required to produce the rock - the large back and forth movement internally of stripped material off south hill will do the same . every time you pick up a yard of material move it you use energy, create dust, noise, and diesel fumes. How much additional energy will be required to accomplish this plan versus a plan which eliminates the constant repetitive earth movement. 7

D biological resources The plan mentions briefly the existence of a Red Legged Frog Habitat Thorough investigation and evaluation of this and the possibility of other endangered or threatened species needs full and careful evaluation. 8

E Social and economic effects /hazards/biological resources/aesthetics/ visual/resources. The Rec Plan proposes the building a new very large temporary berm at the edge of the property adjacent to The Canterra Way entrance to McNears Park This is euphemistically for the protection of the "neighbors" What is the impact of this proposal on the citizens who use the park. 9

In the past the Quarry before Judge Sutro"s ruling dumped waste and fines from the washing operation in this area The noise and dust created by this activity very adversely effected the neighbors – for e.g. decibel readings at nearby properties were consistently above 70 dba – not to mentions the constant back up beepers. Clouds of dust were a ongoing occurrence. What is now proposed under the guise of reclamation is the same thing. The building and tearing down of the so called protective berm over an unknown period of time is the same thing. The EIR must measure these impacts and provide an alternate to this plan that keeps this expanded mining operation out of the Northeast Quadrant. 10

The probability of erosion and runoff from an unconsolidated massive dirt pile into the down grade "preserved" marsh by failure or any erosion control system seems high. What level of rain and runoff is contemplated—the present berm shows visual signs of erosion this winter - for the designed system there is always the question of will any such system be maintained.? 11

3 of 4

T

South Hill is now partially stripped in the North East face. This was done according to the Quarry operators to provide a particular kind of material for sealing a levee brake in 2004. The material was sold and shipped off site. What happens to the sequence of the proposed Rec Plan if the material continues to be sold rather than used as part of the Rec Plan.

11

Sincerely yours William E Hosken

4 of 4

12/28 Tom - Please respond, per AH

U

November 12, 2005

RECEIVED

2005 NOV 29 A 2:45

45 Heritage Drive
San Rafael, Ca 94901

Marin County
Community Development Agency
Alex Hinds, Director
3501 Civic Center Drive
Room 308
San Rafael, Ca 94903-4157

Dear Mr. Hinds:

Subject: EIR- San Rafael Rock Quarry

I am writing to you to supply your agency with my feelings about the operation of the "Quarry".

This operation is a nuisance to the local residents; pollutes the air with dust; constantly explodes with dynamite which shakes the foundation and walls of my home and has cracked my ceiling; operates their grinding of rock way into the early evening hours which inhibits my ability to sleep; creates truck traffic which is hazardous to those driving on the main road, and many trucks have improper emission controls and pollute the air and smell horrid; send dust into the air which creates a film of rock dust on my deck and plants, and I am sure is not healthy to ingest.

I have recently tried to sell my home to move away from this dangerous and unhealthy environment. However, many prospective buyers have shunned away because of the "Quarry" and its pollutants. This situation has caused me undue and substantial financial harm to wit financial loss. Who wants to live in an area which is dangerous to one's health and well - being? Do you?

These owners of the "Quarry" continue to operate knowing they have to close the unlawful and dangerous operation at some point. The longer they can convince you and the authorities to fillibuster with EIR's etc, the more money they can make. They are "laughing all the way to the bank".

1

U

Do you not care about the health and wellbeing and safety of the people in San Rafael? This situation is untenable. If your health and safety and financial resources were negatively impacted, would you stand by and do nothing?

I invite you and your staff to come to my home and spend some time sitting on my deck and listening to outrageous grinding and breathing rock dust into your lungs. 1

Please shut down this operation before you experience lawsuits related to sickness, death, medical bills related to breathing disorders; and mental anguish!

Sincerely,

Nicholas D. James

1/25/06 submitted @ scoping mtg

V

MARIN COUNTY COMMUNITY DEVELOPMENT AGENCY
PLANNING DIVISION

PUBLIC SCOPING SESSION

ENVIRONMENTAL IMPACT REPORT FOR
SAN RAFAEL ROCK QUARRY AMENDED RECLAMATION PLAN

WRITTEN COMMENT FORM
January 25, 2006

Name/Affiliation: AMANDA Metcalf

Address: 29 Marin Bay Park Court

City: San Rafael Zip Code: 94901 Telephone: 454-9945

Please provide comments and concerns regarding the environmental effects of the proposed project or the environmental process below.

1. We don't know what's in the dust that is omitted from the quarry + covers our homes like a fog 1

2. Blasting + its effects needs to be measured inside the effected homes – measuring the ground does not give a true reading of the damage or impacts to structures, their contents or people inside the structures. 2

3. The brick yard which is on quarry property should be regulated as to hours of operation, Noise emissions, etc. 3

4. The quarry promised to close years ago + should not be given the additional operating years proposed 4

5. I look at South Hill which used to be beautiful & now ugly 5

6. Reclamation should be done on a Rolling basis – not all at the end 6

Please use backside of page for additional comments, if needed. This comment form may be handed in at the scoping session to County Staff or mailed to the attention of Tim Haddad, prior to **January 30, 2006**, at the Marin County Community Development Agency - Planning Division, 3501 Civic Center Drive, Room 308, San Rafael, CA 94903.

7. The restrictions on this quarry should be no less stringent than those imposed on older quarries in the area.

W

MARIN COUNTY COMMUNITY DEVELOPMENT AGENCY
PLANNING DIVISION

PUBLIC SCOPING SESSION

ENVIRONMENTAL IMPACT REPORT FOR
SAN RAFAEL ROCK QUARRY AMENDED RECLAMATION PLAN

WRITTEN COMMENT FORM
January 25, 2006

Name/Affiliation: JEFFREY MOSS

Address: 77 MANDERLY RD

City: SAN RAFAEL Zip Code: 94901 Telephone: 415-459-5941

Please provide comments and concerns regarding the environmental effects of the proposed project or the environmental process below.

WITH REGARD TO THE RECLAMATION PLAN FOR THE QUARRY AN EYE MUST BE GIVEN TO THE ENVIRONMENTAL EFFECTS IN THE BROADEST SENSE. MUCH THOUGHT AND WISDOM MUST BE APPLIED AT THIS JUNCTURE TO PRESERVE THIS PIECE OF LAND IN ITS UNIQUE SETTING. WITH ITS HIGH HILL, A PROMINANT POINT IN THE BAY, AND VIEWS ACROSS THE BAY EAST, AND SOUTH SERIOUS CONSIDERATION MUST BE GIVEN TO RESTORATION AS OPPORTUNITY, A PARK FOR ALL TO USE AND A LEGACY FOR FUTURE GENERATIONS. ON SITE ARE HISTORIC BUILDINGS OF McNEARS BRICKYARD WHICH ALSO SHOULD BE PRESERVED AS PART OF MARINS HERITAGE. THE BEAUTY OF POINT SAN PEDRO AND ITS PAST, PRESENT AND FUTURE IMPORTANCE TO THE PEOPLE OF MARIN ARE TOO GREAT TO UNDERESTIMATE. THIS IS AN OPPORTUNITY TO PRESERVE, TO RESTORE AN ENVIROMENT, INCREASE THE BENEFITS OF THIS LAND FOR THE FUTURE.

1

Jeff Moss 1-27-06

Please use backside of page for additional comments, if needed. This comment form may be handed in at the scoping session to County Staff or mailed to the attention of Tim Haddad, prior to **January 30, 2006**, at the Marin County Community Development Agency - Planning Division, 3501 Civic Center Drive, Room 308, San Rafael, CA 94903.

X

MARIN COUNTY COMMUNITY DEVELOPMENT AGENCY
PLANNING DIVISION

PUBLIC SCOPING SESSION

ENVIRONMENTAL IMPACT REPORT FOR
SAN RAFAEL ROCK QUARRY AMENDED RECLAMATION PLAN

WRITTEN COMMENT FORM
January 25, 2006

Name/Affiliation: Kathleen T. Peters

Address: 46 ARGUELLO CIR.

City: San Rafael Zip Code: 94901 Telephone: (415) 256-1860

Please provide comments and concerns regarding the environmental effects of the proposed project or the environmental process below.

1) It is my understanding that the County & City are obligated to maintain roads.
San Pedro Rd. west bound is seriously eroded because of heavy traffic from Dutra Quarry. This erosion creates unsightly, bumpy road conditions, which is hard on vehicles and potentially dangerous 1

2) Dutra gigantic trucks move in caravans of two trucks and do not appear to stagger their pace as court ordered.
This creates traffic conditions that are delayed and difficult, particularly in front of high school and Montecito Mall. 2

3) Dutra excavations & truck movements create significant air pollution.
This pollution affects the air we breathe, clouds our windows, and creates a sanitary and health hazard for seniors & children. (over please) 3

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X

4) Operation of the Dutra Quarry creates a hazardous situation and is incompatible with residential and marina use.

The SF Bay pollution & disturbance caused by aspects of the operation are clear even to lay people, as well as environmental specialists. 4

5) The Dutra Quarry belongs in a rural setting away from the major SF Bay area. factors to consider are: 5

lack of infrastructure to support this major operation (roads, barges, clear waterways)

Use of explosives within a heavily populated area.

Negative effects on the natural beauty, including wildlife, sea life, and ecological balance. 6

Alteration of wetlands, depth of Bay without understanding longterm effects.

Kathleen Peters
1-29-06

Y

MARIN COUNTY COMMUNITY DEVELOPMENT AGENCY
PLANNING DIVISION

PUBLIC SCOPING SESSION

ENVIRONMENTAL IMPACT REPORT FOR
SAN RAFAEL ROCK QUARRY AMENDED RECLAMATION PLAN

WRITTEN COMMENT FORM
January 25, 2006

Name/Affiliation: Julie Schlein

Address: 12 Heritage Drive

City: San Rafael Zip Code: 94901 Telephone: 460-9918

Please provide comments and concerns regarding the environmental effects of the proposed project or the environmental process below.

Now that the quarry is mining south hill there is even more noise + dust than previously. That dust is dirty dust, not regular dust. I believe that it affects us all in the respiratory system, ie air quality. South Hill, is now loosing the beauty it once had, looking uglier every day. more activity (noise) on it. Its beauty is irreplaceable. There are cracks in my walls from the explosions. ~~[illegible]~~ Ones recently plastered now cracked. 1

This piece of land is a precious and unusually beautiful resource and should belong to the city. A public park, a picnic area and a merry-go-round etc. ~~[illegible]~~

In the future, the people of this city will wonder why it was not saved.

also there is an endangered species of frog living in the wetland.

Thanx

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Z

MARIN COUNTY COMMUNITY DEVELOPMENT AGENCY
PLANNING DIVISION

PUBLIC SCOPING SESSION

ENVIRONMENTAL IMPACT REPORT FOR
SAN RAFAEL ROCK QUARRY AMENDED RECLAMATION PLAN

WRITTEN COMMENT FORM
January 25, 2006

Name/Affiliation: DONALD WIDDER MD

Address: 12 MARIN BAY PARK COURT

City: SAN RAFAEL Zip Code: 94901 Telephone: 415-256-9987

Please provide comments and concerns regarding the environmental effects of the proposed project or the environmental process below.

Thank you for the opportunity to comment on the proposed reclamation plan. Since the ruling of Judge Sutro there has been a noticeable improvement in noise levels and conditions. There are still issues related to current operation and grave concern regarding proposed plan, residual clean up issues from prior damages, actions

(1) General. I have little confidence in the performance of quarry to reclaim the damages to view & environment. I have a direct view of berm & South hillside as well as the bay. The berm created by quarry is a significant degradation of the view that I once had & it in no way has been restored to its prior state of greenery. Before we consider moving forward full reclamation of prior damage should occur. I used to have what I thought was a great view of South hill I now look at a partially shaved hillside with truck traffic, com growing eucalyptus so that I do not see the hill. The reclamation plan will result in complete loss of my view — the hill will be taken down, a berm ~~will be~~ & rubbish will be piled up in front of ~~front~~ my house blocking my view of the bay completely. I will also be directly impacted by truck, grating noise, dust, blasting

1

2

Please use backside of page for additional comments, if needed. This comment form may be handed in at the scoping session to County Staff or mailed to the attention of Tim Haddad, prior to **January 30, 2006**, at the Marin County Community Development Agency - Planning Division, 3501 Civic Center Drive, Room 308, San Rafael, CA 94903.

Z

noises. It seems to me that —

Land Use (1,2)

(1) If the quarry is allowed to continue it should seek an alternative to mining & destroying the South hill. One suggestion was to expand close to the bay and as far as possible from neighboring residential;

Land Use

(2) Any debris from mining should not be piled as a berm adjacent to close residential areas, but instead moved as far away as possible. Truck noise, pollution, blasting should be as far away from residential as possible.

(3) Quieter & cleaner methods of mining should be mandated. There are alternatives to blasting which are quiet, less dusty. They should be required.

(4) Neighbors have sustained damage to their property from prior transgressions of the quarry. Dust, blasting damages should be cleaned up at the quarry's expense before they contemplate further, or any expanded activity. (social/economic effects)

(5) Any activities of the reclamation plan that have an adverse environmental impact on the community should be restricted to the last year or two prior to closing the quarry. In that way reclamation will not be used as an excuse to expand quarry activity causing prolonged adverse environmental consequences to the neighborhood.

(6) A 17 year horizon seems excessively long.

(7) Noise. Noisy pieces of equipment, blasting, beeping needs to be minimized, eliminated, or replaced with alternatives

(8) Air quality. Taking down South hill & moving dirt/debris

San Rafael Rock Quarry Scoping Summary Minutes
January 25, 2006

These minutes are meant to highlight key points brought up by each speaker at the scoping session, and are not intended to be an exact transcription of what was said at the meeting.

Michael Nelson, San Pedro Home Owner's Association:

- Concerned about traffic impacts due to the trucks transferring quarry materials. 1
- EIR should address traffic congestion as a result of the reclamation plan. 1
- The proposed subsequent use is too large. 2

Jonathan Frieman, Point San Pedro Road Coalition:

- Concerned about traffic air emissions, truck noise and vibration, blasting and dust resulting from blasting. He wants these issues to be addressed in the EIR. 3
- Also argues that the ARP is flawed and needs to be rejected. 4

John Shook:

- The blasting and dust from the quarry activities need to be addressed in the EIR. 5
- Expansive media should be considered an alternative to dynamite. 5
- Stagger blasting throughout the week, instead of more intense blasting at certain times of the week, and no blasting during other times of the week. 5
- The height of the berm at 165 feet above sea level concerns him because he worries that his view will disappear entirely. He would like a story pole to be brought out to the site to measure exactly how high the pile will be. Aesthetic impacts like this should be addressed in the EIR. 6

Bob Brown, City of San Rafael:

- The city is concerned about the feasibility of the redevelopment plan and infrastructure capacity. 7
- Space issues are also a concern. 8
- Although the traffic study is not required at this stage in the EIR process, the city would like traffic impacts to be addressed in the EIR. 9
- Traffic impacts specifically on Point San Pedro Road and the intersections leading to Highway 101 need to be addressed and analyzed in order to plan for the regrading and improvement of the quarry as a future building site. 9
- The city's new General Plan supercedes Peacock Gap Specific Plan. 10

Jim Dillon:

- Concerned that the reclamation plan will increase the noise, dust, traffic, truck vibration and backup alarm. 11
- Doesn't understand why a berm needs to be built. 12
- Why can't the berm be placed in a better area?
- Worries that the reclamation plan is going to exacerbate an already bad situation. 13
- Alternatives should be discussed in the EIR, such as an alternative to finish mining the pit, and take the overburden waste and put it in the pit. 14
- Or maybe build a berm someplace else where it would have less of a negative impact on the neighborhood. 15
- The reclamation plan seems infeasible, since the city won't allow this kind of development. 16
- The plan is also economically infeasible. 17

Gary Ghilotti:

- An alternative should be included that allows the material to be hauled back into the quarry, as it was happening up until 15 years ago. For example, haul topsoil into the pit for stockpile. Another option is to haul some spoils from the water district, or sewer district for future reclamation. 18
- EIR should consider taking some material in, as it would be a benefit to the community.
- The county doesn't recycle material. The EIR should include an alternative of recycling material (asphalt and concrete) and bringing material back into the quarry. This would not result in an increase in truck traffic.

Trip Allen, Sierra Club and San Pedro Road Environmental Committee:

- Reclamation plan does not sound like a reclamation plan, but sounds more like an operational plan. 19
- The EIR should answer the question, is the primary purpose of this plan to reclaim the site? He believes not. The purpose of this plan is to dispose of overburden and waste fines.
- When alternatives are reviewed, he argues that the plan should include the alternative to put the fines in the pit after the quarry is finished, and remove the South Hill when the pit is finished. South Hill should be mined from South to North, not as proposed. 20
- The reclamation plan extends operating plans and increases time when the neighbors are impacted by mining activities. 21

- The Brick Resource Area was primarily used as a separate resource area. Why hasn't reclamation begun on this site? 22
- There is no vested right for fines to be placed, disposed or processed on the NE quadrant, since these activities did not take place in the original baseline of activities. Processing fines in the NE quadrant would be most harmful to the environment and offensive to the neighbors since it's so close to their homes. 23
- Marshlands should be addressed in the EIR since dust has already been filtering into the marsh. Fines and water runoff from the project site have already damaged the marsh.
- Marsh reclamation needs to begin immediately. An alternative in the EIR should include breaching the dikes and putting in bridges.
- The proximity to the San Rafael Island Wildlife preserve needs to be addressed in the EIR.
- A component of the reclamation plan should include marshland impacts. 24
- Traffic impacts on marshlands must also be studied. Since the movement of dirt will be mostly during the dry months, the marshes will be further degraded by the amount of dust that will carry over to the marshlands. The effects of dust on marshland wildlife need to be examined.
- Expansive media should also be included as an alternative to blasting, or alternated with blasting in order to lessen the impact that blasting has on the neighbors and the environment. 25

Amanda Metcalf:

- Rolling reclamation should have been done all along, not just at the end of the project. 26
- Dirt removal in the quarry creates a lot of dust, which needs to be more adequately addressed in the EIR, than it has been addressed so far. 27
- Economic effects need to be thoroughly examined in the EIR, since the quarry has already impacted home prices for the neighbors. The ability for residents to sell their homes while they're already so negatively impacted by the quarry activities needs to be addressed in the EIR. People afraid to speak up about their concerns because it could affect their home prices. 28
- Concerned about the feasibility of filling the quarry with water. If the water overflowed, where would it be directed? This also needs to be included in the EIR. 29
- The marshlands have suffered already, as well as the neighbors and park visitors. 30
- Blasting has had a tremendous impact on the neighbors already, and the blasting measurements that are used by the County are inadequate to address the reality that the 31

neighbors are dealing with constantly. Residents deal with cracks in their homes and dust from the blasting. 31

Mary Rabb, San Marcos Place:

- EIR should look at the geological effect of settling in the homes as a result of the blasting especially along San Marcos Place and Riviera. 32
- Homes on San Marcos had never experienced settling, up until the last seven years.

Bonnie Marmor, Point San Pedro Road Coalition:

- ARP would intensify environmental effects on the community and increase earthmoving beyond present levels. 33
- There would be an increase in noise and dust impacts as a result of relocating materials to the NE quadrant. 34
- The EIR should adopt the alternative that the southeast main pit is mined to completion, before beginning operations on the South Hill. They also agree that the project stay out of the NE quadrant. The Court order prohibits work in the NE quadrant. 35
- The questions that they would like answered in the EIR include:
    - If fines are put in the pit, what will be the effects?
    - If part of the pit is blasted, what will be the effects?
    - What will be the effects of the residue left in the environment as a result of all the explosive materials? Will they wash out the bay? Will it affect the water or nearshore habitat? If the side of the pit is blasted in, what will happen to the nearshore habitat? What is the plan if they make the pit site into a marina? How are they going to make it into a marina? Are they going to dredge a channel? If they dredge a channel, where are they going to dump what they dredge? Is there mercury in what they will dredge up? 36
    - What kind of rock will be deposited? What would happen if water were to merge with the rock?
- Pollutants in the material need to be studied and included in the EIR. 37
- Geological impacts from having water in that area should also be included in the EIR. 38
- The height of the hills as well as possible changes in the microclimate should also be included in the EIR. 39
- The EIR should also include an alternative discussing the use of expansive media. 40
- The reclamation plan is more like an operations plan and less like a reclamation plan. 41

Jeanne Cohn, Loch Lomond Homeowners:

- Point San Pedro Road has already been impacted by truck traffic and it will only get worse if the development at the Loch Lomand takes place. EIR should address truck traffic impacts on the road. 42
- Cutting down truck traffic is the only way to improve the situation.

Denise Lucy, Point San Pedro Road Coalition:

- Why is moving dirt for 17 years part of the reclamation plan? Why can't it be done in the 17th year? 43
- McNear's brickyard has noise pollution from truck traffic- 24 hours a day. How is the brickyard mentioned in the EIR for the reclamation plan? Will it be eliminated? It should be studied. 44
- How does the county and city wide plans relate to the reclamation plan in regards to the housing that is proposed? 45
- Traffic studies should be included in the EIR. 46

Roger Roberts, Marin Conservation League:

- He is concerned about mitigation measures and studies that will take place at a later date. The studies should take place when the master plan is being proposed. 47
- He is supportive of the San Rafael City issues with this project, since he also agrees that traffic studies need to be conducted now. 48

Barbara Salzman, Marin Audubon Society:

- The plan describes the wetlands as "natural wetlands," which is inaccurate. The wetlands on the property have been diked off for a while. The proposal that they should be open to full tidal action through the use of a bridge should be part of this EIR. 49
- Mosquito problems as a result of full tidal action should also be addressed.
- There is development planned for the upland transition zone area. The upland zone is an area that needs to be protected in order to maintain a healthier environment. A mitigation measure adopted should disallow any development in the upland transition zone, and a 300-foot area needs to be analyzed. 50
- Any mitigation measure for wetland or habitat loss should be addressed in the EIR, and not left for some future plan. 51

- The EIR should also include analysis of impacts for proposed uses along the shoreline (such as boats and ferries) on diving birds in the bay. 52

Jennifer Connor:

- Traffic is her first concern, and she would like it addressed in the EIR. 53
- Wind gusts have increased in strength since South Hill was taken down. She has experienced 90 to 100 mph wind gusts as a result, and she would like this addressed in the EIR. 54

Arlette Cohen:

- She is concerned about the marshlands. A levee was created in 1990s during the powerful storms, which had the effect of turning the salt-water marshes into freshwater marshes. Due to the change in salinity, pesticides have been dumped in the freshwater marshes to kill the mosquito larvae. When it was still a salt-water marsh, this was not necessary. 55
- She is also very concerned about the waterfowl, treefrogs, hawks, coyotes and other wildlife that have been affected by the changes.
- She is concerned that after South Hill is destroyed, more wildlife will be displaced, as they are already being displaced now. 56
- The EIR should include the impacts on wildlife.

APPENDIX G2

Comments on the NOP and Public Scoping Comments on the AQP

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Scoping Comment Log
San Rafael Rock Quarry Amended Quarry Permit EIR

Name of Commentor	Affiliation of Commentor	Comment Letter Designation	Comment Number	Section Where Addressed in EIR
Scott Morgan	California State Clearinghouse and Planning Unit	A	1	Process
Scott Morgan	California State Clearinghouse and Planning Unit	B	1	Process
Timothy C. Sable	California Department of Transportation	C	1	Transportation / Circulation
Chuck Armor	California Department of Fish and Game	D	1	Biological Resources
Chuck Armor	California Department of Fish and Game	D	2	Biological Resources
Chuck Armor	California Department of Fish and Game	D	3	Biological Resources
Chuck Armor	California Department of Fish and Game	D	4	Biological Resources
Chuck Armor	California Department of Fish and Game	D	5	Biological Resources
Joseph Eischens	Marin Municipal Water District	E	1	Utilities and Service Systems - Initial Study
Joseph Eischens	Marin Municipal Water District	E	2	Utilities and Service Systems - EIR for the ARP
James Raives	Marin County Department of Parks and Open Space	F	1	Introduction
James Raives	Marin County Department of Parks and Open Space	F	2	Air Quality
James Raives	Marin County Department of Parks and Open Space	F	3	Noise & Vibration
James Raives	Marin County Department of Parks and Open Space	F	4	Hydrology and Water Quality - Initial Study
James Raives	Marin County Department of Parks and Open Space	F	5	Transportation / Circulation - Initial Study
James Raives	Marin County Department of Parks and Open Space	F	6	Aesthetics and Visual Resources - Initial Study
Christopher Locke	Farella Braun + Martel, Attorneys at Law	G	1	Introduction
Christopher Locke	Farella Braun + Martel, Attorneys at Law	G	2	Project Description
Christopher Locke	Farella Braun + Martel, Attorneys at Law	G	3	Process
Christopher Locke	Farella Braun + Martel, Attorneys at Law	G	4	Project Description
Christopher Locke	Farella Braun + Martel, Attorneys at Law	G	5	Process
Christopher Locke	Farella Braun + Martel, Attorneys at Law	G	6	Noise & Vibration
Christopher Locke	Farella Braun + Martel, Attorneys at Law	G	7	Air Quality
Christopher Locke	Farella Braun + Martel, Attorneys at Law	G	8	Aesthetics and Visual Resources
Christopher Locke	Farella Braun + Martel, Attorneys at Law	G	9	Land Use and Planning
Christopher Locke	Farella Braun + Martel, Attorneys at Law	G	10	Mitigation Measures
Christopher Locke	Farella Braun + Martel, Attorneys at Law	G	11	Noise & Vibration
Christopher Locke	Farella Braun + Martel, Attorneys at Law	G	12	Air Quality
Christopher Locke	Farella Braun + Martel, Attorneys at Law	G	13	Biological Resources
Christopher Locke	Farella Braun + Martel, Attorneys at Law	G	14	Noise & Vibration
Christopher Locke	Farella Braun + Martel, Attorneys at Law	G	15	Process
Christopher Locke	Farella Braun + Martel, Attorneys at Law	G	16	Noise & Vibration
Christopher Locke	Farella Braun + Martel, Attorneys at Law	G	17	Project Description
Christopher Locke	Farella Braun + Martel, Attorneys at Law	G	18	Mineral Resources
Christopher Locke	Farella Braun + Martel, Attorneys at Law	G	19	Process
Christopher Locke	Farella Braun + Martel, Attorneys at Law	G	20	Process
Christopher Locke	Farella Braun + Martel, Attorneys at Law	G	21	Noise & Vibration
Christopher Locke	Farella Braun + Martel, Attorneys at Law	G	22	Air Quality
Christopher Locke	Farella Braun + Martel, Attorneys at Law	G	23	Aesthetics and Visual Resources
Christopher Locke	Farella Braun + Martel, Attorneys at Law	G	24	Land Use Planning
Christopher Locke	Farella Braun + Martel, Attorneys at Law	G	25	Project Description
Christopher Locke	Farella Braun + Martel, Attorneys at Law	G	26	Air Quality
Christopher Locke	Farella Braun + Martel, Attorneys at Law	G	27	Project Description
Christopher Locke	Farella Braun + Martel, Attorneys at Law	G	28	Noise & Vibration
Christopher Locke	Farella Braun + Martel, Attorneys at Law	G	29	Process
Christopher Locke	Farella Braun + Martel, Attorneys at Law	G	30	Process
Christopher Locke	Farella Braun + Martel, Attorneys at Law	G	31	Noise & Vibration
Christopher Locke	Farella Braun + Martel, Attorneys at Law	G	32	Process
Christopher Locke	Farella Braun + Martel, Attorneys at Law	G	33	Baseline Considerations: Introduction and Project Description
Christopher Locke	Farella Braun + Martel, Attorneys at Law	G	34	Land Use and Planning
Christopher Locke	Farella Braun + Martel, Attorneys at Law	G	35	Process
Christopher Locke	Farella Braun + Martel, Attorneys at Law	G	36	Process
Christopher Locke	Farella Braun + Martel, Attorneys at Law	G	37	Noise

Name of Commentor	Affiliation of Commentor	Comment Letter Designation	Comment Number	Section Where Addressed in EIR
Barbara Salzman	Marin Audobon Society	H	1	Preamble
Barbara Salzman	Marin Audobon Society	H	2	Land Use and Planning
Barbara Salzman	Marin Audobon Society	H	3	Biological Resources
Barbara Salzman	Marin Audobon Society	H	4	Biological Resources
Barbara Salzman	Marin Audobon Society	H	5	Biological Resources
Barbara Salzman	Marin Audobon Society	H	6	Prjoect Description: Responsible Agencies
Barbara Salzman	Marin Audobon Society	H	7	Hydrology and Water Quality - Initial Study
Barbara Salzman	Marin Audobon Society	H	8	Biological Resources
Barbara Salzman	Marin Audobon Society	H	9	Biological Resources
Barbara Salzman	Marin Audobon Society	H	10	Biological Resources
Barbara Salzman	Marin Audobon Society	H	11	Biological Resources
Barbara Salzman	Marin Audobon Society	H	12	Biological Resources
Barbara Salzman	Marin Audobon Society	H	13	Biological Resources
Barbara Salzman	Marin Audobon Society	H	14	Biological Resources
Barbara Salzman	Marin Audobon Society	H	15	Biological Resources
Barbara Salzman	Marin Audobon Society	H	16	Biological Resources
Barbara Salzman	Marin Audobon Society	H	17	Biological Resources
Barbara Salzman	Marin Audobon Society	H	18	Biological Resources
Barbara Salzman	Marin Audobon Society	H	19	Biological Resources
Barbara Salzman	Marin Audobon Society	H	20	Cumulative Effects
Sandra Sellinger	Marin ReLeaf	I	1	Biological Resources
Denise M. Lucy and Bonnie Marmor	Point San Pedro Road Coalition	J	1	Preamble
Denise M. Lucy and Bonnie Marmor	Point San Pedro Road Coalition	J	2	Baseline Considerations: Introduction and Project Description
Denise M. Lucy and Bonnie Marmor	Point San Pedro Road Coalition	J	3	Project Description
Denise M. Lucy and Bonnie Marmor	Point San Pedro Road Coalition	J	4	Baseline Considerations: Introduction and Project Description
Denise M. Lucy and Bonnie Marmor	Point San Pedro Road Coalition	J	5	Project Description
Denise M. Lucy and Bonnie Marmor	Point San Pedro Road Coalition	J	6	Project Description, Traffic - Initial Study
Denise M. Lucy and Bonnie Marmor	Point San Pedro Road Coalition	J	7	Project Description
Denise M. Lucy and Bonnie Marmor	Point San Pedro Road Coalition	J	8	Initial Study - Traffic
Denise M. Lucy and Bonnie Marmor	Point San Pedro Road Coalition	J	9	Initial Study - Traffic
Denise M. Lucy and Bonnie Marmor	Point San Pedro Road Coalition	J	10	Noise & Vibration
Denise M. Lucy and Bonnie Marmor	Point San Pedro Road Coalition	J	11	Air Quality
Denise M. Lucy and Bonnie Marmor	Point San Pedro Road Coalition	J	12	Initial Study - Traffic
Denise M. Lucy and Bonnie Marmor	Point San Pedro Road Coalition	J	13	Amended Reclamation Plan Air Quality, Noise, Aesthetics, Alternatives; AQP Land Use and Planning
Denise M. Lucy and Bonnie Marmor	Point San Pedro Road Coalition	J	14	Project Description
Denise M. Lucy and Bonnie Marmor	Point San Pedro Road Coalition	J	15	Land Use and Planning
Denise M. Lucy and Bonnie Marmor	Point San Pedro Road Coalition	J	16	Project Description
Denise M. Lucy and Bonnie Marmor	Point San Pedro Road Coalition	J	17	Land Use and Planning
Denise M. Lucy and Bonnie Marmor	Point San Pedro Road Coalition	J	18	Land Use and Planning
Denise M. Lucy and Bonnie Marmor	Point San Pedro Road Coalition	J	19	Air Quality
Denise M. Lucy and Bonnie Marmor	Point San Pedro Road Coalition	J	20	Land Use and Planning
Denise M. Lucy and Bonnie Marmor	Point San Pedro Road Coalition	J	21	Biological Resources
Denise M. Lucy and Bonnie Marmor	Point San Pedro Road Coalition	J	22	Hydrology and Water Quality - Initial Study; Air Quality
Denise M. Lucy and Bonnie Marmor	Point San Pedro Road Coalition	J	23	Biological Resources
Denise M. Lucy and Bonnie Marmor	Point San Pedro Road Coalition	J	24	Project Description
Denise M. Lucy and Bonnie Marmor	Point San Pedro Road Coalition	J	25	Alternatives
Denise M. Lucy and Bonnie Marmor	Point San Pedro Road Coalition	J	26	Noise & Vibration; Air Quality
Denise M. Lucy and Bonnie Marmor	Point San Pedro Road Coalition	J	27	Project Description: Documents Incorporated by Reference
Denise M. Lucy and Bonnie Marmor	Point San Pedro Road Coalition	J	28	Hydrology and Water Quality: Initial Study
Denise M. Lucy and Bonnie Marmor	Point San Pedro Road Coalition	J	29	Project Description
Denise M. Lucy and Bonnie Marmor	Point San Pedro Road Coalition	J	30	Noise and Vibration; Air Quality; Alternatives
Denise M. Lucy and Bonnie Marmor	Point San Pedro Road Coalition	J	31	Introduction
Denise M. Lucy and Bonnie Marmor	Point San Pedro Road Coalition	J	32	Alternatives
Denise M. Lucy and Bonnie Marmor	Point San Pedro Road Coalition	J	33	Land Use and Planning; Project Description
Denise M. Lucy and Bonnie Marmor	Point San Pedro Road Coalition	J	34	Noise and Vibration
Denise M. Lucy and Bonnie Marmor	Point San Pedro Road Coalition	J	35	Revey Report (Appendix J)
Denise M. Lucy and Bonnie Marmor	Point San Pedro Road Coalition	J	36	Land Use and Planning; Noise
Denise M. Lucy and Bonnie Marmor	Point San Pedro Road Coalition	J	37	Noise and Vibration; Revey Report (Apendix J)
Denise M. Lucy and Bonnie Marmor	Point San Pedro Road Coalition	J	38	Noise and Vibration
Denise M. Lucy and Bonnie Marmor	Point San Pedro Road Coalition	J	39	Noise and Vibration
Denise M. Lucy and Bonnie Marmor	Point San Pedro Road Coalition	J	40	Noise and Vibration
Denise M. Lucy and Bonnie Marmor	Point San Pedro Road Coalition	J	41	Alternatives
Denise M. Lucy and Bonnie Marmor	Point San Pedro Road Coalition	J	42	Alternatives
Denise M. Lucy and Bonnie Marmor	Point San Pedro Road Coalition	J	43	Noise and Vibration
Denise M. Lucy and Bonnie Marmor	Point San Pedro Road Coalition	J	44	Noise and Vibration
Denise M. Lucy and Bonnie Marmor	Point San Pedro Road Coalition	J	45	Aesthetics - ARP EIR
Denise M. Lucy and Bonnie Marmor	Point San Pedro Road Coalition	J	46	Introduction and Project Description - Baseline discussion
Denise M. Lucy and Bonnie Marmor	Point San Pedro Road Coalition	J	47	Alternatives
Denise M. Lucy and Bonnie Marmor	Point San Pedro Road Coalition	J	48	Attachments are part of the Administrative Record

Name of Commentor	Affiliation of Commentor	Comment Letter Designation	Comment Number	Section Where Addressed in EIR
Zia E. Ahari, M.D., Paul Watson; and Fereshteh Dadrieh	Individuals	K	1	Land Use and Planning
Zia E. Ahari, M.D., Paul Watson; and Fereshteh Dadrieh	Individuals	K	2	Air Quality
Zia E. Ahari, M.D., Paul Watson; and Fereshteh Dadrieh	Individuals	K	3	Noise and Vibration
Zia E. Ahari, M.D., Paul Watson; and Fereshteh Dadrieh	Individuals	K	4	Air Quality
Zia E. Ahari, M.D., Paul Watson; and Fereshteh Dadrieh	Individuals	K	5	Introduction
Zia E. Ahari, M.D., Paul Watson; and Fereshteh Dadrieh	Individuals	K	6	Air Quality
Bill and Beverly Cantello	Individuals	L	1	Air Quality
Bill and Beverly Cantello	Individuals	L	2	Traffic - Initial Study; Land Use and Planning
Bill and Beverly Cantello	Individuals	L	3	Air Quality
Stuart H. Brown	Individual	M	1	Introduction
Stuart H. Brown	Individual	M	2	Introduction
Stuart H. Brown	Individual	M	3	Introduction
Stuart H. Brown	Individual	M	4	Introduction
Stuart H. Brown	Individual	M	5	Introduction
Joseph W. Caramucci	Individual	N	1	Traffic - Initial Study; Land Use and Planning; Air Quality
Joseph W. Caramucci	Individual	N	2	Introduction and Project Description (Baseline discussion)
Joseph W. Caramucci	Individual	N	3	Traffic-Initial Study
Joseph W. Caramucci	Individual	N	4	Air Quality
Joseph W. Caramucci	Individual	N	5	Introduction: Scope of the EIR
Joseph W. Caramucci	Individual	N	6	Air Quality
Joseph W. Caramucci	Individual	N	7	Introduction: Scope of the EIR
Joseph W. Caramucci	Individual	N	8	Introduction: Approach to the Analysis
Bonnie Casassa	Individual	O	1	Merits of the Project are not addressed in the EIR
Clark Smith	Individual	P	1	Merits of the Project are not addressed in the EIR
Clark Smith	Individual	P	2	Air Quality
Merilee Colton	Indvidual	Q	1	Introduction: Scope of the EIR
Merilee Colton	Individual	Q	2	Noise and Vibration
Merilee Colton	Indvidual	Q	3	Land Use and Planning
Merilee Colton	Indvidual	Q	4	Noise and Vibration
Merilee Colton	Indvidual	Q	5	Project Description - History of Regulation
Merilee Colton	Indvidual	Q	6	Land Use and Planning
Merilee Colton	Indvidual	Q	7	Revey Report (Appendix J)
Merilee Colton	Indvidual	Q	8	Hydrolgy and Water Quality - Initial Study
Merilee Colton	Indvidual	Q	9	Air Quality
Merilee Colton	Indvidual	Q	10	Noise and Vibration
Merilee Colton	Indvidual	Q	11	Land Use and Planning
Merilee Colton	Indvidual	Q	12	Introduction and Project Description - Baseline discussion
Merilee Colton	Indvidual	Q	13	Cultural Resources; Introduction - Scope of the EIR
Alyce Daunt	Individual	R	1	Merits of the Project are not addressed in the EIR
Robert J. David	Individual	S	1	Traffic - Initial Study; Introduction - Baseline
Benjamin Dienstein	Individual	T	1	Introduction and Project Description - Baseline discussion
Benjamin Dienstein	Individual	T	2	Traffic - Initial Study
Benjamin Dienstein	Individual	T	3	Land Use and Planning
James Dillon	Individual	U	1	Land Use and Planning
James Dillon	Individual	U	2	Air Quality
James Dillon	Individual	U	3	Air Quality; Traffic - Initial Study
James Dillon	Individual	U	4	ARP EIR: Air Quality
James Dillon	Individual	U	5	Introduction: Approach to the Analysis
Donna Dougherty	Individual	V	1	ARP EIR: Aesthetics
Marie Fisher Cichy	Individual	W	1	Noise
Marie Fisher Cichy	Individual	W	2	Air Quality
Marie Fisher Cichy	Individual	W	3	Traffic - Initial Study
Marie Fisher Cichy	Individual	W	4	Land Use and Planning
Marie Fisher Cichy	Individual	W	5	Traffic - Initial Study
Marie Fisher Cichy	Individual	W	6	Traffic - Initial Study
Marie Fisher Cichy	Individual	W	7	Land Use and Planning
Marie Fisher Cichy	Individual	W	8	Merits of the Project are not addressed in the EIR
Raymond Dale Friberg	Individual	X	1	Merits of the Project are not addressed in the EIR
Ruth M. "Jo" Holland	Individual	Y	1	Air Quality
William E. Hosken	Individual	Z	1	Alterantives
William E. Hosken	Individual	Z	2	Project Description
William E. Hosken	Individual	Z	3	Alternatives
Scott Jones	Individual	AA	1	Noise and Vibration; Land Use and Planning
Scott Jones	Individual	AA	2	Traffic-Initial Study
Scott Jones	Individual	AA	3	Traffic-Initial Study

Name of Commentor	Affiliation of Commentor	Comment Letter Designation	Comment Number	Section Where Addressed in EIR
Jeffrey Kamys and Debra Kamys	Individuals	BB	1	Air Quality
Jeffrey Kamys and Debra Kamys	Individuals	BB	2	Introduction: EIR Process
K. Koh	Individual	CC	1	Air Quality
K. Koh	Individual	CC	2	Noise and Vibration
K. Koh	Individual	CC	3	Baseline Considerations: Introduction and Project Description
K. Koh	Individual	CC	4	Merits of the Project are not addressed in the EIR
John D. and Gloria W. Lannom	Individuals	DD	1	Merits of the Project are not addressed in the EIR
John D. and Gloria W. Lannom	Individuals	DD	2	Alternatives; Land Use and Planning
John D. and Gloria W. Lannom	Individuals	DD	3	Noise and Vibration
John D. and Gloria W. Lannom	Individuals	DD	4	Air Quality
Francoise O. Lepage, Ph.D.	Individual	EE	1	Baseline Considerations: Introduction and Project Description
Francoise O. Lepage, Ph.D.	Individual	EE	2	Merits of the Project are not addressed in the EIR
Francoise O. Lepage, Ph.D.	Individual	EE	3	Traffic-Initial Study
Francoise O. Lepage, Ph.D.	Individual	EE	4	Air Quality
Francoise O. Lepage, Ph.D.	Individual	EE	5	Noise
Francoise O. Lepage, Ph.D.	Individual	EE	6	Merits of the Project are not addressed in the EIR
Chuck Louderback and Miranda Wagner	Individual	FF	1	Land Use and Planning
Chuck Louderback and Miranda Wagner	Individual	FF	2	Air Quality
Chuck Louderback and Miranda Wagner	Individual	FF	3	Merits of the Project are not addressed in the EIR
Tom and Francine Martindale	Individuals	GG	1	Air Quality
Amanda Metcalf	Individual	HH	1	Air Quality, Noise and Vibration
Amanda Metcalf	Individual	HH	2	Air Quality
Amanda Metcalf	Individual	HH	3	Introduction and Project Description: Regulatory History and EIR Process
Amanda Metcalf	Individual	HH	4	Noise and Vibration
Amanda Metcalf	Individual	HH	5	Attachments are part of the Administrative Record
Jackie Pollard	Individual	II	1	Noise
Robert Schiff	Individual	JJ	1	Aesthetics-Initial Study; ARP EIR Aesthetics
Robert Schiff	Individual	JJ	2	ARP Project Description - see figures
Robert Schiff	Individual	JJ	3	Introduction-Scope of the EIR
John J. Shook	Individual	KK	1	Project Description
John J. Shook	Individual	KK	2	Air Quality
John J. Shook	Individual	KK	3	Traffic- Initial Study; Land Use and Planning; Alternatives
Mr. and Mrs. Dean E. Showers	Individuals	LL	1	Geology and Soils- Initial Study
Mr. and Mrs. Dean E. Showers	Individuals	LL	2	Noise and Vibration; Land Use and Planning
Mr. and Mrs. Dean E. Showers	Individuals	LL	3	ARP EIR: Project Description
Mr. and Mrs. Dean E. Showers	Individuals	LL	4	ARP EIR: Geology and Soils
Mr. and Mrs. Dean E. Showers	Individuals	LL	5	Noise and Vibration; Air Quality
Barbara Smith	Individual	MM	1	Air Quality
Barbara Smith	Individual	MM	2	Attachments are part of the Administrative Record
Susie Stern	Individual	NN	1	Air Quality
Andrew Stokes and Ingrid Cornelissen	Individuals	OO	1	Introduction: EIR Process
Andrew Stokes and Ingrid Cornelissen	Individuals	OO	2	Land Use and Planning
Andrew Stokes and Ingrid Cornelissen	Individuals	OO	3	Preamble
Andrew Stokes and Ingrid Cornelissen	Individuals	OO	4	Baseline Considerations: Introduction and Project Description
Andrew Stokes and Ingrid Cornelissen	Individuals	OO	5	Alternatives (please note that McNear's Brickyard operations are not within the scope of the EIR)
Andrew Stokes and Ingrid Cornelissen	Individuals	OO	6	Land Use and Planning; Noise
Andrew Stokes and Ingrid Cornelissen	Individuals	OO	7	Geology and Soils, Aesthetics - Initial Study; ARP EIR- Geology and Soils; Noise and Vibration
Andrew Stokes and Ingrid Cornelissen	Individuals	OO	8	Land Use and Planning
Andrew Stokes and Ingrid Cornelissen	Individuals	OO	9	Initial Study- Hydrology and Water Quality; Biological Resources
Andrew Stokes and Ingrid Cornelissen	Individuals	OO	10	Traffic - Initial Study
Andrew Stokes and Ingrid Cornelissen	Individuals	OO	11	Energy and Natural Resources - Initial Study
Andrew Stokes and Ingrid Cornelissen	Individuals	OO	12	Air Quality; Hazards
Andrew Stokes and Ingrid Cornelissen	Individuals	OO	13	Traffic-Initial Study
Andrew Stokes and Ingrid Cornelissen	Individuals	OO	14	Utilities and Service Systems - Initial Study
Andrew Stokes and Ingrid Cornelissen	Individuals	OO	15	Introduction-Scope of the EIR
Andrew Stokes and Ingrid Cornelissen	Individuals	OO	16	Cultural Resources; Land Use and Planning; Economic and Social Effects-Initial Study
Andrew Stokes and Ingrid Cornelissen	Individuals	OO	17	Land Use and Planning
Andrew Stokes and Ingrid Cornelissen	Individuals	OO	18	Merits of the Project are not addressed in the EIR

Name of Commentor	Affiliation of Commentor	Comment Letter Designation	Comment Number	Section Where Addressed in EIR
Charles M. Walther	Individual	PP	1	Land Use and Planning
Charles M. Walther	Individual	PP	2	Traffic-Initial Study
Charles M. Walther	Individual	PP	3	Public Services-Initial Study
Charles M. Walther	Individual	PP	4	Land Use and Planning
Charles M. Walther	Individual	PP	5	Social and Economic Effects- Initial Study
Charles M. Walther	Individual	PP	6	Land Use and Planning
Miranda Wagner	Individual	QQ	1	Air Quality
Miranda Wagner	Individual	QQ	2	Noise and Vibration
Miranda Wagner	Individual	QQ	3	Traffic-Initial Study
Miranda Wagner	Individual	QQ	4	Land Use and Planning
Rod Warters	Individual	RR	1	Air Quality
Rod Warters	Individual	RR	2	Attachments are part of the Administrative Record
Rod Warters	Individual	RR	3	Air Quality
Rod Warters	Individual	SS	1	Air Quality
Don Widder, M.D.	Individual	TT	1	Air Quality
Don Widder, M.D.	Individual	TT	2	Land Use and Planning
Don Widder, M.D.	Individual	TT	3	Noise
Ray Wittenberg	Individual	UU	1	Noise
Ray Wittenberg	Individual	UU	2	Air Quality
Ray Wittenberg and Tho Thi Ngoe Yu	Individuals	VV	1	Air Quality
Ray Wittenberg and Tho Thi Ngoe Yu	Individuals	VV	2	Land Use and Planning
Ray Wittenberg and Tho Thi Ngoe Yu	Individuals	VV	3	Air Quality
Ray Zerbib	Individual	WW	1	Noise
Ray Zerbib	Individual	WW	2	Air Quality
Ray Zerbib	Individual	WW	3	Noise
Ray Zerbib	Individual	WW	4	Land Use and Planning
Ray Zerbib	Individual	WW	5	Attachments are part of the Administrative Record
Ira Alderson	Individual	XX	1	Traffic-Initial Study
Ira Alderson	Individual	XX	2	Land Use and Planning
Roger Roberts	Individual	YY	1	These scoping comments are considered in the EIR analysis for the ARP.

Name of Commentor	Affiliation of Commentor	Comment Letter Designation	Comment Number	Section Where Addressed in EIR
AQP Scoping Summary Minutes, September 12, 2007				
Aimi Dutra	SRRQ	ZZ	1	Comments not on the environmental analysis
Bonnie Marmor	Point San Pedro Road Coalition	ZZ	2	Air Quality, Noise
			3	Baseline discussion in Chapter 1 and 3
			4	Land Use and Planning
			5	Land Use and Planning
			6	Biological Resources, Land Use and Planning
			7	Noise
			8	Noise, Appendix J
Trip Allen	Sierra Club	ZZ	9	Project Description
			10	Biological Resources
			11	Hydrology and Water Quality (Initial Study)
			12	Hydrology and Water Quality (Initial Study)
			13	Alternatives
Arletete Cohen	Individual	ZZ	14	Air Quality
			15	Noise, Alternatives
			16	Biological Resources
Frank Everrini	Individual	ZZ	17	Comments not on the environmental analysis
Joe Cramucci	Individual	ZZ	18	Air Quality
			19	Air Quality, Project Description, Land Use and Planning
Greg Giffra	Individual	ZZ	20	Comments not on the environmental analysis
Rod Warters	Geologist	ZZ	21	Air Quality
Dave Crutcher	Individual	ZZ	22	Noise, Land Use and Planning
Jonathon Frieman	Individual	ZZ	23	Cultural Resources
			24	Traffic, Air Quality, Noise, Alternatives
Alan Schaevitz	Point San Pedro Road Coalition	ZZ	25	Introduction
Roger Roberts	Marin Conservation League	ZZ	26	Alternatives, Biological Resources
			27	Chapters 4 and 5
Ingrid Cornelisshn	Individual	ZZ	28	Air Quality
			29	Noise, Appendix J
			30	Noise
Steve Borden	Individual	ZZ	31	Air Quality
			32	Comments not on the environmental analysis
			33	Comments not on the environmental analysis
Deke Welch	Individual	ZZ	34	Comment unclear
Charlie Walther		ZZ	35	Land Use and Planning
Roger Roberts	Marin Conservation League	ZZ	36	Comment noted

Name of Commentor	Affiliation of Commentor	Comment Letter Designation	Comment Number	Section Where Addressed in EIR
AQP Scoping Summary Minutes, October 3, 2007				
Denise Lucy	Point San Pedro Road Coalition	AAA	1	Noise, Traffic, Project Description
			2	Project Description
			3	Alternatives
			4	Project Description
			5	Alternatives
			6	Chapters 4 and 5
			7	Summary
			8	Noise, Appendix J, Alternatives
			9	Cumulative Effects
Rod Warters	Geologist	AAA	10	Air Quality
Dr. Francoise O'Lepage	Individual	AAA	11	Traffic, Air Quality
			12	Traffic
			13	Noise, Air Quality
			14	Air Quality
			15	Noise
Amanda Metcalf	Individual	AAA	16	Land Use and Planning
			17	Air Quality
			18	Air Quality
			19	Comments not on the environmental analysis
H.C. Jackson	Individual	AAA	20	Comments not on the environmental analysis
Don Widder	Physician	AAA	21	Air Quality
			22	Air Quality
			23	Air Quality
			24	Air Quality
			25	Noise
Marie Fisher Cichy	Individual	AAA	26	Traffic, Noise, Air Quality
			27	Comments not on the environmental analysis
			28	Economic impacts are beyond the scope of an EIR
Bonnie Marmor	Individual	AAA	29	Air Quality
Veronique Rastein	Individual	AAA	30	Air Quality
			31	Noise
			32	Noise, Air Quality
			33	Alternatives

STATE OF CALIFORNIA
GOVERNOR'S OFFICE *of* PLANNING AND RESEARCH
STATE CLEARINGHOUSE AND PLANNING UNIT

ARNOLD SCHWARZENEGGER
GOVERNOR

CYNTHIA BRYANT
DIRECTOR

Memorandum

Date: August 22, 2007

To: All Reviewing Agencies

From: Scott Morgan, Senior Planner

Re: SCH # 2007082097
San Rafael Rock Quarry Amended Quarry Permit

The State Clearinghouse sent you the Notice of Preparation letter for the above-referenced project on August 17, 2007. An incorrect cover letter was attached to the document details report. Attached is the corrected Notice of Preparation letter. All other project information remains the same. We apologize for any inconvenience this may have caused. 1

cc: Tim Haddad
Marin County Community Development Agency
3501 Civic Center Drive, Room 308
San Rafael, CA 94903

STATE OF CALIFORNIA

GOVERNOR'S OFFICE *of* PLANNING AND RESEARCH

STATE CLEARINGHOUSE AND PLANNING UNIT

ARNOLD SCHWARZENEGGER
GOVERNOR

CYNTHIA BRYANT
DIRECTOR

Notice of Preparation

August 22, 2007

To: Reviewing Agencies

Re: San Rafael Rock Quarry Amended Quarry Permit
SCH# 2007082097

Attached for your review and comment is the Notice of Preparation (NOP) for the San Rafael Rock Quarry Amended Quarry Permit draft Environmental Impact Report (EIR).

Responsible agencies must transmit their comments on the scope and content of the NOP, focusing on specific information related to their own statutory responsibility, within 30 days of receipt of the NOP from the Lead Agency. This is a courtesy notice provided by the State Clearinghouse with a reminder for you to comment in a timely manner. We encourage other agencies to also respond to this notice and express their concerns early in the environmental review process. 1

Please direct your comments to:

Tim Haddad
Marin County Community Development Agency
3501 Civic Center Drive, Room 308
San Rafael, CA 94903

with a copy to the State Clearinghouse in the Office of Planning and Research. Please refer to the SCH number noted above in all correspondence concerning this project.

If you have any questions about the environmental document review process, please call the State Clearinghouse at (916) 445-0613.

Sincerely,

Terry Roberts

Scott Morgan
Project Analyst, State Clearinghouse

Attachments
cc: Lead Agency

1400 10th Street P.O. Box 3044 Sacramento, California 95812-3044
(916) 445-0613 FAX (916) 323-3018 www.opr.ca.gov

Document Details Report
State Clearinghouse Data Base

SCH# 2007082097
Project Title San Rafael Rock Quarry Amended Quarry Permit
Lead Agency Marin County

Type NOP Notice of Preparation

Description As a result of a court order in 2005, the San Rafael Rock Quarry submitted a project description that allows the Court to consider, and if deemed appropriate, amend Permit #Q72-03 wherein all operating issues associated with quarry's mining operations may be considered. The project sponsor proposes to continue quarrying within certain areas of site, including to blast, excavate and transport rock and earth from the Main Quarry Bowl to a depth of -400 feet MSL, consistent with the submitted 2004 ARP and from the South Hill. The Quarry will continue to: crush, sort, and stockpile earth and rock quarried from the site, dock and load barges with earth, sand, and rock quarried from the site, operate an asphalt batch plant, and load and weigh commercial trucks that export and transport material over Point San Pedro Road.

Lead Agency Contact

Name Tim Haddad
Agency Marin County Community Development Agency
Phone (415) 499-6269 **Fax**
email
Address 3501 Civic Center Drive, Room 308
City San Rafael **State** CA **Zip** 94903

Project Location

County Marin
City San Rafael
Region
Cross Streets Point San Pedro Road
Parcel No. 184-010-09, 15, 16, 51, 52
Township **Range** **Section** **Base**

Proximity to:

Highways
Airports
Railways
Waterways San Francisco Bay
Schools
Land Use RMPC (Residential/Commercial Multiple Planned)

Project Issues Aesthetic/Visual; Air Quality; Archaeologic-Historic; Biological Resources; Landuse; Noise; Toxic/Hazardous

Reviewing Agencies Resources Agency; Regional Water Quality Control Board, Region 2; Department of Parks and Recreation; Native American Heritage Commission; Office of Historic Preservation; Department of Fish and Game, Region 3; Department of Water Resources; Department of Conservation; Caltrans, District 4; San Francisco Bay Conservation and Development Commission; Air Resources Board, Major Industrial Projects; Department of Toxic Substances Control; State Lands Commission

Date Received 08/17/2007 **Start of Review** 08/17/2007 **End of Review** 09/17/2007

1

Note: Blanks in data fields result from insufficient information provided by lead agency.

NOP Distribution List

County: MARIN

SCH# 2007082097

Resources Agency

- [■] **Resources Agency** Nadell Gayou
- [ ] **Dept. of Boating & Waterways** David Johnson
- [ ] **California Coastal Commission** Elizabeth A. Fuchs
- [ ] **Colorado River Board** Gerald R. Zimmerman
- [■] **Dept. of Conservation** Sharon Howell
- [ ] **California Energy Commission** Paul Richins
- [ ] **Cal Fire** Allen Robertson
- [■] **Office of Historic Preservation** Wayne Donaldson
- [■] **Dept of Parks & Recreation** Environmental Stewardship Section
- [ ] **Reclamation Board** DeeDee Jones
- [■] **S.F. Bay Conservation & Dev't. Comm.** Steve McAdam
- [■] **Dept. of Water Resources** Resources Agency Nadell Gayou
- [ ] _____ Conservancy

Fish and Game

- [ ] **Depart. of Fish & Game** Scott Flint Environmental Services Division
- [ ] **Fish & Game Region 1** Donald Koch
- [ ] **Fish & Game Region 1E** Laurie Harnsberger
- [ ] **Fish & Game Region 2** Banky Curtis
- [■] **Fish & Game Region 3** Robert Floerke
- [ ] **Fish & Game Region 4** Julie Vance
- [ ] **Fish & Game Region 5** Don Chadwick Habitat Conservation Program
- [ ] **Fish & Game Region 6** Gabrina Gatchel Habitat Conservation Program
- [ ] **Fish & Game Region 6 I/M** Gabrina Getchel Inyo/Mono, Habitat Conservation Program
- [ ] **Dept. of Fish & Game M** George Isaac Marine Region

Other Departments

- [ ] **Food & Agriculture** Steve Shaffer Dept. of Food and Agriculture
- [ ] **Depart. of General Services** Public School Construction
- [ ] **Dept. of General Services** Robert Sleppy Environmental Services Section
- [ ] **Dept. of Health Services** Veronica Malloy Dept. of Health/Drinking Water

Independent Commissions,Boards

- [ ] **Delta Protection Commission** Debby Eddy
- [ ] **Office of Emergency Services** Dennis Castrillo
- [ ] **Governor's Office of Planning & Research** State Clearinghouse
- [■] **Native American Heritage Comm.** Debbie Treadway
- [ ] **Public Utilities Commission** Ken Lewis
- [ ] **Santa Monica Bay Restoration** Guangyu Wang
- [■] **State Lands Commission** Jean Sarino
- [ ] **Tahoe Regional Planning Agency (TRPA)** Cherry Jacques

Business, Trans & Housing

- [ ] **Caltrans - Division of Aeronautics** Sandy Hesnard
- [ ] **Caltrans - Planning** Terri Pencovic
- [ ] **California Highway Patrol** Shirley Kelly Office of Special Projects
- [ ] **Housing & Community Development** Lisa Nichols Housing Policy Division

2007082097

Dept. of Transportation

- [ ] **Caltrans, District 1** Rex Jackman
- [ ] **Caltrans, District 2** Marcelino Gonzalez
- [ ] **Caltrans, District 3** Jeff Pulverman
- [■] **Caltrans, District 4** Tim Sable
- [ ] **Caltrans, District 5** David Murray
- [ ] **Caltrans, District 6** Marc Birnbaum
- [ ] **Caltrans, District 7** Cheryl J. Powell
- [ ] **Caltrans, District 8** Dan Kopulsky
- [ ] **Caltrans, District 9** Gayle Rosander
- [ ] **Caltrans, District 10** Tom Dumas
- [ ] **Caltrans, District 11** Mario Orso
- [ ] **Caltrans, District 12** Bob Joseph

Cal EPA

Air Resources Board

- [ ] Airport Projects Jim Lerner
- [ ] Transportation Projects Ravi Ramalingam
- [■] Industrial Projects Mike Tollstrup
- [ ] **California Integrated Waste Management Board** Sue O'Leary
- [ ] **State Water Resources Control Board** Regional Programs Unit Division of Financial Assistance
- [ ] **State Water Resources Control Board** Student Intern, 401 Water Quality Certification Unit Division of Water Quality
- [ ] **State Water Resouces Control Board** Steven Herrera Division of Water Rights
- [■] **Dept. of Toxic Substances Control** CEQA Tracking Center
- [ ] **Department of Pesticide Regulation**

Regional Water Quality Control Board (RWQCB)

- [ ] **RWQCB 1** Cathleen Hudson North Coast Region (1)
- [■] **RWQCB 2** Environmental Document Coordinator San Francisco Bay Region (2)
- [ ] **RWQCB 3** Central Coast Region (3)
- [ ] **RWQCB 4** Teresa Rodgers Los Angeles Region (4)
- [ ] **RWQCB 5S** Central Valley Region (5)
  - [ ] **RWQCB 5F** Central Valley Region (5) Fresno Branch Office
  - [ ] **RWQCB 5R** Central Valley Region (5) Redding Branch Office
- [ ] **RWQCB 6** Lahontan Region (6)
  - [ ] **RWQCB 6V** Lahontan Region (6) Victorville Branch Office
- [ ] **RWQCB 7** Colorado River Basin Region (7)
- [ ] **RWQCB 8** Santa Ana Region (8)
- [ ] **RWQCB 9** San Diego Region (9)

- [ ] **Other** _____

Last Updated on 07/12/07

G2-13

1

STATE OF CALIFORNIA
GOVERNOR'S OFFICE *of* PLANNING AND RESEARCH
STATE CLEARINGHOUSE AND PLANNING UNIT

ARNOLD SCHWARZENEGGER
GOVERNOR

CYNTHIA BRYANT
DIRECTOR

Memorandum

Date: September 14, 2007

To: All Reviewing Agencies

From: Scott Morgan, Senior Planner

Re: SCH #2007082097
San Rafael Rock Quarry Amended Quarry Permit

Pursuant to the attached letter, the Lead Agency has extended the review period for the above referenced project to October 3, 2007 to accommodate the review process. All other project information remains the same. 1

cc: Tim Haddad
Marin County Community Development Department
3501 Civic Center Drive, Room 308
San Rafael, CA 94903

1400 10th Street P.O. Box 3044 Sacramento, California 95812-3044
(916) 445-0613 FAX (916) 323-3018 www.opr.ca.gov

Notice of Completion & Environmental Document Transmittal

Appendix C

Mail to: State Clearinghouse, P. O. Box 3044, Sacramento, CA 95812-3044 (916) 445-0613
For Hand Delivery/Street Address: 1400 Tenth Street, Sacramento, CA 95814

SCH # **2007082097**

Project Title: San Rafael Rock Quarry Amended Quarry Permit

Lead Agency: Community Development Agency — Contact Person: Tim Haddad, Environmental Coordinator

Mailing Address: 3501 Civic Center Drive, Room 308 — Phone: (415) 499-6269

City: San Rafael — Zip: 94903 — County: Marin

Project Location:

County: Marin — City/Nearest Community: San Rafael

Cross Streets: Point San Pedro Road — Zip Code: 94901

Assessor's Parcel No.: 184-010-09, -15, -16, -51, -52 — Section: ____ Twp.: ____ Range: ____ Base: ____

Within 2 Miles: State Hwy #: ____ Waterways: San Francisco Bay

Airports: ____ Railways: ____ Schools: ____

Document Type:

CEQA: ☐ NOP ☐ Draft EIR — NEPA: ☐ NOI — Other: ☐ Joint Document
☐ Early Cons ☐ Supplement/Subsequent EIR ☐ EA ☐ Final Document
☐ Neg Dec (Prior SCH No.)____ ☐ Draft EIS ☐ Other____
☐ Mit Neg Dec ☒ Other Scoping Session ☐ FONSI

Local Action Type:

☐ General Plan Update ☐ Specific Plan ☐ Rezone ☐ Annexation
☐ General Plan Amendment ☐ Master Plan ☐ Prezone ☐ Redevelopment
☐ General Plan Element ☐ Planned Unit Development ☐ Use Permit ☐ Coastal Permit
☐ Community Plan ☐ Site Plan ☐ Land Division (Subdivision, etc.) ☒ Other Amended Quarry Permit

Development Type:

☐ Residential: Units____ Acres____
☐ Office: Sq.ft.____ Acres____ Employees____
☐ Commercial: Sq.ft.____ Acres____ Employees____
☒ Industrial: Sq.ft.____ Acres____ Employees____
☐ Educational ____
☐ Recreational ____
Total Acres (approx.) 272

☐ Water Facilities: Type____ MGD____
☐ Transportation: Type____
☐ Mining: Mineral ____
☐ Power: Type____ MW____
☐ Waste Treatment: Type____ MGD____
☐ Hazardous Waste: Type____
☐ Other: ____

Project Issues Discussed in Document:

☒ Aesthetic/Visual ☐ Fiscal ☐ Recreation/Parks ☐ Vegetation
☐ Agricultural Land ☐ Flood Plain/Flooding ☐ Schools/Universities ☐ Water Quality
☒ Air Quality ☐ Forest Land/Fire Hazard ☐ Septic Systems ☐ Water Supply/Groundwater
☒ Archeological/Historical ☐ Geologic/Seismic ☐ Sewer Capacity ☐ Wetland/Riparian
☒ Biological Resources ☐ Minerals ☐ Soil Erosion/Compaction/Grading ☐ Wildlife
☐ Coastal Zone ☒ Noise ☐ Solid Waste ☐ Growth Inducing
☐ Drainage/Absorption ☐ Population/Housing Balance ☒ Toxic/Hazardous ☒ Land Use
☐ Economic/Jobs ☐ Public Services/Facilities ☐ Traffic/Circulation ☐ Cumulative Effects
☐ Other ____

Present Land Use/Zoning/General Plan Designation:

RMPC (Residential/Commercial Multiple Planned)

Project Description: *(please use a separate page if necessary)*

See attached materials- Please note that this project not the same project as the San Rafael Rock Quarry Amended Reclamation Plan, State Clearinghouse # 2005102122; although it is occuring on the same site.

Note: The State Clearinghouse will assign identification numbers for all new projects. If a SCH number already exists for a project (e.g. Notice of Preparation or previous draft document) please fill in.

Revised 2004

1

Scoping Comment Letter B

NOP Distribution List **County:** MARIN **SCH#** 2007082097

Resources Agency

- [■] **Resources Agency** Nadell Gayou
- [ ] **Dept. of Boating & Waterways** David Johnson
- [ ] **California Coastal Commission** Elizabeth A. Fuchs
- [ ] **Colorado River Board** Gerald R. Zimmerman
- [▨] **Dept. of Conservation** Sharon Howell
- [ ] **California Energy Commission** Paul Richins
- [ ] **Cal Fire** Allen Robertson
- [■] **Office of Historic Preservation** Wayne Donaldson
- [■] **Dept of Parks & Recreation** Environmental Stewardship Section
- [ ] **Reclamation Board** DeeDee Jones
- [■] **S.F. Bay Conservation & Dev't. Comm.** Steve McAdam
- [■] **Dept. of Water Resources** Resources Agency Nadell Gayou
- [ ] _____ Conservancy

Fish and Game

- [ ] **Depart. of Fish & Game** Scott Flint Environmental Services Division
- [ ] **Fish & Game Region 1** Donald Koch
- [ ] **Fish & Game Region 1E** Laurie Harnsberger
- [ ] **Fish & Game Region 2** Banky Curtis
- [▨] **Fish & Game Region 3** Robert Floerke
- [ ] **Fish & Game Region 4** Julie Vance
- [ ] **Fish & Game Region 5** Don Chadwick Habitat Conservation Program
- [ ] **Fish & Game Region 6** Gabrina Gatchel Habitat Conservation Program
- [ ] **Fish & Game Region 6 I/M** Gabrina Getchel Inyo/Mono, Habitat Conservation Program
- [ ] **Dept. of Fish & Game M** George Isaac Marine Region

Other Departments

- [ ] **Food & Agriculture** Steve Shaffer Dept. of Food and Agriculture
- [ ] **Depart. of General Services** Public School Construction
- [ ] **Dept. of General Services** Robert Sleppy Environmental Services Section
- [ ] **Dept. of Health Services** Veronica Malloy Dept. of Health/Drinking Water

Independent Commissions,Boards

- [ ] **Delta Protection Commission** Debby Eddy
- [ ] **Office of Emergency Services** Dennis Castrillo
- [ ] **Governor's Office of Planning & Research** State Clearinghouse
- [■] **Native American Heritage Comm.** Debbie Treadway
- [ ] **Public Utilities Commission** Ken Lewis
- [ ] **Santa Monica Bay Restoration** Guangyu Wang
- [▨] **State Lands Commission** Jean Sarino
- [ ] **Tahoe Regional Planning Agency (TRPA)** Cherry Jacques

Business, Trans & Housing

- [ ] **Caltrans - Division of Aeronautics** Sandy Hesnard
- [ ] **Caltrans - Planning** Terri Pencovic
- [ ] **California Highway Patrol** Shirley Kelly Office of Special Projects
- [ ] **Housing & Community Development** Lisa Nichols Housing Policy Division

Dept. of Transportation

- [ ] **Caltrans, District 1** Rex Jackman
- [ ] **Caltrans, District 2** Marcelino Gonzalez
- [ ] **Caltrans, District 3** Jeff Pulverman
- [▨] **Caltrans, District 4** Tim Sable
- [ ] **Caltrans, District 5** David Murray
- [ ] **Caltrans, District 6** Marc Birnbaum
- [ ] **Caltrans, District 7** Cheryl J. Powell
- [ ] **Caltrans, District 8** Dan Kopulsky
- [ ] **Caltrans, District 9** Gayle Rosander
- [ ] **Caltrans, District 10** Tom Dumas
- [ ] **Caltrans, District 11** Mario Orso
- [ ] **Caltrans, District 12** Bob Joseph

Cal EPA

Air Resources Board

- [ ] Airport Projects Jim Lerner
- [ ] Transportation Projects Ravi Ramalingam
- [■] Industrial Projects Mike Tollstrup
- [ ] **California Integrated Waste Management Board** Sue O'Leary
- [ ] **State Water Resources Control Board** Regional Programs Unit Division of Financial Assistance
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- [ ] **RWQCB 9** San Diego Region (9)

[ ] **Other** _____

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Last Updated on 07/12/07

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G2-16

STATE OF CALIFORNIA—BUSINESS, TRANSPORTATION AND HOUSING AGENCY ARNOLD SCHWARZENEGGER, Governor

DEPARTMENT OF TRANSPORTATION
111 GRAND AVENUE
P. O. BOX 23660
OAKLAND, CA 94623-0660
PHONE (510) 286-5505
FAX (510) 286-5559
TTY 711

Flex your power!
Be energy efficient!

September 17, 2007

MRN000060
MRN-101-10.6
SCH# 2007082097

Mr. Tim Haddad
Marin County
3501 Civic Center Drive, Room 308
San Rafael, CA 94903-4157

Dear Mr. Haddad:

San Rafael Rock Quarry Amended Quarry Permit – Notice of Preparation (NOP)

Thank you for including the California Department of Transportation (Department) in the environmental review process for the project referenced above. Our comments on the NOP are as follows:

Traffic Analysis

The Department is primarily concerned with potential impacts of project-generated truck traffic on US 101 and its on- and off ramps in the vicinity of the project site. As stated in the NOP, quarry operations involve loading and weighing of commercial trucks that export and transport material over Point San Pedro Road. However, it is not clear where the trucks will be going from there. Please ensure that the environmental analysis evaluates potential impacts to State highway facilities by applying the following criteria to determine if a traffic analysis is warranted:

1. The project will generate over 100 peak hour trips assigned to a State highway facility.

2. The project will generate between 50 to 100 peak hour trips assigned to a State highway facility, and the affected highway facilities are experiencing noticeable delay; approaching unstable traffic flow (level of service (LOS) "C" or "D") conditions.

3. The project will generate between 1 to 49 peak hour trips assigned to a State highway facility, and the affected highway facilities are experiencing significant delay; unstable or forced traffic flow (LOS "E" or "F") conditions.

We recommend using the Department's Guide for the Preparation of Traffic Impact Studies for determining which scenarios and methodologies to use in the analysis. It is available at the following website address:
http://www.dot.ca.gov/hq/traffops/developserv/operationalsystems/reports/tisguide.pdf

1

If the project will not generate the amount of trips needed to meet the Department's trip generation thresholds, an explanation of how this conclusion was reached should be provided. 1

Should you require further information or have any questions regarding this letter, please call Ina Gerhard of my staff at (510) 286-5737.

Sincerely,

Christian Bushong
signed for
TIMOTHY C. SABLE
District Branch Chief
IGR/CEQA

c: State Clearinghouse

State of California – The Resources Agency **ARNOLD SCHWARZENEGGER, Governor**

DEPARTMENT OF FISH AND GAME

http://www.dfg.ca.gov

POST OFFICE BOX 47
YOUNTVILLE, CALIFORNIA 94599
(707) 944-5500

August 23, 2007

Mr. Tim Haddad
Marin County
Community Development Agency
3501 Civic Center Drive, Room 308
San Rafael, CA 94903-4157

Dear Mr. Haddad:

Subject: San Rafael Rock Quarry Amended Quarry Permit and Reclamation Plan Notice of Preparation (NOP), San Rafael, Marin County

Department of Fish and Game (DFG) staff has reviewed the Notice of Preparation (NOP) for the draft Environmental Impact Report (EIR) for the San Rafael Rock Quarry Amended Quarry Permit and Reclamation Plan and is providing comments on fisheries, wildlife, and botanical resources that may be impacted by the proposed project. DFG appreciates the opportunity to comment on the proposed project but encourages early consultation and coordination with all responsible and trustee agencies. 1

In order for DFG to provide meaningful review and comment, a complete assessment (including but not limited to type, quantity, and locations) of the habitats, fauna and flora within and adjacent to the project area, including endangered, threatened, locally unique species and sensitive habitats should be disclosed within the draft EIR.

The proposed project has the potential to impact wetland habitat within the project area. California's remaining wetlands provide significant and essential habitat for a wide variety of fish and wildlife species. Development in or conversion of wetlands is strongly discouraged and retaining existing wetland habitat through avoidance is recommended. If it is necessary to develop wetland habitat, DFG's no net loss policy requires that the converted wetland habitat be mitigated for on an acre-for-acre basis. The draft EIR should indicate the amount of permanent impacts to wetlands and jurisdictional waters that is proposed. The draft EIR should disclose the location and type of impacts and include an assessment of temporary impacts. In order to provide meaningful review and comments, DFG recommends that the exact acreage, location, and quality of those impacts be disclosed within the draft EIR. The analysis should include potential direct and indirect; permanent and temporary; and cumulative impacts to wetlands. Areas that are fragmented or where hydrologic regimes will be modified should also be included in the assessment. If impacts cannot be avoided, mitigation measures should include either on-site or off-site creation with sites held and managed in perpetuity. 2

The proposed project may have the potential to impact grassland, riparian or other sensitive habitats. Marin County has suffered extensive loss of grassland and riparian habitat and further impacts to native habitats and species which rely on them may be cumulatively significant in the context of other related past, present, and reasonable foreseeable probable future impacts (California Environmental Quality Act [CEQA], Section 15355). Potential mitigation scenarios 3

include setting aside acreage for retention in perpetuity, restoration or enhancement of existing habitat or a combination of several mitigation scenarios. Sites should be maintained in perpetuity and managed under an approved management plan. If planting is proposed as a part of the mitigation plan, monitoring and maintenance should be conducted for a minimum of 10 years to ensure compliance. The draft EIR should include specific mitigation plans. 3

Botanical assessments should be conducted within the project areas and should identify any rare plants and rare natural communities following DFG's Guidelines for Assessing the Effects of Proposed Projects on Rare, Threatened, and Endangered Plants and Natural Communities (Revised May 8, 2000). Surveys for sensitive plants should be conducted and results disclosed within the draft EIR and should include species specific mitigation measures. Appropriate mitigation measures should include avoidance, restoration or off-site retention. Retention areas should be held and managed in perpetuity with an approved management plan. It is recommended that a complete assessment of the area be conducted to detect the presence of sensitive species and a feasible mitigation plan be developed in consultation with DFG. 4

For any activity that will divert or obstruct the natural flow, or change the bed, channel, or bank (which may include associated riparian resources) of a river or stream, or use material from a streambed, DFG may require a Streambed Alteration Agreement (SAA), pursuant to Section 1600 et seq. of the Fish and Game Code, with the applicant. Issuance of SAAs is subject to the California Environmental Quality Act (CEQA). DFG, as a responsible agency under CEQA, will consider the CEQA document for the project. The CEQA document should fully identify the potential impacts to the stream or riparian resources and provide adequate avoidance, mitigation, monitoring and reporting commitments for completion of the agreement. To obtain information about the SAA notification process, please access our website at www.dfg.ca.gov/1600; or to request a notification package, contact the Streambed Alteration Program at (707) 944-5520. 5

If you have questions, please contact Mr. Jeremy Sarrow, Environmental Scientist, at (707) 944-5573; or Mr. Greg Martinelli, Water Conservation Supervisor, at (707) 944-5570.

Sincerely,

for

Chuck Armor
Regional Manager
Bay Delta Region

cc: State Clearinghouse

MARIN MUNICIPAL
WATER DISTRICT

220 Nellen Avenue Corte Madera CA 94925-1169
www.marinwater.org

September 21, 2007
File No. 241.0
Service No. 10009,
13217 & 24382
Map No. K22-06

Eric Steger
Marin County Department of Public Works
PO Box 4186
San Rafael CA 94913

RE: **WATER AVAILABILITY** – San Rafael Rock Quarry
Assessor's Parcel No.: 184-010-09, -15, -16, -51 and -52
Location: 1000 Point San Pedro Rd., San Rafael

Dear Mr. Steger:

The above referenced parcels are currently being served. The purpose and intent of these services are to provide water to San Rafael Rock Quarry. The proposed Amended Quarry Permit will not impair the District's ability to continue service to these properties. 1

All landscape and irrigation plans must be designed in accordance with District landscape Ordinance #385. Prior to providing water service for new landscape areas, or improved or modified landscape areas, the District must review and approve the project's working drawings for planting and irrigation systems. Any questions regarding the District's current water conservation and landscape Ordinance should be directed to Charlene Burgi at (415) 945-1525. 2

Should backflow protection be required, said protection shall be installed as a condition of water service. Questions regarding backflow requirements should be directed to the Backflow Prevention Program Coordinator at (415) 945-1559.

If you have any questions regarding this matter, please contact me at (415) 945-1531.

Very truly yours,

J.W. Eischens

Joseph Eischens
Engineering Technician

JE:dh F:\ENGINEER\WP\LETTERS\Ltrs-2007\Ltrs-Sep\je-09-21-07d-dh.doc

recycled
recyclable

COUNTY OF MARIN
DEPARTMENT OF PARKS AND OPEN SPACE
3501 CIVIC CENTER DRIVE, SUITE 415, SAN RAFAEL, CA 94903
415/499-6387 - FAX 415/499-3795

Date: October 3, 2007

TO: Tim Haddad, Environmental Coordinator

FROM: James Raives, Senior Open Space Planner JRR

SUBJECT: San Rafael Rock Quarry, Amended Quarry Permit

Thank you for the opportunity to comment on the scoping for the above-referenced project. The Marin County Department of Parks and Open Space owns and manages McNear's Beach County Park, a popular regional recreational facility adjacent to the quarry. In the past, noise, dust, and traffic associated with the quarry have conflicted with the management and public use of McNear's Beach. The Department recommends that the proposed EIR evaluate and, if necessary, provide mitigation for the quarry's impact on this important public recreation facility. In particular, the Department recommends that the EIR evaluate the following resource issues: 1

1. **Air Quality:** The quarry operation creates considerable amount of dust and other air pollutants that adversely affect the public's enjoyment of the park. In addition, these pollutants create management problems for the County, including damaging pool filtering and pumping systems and affecting other equipment and recreational facilities. The evaluation of air quality should also consider impacts from pollutants discharged by barges and trucks. 2

2. **Noise:** The noise from the operation of the quarry, including trucks and barges, may interfere with the public's enjoyment and recreation use of the park and the Department recommends that the EIR study this potential impact. 3

3. **Water Quality:** The EIR should consider potential water quality impacts from the quarry operation on swimming and fishing activities at McNear's Beach. 4

4. **Traffic:** The notice for the scoping meeting does not identify transportation and circulation as an issue that the EIR will consider. The Department is concerned about this determination, because truck traffic from the quarry on Point San Pedro Road may be damaging the road and creating traffic problems. These impacts may be interfering with the public's ability to get to McNear's Beach. In addition, truck traffic may be adversely affecting public use of the San Francisco Bay Trail, which runs along Point San Pedro Road. 5

5. **Aesthetics and Visual Resources:** The EIR should evaluate the visual impacts from the quarry on the county park. In particular, the Department is concerned about the visual impacts from increased barge activities on the public's enjoyment of the park. 6

Once again, thank you for the opportunity to provide scoping comments for the San Rafael Rock Quarry Amended Quarry Permit. If you have any questions, please call me at (415) 499-3745.

FARELLA BRAUN + MARTEL LLP
Attorneys At Law

Russ Building / 235 Montgomery Street
San Francisco / CA 94104

T 415.954.4400 / F 415.954.4480
www.fbm.com

CHRISTOPHER LOCKE
clocke@fbm.com
D 415.954.4486

September 17, 2007

Timothy Haddad
Environmental Coordinator
Marin County Community Development Agency
3501 Civic Center Drive, Room 308
San Rafael, CA 94903

Re: Comments on the San Rafael Rock Quarry AQP Notice of Preparation

Dear Mr. Haddad:

This letter is submitted on behalf of San Rafael Rock Quarry, Dutra Materials, Inc., and The Dutra Group ("SRRQ") in response to the Memorandum and Notice of Preparation, dated August 17, 2007, in which the County of Marin ("County") requested comments on the scope and content of an Environmental Impact Report ("EIR") on SRRQ's application for operating conditions under an Amended Quarry Permit, dated October 28, 2004 ("Application"), and determined by the County to be complete on January 14, 2005. 1

SRRQ's comments include a summary and update on the mitigation measures that SRRQ has implemented which appear not to have been considered in the Initial Study of operating conditions and which, we believe, reduce environmental impacts identified in the Initial Study to a less than significant level.[1] The comments also address incorrect references in the Initial Study to operating hours proposed by SRRQ, and questions concerning the analysis and proposed mitigation measures contained in the Initial Study.

Fundamentally, as discussed more fully below, SRRQ's Application proposes no changes in operations from those that form the baseline. SRRQ has, in fact, implemented measures that reduce impacts as compared to baseline operations. While the Initial Study correctly identifies 1982 as the baseline, it fails to consistently compare that baseline to proposed operations when considering whether SRRQ's Application poses an adverse change. Instead, the Initial Study 2

[1] The comments include mitigation measures previously summarized in my letter to you on behalf of SRRQ, dated August 8, 2007, which is incorporated herein by this reference and attached as Exhibit A, and discussed in the July 26, 2007 meeting between representatives of the County and SRRQ, pursuant to Section 15063(g) of the Guidelines of the California Environmental Quality Act ("CEQA"). These comments are intended to ensure that the information previously furnished, as updated and supplemented herein, is included in the record as comments in response to the County's August 17, 2007 Memorandum and Notice of Preparation. My letter to you on behalf of SRRQ concerning the process and timing for EIRs and related proceedings for the SRRQ's proposed Amended Reclamation Plan and operating conditions under Amended Quarry Permit, dated August 27, 2007, is also responsive to the County's Memorandum and Notice of Preparation, and is incorporated herein by this reference and attached as Exhibit B.

19605\1343396.1

appears to find a potential for significant impacts in areas where there is no proposal to change operations relative to the baseline. Under CEQA, the question of significant impacts is not presented unless the project proposes adverse changes, not simply continuing operations that are unchanged (or mitigated) relative to 1982 operations. *See* Pub. Res. Code § 21068; 14 CCR §15382. Indeed, unchanged continuing operations of a facility are categorically exempt from CEQA review. *See* 14 CCR §15301. 2

SRRQ reserves the right to supplement these comments, as necessary and appropriate, prior to the Scoping Session that has been scheduled for October 3, 2007, and in subsequent proceedings concerning SRRQ's Application for operating conditions under an Amended Quarry Permit. 3

I. Correction to the Initial Study's Reference to Operating Hours

As a preliminary matter, we bring to your attention two errors that appear in Table PD-3 on page 30 of the Initial Study: The reference to "Maintenance Activities" as proposed for 7:00 a.m. to 5:00 p.m., Monday through Friday; and the reference to "Other mining activities, including drilling, materials handling and transport, etc., other than blasting," as proposed for 7:00 a.m. to 10:00 p.m., weekdays and weekends.

SRRQ's Application does not propose "other mining activities" from 7:00 a.m. to 10:00 p.m. on weekdays and weekends. Consistent with current practices and absent an officially-declared public emergency, the only operations that are proposed from 5:00 p.m. to 10:00 p.m. on weekdays are the crushing plant (during May 1 – November 30, and for up to 30 days during December 1 – April 30), and barge loading; and the only operations that are proposed on weekends are barge loading and, on up to 15 Saturdays per year, maintenance activities. Therefore, the reference to "Other mining activities, including drilling, materials handling and transport, etc., other than blasting," should be deleted from Table PD-3, and other portions of the Initial Study that include this incorrect reference should be corrected (*see, e.g.*, Initial Study at 175). 4

Additionally, SRRQ's Application does not propose restricted hours of maintenance activities on weekdays. Weekend maintenance activities are restricted to 7:00 a.m. to 5:00 p.m., on up to 15 Saturdays per year, and none on Sundays. Therefore, the reference to "7:00 a.m. to 5:00 p.m." in the second column to the right of Maintenance Activities should be deleted from Table PD-3, and other portions of the Initial Study that include this incorrect reference should be corrected (*see, e.g.*, Initial Study at 29).

II. Mitigation Measures are Properly Considered Following Issuance of an Initial Study

The Guidelines accompanying the California Environmental Quality Act ("CEQA") provide for consultation between the Lead Agency and the applicant after the release of an Initial Study in order to "determine if the applicant is willing to modify the project to reduce or avoid 5

significant effects identified in the Initial Study." CEQA Guidelines § 15063(g). SRRQ presented information at the July 26, 2007 meeting with the County and is providing this summary in order to demonstrate that SRRQ is willing to implement, and indeed has already implemented, measures to reduce or avoid impacts identified in the Initial Study, consistent with the CEQA Guidelines.

None of these mitigation measures alters SRRQ's Application for review of proposed operating conditions under an Amended Quarry Permit. Instead, these are mitigation measures, contemplated by the CEQA Guidelines to be responsive to the Initial Study, and properly considered as comments in response to the Notice of Preparation, some or all of which may be adopted as conditions of approval. 5

III. SRRQ Mitigation Measures Already Implemented but Not Considered in Initial Study

Unlike most CEQA projects, SRRQ is an industrial operation that has been ongoing for many decades. Because of the ongoing nature of the operations, there have been equipment upgrades and operational changes to address regulatory requirements, customer needs and community concerns. In recent months and years, these upgrades and changes have included mitigation measures, many of which address the impacts that were identified in the Initial Study and, SRRQ believes, avoid or reduce those impacts to a less than significant level.

A. Noise

While correctly acknowledging that noise levels at the nearest residences "do not exceed established County noise standards for residences" (Initial Study at 175-76), the Initial Study incorrectly states that SRRQ's stationary equipment is subject to the County's 50 dBA daytime noise standard under the Countywide Plan Noise Element. As we have previously pointed out, the Countywide Plan Noise Element states that "[t]he standards in Table N-3 are *not* to be used for regulating existing noise sources or enforcement concerning noise problems." 1994 CWP at N-23 (emphasis added). There can be no question that SRRQ, including all stationary equipment operating at SRRQ, is an "existing noise source." 6

Additionally, we note that the Initial Study's discussion of noise impacts states that "conveyor loading of materials at the Quarry was the single most substantial noise source, with secondary noise sources including back-up alarms from mobile quarry equipment." Initial Study at 175. According to the Initial Study, this conclusion is based on three days of noise monitoring conducted in early October 2006.[2] Therefore, the conclusion that noise from these sources may pose a significant impact fails to consider the mitigation resulting from SRRQ's installation of

[2] SRRQ also notes that the three days selected for noise monitoring in early October 2006 are not likely to be representative of overall SRRQ operations, given the response to the State's emergency levee repair program that was occurring at that time. The Initial Study also fails to acknowledge the noise monitoring data collected by the County during the past 30 months, pursuant to the Court's July 15, 2004 Order.

(1) rubber liners on the barge loading conveyor and transfer boxes in May 2007, and (2) directional/reduced noise back-up alarms on rolling stock in October 2006.

As noted above, these mitigation measures were implemented to address the two sources subsequently identified in the Initial Study as the most substantial sources of noise at SRRQ. When considered individually or together, these mitigation measures should reduce noise impacts identified in the Initial Study to less than significant. The results of a noise comparison of the barge loading conveyor and transfer boxes, conducted before and after the installation of the rubber liners, confirms a reduction of 2-4 dBA (as measured sufficiently near the equipment to isolate the source) as well as qualitative noise mitigation through these measures.[3] 6

Furthermore, as discussed below, it was the obligation of the County and the City of San Rafael ("City") to maintain a buffer to protect SRRQ as a regionally significant mineral resource, consistent with the requirements of the California Surface Mining and Reclamation Act ("SMARA"). A buffer was created when the area was rezoned in 1982, the residential development that has since occurred was contemplated in 1982, and such development has presumably been permitted by the County and the City with due notice and consideration of the buffer.

B. Air Quality

All SRRQ rolling stock was converted to bio-diesel as of October 2006. The Air Quality section of the Initial Study acknowledges that some equipment has been converted, but implies that this should be done in the future rather than recognizing that it has already been completed. Initial Study at 109. Thus, the Initial Study fails to consider the reduction in emissions from this conversion. The Initial Study also fails to consider that further reductions in emissions have been achieved by the recent upgrade of SRRQ's entire fleet of off-road diesel equipment to USEPA Tier 3 standards, well ahead of regulatory requirements. The majority of the tug boats that operate to and from SRRQ are already Tier 2 compliant, and the remainder will be upgraded within the next year. 7

As the Initial Study acknowledges, the conversion of rolling stock to bio-diesel reduces PM-10 emissions, which are listed as a basis for the finding that diesel emissions may pose a significant impact. The upgrade of off-road equipment to Tier 3 standards and tug boats to Tier 2 standards provides further reductions in PM-10 emissions, as well as NOx emissions. SRRQ believes that these measures, if recognized by the Initial Study, reduce diesel emission impacts to less than significant, when compared to the 1982 baseline.

The Initial Study also concludes that fugitive dust may pose a significant air quality impact. Although acknowledging that SRRQ may not be the source, this conclusion is based in

[3] A copy of the September 17, 2007 correspondence of Harold S. Goldberg, P.E., Rosen Goldberg Der & Lewitz, reporting on this comparative analysis, is attached as Exhibit C.

part on monitoring that identified arsenic, chromium and silica in regional ambient air samples. The Initial Study suggests further study and adoption of mitigation measures to achieve 75 percent efficiency in dust control,[4] and suggests a cap on annual production (rather than emissions) at 1982 levels.

The Initial Study acknowledges that SRRQ's Application proposes "dust control measures [that] are more specific and more stringent than those specified in current permit conditions." Initial Study, Table PD-4 at 37. However, the Initial Study appears to have not considered the proposed dust control measures, which have already been implemented by SRRQ, in evaluating whether there is any change from the baseline. The dust control measures in place at SRRQ include suspension of certain operations during winds gusting over 25 mph, the use of watering and hydroseeding to control dust in areas of exposed soil, installation of a new truck wash station, and full pavement of the roadway to Point San Pedro Road to reduce track-out and dust emissions. SRRQ also operates a street sweeper daily on Point San Pedro Road, and is currently testing a new vacuum street sweeper to further reduce dust. 7

SRRQ believes that the Initial Study greatly overstates fugitive dust impacts from SRRQ operations, that there is no adverse change as compared to the baseline, and that even if there were a change, any impacts are reduced to a less than significant level when existing and proposed dust control and mitigation measures are taken into account.

C. Aesthetic/Visual Resources

The Initial Study fails to recognize that additional light shields have been installed at all lighting plants, above and beyond the light shielding requirements of the 1982 operating conditions. Initial Study at 188. Furthermore, the fact that light shielding was required under the Amended Reclamation Plan of 1982 ("ARP82") rebuts the suggestion in the Initial Study that operations at that time were limited to daylight hours. In fact, ARP82 stated that *noise generating operations* were *generally* limited to daylight hours, and witnesses at trial explained that night operations varied based on customer needs, other economic factors and emergency response requirements.[5] 8

Thus, the project proposes no change from the baseline, and even if it did, recently implemented noise and visual mitigation measures reduce impacts to less than significant levels relative to 1982 operations.

[4] SRRQ is unaware of any regulatory requirements or best practices criteria for 75% efficiency in dust control, but believes its existing mitigation measures are highly effective in controlling fugitive dust. SRRQ is also subject to, and is in full compliance with, a BAAQMD permit that includes requirements for dust control.

[5] *See, e.g.*, the July 21, 2003 testimony of former Dillingham employee Horace David McGee, at 315:3-12. Mr. McGee also testified that the Quarry received complaints from neighbors concerning blasting and noise in 1982 and at other times during his employment. *Id.*, at 313:24-26, 317:2-16.

D. Land Use and Planning

The Initial Study correctly acknowledges that SRRQ became a legal non-conforming use when the area was rezoned in 1982, and that the Marin County Superior Court has found that SRRQ has a vested right to mine without limits on depth or duration, pursuant to the Surface Mining and Reclamation Act ("SMARA"). Thus, an EIR is required only as to proposed changes in operating conditions, if any, that would cause a significant impact compared to the 1982 baseline.

The proposal for permanent operating conditions *does not increase impacts* compared to the 1982 baseline. To the contrary, as summarized above, considering the existing and proposed measures to mitigate noise, visual and air quality impacts, SRRQ operations are no less compatible with adjacent land uses than they were in 1982. In fact, these environmental improvements go beyond that which was anticipated in 1982 when the facility became a non-conforming use. The average frequency of blasting is also consistent with the levels identified in the Initial Study as reflecting 1982 operations. 9

In the baseline year of 1982, the City and the County created a buffer that was intended to protect the mineral resource from incompatible land uses, as required by SMARA. The Initial Study incorrectly suggests that the SRRQ proposal for permanent operating conditions could render the buffer inadequate. This is simply not the case. There is no proposal for intrusion into this buffer by SRRQ, nor are operations proposed to change in any manner that would increase impacts compared to 1982 levels.

Furthermore, the Initial Study's suggestion that the buffer has been rendered "inadequate" by residential development closer to SRRQ than existed in 1982 is unsupported by the record. We note that all of the residential development that has occurred since then was contemplated in 1982,[6] it has presumably been permitted by the County or the City with due notice and consideration of the buffer. Residential developments such as Marin Bay Park were permitted with conditions of approval such as double-glazed windows to reduce noise in recognition of the buffer, and owners of the involved properties acquired those properties with full knowledge of SRRQ's operations.

Thus, neither current conditions nor proposed operations provide a basis for finding the buffer approved and maintained by the City and County to be inadequate.

IV. Impacts Identified and Mitigation Measures Proposed in the Initial Study

The foregoing is intended to respond to the Notice of Preparation with a summary of the information concerning the lack of change from baseline posed by the Application and mitigation measures implemented by SRRQ, but not considered in the Initial Study, that reduce 10

[6] We note that the County and the City approved the Peacock Gap Neighborhood Plan, and it was incorporated into the Marin Countywide Plan and the City's General Plan.

impacts identified in the Initial Study to less than significant. SRRQ also offers the following comments in response to the Notice of Preparation and the findings made, and mitigation measures proposed, by the Initial Study. 10

A. Operating Hours

In the Land Use and Planning, Aesthetics and Visual Resources, and Noise sections, the Initial Study proposes that operations be limited to daylight hours on weekdays (except during a declared emergency). However, the 1982 Reclamation Plan stated that noise generating operations were only *generally* limited to daylight hours on weekdays. Furthermore, as noted above, ARP82 recognized the need for expanded operations to respond to public emergencies, and witnesses at trial explained that night operations varied based on customer needs and other economic factors. 11

Thus, this proposed mitigation measure is unduly restrictive and is not necessary to reduce impacts to a less than significant level relative to 1982 operations, particularly in light of the mitigation measures already implemented to reduce noise and visual impacts, as discussed above.

B. Dust Control

In the Air Quality section the Initial Study proposes an operational dust plan to achieve "at a minimum a dust control efficiency of about 75%." SRRQ requests that the County identify the source of "75% efficiency" target, and how this efficiency level should be measured, since we have been unable to identify this standard in regulatory guidance documents or other literature. 12

Furthermore, as noted above, SRRQ has implemented a highly effective dust control and mitigation plan that goes well beyond the dust control measures in place in 1982, and yet does not appear to have been considered in the Initial Study. As a result, the Initial Study greatly overstates fugitive dust impacts from SRRQ operations. Such impacts will be reduced to a less than significant level when existing mitigation measures are taken into account.

C. Habitat Disturbance

SRRQ requests that the County identify the change presented by the proposed operating conditions relative to 1982 baseline operations that may pose a significant impact on any special status species under the Initial Study. Since operations at SRRQ have been ongoing continually since 1982, any species are likely to have already acclimated to the operations or chosen not to seek a habitat in the area, and thus, operations that are merely continuing would not pose a change. For these reasons, it is not clear what change the County believes has occurred or is proposed to occur, relative to 1982 baseline operations that may pose a significant impact. 13

The conditions of approval for ARP82 already require that areas of particular environmental sensitivity, or those required for maintenance of an aesthetic buffer (namely, the marsh areas and the eucalyptus groves on the north side of the South Hill) will be "preserved in their natural state." SRRQ has preserved and will continue to preserve these areas.

As to the south side of the South Hill, the Court has found the area contemplated for mining to be within the limits identified in ARP82, and thus within SRRQ's vested mining rights. In the unlikely event that nesting of any special status species were discovered in the eucalyptus grove in that area, however, the tree removal activities could be suspended and rescheduled to avoid the nesting season, thereby avoiding any adverse impacts. 13

D. Blasting Plan/Vibrations

The Initial Study proposes mitigation measures for blasting but fails to describe how blasting has increased or changed relative to the 1982 baseline. Blasting is already averaging less than twice per week on an annualized basis, which is consistent with 1982 levels, and the Initial Study acknowledges that all objective measurements show vibrations to be well below accepted human annoyance levels, much less structural damage levels. Furthermore, the measures proposed by Revey Associates (Initial Study at 179) are already in place at SRRQ. Specifically,

- Blasts are already designed to maintain a minimum scaled distance of 52.8ft/lb, as defined by the Revey Associates report;
- As acknowledged by the Initial Study, peak ground motions never exceed 0.5 in/s in ground adjacent to residential buildings; 14
- All charges are confined with clean crushed stone of height equal to or greater than 25 charge diameters, as defined on page 21 of the Revey Associates report;
- Air-overpressure measured near residence never exceeds 133 dBL, as measured with 2-Hz monitoring equipment;
- All charges are confined with rock burden equal to or greater than 25 charge diameters, as defined on page 21 of the Revey Associates report; and
- All blast monitoring of ground motion and air-overpressure effects is done in full conformance with ISEE guidelines, as provided in Attachment I of the Revey Associates report (the Initial Study acknowledges conformance by all past monitoring).

The Initial Study also proposes that SRRQ prepare a blasting plan and submit it to the Department of Public Works. Such additional review is unnecessary, unwarranted and could conflict with the specialized requirements and expertise of federal, state and local regulatory 15

review that is already in place. Currently, three federal agencies (BATF, MSHA, and Homeland Security), two State agencies (CalOSHA and CalTrans,) and the County Sheriff and Fire Marshal all review the blasting activities at SRRQ. SRRQ is inspected annually by BATF and the County Fire Marshal, biannually by MSHA and CalOSHA, and the County requires an annual renewal of its license. 15

E. Noise Monitoring and Standards

As noted above, the Initial Study refers to a 50 dBA daytime benchmark for allowable noise exposure from stationary sources. Initial Study at 164, 175. However, this benchmark is derived from the Countywide Plan Noise Element which states plainly that "[t]he standards in Table N-3 are *not* to be used for regulating existing noise sources or enforcement concerning noise problems." 1994 CWP at N-23 (emphasis added). When this standard is replaced by Model Community Noise Standards (as proposed to the Court by the Point San Pedro Road Coalition earlier this year) or other applicable criteria, noise impacts from current and proposed SRRQ operations are less than significant. 16

This conclusion is bolstered by the recent mitigation measures addressing the principal sources of noise identified in the Initial Study. As noted above, the County gathered noise data during three days in early October 2006, prior to the implementation of noise mitigation measures at the two sources identified as most substantial by the Initial Study. Additionally, the three days selected for monitoring are not representative of overall SRRQ operations, and the Initial Study fails to consider noise data collected by the County during the past 30 months.

F. 1982 Baseline

The Initial Study correctly identifies 1982 as the operational baseline (Initial Study at 15, 16-20, 27) but fails to consistently compare that baseline to proposed operations when considering whether SRRQ's Application poses a change, and if so, whether such change would pose the potential for a significant impact. The Initial Study also correctly cites *Fairview Neighbors v. County of Ventura*, 70 Cal.App.4th 238 (1999) as controlling legal authority.

The CEQA statute and guidelines define a significant effect as one which causes an "adverse change" for the environment. Pub. Res. Code § 21068; 14 CCR §15382. The Initial Study appears to find numerous significant impacts in areas where there is no basis to conclude the proposed operating conditions pose an adverse change relative to the baseline. The Initial Study must address adverse changes, not simply continuing operations that are unchanged (or mitigated) relative to 1982 operations, especially where the Court has found SRRQ to have a vested right to mine without limits on duration. 17

G. Buffer

SMARA requires the County to take the protection of mineral resources into account when making land use decisions. *See* Pub. Res. Code § 2762-2764. SRRQ has been found by the State, County and Court to be a regionally significant mineral resource. As a result, SMARA requires that the County's mineral resource management policy include protections that will restrict the encroachment of incompatible land uses, furnish notice to prospective developers or purchasers of the presence of the mineral resource, and provide conditions for incompatible land uses that mitigate the conflicts prior to approving such uses. *See* 14 CCR § 3676. 18

As noted above, the record supports the conclusion that the County and the City have complied with SMARA in creating and maintaining a buffer to protect the mineral resource as proposals for residential developments were considered and approved. In any event, SRRQ has not proposed any adverse operational change or intrusion that would render inadequate the buffer established by the City and County in 1982 to protect this mineral resource, and the mitigation measures adopted by SRRQ actually *decrease* impacts compared to 1982 operations.

H. Scope of Further CEQA Review

It is SRRQ's belief that proper recognition by the Initial Study of the baseline and the mitigation measures already implemented will narrow the scope of any subsequent CEQA document. While we believe that the record supports issuance of a Mitigated Negative Declaration, the CEQA Guidelines note that if the CEQA document is in the form of an EIR it should focus on the significant effects on the environment and "should be discussed with emphasis in proportion to their severity and probability of occurrence." 14 CCR § 15413. Effects that may be dismissed in the Initial Study as insignificant need not be discussed further in the EIR unless new information emerges. *Id.* 19

Thank you for this opportunity to provide comments in response to the Notice of Preparation and Initial Study. We invite any questions concerning the mitigation measures that SRRQ has implemented and the other points presented in these comments.

Very truly yours,

Christopher Locke

cc: Supervisor Susan Adams
Alex Hinds, CDA Director
Thomas F. Lyons, Deputy County Counsel
Eric Steger, Project Manager, DPW
Rachel Warner, Environmental Planner

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Exhibit A

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August 8, 2007

Timothy Haddad
Environmental Coordinator
Marin County Community Development Agency
3501 Civic Center Drive, Room 308
San Rafael, CA 94903

Re: San Rafael Rock Quarry: Initial Study of Operating Conditions

Dear Mr. Haddad:

Thank you for meeting with us to discuss the mitigation measures that San Rafael Rock Quarry ("SRRQ") has implemented which we believe reduce environmental impacts identified in the Initial Study of operating conditions to a less than significant level. This letter is in response to your request that SRRQ provide a written summary of the measures we discussed at the meeting. The letter also addresses some areas where SRRQ would like clarification about the analysis and proposed mitigation measures contained in the Initial Study.

I. Mitigation Measures are Properly Considered Following Issuance of an Initial Study

The CEQA Guidelines provide for consultation between the Lead Agency and the applicant after the release of an Initial Study in order to "determine if the applicant is willing to modify the project to reduce or avoid significant effects identified in the Initial Study." CEQA Guidelines § 15063(g). SRRQ requested the recent meeting with the County of Marin ("County") and is providing this summary in response to your request in order to demonstrate that SRRQ is willing to implement, and indeed has already implemented, measures to reduce or avoid impacts identified in the Initial Study, consistent with the CEQA Guidelines. 1

None of these mitigation measures alters the proposal for review of operating conditions under the Surface Mining and Quarrying Permit, as submitted by SRRQ on October 27, 2004, and deemed complete by the County on January 14, 2005. Instead, these are mitigation measures, contemplated by the CEQA Guidelines to be responsive to the Initial Study as noted above, some or all of which may be adopted as conditions of approval.

II. SRRQ Mitigation Measures Already Implemented but Not Considered in Initial Study

Unlike most CEQA projects, SRRQ is an industrial operation that has been ongoing for many decades. Because of the ongoing nature of the operations, there have been equipment upgrades and operational changes to address regulatory requirements, customer needs and community concerns. In recent months and years, these upgrades and changes have included mitigation measures, many of

which address the impacts that were identified in the Initial Study and, SRRQ believes, avoid or reduce those impacts to a less than significant level.

1

A. Noise

The Initial Study's discussion of noise impacts states that "conveyor loading of materials at the Quarry was the single most substantial noise source, with secondary noise sources including back-up alarms from mobile quarry equipment." Initial Study ("IS") at 175. According to the Initial Study, this conclusion is based on three days of noise monitoring conducted in early October 2006.[1] Therefore, the conclusion that noise from these sources may pose a significant impact fails to consider the mitigation resulting from SRRQ's installation of (1) rubber liners on the barge loading conveyor and transfer boxes in May 2007, and (2) directional/reduced noise back-up alarms on rolling stock in October 2006.

2

As noted above, these mitigation measures were implemented to address the two sources subsequently identified in the Initial Study as the most substantial sources of noise at SRRQ. When considered individually or together, these mitigation measures should reduce noise impacts identified in the Initial Study to less than significant. SRRQ will conduct measurements later this month to confirm the effectiveness of these mitigation measures.

B. Air Quality

All SRRQ rolling stock was converted to bio-diesel as of October 2006. The Air Quality section of the Initial Study acknowledges that some equipment has been converted, but implies that this should be done in the future rather than recognizing that it has already been completed. IS at 109. Thus, the Initial Study fails to consider the reduction in emissions from this conversion. The Initial Study also fails to consider that further reductions in emissions have been achieved by the recent upgrade of SRRQ's entire fleet of off-road diesel equipment to USEPA Tier 3 standards, well ahead of regulatory requirements. The majority of the tug boats operated by SRRQ are already Tier 2 compliant, and the remainder will be upgraded within the next year.

3

As the Initial Study acknowledges, the conversion of rolling stock to bio-diesel reduces PM-10 emissions, which are listed as a basis for the finding that diesel emissions may pose a significant impact. The upgrade of off-road equipment to Tier 3 standards and tug boats to Tier 2 standards provides further reductions in PM-10 emissions, as well as NOx emissions. SRRQ believes that these measures, if recognized by the Initial Study, reduce diesel emission impacts to less than significant, when compared to the 1982 baseline.

[1] SRRQ notes that the three days selected for noise monitoring in early October 2006 are not likely to be representative of overall SRRQ operations, given the response to the State's emergency levee repair program that was occurring at that time. The Initial Study also fails to acknowledge the noise monitoring data collected by the County during the past 30 months, pursuant to the Court's July 15, 2004 Order.

The Initial Study also concludes that fugitive dust may pose a significant air quality impact. Although acknowledging that SRRQ may not be the source, this conclusion is based in part on monitoring that identified arsenic, chromium and silica in regional ambient air samples. The Initial Study suggests further study and adoption of mitigation measures to achieve 75 percent efficiency in dust control,[2] and proposes to cap annual production (rather than emissions) at 1982 levels.

The Initial Study fails to consider existing dust control measures at SRRQ, including suspension of certain operations during winds gusting over 25 mph, the use of watering and hydroseeding to control dust in areas of exposed soil, installation of a new truck wash station, and full pavement of the roadway to Point San Pedro Road to reduce track-out and dust emissions. SRRQ also operates a street sweeper daily on Point San Pedro Road, and is currently testing a new vacuum street sweeper to further reduce dust. 3

SRRQ believes that the Initial Study greatly overstates fugitive dust impacts from SRRQ operations, and that such impacts are reduced to a less than significant level, as compared to 1982 levels, when existing and proposed dust control and mitigation measures are taken into account.

C. Aesthetic/Visual Resources

The Initial Study fails to recognize that additional light shields have been installed at all lighting plants, above and beyond the light shielding requirements of the 1982 operating conditions. IS at 188. Furthermore, the fact that light shielding that was required under the Amended Reclamation Plan of 1982 ("ARP82") rebuts the suggestion in the Initial Study that operations at that time were limited to daylight hours. In fact, ARP82 stated that *noise generating operations* were *generally* limited to daylight hours, and witnesses at trial explained that night operations varied based on customer needs, other economic factors and emergency response requirements.[3] 4

Thus, the project proposes no change from baseline, and even if it did, recently implemented noise and visual mitigation measures reduce impacts to less than significant levels relative to 1982 operations.

D. Land Use and Planning

The Initial Study correctly acknowledges that SRRQ became a legal non-conforming use when the area was rezoned in 1982, and that the Marin County Superior Court has found that SRRQ has a vested right to mine without limits on depth or duration, pursuant to the Surface Mining and 5

[2] SRRQ is unaware of any regulatory requirements or best practices criteria for 75% efficiency in dust control, but believes its existing mitigation measures are highly effective in controlling fugitive dust. SRRQ is subject to, and is in full compliance with, a BAAQMD permit that includes requirements for dust control.

[3] *See, e.g.*, the July 21, 2003 testimony of former Dillingham employee Horace David McGee, at 315:3-12. Mr. McGee also testified that the Quarry received complaints from neighbors concerning blasting and noise in 1982 and at other times during his employment. *Id.*, at 313:24-26, 317:2-16.

Reclamation Act ("SMARA"). Thus, an EIR is required only as to those issues, if any, presented by proposed changes in operating conditions that would cause a significant impact compared to the 1982 baseline operations.

The proposal for permanent operating conditions *does not increase impacts* compared to the 1982 baseline. To the contrary, as summarized above, considering the existing and proposed measures to mitigate noise, visual and air quality impacts, SRRQ operations are no less compatible with adjacent land uses than they were in 1982. In fact, these environmental improvements go beyond that which was anticipated in 1982 when the facility became a non-conforming use. The average frequency of blasting is also consistent with the levels identified in the Initial Study as reflecting 1982 operations.

In the baseline year of 1982, the City of San Rafael ("City") and the County created a buffer that was intended to protect the mineral resource from incompatible land uses, as required by SMARA. The Initial Study incorrectly suggests that the SRRQ proposal for permanent operating conditions could render the buffer inadequate. This is simply not the case. There is no proposal for intrusion into this buffer by SRRQ, nor are operations proposed to change in any manner that would increase impacts compared to 1982 levels.

Furthermore, the Initial Study's suggestion that the buffer has been rendered "inadequate" by residential development closer to SRRQ than existed in 1982 in unsupported by the record. We note that all of the residential development that has occurred since then was contemplated in 1982,[4] it has presumably been permitted by the County or the City with due notice and consideration of the buffer. Residential developments such as Marin Bay Park were permitted with conditions of approval such as double-glazed windows to reduce noise in recognition of the buffer.

Thus, neither current conditions nor proposed operations provide a basis for finding the buffer approved and maintained by the City and County to be inadequate.

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III. Impacts Identified and Mitigation Measures Proposed in the Initial Study

Along with this letter intended to provide the County with a summary of the latest information about the mitigation measures that reduce impacts identified in the Initial Study, SRRQ offers the following points concerning impacts identified in the Initial Study and requests clarification regarding mitigation measures that it proposes.

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A. Operating Hours

In the Land Use and Planning, Aesthetics and Visual Resources, and Noise sections, the Initial Study proposes that operations be limited to daylight hours on weekdays (except during a

[4] We note that the County and the City approved the Peacock Gap Neighborhood Plan, and it was incorporated into the Marin Countywide Plan and the City's General Plan.

declared emergency). However, the 1982 Reclamation Plan stated that noise generating operations were only *generally* limited to daylight hours on weekdays. Furthermore, as noted above, ARP82 recognized the need for expanded operations to respond to public emergencies, and witnesses at trial explained that night operations varied based on customer needs and other economic factors.

Thus, this proposed mitigation measure is unduly restrictive and is not necessary to reduce impacts to a less than significant level relative to 1982 operations, particularly in light of the mitigation measures already implemented to reduce noise and visual impacts, as discussed above.

B. Dust Control

In the Air Quality section the Initial Study proposes an operational dust plan to achieve "at a minimum a dust control efficiency of about 75%." SRRQ requests that the County identify the source of "75% efficiency" target, and how this efficiency level should be measured, since we have been unable to identify this standard in regulatory guidance documents or other literature.

Furthermore, as noted above, SRRQ already has a highly effective dust control and mitigation plan in place that does not appear to have been considered in the Initial Study. As a result, the Initial Study greatly overstates fugitive dust impacts from SRRQ operations. Such impacts will be reduced to a less than significant level when existing mitigation measures are taken into account.

C. Habitat Disturbance

SRRQ requests that the County identify the change presented by the proposed operating conditions relative to 1982 baseline operations that may pose a significant impact on any special status species under the Initial Study. Since operations at SRRQ have been ongoing continually since 1982, any species are likely to have already acclimated to the operations or chosen not to seek a habitat in the area, and thus, operations that are merely continuing would not pose a change. For these reasons, it is not clear what change the County believes has occurred or is proposed to occur, relative to 1982 baseline operations, that may pose a significant impact.

The conditions of approval for ARP82 already require that areas of particular environmental sensitivity, or those required for maintenance of an aesthetic buffer (namely the marsh areas and eucalyptus groves on the north side of the South Hill) will be "preserved in their natural state." SRRQ has preserved and will continue to preserve these areas.

As to the south side of the South Hill, the Court has found the area contemplated for mining to be within the limits identified in ARP82, and thus within SRRQ's vested mining rights. In the unlikely event that nesting of any special status species were discovered in the eucalyptus grove in that area, however, the tree removal activities could be suspended and rescheduled to avoid the nesting season, thereby avoiding any adverse impacts.

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D. Blasting Plan/Vibrations

The Initial Study proposes mitigation measures for blasting but fails to describe how blasting has increased or changed relative to the 1982 baseline. Blasting is already averaging less than twice per week on an annualized basis, which is consistent with 1982 levels, and the Initial Study acknowledges that all objective measurements show vibrations to be well below accepted human annoyance levels, much less structural damage levels. Furthermore, the measures proposed by Revey Associates (IS at 179) are already in place at SRRQ. Specifically,

- Blasts are already designed to maintain a minimum scaled distance of 52.8ft/lb, as defined by the Revey Associates report;
- As acknowledged by the Initial Study, peak ground motions never exceed 0.5 in/s in ground adjacent to residential buildings;
- All charges are confined with clean crushed stone of height equal to or greater than 25 charge diameters, as defined on page 21 of the Revey Associates report;
- Air-overpressure measured near residence never exceeds 133 dBL, as measured with 2-Hz monitoring equipment;
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- All blast monitoring of ground motion and air-overpressure effects is done in full conformance with ISEE guidelines, as provided in Attachment I of the Revey Associates report (the Initial Study acknowledges conformance by all past monitoring).

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The Initial Study also proposes that SRRQ prepare a blasting plan and submit it to the Department of Public Works. Such additional review is unnecessary, unwarranted and could conflict with the specialized requirements and expertise of federal, state and local regulatory review that is already in place. Currently, three federal agencies (BATF, MSHA, and Homeland Security), two State agencies (CalOSHA and CalTrans,) and the County Sheriff and Fire Marshal all review the blasting activities at SRRQ. SRRQ is inspected annually by BATF and the County Fire Marshall, biannually by MSHA and CalOSHA, and the County requires an annual renewal of its license.

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E. Noise Monitoring and Standards

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proposed to the Court by the Point San Pedro Road Coalition earlier this year) or other applicable criteria, noise impacts from current and proposed SRRQ operations are less than significant. 12

This conclusion is bolstered by the recent mitigation measures addressing the principal sources of noise identified in the Initial Study. As noted above, the County gathered noise data during three days in early October 2006, prior to the implementation of noise mitigation measures at the two sources identified as most substantial by the Initial Study. Additionally, the three days selected for monitoring are not representative of overall SRRQ operations, and the Initial Study fails to consider noise data collected by the County during the past 30 months. 13

F. 1982 Baseline

The Initial Study correctly identifies 1982 as the operational baseline initially (IS at 16-19) but fails to consistently compare that baseline to current and proposed operations when considering the potential for significant impacts. The CEQA statute and guidelines define a significant effect as one which causes an "adverse change" for the environment. Pub. Res. Code § 21068; 14 CCR §15382. The Initial Study appears to find numerous significant impacts in areas where there is no basis to conclude the proposed operating conditions pose an adverse change relative to 1982 operations. The Initial Study must address adverse changes, not simply continuing operations that are unchanged (or mitigated) relative to 1982 operations, especially where the Court has found SRRQ to have a vested right to mine without limits on duration. 14

G. Buffer

SMARA requires the County to take the protection of mineral resources into account when making land use decisions. *See* Pub. Res. Code § 2762-2764. SRRQ has been found by the State, County and Court to be a regionally significant mineral resource. As a result, SMARA requires that the County's mineral resource management policy include protections that will restrict the encroachment of incompatible land uses, furnish notice to prospective developers or purchasers of the presence of the mineral resource, and provide conditions for incompatible land uses that mitigate the conflicts prior to approving such uses. *See* 14 CCR § 3676. 15

As noted above, the record supports the conclusion that the County and the City have complied with SMARA in creating and maintaining a buffer to protect the mineral resource as proposals for residential developments were considered and approved. In any event, SRRQ has not proposed any adverse operational change or intrusion that would render inadequate the buffer established by the City and County in 1982 to protect this mineral resource, and the mitigation measures adopted by SRRQ actually *decrease* impacts compared to 1982 operations.

H. Scope of Further CEQA Review

It is SRRQ's belief that proper recognition by the Initial Study of the mitigation measures already implemented will narrow the scope of any subsequent CEQA document. While we believe 16

that the record supports issuance of a Mitigated Negative Declaration, the CEQA Guidelines note that if the CEQA document is in the form of an EIR it should focus on the significant effects on the environment and "should be discussed with emphasis in proportion to their severity and probability of occurrence." 14 CCR § 15413. Effects that may be dismissed in the Initial Study as insignificant need not be discussed further in the EIR unless new information emerges. *Id.*

16

Thank you for meeting with us to review the mitigation measures implemented at SRRQ bearing on the impacts identified in the Initial Study. We look forward receiving clarification on the questions we have posed with respect to the Initial Study, and we invite any questions concerning the mitigation measures that SRRQ has implemented and the other points presented in this summary.

Very truly yours,

Christopher Locke

cc: Supervisor Susan Adams
Alex Hinds, CDA Director
Jim Flageollet, Chief Deputy County Counsel
Thomas F. Lyons, Deputy County Counsel
Eric Steger, Project Manager, DPW
Rachel Warner, Environmental Planner

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Exhibit B

CHRISTOPHER LOCKE
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August 27, 2007

Timothy Haddad
Environmental Coordinator
Marin County Community Development Agency
3501 Civic Center Drive, Room 308
San Rafael, CA 94903

Re: Process and Timing for Environmental Impact Reports and Proceedings for the San Rafael Rock Quarry Amended Reclamation Plan and Operating Conditions

Dear Mr. Haddad:

This is to request reconsideration of the County of Marin's ("County's") position on the process and timing for review of Environmental Impact Reports ("EIRs") to be issued in connection with San Rafael Rock Quarry's ("SRRQ's") Amended Reclamation Plan of 2004 ("ARP04") and application for permanent operating conditions under Surface Mining and Quarrying Permit No. 72-03, pursuant to the California Environmental Quality Act ("CEQA").

SRRQ was surprised to learn that the County is currently delaying the release of the draft EIR for ARP04, estimated earlier this year by the County to be ready for issuance in June 2007, until the Draft EIR ("DEIR") on operating conditions is released, now estimated for late 2007 or early 2008. The suggestion that the ARP04 EIR be delayed to be issued as a "joint DEIR," followed by a public comment period and a hearing on the "adequacy of the joint DEIR," runs counter to the County's long-standing agreement with SRRQ and acknowledgement of case law concluding that proceedings on surface mining operations and reclamation plans should be kept separate. The County's position is also at odds with the Marin County Superior Court's ("Court's") orders for expedited proceedings on an amended reclamation plan, with CEQA provisions, guidelines and case law requiring lead agency certification of an EIR within one year of the application being deemed complete, and with the County's past representations to the Court and the parties concerning the anticipated schedule. 17

In this case, the application for environmental review on ARP04 was deemed complete by the County more than two and one-half years ago, on January 14, 2005. Your October 5, 2005 Declaration to the Court estimated 204 days for publication of a DEIR, and the Scoping Session for a DEIR on ARP04 was completed on January 25, 2006. As recently as March 28, 2007, the County advised the Court that the DEIR could be issued by June 2007.

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Thus, by the County's own account, the DEIR on ARP04 was ready to be issued months (if not years) ago. There is no reason to delay issuance until the DEIR on operating conditions is completed. As you know, those proceedings included an Initial Study that was not issued until June 2007, and they remain subject to a Scoping Session next month – more than a year and a half after the Scoping Session in the proceedings on ARP04.

Given the acknowledged need for separate proceedings, there is no reason to combine the two DEIRs in one document and delay issuance of the DEIR on ARP04 until the operating conditions DEIR is ready. We urge the County to reconsider its position and release the DEIR on ARP04 without further delay.

I. The Court Directed Expedited Review of an Amended Reclamation Plan

The Marin County Superior Court's April 12, 2004 Statement of Decision and April 19, 2004 Order provided for prompt submittal by SRRQ, and review and approval by the County, of an amended reclamation plan.[1] SRRQ submitted ARP04 to the County within six months of the Court's April 19 Order, has promptly furnished information and funding requested by the County in connection with administrative review since that time, and agreed to allow the County to proceed directly to a DEIR on ARP04 in an effort to ensure the process was completed quickly. 17

Upon stipulation with the County and Court order, SRRQ also consented to review of operating conditions under the Surface Mining and Quarrying Permit, with proceedings before the Board of Supervisors "intended to result in the imposition by the County of economically viable conditions on the SRRQ's mining activities" without waiver of SRRQ's "established vested rights to conduct mining operations on the property." July 15, 2004 Order, at 2:14-17.

Review of ARP04 appeared to be proceeding reasonably efficiently through the Scoping Session on January 25, 2006, with the DEIR on ARP04 estimated by the County at that time to be published by December 2006.[2] Since that time, the County has repeatedly represented to the Court that release of the DEIR on ARP04 was imminent. Environmental review of operating conditions was on a separate track since, as noted above, this review included an Initial Study to determine whether an EIR was required, and because there are different applicable legal standards and little if any factual overlap between the two proceedings.

[1] The Court stated that it was "extremely concerned about the prolonged lack of action by responsible local agencies" in the past and ordered, *inter alia*, "the County and other interested agencies to act upon any amended reclamation plan that defendant may submit." *See* April 12 Statement of Decision, at 33:24-25; April 19 Order, at 4:18-19.

[2] *See* Declaration of Timothy Haddad in Support of Status Report, dated June 28, 2006, filed with the Court in connection with the July 12, 2006 Status Conference.

The Initial Study, issued on June 15, 2007, concluded that an EIR would be required for review of operating conditions. According to the transmittal letter accompanying the Initial Study and your Declaration filed with the County's Status Conference Statement earlier this month, however, the County intends to proceed with environmental review of ARP04 and SRRQ operating conditions through issuance of a "joint DEIR," delayed until the operating conditions DEIR is ready in late 2007 or early 2008, to be followed by a public comment period and a hearing on the "adequacy of the joint DEIR."

The County's position that release of the DEIR on ARP04 should be delayed until the DEIR on operating conditions is prepared months from now, and issued as a joint document for consideration in joint proceedings, is contrary the understanding of the parties and, we believe, the Court's orders.

II. CEQA Requires Certification of an EIR within One Year of the Project Application

The continuing delay in issuing the EIR on ARP04 is not only contrary to the understanding of the parties and the Court's orders, it is a violation of the statutory provisions and guidelines of CEQA, which allow "[o]ne year for completing and certifying environmental impact reports." Cal.Pub.Res.Code § 21151.5(a)(1)(A). The guidelines make it clear that, "[w]ith a private project, the lead agency shall complete and certify the final EIR as provided in Section 15090 within one year after the date when the lead agency accepted the application as complete. Lead agency procedures may provide that the one-year time limit may be extended once for a period of not more than 90 days upon consent of the Lead Agency and the applicant." 14 Cal. Code Regs. § 15108. 17

The continuing delay is also at odds with the County's own EIR guidelines, which similarly provide "EIRs shall be completed within one (1) year of the acceptance of the project application as complete," absent exceptions not applicable here and subject to the applicant's agreement to one extension of up to ninety (90) days. Marin County Environmental Impact Review Guidelines, at § XII.A-C.

In *Sunset Drive Corp. v. City of Redlands*, the Court held that the agency's refusal to complete the EIR within the "maximum time limits prescribed by CEQA" meant that the "trial court was not only authorized, but required, to issue a writ of mandate ordering [the lead agency] to take corrective action." 73 Cal.App.4th 215, 221 (1999) (citing Cal.Pub.Res.Code § 21151.5(a)(1)(A)). The Court found that "even directory time limits may be enforced by a writ of mandate compelling the agency to act." *Id.* at 223. The Court also allowed the plaintiff to seek monetary damages for such delay under the theory that the agency deprived the applicant of its rights to due process and equal protection. *Id.* at 225.

Thus, CEQA prescribes time limits for certification of an EIR that have already been significantly exceeded in this matter, where a period of more than two and one-half years has passed since the application for review of ARP04 was deemed complete. Courts have found failure to meet these time limits to be actionable, and that they may not be disregarded by lead agencies. By the County's own account, the DEIR for ARP04 is ready to be issued. It should not be subject to further delay.

III. Separate Review of ARP04 and Operating Conditions have been Adopted in the County's Proceedings to Date, Consistent with Case Law, and Should Continue to be Observed

That CEQA review of SRRQ operating conditions would be conducted separately from the review of ARP04 has been mutually expressed in numerous communications between SRRQ and the County, including most recently in the June 15, 2007 Initial Study itself. The Initial Study states (*id.*, at 11):

> SRRQ has proposed amendments to its approved 1982 Amended Reclamation Plan. At the request of SRRQ and their attorneys, and pursuant to established Appellate Court precedent[3], Marin County is conducting CEQA environmental review of SRRQ's proposed amendments to its Surface Mining and Quarrying Permit separately from its proposed Amended Reclamation Plan.

From the beginning, it has been SRRQ's position that the proceedings and documents should be separate because of different applicable legal standards and factual issues, to avoid confusion, and because of the agreement to proceed directly to an EIR on ARP04. The County agreed with this position. In correspondence dated April 8, 2005, you stated:

> It is our understanding that you wish to initially proceed with environmental review of the 2004 Amended Reclamation Plan submittal, and the Surface Mining and Quarrying Permit Amendment (#Q-72-03) on two separate tracks. Therefore, one Initial Study will be commissioned for the Administrative Proceedings on the Mining Permit, and a second Initial Study will be commissioned for review of the Amended Reclamation Plan.

* * * *

17

[3] The Initial Study appropriately cites *El Dorado County Taxpayers for* Quality *Growth v. County of El Dorado (Cool Cave Quarry, Inc.)*, 122 Cal.App.4th 1591 (2004); *see also City of Ukiah v. County of Mendocino*, 196 Cal.App.3d 47 (1987).

> After a contract with the consultant is approved by the Board of Supervisors, I anticipate that the Initial Studies will take 14-16 weeks for the consultant to complete, leading to a determination for Negative Declaration(s) or Environmental Impact Report(s) for the proposed projects.

In follow up correspondence on July 1, 2005, you encouraged SRRQ to agree to proceed directly to an EIR, skipping the Initial Studies in both proceedings. SRRQ responded on July 13, 2005 by agreeing that moving directly to an EIR would be most efficient for the review of ARP04, but that an Initial Study was required for review of operating conditions. By letter dated August 9, 2005, Rachel Warner confirmed that the County would proceed in this manner, stating:

> [W]e are instructing Environmental Science Associates (ESA) to prepare an Environmental Impact Report (EIR) for San Rafael Rock Quarry's Amended Reclamation Plan of 2004 (ARP) and a separate Initial Study for the operating conditions under the Amended Mining and Quarrying Permit (AQP).

The proceedings continued on these separate tracks, with the scoping session for the DEIR on ARP04 conducted on January 25, 2006, and the Initial Study on operating conditions issued nearly a year and a half later, on June 15, 2007. By the County's own account, the DEIR for ARP04 could have been issued in June 2007, if not earlier. Instead, despite its past acknowledgement of the need for separate proceedings, the County has now taken the position that the EIRs should be issued as a "joint DEIR," with a combined hearing and determination of the "adequacy of the joint DEIR." 17

For all of the reasons stated by SRRQ and acknowledged by the County, combining these documents and proceedings will create unnecessary confusion for the public and the record, is inconsistent with case law, will serve no valid purpose since the proceedings are acknowledged to be legally and factually distinct, and will delay and complicate the proceedings rather than promoting efficiency.

IV. Separate Environmental Review Documents and Proceedings will Result in More Efficient and Less Confusing Proceedings

As acknowledged in the Initial Study and consistent with the history of communications noted above, the appropriateness of separate proceedings is supported by case law concerning CEQA review of mining projects. Courts have held that an EIR prepared for a reclamation plan appropriately focuses solely on the impact of *reclamation activities* rather than *mining activities*. *El Dorado County Taxpayers for Quality Growth v. County of El Dorado (Cool Cave Quarry,*

Inc.), 122 Cal.App.4th 1591, 1598 (2004); *City of Ukiah v. County of Mendocino*, 196 Cal.App.3d 47, 54 n. 4 (1987). The legal standards are distinct in these proceedings, and there are distinct activities to be reviewed for each project, as acknowledged by the December 21, 2005 analysis of the County's outside CEQA counsel, E. Clement Shute, and by the Initial Study.

Nor will any efficiency be gained by delaying issuance of the EIR on ARP04 until the EIR on operating conditions is ready. As you know, SRRQ has implemented a number of environmentally beneficial mitigation measures that were not taken into account in the Initial Study on operating conditions. As a result, additional time will be required for the County to review these measures and determine whether they reduce impacts identified in the Initial Study to less than significant levels, as contemplated by CEQA Guidelines § 15063(g). 17

For all of these reasons, SRRQ respectfully requests reconsideration of the decision to delay issuance of the DEIR on ARP04 until a DEIR can be prepared on operating conditions, and requests that the ARP04 DEIR be issued forthwith, without further delay, consistent with the parties understanding, the Court's orders, and the CEQA statute, guidance documents and caselaw.

Very truly yours,

Christopher Locke

cc: Supervisor Susan Adams
Alex Hinds, CDA Director
Jim Flageollet, Chief Deputy County Counsel
Tom Lyons, Deputy County Counsel
Eric Steger, Project Manager, DPW
Rachel Warner, Environmental Planner

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ROSEN
GOLDBERG
DER &
LEWITZ, INC.
Acoustical and Audiovisual Consultants

Exhibit C

17 September 2007

Aimi Dutra Krause
The Dutra Group
1000 Point San Pedro Road
San Rafael, CA 94901

Subject: Barge Loading Noise Reduction Treatments
Project: San Rafael Rock Quarry Noise Monitoring
RGDL #: 04-056-1

Dear Aimi,

This letter addresses the noise reduction provided by the treatments to the barge loading equipment. The treatments consisted of covering the metal surfaces of the hopper and the "bangboard" with thick (approximately 5-inches) rubber lining. The purpose of the rubber is to cushion the impact of rocks (e.g. rip rap) on the metal surfaces. On 13 August 2007, we made acoustical measurements of the barge loading after the rubber lining treatments had been implemented. Comparisons were made to noise measurements and observations made in February 2007, before the treatments.

The bangboard is located at the end of the conveyor belt that drops the rocks onto the barge. It is used to direct the stream of falling rocks into piles along the centerline of the barge. The rubber lining made the sound of the rocks hitting the bangboard indistinguishable from the sound of the rocks hitting the pile on the barge. This is in contrast to our observations of loading activities before the treatment when the bangboard was a distinctly noticeable noise source with a "metallic" quality. The measurements show a decrease in the median noise level of up to 2 dBA after the treatments as measured at a distance of about 250 feet from the bangboard. Although the noise contribution of the bangboard has likely been reduced more than this amount by installation of the rubber lining, the other noise sources (such as the rocks hitting the pile on the barge and the diesel engine of the front end loader) tend to limit the measured noise reduction.

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The hopper is located at the start of the conveyor belt. A front end loader fills the hopper with shovelfuls of rocks. The effect of the treatment was less apparent at the hopper because the sound of the rocks hitting the sides of the hopper is mixed with the sound of the rocks hitting each other. The measurements show a reduction in the maximum noise level of about 4 dBA after the treatments as measured at a distance of about 330 feet from the hopper. This reduction may also be influenced by acoustical shielding provided by rock stockpiles east of the hopper that were taller

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during the "after treatment" measurements than during the "before treatment" measurements.

18

This concludes our current comments. Please call if you have any questions.

* * *

Sincerely,

Harold S. Goldberg, P.E.
Principal
Rosen Goldberg Der & Lewitz, Inc.

File Name: 04-056_Barge Loading_17sep07.doc

Measurements of Barge Loading at the "Barge" Belt

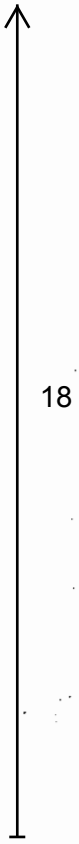
Location: End of "Swoop" Belt, 250 ft north of Barge Belt and about 25 ft above the water
About 330 feet northeast of Hopper at start of Barge Belt
Equipment: Larson Davis Model 820 and 824.

Rip Rap hiting bangboard, Crushing Plant off

		Median Leq(5 sec) dBA	
Before Rubber Lining on Bangboard:	14-Feb-07		
five minute periods starting at	6:10 PM	73	
After Rubber Lining of Bangboard	17-Aug-07		
seven minute period starting at	9:14 AM	71	
		2	decrease

Front End Loader Dumping Rip Rap into Hopper at start of Barge Belt

		Typical Lmax (slow), dBA	
Before Rubber Lining on Hopper	14-Feb-07		
	around 18:00 - 19:00	79	
After Rubber Lining on Hopper (rock pile just blocks line of sight between hopper and SLM)	17-Aug-07		
	around 8:00 - 9:30 AM	75	
		4	decrease



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Marin Audubon Society

P.O. Box 599 | Mill Valley, CA 94942-0599 | marinaudubon.org

September 15, 2007

Tim Haddad, Environmental Coordinator
Marin Community Development Agency
23501 Civic Center Drive
San Rafael, CA 94903

RE: SAN RAFAEL ROCK QUARRY AMENDED SURFACE MINING AND QUARRYING PERMIT SCOPING

Dear Mr. Haddad:

The Marin Audubon Society appreciates the opportunity to comment on the above project, and we support the need to prepare an environmental Impact Report for this permit. Our concerns focus on the protection of biological resources. The understand the project and its impacts, we request that the DEIR address the following issues and questions be addressed in the DEIR: 1

1. The DEIR should evaluate the project in terms of policies in the newly revised Countywide Plan policies which is scheduled for approval in early October. 2

2. Some clarifications/corrections should be made to the text on page 124. Although ruderal habitats may not support the maximum (page 124) habitat values, many do provide "habitat for native wildlife." Areas covered by buildings are not only not ruderal habitat, they are not wildlife habitat at all. What is a "generalist" species of wildlife? All native wildlife species are important and habitat for them should be maintained. 3

3. Rats are attracted to riprap shoreline. Discuss the presence of rats and the impact of rats on wildlife and people. 4

4. Add Black rail to the list of potential special status species. 5

5. The Regional Water Quality Control Board should be listed as a state agency with regulatory authority over the project. Add National Marine Fisheries Service which has oversight responsibility over for some fish species. 6

6. Provide a complete list of BMPs that are used by the quarry to protect water quality, and evaluate the effectiveness of these measures in actually protecting water quality. Should any other measures be used? 7

A Chapter of the National Audubon Society

7. The DEIR should discuss the potential adverse impacts of the quarry operation, and its increased activities, on wildlife and their habitats. For example, noise would increase because blasting frequency would increase. 8

8. The discussion in the last paragraph page 137 (bottom) indicates that adult frogs, frog larvae and tadpoles could be entrained on screens as water is pumped from the pond. Even if the screens are maintained this could occur. A measure should be added to Mitigation 7.a to limit pumping to the time when impacts to red-legged frogs, if they are found, are least likely to occur, i.e. when only adults are present. 9

9. Surveys for red-legged frog are not recommended to be conducted until after project approval Mitigation Measure 7.1a. We strongly recommend that red-legged frog surveys be conducted now, and not wait for project approval. It may be too late after project approval.

10. Are there any buffers in existence around habitat and the various quarry operations? If so, what was the basis for establishing the distance? The permanence and adequacy of existing buffers should be addressed. 10

11. Mitigation Measure 7.1.b provides that a qualified biologist remove and relocate Western Pond Turtle eggs. We strongly object to allowing removal of eggs which are laid in the mud and which would be difficult, if not impossible, to remove without damage to the eggs. We recommend that construction be scheduled to avoid nesting season. 11

12. Mitigation Measure 7.1 c. states that buffer areas "can" be included from native bird nests. This condition should not be optional. The recommendation should state that if nests are found, suitable buffers shall be provided. 12

13. In Mitigation Measure 7.1 d the size of the recommended no-disturbance buffer around bat nests should be stated. 13

14. The EIR should provide a more complete description of the native trees that are anticipated to be removed. What are the species, number and location of all native trees that could be removed. Provide a map showing the trees. A mitigation measure should recommend that all native trees be retained to benefit native wildlife and people. 14

15. While the lack of tidal influence may have degraded the marsh, there is a culvert under the road and tide gate that, if opened, allows tidal water to flow into and out of the marsh. It is the failure of the property owner to manage the tide gate so that water is allowed into and out of the marsh that has caused the degradation of the marsh. Property owners should not be rewarded for failure to manage their facilities. 15

16. There has been a long-standing mosquito problem because tidal waters are blocked from the marsh. What is the status of mosquito production? What measures are recommended to address this problem? 16

17. The only mitigation measures discussed under the marsh impact discussion relate to tree removal. Perhaps these are just misplaced. There should be mitigation measures to address the adverse impacts of blocking tidal waters through the gate. A measure should be included that requires the owner to open and operate the tide gate to allow water flow into and out of the marsh. A management plan with a schedule for operation of the tide gate should be prepared to ensure there is no flooding of adjacent properties, that mosquito problems are avoided to the extent possible, and ensure there is adequate tidal flows to nourish the marsh plants and wildlife species that depend on the marsh. 17

18. Include a description of the fresh water wetland on the eastern side of the quarry access road. What is the water source for this wetland, what is its condition, and what species use this wetland? Discuss whether wetlands of this type are an unusual resource in Marin and the Bay Area. 18

19. Discuss the impact of quarry operation (noise, barging, dust) etc. on the Marin Islands National Wildlife Refuge and species, particularly the nesting birds. 19

20. Provide a cumulative impact analysis of all of the project adverse impacts. 20

Thank you for addressing our concerns and questions.

Sincerely,

Barbara Salzman
Conservation Committee

Haddad, Timothy

From: sandrasellinger@comcast.net
Sent: Wednesday, October 03, 2007 10:15 PM
To: Haddad, Timothy
Cc: bonitamarmor@comcast.net>
Subject: Quarry comments

I submitted a form to speak tonight at the scoping meeting at Glenwood Elementary School, but had to leave before I was called upon.

My comments are about the continued removal of the large Eucalyptus globulus at the quarry. These trees, usually considered undesirable, have provided protection to the community over the years. This species is the third largest tree in the world. Because of tits large wood base, branching structure when grown in crowded conditions,and type of spreading habit, they create a wonderful natural sound wall. It is evergreen, so the leaves help capture quarry pollutants and sequester carbon from the trucks. Broad stands of this tree have provided mitigation to night time light to the neighborhoods.This is one application where the tree fits the site. 1

Replacement of this species would help the quarry reduce sound, collection of pollutants and reduce light glare.

Respectfully,
--
Sandra Sellinger, Director
Marin ReLeaf
PO Box 9512
San Rafael, CA 94912
Tel: (415) 721-4374
www.marinreleaf.org

"Urban forestry is Marin's frontline defense against climate change"

10/4/2007

Submitted at scoping 10/3/07

POINT SAN PEDRO ROAD COALITION

Board of Directors:
DENISE LUCY, ~~Co-president~~ *BONNIE MARMOR*, **Co-president**
DAVE CRUTCHER, **Secretary/Treasurer** *AMANDA METCALF*, **Past President**
ALAN SCHAEVITZ, **Webmaster**

Box 449, 369 "B" Third Street, San Rafael, CA 94901 www.sprcoalition.org

October 3, 2007

Tim Haddad
Marin Community Development Agency
3501 Civic Center Drive, Room 308
San Rafael, CA 94903

Dear Mr. Haddad:

Re: Scoping Comments for EIR on SRRQ Amended Quarrying Permit

The Pt. San Pedro Road Coalition (the "Coalition") concurs with the decision to require an Environmental Impact Report ("EIR") for the amended San Rafael Rock Quarry permit (the "AQP") that has been proposed by the San Rafael Rock Quarry ("SRRQ" or the "Quarry"). Although the Initial Study ("IS") released in June identifies many potential significant impacts from the AQP, it ignores or materially understates many negative consequences, such as damage and disturbance from blasting, the detrimental effects of the increasing intensity of the Quarry's operations on traffic, noise and the general environment of the Pt. San Pedro Road peninsula.

A. Overview

This letter discusses the following general topics:

Baseline Determination. The baseline determinations contained in the IS appear to be substantially overstated, particularly relating to overall production levels and the percentage of Quarry material shipped by truck instead of by barge. Because of the fundamental importance of the baseline, the EIR must make a greater effort to determine an accurate baseline. It must also analyze trucking impacts and alternatives to a much greater extent that contained in the IS. 1

Overburden Disposal. The EIR should be prepared on the assumption that SRRQ's proposal to deposit overburden material in the Northeast Quadrant constitutes quarrying activity that is not permitted by Court order.

Consistency with Countywide Plan. There has been substantial evolution in the residential setting of the Quarry over the past quarter century, which is appropriately reflected in the CWP. However, the CWP's proposals and plans for the Pt. San Pedro Road corridor are generally inconsistent with increased mining intensity at the

Quarry. The EIR must evaluate the AQP much more rigorously with respect to its consistency with the CWP.

Air Quality. The IS understates the health hazards posed by particulate matter produced by Quarry operations, in particular respirable crystalline silica and diesel particles. Several studies over the past decade stand as a red flag that something may be terribly wrong, notwithstanding the more benign study on which the IS principally relies. The EIR must dramatically enhance its review of air quality over the review contained in the IS.

Biological Issues. Increased quarrying activity is likely to have a significant and negative effect on the site's marshland and native species. The EIR should analyze these effects, including the AQP's consistency with setbacks for the Bayland's Corridor in the CWP and with the Quarry's status as a Bayfront Conservation zone.

Barging. The IS generally assumes that barging causes few negative impacts and thus need not be studied or upgraded. For this reason, the AQP proposes to increase barging activity over the baseline dramatically. In fact, barging is a noisy and dust-spewing activity. On the other hand, it is also confined to a relatively small part of the Quarry site, and lends itself to very effective mitigation through enclosure. The EIR should study all the effects of additional barging, and seriously examine the practicability of enclosing the entire barge loading activity. Practicability should be applied in the context of a large capital budget that an operation the scale of the Quarry should support.

Hours of Operation. SRRQ is proposing to expand substantially the hours during which it may conduct operations, including barge loading until 10 p.m. every day. The EIR should address the effects of these increased hours, which will exacerbate most of the negative effects of quarrying that are discussed in this letter.

Blasting. Blasting is a major concern of residents close to the Quarry. Though this letter proposes a number of mitigation approaches, the basic objective is to reduce the effect of a blast to the "barely perceptible" standard that the Quarry (and the IS) incorrectly assumes is currently being met.

Noise. The AQP should have high expectations of SRRQ with respect to reducing the amount of noise resulting from Quarry operations. Though we suggest investigating a number of approaches, enclosing the most offending aspects of the operation may well be feasible economically (considering the scale of the Quarry operation), and would almost certainly reduce dramatically the noise problem. It would address other environmental problems as well, such as dust production. Serious consideration must be given to enclosing as much of the quarrying operation as possible.

Aesthetics. As with any strip mine, the Quarry is an eyesore. However, it proposes to hide from the view of residents by erecting berms in Quarry locations that are off-limits to quarrying activity. The construction of those berms over years and years would have a devastating effect on nearby neighborhoods. They should be rejected as prohibited operations.

Cumulative Effects: The EIR should also consider the cumulative effects of all negative impacts on the residents and the environment, taken as a whole. None of

1

these effects should be analyzed solely by themselves. The EIR must consider the cumulative pollution effects of all Quarry sources in combination with nearby non-SRRQ operations in the area, such as McNear's Brick yard, other construction projects in the neighborhood, diesel from ships and particulates from nearby refineries. The EIR should consider the complaints presented during the Court at trial and subsequently submitted to the Court for consideration at status conferences, as well as the Coalition's surveys that were submitted to the County and SRRQ, in order to assess the cumulative impacts on the community. 1

Alternative Plan. Finally, we propose alternative set of operating conditions that are reasonable and strike an appropriate balance between the residents living on the Pt. San Pedro Road peninsula.

B. Baseline Determination 2

The most fundamental and consequential assumption underlying the scope of the EIR is the determination of the 1982 baseline. Specific components of the baseline have been determined on the basis of incomplete and inaccurate facts, and unchallenged assumptions. Though inaccurate baseline production levels and truck traffic are discussed below, these are not the only inaccurate baseline components.

Level of Production

The IS estimates the average production for the Quarry in 1980-1982 at 1,414,667 tons. This number is an average reported for those years in a document prepared in October 1984 by Merrill Lynch Capital Markets for the purpose of marketing the Quarry to potential buyers. The IS notes the tonnage from 1979, but disregards it when determining the estimated tonnage even though is was included in Table PD-2 of the IS. The following table presents tonnages for 1979 through 1982: 3

1979	1980	1981	1982
692	1,467	1,304	1,473

If the IS had included the much lower 1979 production the average would have been 1,234,000 tons. The 1979 production statistic is historic data that should have been included in the calculation.

- ❖ The County must research much more thoroughly both SRRQ's internal records and their external reports to regulators in order to arrive at more accurate current and historical production estimates. This would allow the full impact of the AQP to be examined in light of current and projected future levels of Quarry activity.

Truck Traffic

The IS states (at page 17, bullet 12) that there are no known records of the number of truck trips associated with SRRQ operations in 1982, and that the Marin County Planning Department estimated the number of truck trips in 1981 and 1982 by assuming that half of the Quarry's annual production was shipped by truck and the other half by barge, that the Quarry operated 240 days per year, and that the average truck load was 20 tons. The table lists production level by tons and assumes half was shipped by truck. These 4

computations have never been independently analyzed and are inconsistent with other reliable documents.

- ❖ The EIR should provide a more accurate estimate of both the number of days that the Quarry operated during 1979 through 1982 and its current hours and days of operations.

The EIR translates tonnages into truck trips using an average truck size as its denominator. Over the years, the gravel trucks coming to and from the Quarry have increased materially in size from 20 tons to 25 tons.

- ❖ Since a high percentage of the materials shipped out of the Quarry go to SRRQ plants in Richmond and Petaluma, the EIR should study the impact on the community if these loads were shipped by barge instead of trucks.

Other sources of baseline information seem not to have been considered. For example, Norman T. Gilroy and Associates testified at the 2004 trial of Marin County Case No. CV014584 about his May 12, 1982, letter to Mehdi Madjd-Sadjadi, Assistant Land Development Engineer of Marin County Department of Public Works. On page 4, paragraph 6, Mr. Gilroy wrote:

> *"The vast majority of the material quarried at the property is shipped out by deep water barge, thereby minimizing the kind of truck traffic which might normally be associated with an operation of this size."*

4

Gilroy testified that a reasonable interpretation of "vast majority" is that at least 75% of material quarried at the property in 1982 was shipped out by barge, meaning that at most 25%, or 368,250 tons, were shipped out by truck in 1982. Gilroy also testified that Basalt was sensitive to the neighbors' concerns with the truck traffic and accepted many bargeable projects to take traffic off the road. There is no valid basis for making any upward adjustment from the 1982 baseline figure of 368,250 tons. Despite Gilroy's assurance that no increase in truck traffic was expected, 456,775 tons of materials were shipped out by truck in 1989, the first year for which SRRQ has provided data. In 2000, 748,220 tons were shipped out and in 2001, 713,382 tons were shipped out by truck. These are the two years for which SRRQ provided data. The 2000 tonnage trucked out is a 103% increase over the amount trucked out in 1982, a very substantial intensification of truck use. SRRQ has significantly exceeded the 368,250 ton baseline figure for every year for which records are available between 1989 and 2001.

- ❖ The EIR should deem 368,250 tons of products per year from the SRRQ as the baseline amount of truck traffic and evaluate the environmental impacts of SRRQ's current and proposed use in comparison to that level of trucking.
- ❖ The EIR should explain the discrepancy between the IS estimation that 50% of all Quarry products were shipped by truck compared to Gilroy Associates' letter of May 12, 1982, and Gilroy's trial testimony stating that at least 75% of the Quarry's output was being shipped by barge.

SRRQ should have the burden for determining higher baseline levels. They are the only party that has been in a position to produce and safeguard the records necessary to support their own production claims. If the records they produce are inadequate to that task, then only they are to blame. SRRQ cannot claim that they should not be penalized

for their predecessor's (Basalt's) lack of adequate production records. Though they might not have anticipated they would need production records to support an eventual amended permit, their lack of due diligence in the course of their acquisition regarding the stewardship of quarry records is their own fault.[1] It is unacceptable that the County would construe production evidence in SRRQ's favor. 4

- If the County cannot definitively determine which of multiple pieces of conflicting evidence is the most accurate for determining the operating baseline, the evidence should be construed against SRRQ in favor of other competent evidence.
- Consultants hired by the County have demonstrated that they are ill-suited estimators of past Quarry activity. To obtain a more accurate baseline, a cultural anthropologist should be hired to interview residents and take other appropriate steps to investigate how people co-existed with the operators of the Quarry site since 1972 and gain a far more accurate sense of the intensity of Quarry operations. 5
- That same cultural anthropologist should be asked to review and comment in the EIR on how the proposed increase in quarrying intensity is likely to affect residents living near the Quarry.
- The EIR should review the court case records and the ongoing complaints submitted to the County regarding complaints by neighbors regarding trucking operations. 6

SRRQ has stated its intent to continue quarrying operations for another 20 or 30 years, at least. The AQP will constitute the principal rules under which the Quarry will operate for this future period. Because the public may have no effective opportunity to question the environmental impacts resulting from the AQP, these new rules should at least be examined against an accurate well-researched baseline. 7

The EIR has relied upon SRRQ's representations of full adherence to the SRRQ "Truckers' Management Plan." There has been no independent verification of adherence to any aspect of that plan. Though SRRQ has represented that all trucks leaving the Quarry will be tarped, and trucks will department at intervals to avoid caravanning on Pt. San Pedro Road, the experience of almost anyone who drives on Pt. San Pedro Road is inconsistent with those representations. 8

- The EIR should consider the environmental impacts of the "Truckers' Management Plan.
- More generally, the EIR should not rely solely, or even primarily, on SRRQ representations of their intent as to how the Quarry will be operated without accounting for SRRQ's past record relating to the particular representation.

[1] Alternatively, they may have allowed useful records to dissipate if those records did not support their claims. Though we have no specific basis to make that assertion, at a minimum SRRQ would have had far less incentive to safeguard records that might set a low baseline number.

- ❖ Apart from the baseline determination, the EIR should consider the impact of the use of these larger gravel trucks on road wear, noise levels for homes close to Pt. San Pedro Road, increased diesel emissions and overall traffic flow.

9

C. Use of the Brick Resource Area for Disposal of Overburden

The Coalition asserted at the Scoping Hearing for the EIR on the Amended Reclamation Plan that the much of SRRQ's plan must be considered operations, not reclamation. For that reason, we direct you to the matters we raised in our November 28, 2005, scoping letter as if they were set forth fully herein. Of particular concern is the Quarry's proposal to use the Brick Resource Area for disposal of overburden.

The Brick Resource Area is depicted and labeled as such in the figure labeled "Existing Use Areas" attached to Basalt's 1976 Reclamation Plan and in Fig. 4 of the Amended Reclamation Plan (1982). It is located north of the Main Pit/North Hill area at the northern end of the SRRQ property. It is also adjacent to Cantara Way, the entry road to McNear Beach County Park, and to the homes in the Marin Bay Park development that lie just north of Cantara Way, on a hillside overlooking it. SRRQ has admitted that the Brick Resource Area was not used for disposal of overburden in 1982, when it became a non-conforming use. To the contrary, SRRQ has admitted that the first year it placed excavated overburden material from rock quarrying activities in the Brick Resource Area was 1995. See Plaintiff's Trial Exs. 52, 53 (Coalition Interrog. No. 19, SRRQ Response to Interrog. No. 19). SRRQ has admitted that as part of its operations, it placed 136,742 tons of overburden in the Brick Resource Area in 2002 (the only year for which it supplied data) and placed 232,247 tons of washed fines in the Brick Resource Area between 1998 and 2002. See Plaintiffs' Trial Exs. 52, 53 (Coalition Interrog. No. 20, SRRQ Response to Interrog. No. 20). Brian Peer, the Quarry's manager, testified in the 2004 trial that SRRQ disposed of overburden in the northeast portion of the Brick Resource Area at that time. (Reporter's Transcript at Trial at page 346, lines 14-18.) The Brick Resource Area differs from the Main Pit/North Hill and South Hill Areas in that Basalt never expressed an intent to quarry rock in this area. Instead, as indicated in the 1976 Reclamation Plan, Basalt's intent for this area is that:

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> "[m]ining for shales and clays for brick making is expected to continue in the Brick Resource Area for the remaining period of the McNears [Brick Company] lease (i.e. 15 years). Tentative quarrying contours for that area are shown on the Quarrying Study, though the nature of the operation is such that excavation takes place where the resource is found (the quality of materials from place to place being uneven) with the result that both the final contours and the appearance of the land in the interim are uncertain at this time." Plaintiffs' CTE, Ex. 8 at 0159.

Other than McNear's shale and clay mining[2], Basalt/Dillingham indicate no intent in the 1982 ARP to conduct any other activities in the Brick Resource Area until the entire mining operation terminates and final reclamation and redevelopment activities commence.[3] In particular, Basalt indicates no history of or intent to use the Brick

[2] McNears in fact ceased shale and clay mining in this area in the early 1990s.

[3] In fact, Fig. 4 of the 1982 Amended Reclamation Plan reflects Basalt's intent to "PRESERVE IN NATURAL STATE" a "HILL" located in the northwest corner of the Brick Resource Area. Id. at 0103. In

Resource Area as a disposal area. To the contrary, Basalt's intended disposition of waste materials was that "[g]enerally, waste materials generated by the quarry (low grade fill etc.) will either be exported to off-site fill projects or will be deposited at the bottom of deep pit excavations onsite that are a natural part of the overall quarrying operation." Plaintiffs' CTE, Ex. 8 at 0160.

Contrary to Basalt's historical practice and stated intent to dispose of Quarry-generated waste materials offsite or in the main pit, SRRQ's discovery responses established that the Quarry has dumped in the Brick Resource Area large amounts of (i) "washed fines" from rock washing operations commencing in 1998, (ii) overburden excavated from the Main Pit/North Hill Area commencing in 1995 and (iii) "976 cubic yards of clean-dredged soils" in April 2001. See Edgcomb Decl., Ex. 1, Coalition Interrog. Nos. 10, 11, 13-15, 17-25; Ex. 2, SRRQ's Responses to Interrog. Nos. 10, 11, 13 (figure), 14-15, 17-18 (figure), 19-25. Between 1998 and 2002, SRRQ admitted dumping 203,266 cubic yards of washed fines in the Brick Resource Area. Ex. 2, SRRQ's Response to Interrog. No. 15. Also, while SRRQ claims to lack data for the years 1995 to 2001, it admitted dumping 136,742 tons of overburden in the Brick Resource Area in 2002 alone. Ex. 2, SRRQ's Responses to Interrog. Nos. 18, 20. SRRQ has prepared a figure showing the three large dump areas within the Brick Resource Area. Ex. 2, SRRQ's Response to Interrog. No. 13.

The Coalition introduced evidence at trial in which SRRQ acknowledges that it first began disposing of washed fines generated from the production of these "washed products" to the Brick Resource Area in 1998. See Plaintiffs' Trial Exs. 52 and 53 (Coalition Interrog. Nos. 12-15, 21 and 22; and SRRQ Responses to Interrog. Nos. 12, 13 (figure), 14, 15, 21 and 22). Quarry manager Brian Peer testified that a new wash plant was reconfigured from the "sloth plants." TT at 363:4-7. The wash plant produces components for asphalt. TT at 363:12-16. The fines that are washed off the rock are disposed of into Area 2 in the Brick Resource Area. TT at 363:17-22. Plaintiff's Exhibit 38 is marked with a red 2 to indicate the location of Area 2. TT at 364:1, Plaintiff's Trial Ex. 38. Peer testified that when he joined Dutra they moved the fines produced by Basalt that were located in the southwest corner of the pit to the current location of Area 2. TT 364 at 17-24. Bill Hosken, a resident of the adjacent Marin Bay Park neighborhood, testified that in the late 1990's he began seeing a gray material, likely washed fines, being dumped in Area No. 3 in the Brick Resource Area. TT at 215:27-28, 216:9-12, Plaintiff's Trial Ex. 38. Hosken stated that since the dumping has commenced, he has heard noise from the equipment and experiences large amounts of dust outside and inside his home. TT at 216:16-217:12.

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As a result of these findings, Judge Sutro's April 19, 2004 post-trial Order provides that:

> "Defendant Quarry is enjoined from depositing any overburden, tailings, dredged material or other waste materials in the Brick Resource Area (the northeast quadrant) depicted in Figure 1 of the 1982 Amended Reclamation Plan."

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the text, Basalt states "[t]he low hill in the northwest corner of the [Brick Resource Area] quadrant will be preserved in its natural state. Some reshaping will be necessary along its north and east sides where excavation of shale for the brick making process has taken place in the past." Id. at 0100.

Yet, draft ARP-04 now provides that the Quarry will place very large volumes of overburden and tailings "pond fines" in the brick resource area, despite the prohibition in the Court's Order and the severe noise, dust and visual impacts such activities have had on the Quarry's residential and County park neighbors in the past.[4] SRRQ tries to justify this proposed violation of the Court Order and impacts on the neighbors by claiming the County has requested some interim restoration activities in the Brick Resource Area. However, the County's request is not an invitation to continue the illegal waste disposal activities of the past. In light of the Court's April 19, 2004 Order finding that SRRQ has no vested right to conduct waste disposal operations in the Brick Resource Area and that such past operations were illegal expansions of SRRQ's non-conforming use, SRRQ's proposal to continue these waste disposal operations in ARP-04 is an illegal expansion of the SRRQ's use, a zoning violation, and a violation of the Court's April 19, 2004 Order.[5]

SRRQ ignores this prohibition by dressing up its plan to continue its waste disposal activities in the Brick Resource Area as "interim reclamation." SRRQ's proposed recommencement of this expanded and illegal use of the Quarry property for continued waste disposal activities remains illegal, no matter how the Quarry characterizes it. The AQP must incorporate the Court's conclusion that, as a matter of law, SRRQ cannot use the Brick Resource Area for disposal of overburden or pond fines, and reject SRRQ's claim that such disposal is "reclamation." SRRQ never saved such materials for reclamation in 1982 or before, never disposed of them in the Brick Resource Area before, and should not be allowed now to dispose of over two million tons of such material in that area now, and to excavate and redispose those materials later, all activities that will have severe and negative environmental impacts on surrounding residents and the environment. 10

- ❖ The EIR should be prepared on the assumption that SRRQ's proposal to deposit overburden material in the Northeast Quadrant constitutes quarrying activity that is not permitted by Court order.
- ❖ The IS says (page 33) that the SRRQ does not "intend" to produce pond fines in the future. To promote the vitality of this intent, production of pond fines should be prohibited under the AQP. 11

[4] Site-wide, the Quarry estimates that the "phased reclamation process" will require the relocation of over 2 million tons of material." The Quarry also states that "[r]eclamation will continue over the remaining life of the Quarry."

[5] The Quarry's proposed "reclamation" activities in the Brick Resource Area include: ""[r]emove and replace pond fines in [the Brick Resource Area] with a mix of pond fines and overburden from South Hill…", "build the new berm on [the Brick Resource Area] to provide continuing sound and visual protection for nearby neighbors to the north," and "build[ing]" a temporary berm along the north edge of the [Brick Resource Area]" which "will be of sufficient height and bulk, to fully screen noise from, and views of, the quarry activities and facilities from neighbors to the north." This proposed extensive waste disposal activity is to occur on property directly adjacent to the residential and park neighbors to the north for the remaining life of the Quarry.

D. Land Use and Planning

Consistency with County Wide Plan[6]

The CWP generally reflects a heightened need to protect adjacent properties from impacts of active mining operations, and specifically cites the Quarry as an example of a conflict between extraction activities and neighboring uses.

> *"In some areas of the County, quarry operations, including truck transportation and blasting, have resulted in substantial conflicts with nearby residential and recreational uses. Among examples of such impacts is (sic) the noise and truck traffic experienced by neighbors of the San Rafael Rock Quarry, which operates under a permit granted in 1972."* (P. 3-104)
>
> *"When the need to extract material is not accompanied by appropriate protection of the environment and the health and safety of surrounding neighbors, such operations can create nuisances, hazards, or significant environmental impacts."* (P. 3-105)

- The EIR should discuss strategies to comply with relevant policies and programs in the new CWP including, but not limited to, MIN-1.3, MIN-1.4, programs MIN-1.f, MIN-1.i and MIN-1.j.

12

Change in Surrounding Landscape and Resulting Incompatibility

The increased residential density and proximity of homes to the Quarry since approval of the 1972 permit and establishment of the 1982 baseline results in operations impacting more people more often. Many of the surrounding neighborhoods did not exist or were under development before 1982.

- To build a picture of the change from then to the present, the EIR should describe the characteristics of the area surrounding the Quarry for a distance reasonably judged to be within range of view, sound, blast vibration, truck traffic and airborne pollution. This should include changes in the approximate number of housing units, recreational users of McNear's Beach and individuals dependent on Pt. San Pedro Road for access to homes and recreational destinations.

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- The EIR should examine cumulative impacts of the proposed project on the surrounding residential neighborhood and recreational areas, noting the difference in the number of households and users affected by operations in 1972 and the present, and comparing impacts of the prior permit on the same geographic area.
- The continuing incompatibility of Quarry operations with nearby residential and recreational land uses, as stated in Impact 1.2, should be analyzed in depth.

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Pages 121 and 122 of the IS notes the availability of sidewalks and the intention of adding bike paths on Pt. San Pedro Road under General Plan 20/20 policies. Given that there are three schools in the area (San Rafael High, San Pedro Elementary and

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[6] Our comments on the IS and scoping for the AQP EIR follow. When discussing the Countywide Plan ("CWP"), unless otherwise stated we mean the draft 2007 CWP expected to be adopted by the Board of Supervisors in October 2007.

Glenwood Elementary), and that our children are being encouraged to walk or bike to school, this is particularly important.

- ❖ The EIR should consider the impact of having multi-ton double trucks on the same road as bike riders and pedestrians, including the likelihood of rocks being thrown up from the roadway that could seriously injure a biker or pedestrian.

15

E. Air Quality

There is strong evidence that the IS has seriously underestimated health risks from air pollutants due to Quarry operations (including McNear's Brickyard). Also, we are concerned that some proposed mitigation measures should themselves be subject to analysis for impacts.

In 2004, Sonoma Technologies (STI), the County's air quality consultant, conducted air quality monitoring tests for PM-10 and PM-2.5 concentrations in the air close to the Quarry. These tests concluded that particulate matter concentrations in areas adjacent to the Quarry were least when the wind was coming from a direction other than the Quarry, suggesting that the air coming from the direction of the Quarry is actually cleaner than the air that comes from the opposite direction. STI also concluded that most Quarry blasts result in no identifiable change in air quality to nearby residents, that average PM-10 and PM-2.5 daily and annual concentrations were well below federal significance thresholds, and that whatever pollution was measured was not likely attributable to the Quarry.

These findings are entirely inconsistent with the personal experience of those who live adjacent to the Quarry. Residents near the Quarry have long complained about the copious amounts of dust that blanket their patios, window sills and foliage as a direct result of Quarry blasting activities. During July 2006 through December 2006, data submitted to Judge Sutro by the County contained some 246 complaints submitted by residents of the Pt. San Pedro Road corridor describing the negative impacts of Quarry operations on their lives. A high percentage of those complaints related to dust. That the air coming from the Quarry is cleaner than the air coming from the opposite direction is not a plausible factual finding to nearby residents who see firsthand, in and around their homes, the fine gray cement-like powder that is almost certainly produced by Quarry operations.

16

At least three sampling episodes funded by the Marin Bay Park Homeowners' Association conducted over the past decade or so have consistently found potentially dangerous amounts of crystalline silica deposited on and about homes in the general vicinity of the Quarry. The first sample, funded by several concerned residents, collected samples of the gray dust that is common around area homes and had the sample analyzed. The conclusion reached in the analytical report by Slakey, an independent consultant, was that the dust contained high amounts of respirable crystalline silica. A 2001 County-funded study by Onsite Environmental Labs found that silica exposure exceeded acceptable daily and annual thresholds for two principal testing stations downwind of the Quarry. Finally, the IS cites a study performed in early 2007 by a concerned neighbor (Rod Warters) that, consistent with the prior two sampling episodes, found high concentrations of respirable crystalline silica in samples taken from several disparate

locations close to the Quarry. The results of the Warters study, along with background academic literature for context, were presented in some detail to County officials.

These studies are inconsistent with STI's conclusions that the Quarry produces no significant amounts of PM-10 and PM-2.5 (such as respirable crytalline silica) and its inference that air coming from the direction of the Quarry is less polluted than air coming from other directions.

Though the IS identifies DPM emissions as a significant impact, the IS does not mention the potential health dangers of ultrafine particles ("ultrafines"), which are very small particles of airborne soot that are routinely emitted by diesel engines. Ultrafines have been implicated in cancer, heart attack and stroke (initiating and worsening atherosclerosis), narrowing of the airways (contributing to chronic obstructive pulmonary disease or COPD, and asthma) and otherwise altering the chemistry inside cells and precipitating medical problems. There have been reports that damaged lungs retain a higher proportion of ultrafines than healthy lungs, and that retaining more ultrafines causes more lung damage.

- ❖ The EIR should examine the cumulative impacts (over the 30-year life projected by SRRQ) from all pollutants resulting from Quarry and brickyard operations that impact the health of humans and wildlife, and damage property or create a nuisance for residents. For example, the EIR should examine dust ejected directly from the Quarry site and dust that is stirred up from trucks exiting the Quarry that settles in driveways and yards all along Pt. San Pedro Road. These could include toxic air contaminants and volatile organic compounds. Whether from stationary or moving sources, and along with PM-10 and PM-2.5 concentrations, ultrafines should also be studied. The EIR should report on the impacts at locations near the Quarry, along Pt. San Pedro Road, and in the highly congested downtown area where trucks often idle through several traffic light cycles.

16

Affected residents must have confidence that the air they breathe today will not cause themselves and their children serious and possibly fatal health consequences in the future.

- ❖ The EIR should perform extensive air quality testing to either rebut or corroborate, conclusively, the three studies cited above suggesting the existence of dangerous amounts of crystalline silica in the environment surrounding SRRQ. That testing should test the air and, separately, the dust itself that has already been deposited on area property.

Given the very high likelihood that respirable crystalline silica is produced by the Quarry, it is indefensible to rely on one benign and questionable study against the negative conclusions of three, and equally indefensible to refuse to test previously-settled dust that abounds in and around the homes and parks close to the Quarry on the grounds that its source might not be the Quarry. (The County should be concerned about the existence of previously-deposited respirable silica regardless of its source. The unlikely possibility that it might not have come from the Quarry in an insufficient reason to avoid testing it.)

- ❖ Emissions analysis should include emissions from truck traffic to and from the Quarry as part of operations.

- ❖ Regardless of the absolute measurements of PM material in the air at any one time, the EIR should consider the propensity of PM material to concentrate over time within peoples homes, such as their carpets, bedding and drapes.

Separate from the EIR, the County should determine whether residents should be advised to filter the air within their homes, upgrade their vacuum cleaners and discourage small children from crawling around on carpeting that contains small-particle respirable silica.

- ❖ The EIR should describe outdoor activities that take place within range of airborne pollution from the Quarry and trucks coming and going from the Quarry, including neighbors' use of their patios and decks.

Perhaps at one time, due to work patterns, people concentrated at-home activities on the weekend. But census and anecdotal experience portray a changing work climate with a growing number of people working from their homes.

- ❖ The EIR should discuss whether weekday and weekends should be viewed differently for purposes of planning operations. For example, to what extent are there fewer people at home, either working indoors or taking part in outdoor activity, during the week as opposed to the weekend?

Because of the potentially profound consequences that respirable silica production can have on human beings over time, the testing that we urge above must reflect the conditions that will exist when the Quarry will operate at its maximum dust-producing output under weather conditions that exacerbate the risk to residents. Any current test results should be evaluated in context with the results of prior tests. For example, do negative (benign) current test results reflect safe operations, or do they reflect temporary reduced Quarry activity of the type that produces dust, or seasonal conditions that are favorable to negative testing results? 16

SRRQ proposes to create a new haul road on the south rim of the main pit, which will presumably be used by heavy vehicles transporting mined material around the mine site. (Initial Study, page 28.) This elevated road will likely create additional dust to be blown from the site onto nearby residential properties.

- ❖ The EIR should review the court case records and the ongoing complaints submitted to the County regarding complaints by neighbors regarding dust impacts.
- ❖ The County should determine whether the likely increase in dust blown into residential neighborhoods from vehicles on the new haul road could be mitigated. For example, the 25 mph wind threshold above which some quarrying operations are suspended might need to be reduced and extended to use of the haul road.
- ❖ The EIR should examine the cumulative effects of exposure by residents and persons using recreational areas of the listed TACs and DPM emissions (including ultrafines) over the proposed extended operation. Air pollutants have different impacts on respiratory systems depending on a person's activity level and this should be discussed in light of recreational activities that take place within range of the Quarry, including many weekday events.

- ❖ The difference in impact due to the increase in resident population near the Quarry from 1972/82 to the present should also be discussed. How many more homes and people are within one-half mile of SRRQ, and much more intense will the effects of SRRQ operations be felt by those individuals over others who live in the Pt. San Pedro Road corridor?
- ❖ The health risk assessment of long-term exposure to DPM emissions that was not conducted as a part of the monitoring study should be performed. This could include local elementary schools and the immediate community's large number of elderly residents.
- ❖ IS Mitigation Measure 5.1b suggests strategies for reducing airborne dust by watering, sweeping and use of dust suppressants to keep materials on the ground. Would there be impacts on adjacent wetlands or other properties from these materials? These measures were largely in effect when prior dust studies were performed, and those studies still measured dangerous levels of silica. Why will they be effective in the future? 16
- ❖ The EIR should consider the feasibility of continuous air monitoring of PM-10 and PM-2.5 material with an extremely low, or no, tolerance for excess emissions. Penalties for exceeding safe limits should be sufficiently high to discourage violations (*e.g.,* the closure of the facility).
- ❖ As the IS already notes, cumulative emission impacts should include increases at outlying facilities in Petaluma and affected populations away from the immediate neighborhood.
- ❖ The EIR should study the impact of reducing dust if all of the trucks were tarped. The feasibility of requiring SRRQ to contract only with haulers who agree to tarp their trucks should be considered.

F. Biological Resources

The draft 2007 CWP establishes setbacks for the Baylands Corridor, and states the following at BIO-5.1:

> *BIO-5.1. "For large parcels (over 2 acres in size) adhere to development setback standards for areas qualifying for protection under the WCA and SCA, but increase setback distances as necessary to ensure that hydrologically isolated features such as seasonal wetlands and freshwater marsh are adequately linked to permanently protected habitat. These additional development setbacks shall serve to prevent fragmentation and preserve essential upland buffers in the Baylands Corridor."* 17

It also suggests broadened protections as follows:

> *Page 2-42. GOAL BIO-5. "Where applicable for large parcels (more than two acres in size) which are primarily undeveloped and, based upon site specific characteristics, an additional area of 300 feet or more of associated habitat is included ..."*

- ❖ The EIR should discuss how the proposed operations would conform to the setbacks established for the Baylands Corridor in the draft 2007 CWP.

The IS notes that residential development since the last permit approval has reduced the buffer between the Quarry and adjacent uses.

- ❖ The EIR should examine what buffers would be needed to protect sensitive environmental resources such as wetlands and the adjacent marine habitat (for example, the 300 foot buffer recommended in the *Habitat Goals Report*).

The IS, at page 54, concludes that the AQP is consistent with designating NWQ marshland as a Bayfront Conservation zone because the AQP does not contemplate diking, filling or dredging of tidelands. However, the IS later discusses (at page 108) how the proposal to eliminate production limitations will likely result in additional tons of particulate material being released into the air each year. Some of that material will end up in the marshland, and will have diking and filling effects. 18

The EIR should rely on the Cowardin definition of wetlands as this would meet the requirements of all agencies with jurisdiction.

- ❖ The EIR should evaluate the extent to which the proposed additional quarrying activity will cause particulate matter to settle in adjacent marshlands, whether that will have a diking and filling effect, and whether those effects can be mitigated to cause the project to be consistent with NWQ's designation as a Bayfront Conservation Zone.
- ❖ The EIR should consider impacts of the mining and barge operations, including blasting, vehicle fluids, and airborne particles on marine life as well as the bird and terrestrial populations, and should comment on any effects on the Marin Islands National Wildlife Refuge.
- ❖ The EIR should determine whether dust from blasting, crushing and vehicle traffic contains water-soluble salts having the potential to pollute runoff or alter the chemistry of wetland areas. 19
- ❖ The EIR should identify any of the following that could be found on the Quarry site, using CDFG/USF&WS protocol surveys: species listed, proposed for listing, or that are candidates under federal and state endangered species acts; species listed as fully protected under the California Fish and Game Code; species identified as those of Special Concern by the California Department of Fish and Game, including but not limited to the Red-Legged Frog, and birds protected under the Migratory Bird Treaty Act.
- ❖ The EIR should evaluate the mining and grading activity on South Hill relative to breeding and migrations of species. 20
- ❖ The EIR should inventory non-native species.
- ❖ The EIR should describe the impacts on the marsh, Bay and any wildlife habitats, of public access (including traffic to and from the Quarry and all internal operational traffic of the Quarry and the brickyard and their associated haul roads).

G. Barges

Barge operations and its impact on residents, wildlife and the county park are totally ignored in the IS, even though the project proposes to operate barges seven days a week, 7 a.m. to 10 p.m. 21

- ❖ The EIR should analyze the impact if all material going out of the Marin County were barged and only material headed for County destinations were trucked out. 22
- ❖ The EIR should discuss the best available management and mining and conveyance techniques to reduce the impact of barge traffic on the community and the environment. 23
- ❖ The EIR should review the court case records regarding complaints by neighbors regarding barging operations. 24
- ❖ The EIR should study whether appropriate loading techniques are being used in the barging process to ensure that waste material is not dumped into the Bay. 25
- ❖ There is a buoy field used by the Quarry for field storing materials in barges in the middle of the bay. The EIR should study the impact on views related to these buoys and on the environment. 26
- ❖ The EIR should determine whether the machinery (including the conveyor belt and the barges themselves) employed to load barges can practicably be enclosed or substantially shielded to mitigate dramatically the amount of dust and noise resulting from barge loading. Practicability should be applied in the context of the substantial size of the Quarry operation and the fact that much smaller quarrying operations, in much less residentially dense areas, have managed to enclose much of their facility while remaining economically viable. 27

Relating to the comment directly above, the EIR should define how it applies "economic viability." In general, whether a particular modernizing and impact-mitigating capital expenditure is inappropriate because it reduces economic viability is a complex question. SRRQ routinely refuses to implement (or ignores) major proposals for impact-reducing improvements because they purport to be too expensive and generally reduce economic viability. 28

- ❖ The EIR should evaluate proposed substantial impact-mitigating improvements in its broad context, considering such factors as (i) the proposal's annualized depreciable cost over its useful life relative to the scope of the SRRQ operation, (ii) the likely effectiveness of the proposal and (iii) the success of similar proposals (adjusted for scale) implemented by similarly-situated quarries throughout the world.

For example, SRRQ has shown no interest in even investigating the practicability of enclosing most or all of the barging operation, generally suggesting that it would be too expensive. The EIR should assume that the proposal's cost is reasonable relative to the Quarry operation unless SRRQ can prove otherwise. If SRRQ makes an assertion about economic unviability that it claims is based on information that is confidential or proprietary, the County should deem the assertion as unsupported by the facts. 29

H. Hours of Operation

The IS states that SRRQ is requesting an estimated 3,350 hours per year, with an additional 4,695 hours per year of barging. In effect, SRRQ is seeking to become a seven-day-per-week operation, which is profoundly alarming to nearby residents.

- ❖ The EIR should compare the proposed operating hours with the operations of other quarries that are located inside a residential neighborhood along with the 1982 baseline.
- ❖ The EIR should evaluate the proposed expansion of hours on all significant effects discussed in this letter, including traffic, noise, dust, blasting and related environmental impacts.
- ❖ The EIR should review the formal comments made by nearby residents of other urban quarries in connection with those quarries' EIRs to determine what issues and problems were raised relating to operating hours, and what other problems might be going unaddressed with this EIR out of inadvertence.

30

I. Blasting

The IS bases its conclusions regarding mitigation of blast effects on a report prepared by Revey Associates in January 2007. That report is little more than a theoretical discussion of blast effects. It does not properly evaluate numerous neighbors' complaints lodged over many years as to the effect on their lives of heavy-duty shaking/damaging of their homes by Quarry blasts. SRRQ over the past several years has settled numerous claims lodged by nearby neighbors related to damage to structures and contents of their homes.

- ❖ The EIR should discuss what might reduce the shock nearby homeowners receive when their structure is hit by a Quarry blast.
- ❖ The EIR should review the court case records and the ongoing complaints submitted to the County regarding complaints by neighbors regarding blasting operations.

31

There is no serious evaluation in the IS of alternative blasting protocols such as reduced charges per delay, electronic detonation, pre-splitting and rock fracturing using expansive materials instead of explosives. The current protocol is accepted as sufficient.

- ❖ The EIR should evaluate other blasting protocols with a view to achieving the "barely perceptible" standard that the IS prescribes but that the Quarry plainly does not meet.

In Section 2.4 (page 9) of Appendix B of the IS (Blasting Impacts Assessment for SRRQ), Revey uses Figure 2.6 to demonstrate that all Quarry blasts fall in the "barely perceptible" range for nearby residences. No hard data measurements are provided to support this conclusion, nor is there any consideration of variations from the theoretical scheme in geologic conditions (rock and soil types) or construction methods used in residences surrounding the Quarry. The measurements evaluated are all on ground surface instruments and converted to the perceptibility chart for humans by a formula developed in 1977. No measurements were made with seismographs attached to the foundations of structures nor while humans were present in structures to report on "annoyance levels."

32

The current trend is that the number of blasts is increasing. In 2005 there were 52 blasts, in 2006 106 blasts and in the first five months of 2007 there were 51 blasts. The problem is intensifying and increasing for the neighborhood (source of data is County website) and there is no indication of any limitation on the increased blasting in the IS. 33

- ❖ The EIR should study cumulative effects, including health effects, on residents using standards contained in ANSI S3.29-198 and ISO Standard 2631, which provide criteria specifically related to human response to vibrations.
- ❖ Section 2.6 of Appendix B (Effects of Environmental Forces versus Blast Vibration) contains a theoretical discussion of crack monitoring indicating that environmental factors will have a greater impact on residence damage than the Quarry blasts. There is no discussion or measure of the cumulative structural effects of blasting by the Quarry over the proposed extension of its life by several decades. For example, the effects of the blast on the double-paned windows required in many of the nearby residences and the rates of failure experienced in these windows should be examined.
- ❖ Blasts should be measured using seismographs attached to the foundations of structures in homes on a varying range of soil types within range of vibration. Relatedly, the EIR should examine how the various ground compositions influence cumulative impacts from blasting vibration and noise on homes and residents.

During July 2006 through December 2006, data submitted to Judge Sutro by the County contained some 246 complaints submitted by residents of the Pt. San Pedro Road corridor describing the negative impacts of Quarry operations on their lives. Of these complaints, 99 or 41 % contained complaints about blasts. In addition, in late 2006 the Coalition surveyed residents of the Quarry area about impacts from Quarry operations. Blasting and dust were the major issues mentioned. 34

- ❖ The EIR must conduct an independent analysis of blasting effects on residences and must conduct tests in structures with humans present to determine an acceptable blast level (1982 standard). We suggest that tests be conducted in the pit on the north wall at various depths with delay loading of varying levels of explosives.

Floyd (SRRQ's blasting consultant) pointed out in his study for the SRRQ that the prime variable in reducing blast effects is the charge per delay.

- ❖ The EIR should establish the proper level of explosive charge per delay by scientific field tests conducted fairly to show what charge intensity will result in a finding of "barely perceptible" in nearby structures. The test should be related to activities in the main pit.
- ❖ The complaint record must be considered and analyzed as part of the EIR. Also, factors such as shear wave variations, rock types encountered, structural characteristics of surrounding homes and the geographic range of the area where the complaints are originating should be considered.

The IS accepts the recommendations in Mitigation Measure 10.3 on page 179 (copied from the Revey Associates report, page 23) with no proof that they would result in a

reduction in the effects felt by neighbors of Quarry blasting. A following paragraph states that "the level of continuing impact may be considered below the threshold of significance," while also admitting that "it is likely…that such [disturbing] effects will continue." There is no supporting evidence that the continuing impact will remain, or has consistently ever been, below the threshold of significance.

SRRQ proposes to "provide 36 hours advance notification of blasting to local residents and the County of Marin by posting the date and approximate time of scheduled blasts on a website" (p. 32 of IS). Web posting does not assure that neighbors are notified, since not all neighbors own a computer, have Internet access nor constantly monitor SRRQ's website. 34

- ❖ The EIR should discuss supplemental notice procedures that would assure more effective notification to neighbors.

J. Noise

Noise is an obvious problem with the Quarry, and many of the comments made elsewhere in this letter relating to environmental issues include noise as one of its elements.

The 1982 Salter report, which helped to determine the baseline conditions, took 15-minute noise measurements to conclude that noise levels at the selected San Marino homes were 44 to 60 dBA, Leq. However, the ESA monitoring in 2006, used to establish existing conditions, measured noise at a Marin Bay Park Court residence over 24-hour periods to arrive at the 52 to 55 dBA Ldn. The use of Ldn measurements over 24 hour periods does not adequately assess the impact of noise from the Quarry on surrounding residences because it is an average of a long period. Why wasn't the same system of 15-minute noise measurements used to describe current conditions? 35

- ❖ Noise from Quarry trucks passing through San Rafael should be analyzed for compliance with the San Rafael Noise Ordinance. 36
- ❖ The EIR should study the truck noise at 25 mph instead of the posted 35 mph to determine if the noise can be significantly reduced.
- ❖ The EIR should study whether rubberizing the roadway would significantly mitigate noise levels. 37
- ❖ Since a high percentage of shipped material goes to SRRQ plants in Richmond and Petaluma, the EIR should study the impact on the community if these loads were shipped by barge instead of trucks. 38
- ❖ The EIR should consider enclosing as much of the noise-producing Quarry operation (in particular, the barge operation and the crushers) as is possible. This would mitigate other environmental effects as well, such as dust production. 39
- ❖ The EIR should review whether SRRQ can employ far more modern and state-of-the-art equipment that makes less noise. 40
- ❖ Given the pervasiveness of noise as a typical problem associated with quarries, the EIR should discuss how other quarries have reduced noise levels, and 41

comment on the feasibility of employing successful noise-reducing strategies to the Quarry.

- ❖ The EIR should review the court case records and the ongoing complaints submitted to the County regarding complaints by neighbors regarding noise impacts. 41

K. Aesthetics/Visual Resources

The IS deals inadequately with buffers, which are a major tool suggested for reducing visual and noise impacts. The IS notes, in a footnote on page 33, that SRRQ proposes construction of a berm on the north end of the property in the Northeast Quadrant. The proposed berm would be 175 feet high within about 100 feet of the property line and would take in two million tons of dirt over 17 years. Although the berm is part of the proposed Amended Reclamation Plan, it is clearly an operational issue. 42

- ❖ The EIR should analyze the visual impact of a new berm as well as the noise and air quality effects of its construction over 17 years.
- ❖ The EIR should study the view impact of barges and the unsightly industrial-appearing machinery that dominates the southeastern water-border of the Quarry site. 43

L. Project Alternative

A project alternative should be evaluated that allows for no expansion of impacts over the 1982 baseline. We ask that the County consider an alternative operation that includes at least the following features:

1. Noise
   a) Reduce noise at source by enclosing crushing operations, barge loading and all other operations that can be enclosed.
   b) Quarry must use modern, improved equipment to decrease noise, similar to that used by state-of-the-art quarry operations, and suitable for a quarry situated in close proximity to residential areas. 44
   c) Noise measured in decibels at nearest property receptor, based on hourly average with limits per San Rafael noise ordinance, at 50 dBA daytime (7 a.m. to 5 p.m.) and 40 dBA nighttime (5 p.m. to 7 a.m.) with recognition of effect of tonal quality and consistency of noise.
2. Blasting
   a) Blasting controls that limit the charge of explosive per delay to 200 lbs; use of electronic detonator and delay systems.
   b) Require pre-fracturing of blasts and limit number and diameter or blasting bore holes.
   c) Blasting time limited to weekdays 11:30 a.m. to 1:30 p.m., with at least a 36 hour notice posted on the Quarry website.

3. Transportation and Circulation

   a) Baseline for transportation (as per the Gilroy testimony that the vast majority should be shipped by barge) to be defined as at least 75% by barge. The EIR should deem 368,250 tons of products per year from the SRRQ as the baseline amount of truck traffic and evaluate the environmental impacts of the Quarry's current and proposed use in comparison to that level of trucking.

   b) Gates and access for trucks, contractors and other non-employee traffic may open no earlier than 7 a.m.

   c) Materials may be only transported out of the Quarry by truck for delivery to Marin County projects and only on the day of delivery. All other material to be shipped by barge.

   d) Trucks of 10 or more tons driving on Pt. San Pedro Road travel no more than 25 mph (to be enforced by contract, if not by statue or ordinance.

   e) Trucks leaving the Quarry shall leave at no less than 5 minute intervals during operating hours.

   f) Quarry must substantially increase its commitment to supply resources and materials annually for the ongoing repair and maintenance of Pt. San Pedro Road in both the City and County. This should include a financial commitment to fund rubberizing the road to mitigate noise impacts.

44

4. Dust and Air Quality

   a) All loaded trucks must be tarped (to be enforced by contract, if not by statute or ordinance).

   b) Trucks leaving the Quarry must first be washed down.

   c) Quarry must use best practices to minimize diesel emissions and dust (PM-10 and PM2.5).

   d) Quarry must use a state-of-the-art vacuum sweeper on Pt. San Pedro Road at least twice per day during operating days.

   e) The Quarry must cease all operations that increase air pollution, including but not limited to blasting, on declared "Spare the Air Days."

5. Light Pollution

The Quarry must propose a plan to reduce light pollution from all Quarry activities that require lighting, including security lights.

6. Hours of Operation

   a) No Quarry operations, including maintenance and barge loading, shall take place on weekends or State and Federal holidays, unless for a declared emergency. Emergency operations, and associated quarrying work conditions must receive prior approval from the County of Marin.

   b) All Operations are limited to 7 a.m. to 5 p.m., except administrative office hours.

7. Operating Permit Renewal
   a) Each year Quarry must submit a compliance report, to be certified by the County, ensuring that Quarry operations comply with the permit conditions.
   b) The operating permit should be reviewed every two years to account for changes in mining technology, evolving health standards and problems that might arise under the existing operating conditions.
   c) County has authority to amend the operating permit at any time in its sole discretion if deemed appropriate.
   d) This operating permit will expire in 4 years.
8. If the cumulative effects of all the negative impacts of the SRRQ project cannot be adequately mitigated, then the SRRQ operation should cease.

44

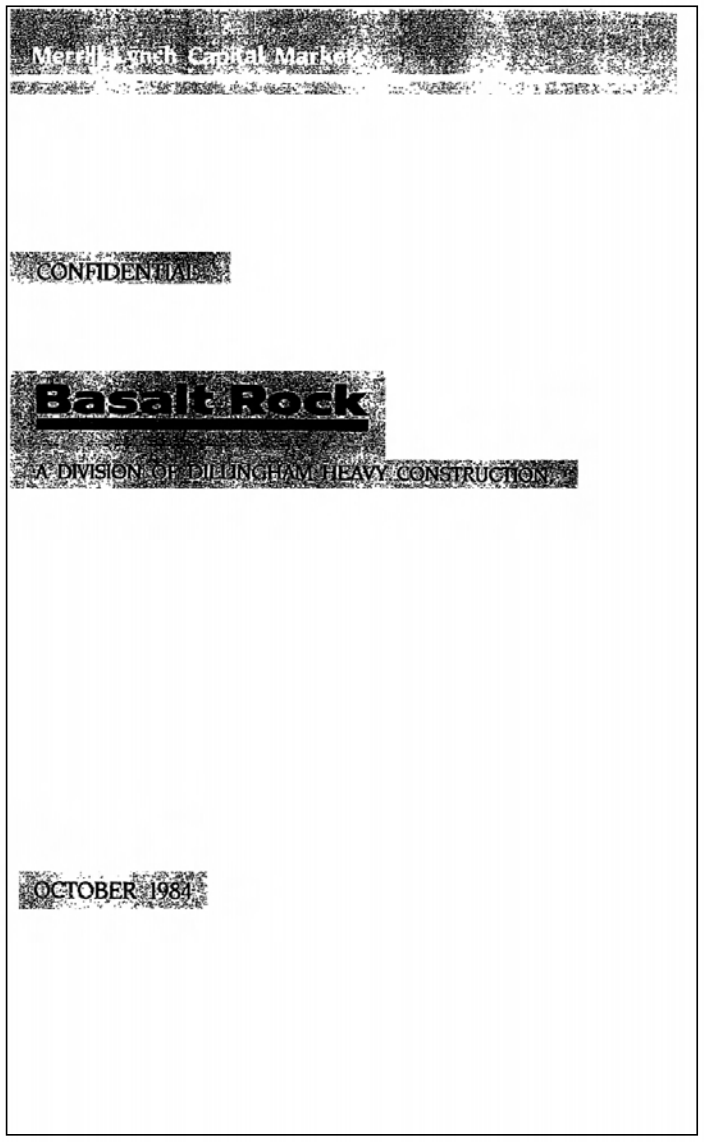
Thank you for your consideration of these comments.

Sincerely,

Denise M. Lucy
Co-President

Bonnie Marmor
Co-President

Attachments 45



Attachment to Scoping Comment Letter J

TO: FORHAD GHODRATI
FROM: L MARKRACK
1/17/2001

RECEIVED
1982
Marin County Public Works

May 12, 1982

NORMAN T. GILROY
AND ASSOCIATES
312 SUTTER ST., SUITE 608
SAN FRANCISCO, CA. 94108
TELEPHONE: 415/956-1230

Mr. Mehdi Madjd-Sadjadi
Assistant Land Development Engineer
Marin County Department of Public Works
P.O. Box 4186, Civic Center
San Rafael, CA 94913

predecessor to SMRG

Dear Mr. Madjd-Sadjadi:

This letter is an addendum to the Amended Reclamation Plan for the McNears Quarry property submitted previously by this office on behalf of Basalt Products Company. I would appreciate it if you would arrange that the points in the letter be reviewed as a part of your overall evaluation of the Reclamation Plan and that due consideration be given to the various stipulations and new areas of information provided herein as you prepare your Initial Study checklist.

Since the Amended Reclamation Plan was submitted to you we have received copies of comments from various interested agencies and individuals and have met with representatives of the City of San Rafael Planning Department, the Peacock Gap homeowners (including representatives of the Peacock Gap Homeowners Association and residents of San Marino Drive, the area mostly affected by the plan), and representatives of the State Division of Mines and Geology. We have also had telephone conversations with representatives of the U.S. Army Corps of Engineers and the California State Lands Commission.

In addition, we have prepared a slide show which addresses many of the issues covered in the initial Reclamation Plan submittal or addressed in this letter. We have also completed a model of the site at scale 1 inch: 100 feet which shows the condition of the property under present day conditions and as it will be when the mining process is complete. Both of these exhibits were used in our discussions with the local homeowners (with representatives of the City of San Rafael attending) and they will be a part of our presentation to the Marin County Planning Commission when the Amended Reclamation Plan comes before them for a decision. They are also available to you for any meetings which you may wish to arrange as a part of reviewing our application at a staff level.

Following are our responses to the various issues raised by agencies commenting on the Amended Reclamation Plan. It should be noted in reading them, however, that most of the comments raised refer to operational issues during the remaining life of the quarry and not to the primary concern of the Reclamation Plan i.e. the process of restoration of the quarry site to productive use and attractive, environmentally acceptable condition after the quarrying process is complete. Consistent with their past attitude of neighborhood cooperation, Basalt has, however, agreed to respond in detail to all questions raised.

NORMAN T. GILROY AND ASSOCIATES

A. Response to Comments

1. Visual Impacts - At the request of the City of San Rafael and various homeowners, we have evaluated in more detail the impact of the work proposed on the North Hill of the McNears Quarry site and have discussed them in some detail with local homeowners, using the slide show. It is clear that a number of the residents on San Marino Drive have a view of the area of the North Hill which will be removed, though some only through a thick screen of high eucalyptus trees which flanks San Pedro Road. A few houses have clearer views of the hill through a gap in the trees. Only a few are high enough on the ridge to look over the trees and directly see the area to be quarried.

   The views from many of the houses on San Marino Drive will be greatly improved by the removal of the North Hill. Major views of a broad sweep of the Bay and of the Richmond skyline will be opened up - an enhancement which should have a positive impact upon property values in that area.

   Some residents have been concerned about viewing the equipment that will from time to time be working on the North Hill itself. This problem will be eliminated by maintaining a fifteen foot high lip between the area being quarried and the nearest homes (see exhibit A). It will be eliminated altogether after quarrying on the North Hill moves below the +30' contour and is essentially contained within the walls of the quarry bowl.

   Some residents will be able to see across the site during operations to the area now occupied by the crushing and screening plant that serves the quarry. The plant is of course far distant from the homes on San Marino Drive (much further away than the industial area of the McNears' Brickworks, to which no one seems to object at present) and is only a very small element in the panoramic view of the Bay that will open up as the North Hill is removed. As an additional visual mitigation, however, it has been agreed that the large stockpiles that lie to the North of the plant will be maintained in their present position throughout the life of the quarry, thereby effectively screening the plant structures from view of the residents in the area.

2. Noise Impacts - Acting in response to concerns expressed by the City of San Rafael and various homeowners, Charles Salter & Associates, Acoustical Engineers, was asked to prepare a study of the anticipated noise conditions that could exist during operations on the site (even though, as we have said before, strictly speaking the Reclamation Plan is required to address only conditions which would exist when quarrying is complete and reclamation is taking place). Salter & Associate's report is attached to this letter.

Attachment to Scoping Comment Letter J

NORMAN T. GILROY AND ASSOCIATES

Essentially, Salter finds that daytime noise levels at the homes on San Marino Drive could increase by 6 dba if no mitigation measures were to be used. Salter suggests that:

1. a 15' high lip be maintained between the machines working on the North Hill and the homes on San Marino Drive (see exhibit A attached), and

2. the large stockpile areas now located north of the main plant be maintained throughout the life of the quarry as a buffer to sound produced from that point (see exhibit B attached).

In his report he makes the point that noise from equipment working in the quarry bowl will be shielded from adjacent homes by the wall of the quarry bowl itself.

With the mitigations proposed, the noise generated by equipment in the quarry will be 5 dba less than the surrounding ambient daytime sound levels. The resultant noise levels at homes at San Marino Drive are therefore expected to be no higher than at present.

It should be stressed that noise levels under both alternatives would be less than noise levels acceptable within the standards recommended by EPA for residential developments and would meet the objectives of the Noise Element of the Marin County General Plan.

3. Preservation of the Eucalyptus Groves - We can confirm that it is Basalt's intention to preserve the Eucalyptus Grove along San Pedro Road and the woodland area of the South Hill in accordance with the provisions of the Peacock Gap Neighborhood Plan and Basalt's previous Reclamation Plan for the area.

4. Shoreline Access - Shoreline access (including bicycling and hiking paths) will be provided as a part of the future development of the property. It will be designed to meet the standards required by the San Francisco Bay Conservation and Development Commission and will be contained in a strip with an average width of 100 feet which will be woven into the open space and development areas on the shoreline. Paths will be connected to the McNear's Beach Park and to the recreation paths along the San Rafael Shoreline.

5. Glare from Lights - A number of residents of San Marino Drive have suggested that, after the North Hill has been lowered, floodlights on the plant facility could cause glare problems if not shielded properly. Basalt has agreed to examine ways to shield the lights presently in place and to ensure that any lights necessary to the operation in the future will similarly be shielded from view from the North wherever possible.

NORMAN T. GILROY AND ASSOCIATES

6. Truck Traffic - The mining operation which underlies the Amended Reclamation Plan would serve a local market (generally speaking, Marin County) with continuing demands very similar to those that are met at present. While minor fluctuations will occur depending on local construction activity, the average level of truck traffic flowing from the McNears property along San Pedro Road is expected to remain the same as it is now. No increase in truck traffic is expected. The vast majority of the material quarried at the property is shipped out by deep water barge, thereby minimizing the kind of truck traffic which might normally be associated with an operation of this size.

7. Waste Disposal - The McNears quarry is essentially a "no-waste" activity. Overburden is sold, as and when the opportunity presents itself, as fill (shipped occasionally by truck to Marin County markets, but more often by barge to projects in the Sacramento Delta). Since all mining takes place in inert materials (rock, sand, gravel and shale) no problems have been encountered with toxins in stockpiles, etc. that would cause a disposal problem.

   Should there be an excess of fill material remaining at the end of the project, it will either be used as top dressing for the second use areas of the property or it will be pushed into the bottom of the 200 foot deep quarry bowl before water is pumped in from the Bay to form the harbor basin shown in the Reclamation Plan.

8. Microclimatic Changes - The question has been raised as to whether removal of the North Hill will cause significant changes in the microclimate of the area immediately adjacent. In responding we have discussed the climatic setting with geographers and climatologists familiar with the area and have reviewed information in the Peacock Gap Neighborhood Plan and the Marin County General Plan.

   Little change is expected in the incidence of fog, precipitation, and general air quality in the area surrounding the site due to the lowering off the North Hill. Some change may be experienced in the way winds move across the site, especially in the summer months. Wind directions in the Peacock Gap area are directly influenced by the surrounding hills. Air is drawn up into the hills as daytime temperatures rise. In the evening the air flows off the land as nighttime temperatures fall. This local microclimatic pattern dominates except when high atmospheric activity occurs, causing regional airflow patterns to prevail. Prevailing winds on the site are generally from the West as air flows from the ocean through gaps in the surrounding hills and moves up-river toward the Central Valley. Peacock Gap is protected from winter storms by a high east-west ridge which will not be affected by the quarrying at the McNears Quarry site.

   Westerly winds blowing toward Peacock Gap and the McNears Quarry tend now to rise up over the North Hill before joining the main air pattern moving north and east up the Sacramento River. Air moving through the existing slot in the hill (through which the access road now passes)

Attachment to Scoping Comment Letter J

NORMAN T. GILROY AND ASSOCIATES

moves at an appreciably faster rate than air flowing over the top of the ridge on either side. With the removal of the North Hill it can be expected that velocities of air passing over the North Hill will be evened out, resulting in more stable conditions than at present. The grading on the quarry site is not likely to affect the Peacock Gap Neighborhood which lies in a valley separated from the bowl in which the quarry is located.

9. Revegetation - The initial comments by the California State Division of Mines and Geology regarding the potential of revegetation of steep rock slopes on the property have since been modified after a review of the project with the State staff.

   Experiments at Basalt's other properties (notably the Napa quarry) have shown clearly that tight unfissured rock slopes such as those found at the McNears Quarry do not lend themselves to traditional means of revegetation. Holes must be blasted to receive the plants and trees and their attendant topsoil and fertilizer. Once the tree's root system has grown to the outer extent of the blasted hole, it finds it impossible to extend any further if there are no fissures and apertures in the natural rock formation. The tree then becomes stunted and frequently dies. The blasted holes are often tight enough that they serve as permanent receptacles for runoff water in the winter. Plant materials placed there frequently die from drowning.

   For these reasons, it has been proposed that the final backslopes of the quarry on the South Hill and the minor slopes behind the quarry on the North Hill be left as a "clean blasted" attractive rock face with an appearance similar to some of the rock faces now present on the North Hill.

   The State's staff has also suggested that an outline specification be provided for other areas on the site to be revegetated (e.g. the easterly side of the small knoll between the brick resource area and the marsh). A landscape architect's report on that subject will be submitted within two weeks of the date of this letter.

10. Permits Required - The U.S. Army Corps of Engineers and the California State Lands Commission have each responded to the Amended Reclamation Plan as if it is an immediate construction project to be carried out within the next few months - missing, of course, the point that the Reclamation Plan deals with the conditioning proposed at the end of the mining process presently underway. Mining on the McNears Quarry has, of course, all of the required permits from County, State and Federal agencies necessary to continue its operation to completion.

    Both the Corps and the State Lands have confirmed that the permits to which they refer will not be required until the reclamation process and/or second uses take place or until major changes take place within their areas of jurisdiction which require additional operating permits.

NORMAN T. GILROY AND ASSOCIATES

B. Revisions to Plan

In order to respond to the concerns discussed above, the following modifications are made to the Amended Reclamation Plan for McNears Quarry as submitted:

1. The stockpiles now located to the north of the main plant will be kept in place throughout the life of the operation as a visual and noise screening buffer.

2. In all operations on the North Hill, a 15 foot high lip will be maintained between equipment working on the ridge and the residential areas to the North.

3. Lights on the plant will be shielded to minimize glare at adjacent homesites.

4. Selected areas of the site will be revegetated using the procedures and specifications to be outlined in a landscape architects report to be submitted within 2 weeks.

This completes our response to neighborhood and agency comments to the Amended Reclamation Plan for the McNears Quarry in Marin County. Please keep us informed of any other concerns which you might identify which can be resolved during the review process. We hope to have the opportunity to review your Initial Study when it is complete and ready for forwarding to the Marin County Planning Staff.

Please keep us informed of projected hearing dates. A few of the key people working on this project will be away from time to time during the next three months and we would like to ensure that everyone concerned can be present for the hearings on the plan. Should you wish to have a staff review of the model and/or slide show, please let us know.

Sincerely,

Norman T. Gilroy
Architect/Planner

CC: Eric Borgward
Anne Moore

G2-78

Attachment to Scoping Comment Letter J

Table 2

Historical Tonnage McNear Quarry
(000s)

	1979 Tons	1980 Tons	1981 Tons	1982 Tons	1983 Tons
Aggregate	557	1,343	1,304	1,399	1,689
A.C.	135	124	N/A	74	100
Total	692	1,467	1,304	1,473	1,789

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MARIN COUNTY
COMMUNITY DEVELOPMENT
AGENCY

To Mr. Tim Haddad
Environmental Coördinator
3501 Civic Center Drive, Room 308
San Rafael, CA 94903

Dear Sir
Re; San Rafael Rock Quarry's Operating Conditions

Zoning distribution and allocation of land to various civic activities are created to assist and encourage development of industries and population centers according to the needs of that community. It's aim is also to prevent the harmful effects of the byproducts resulting from these activities on each other .
Accordingly the San Rafael Rock Quarry (SRQ) was created and started work in Point San Pedro and an Industrial zone was created in the area surrounding it.
However answering to the population expansion in San Rafael and the attractive quality of the real estate of the Point San Pedro, housing development was permitted in the same area promising the developers and inhabitants a cut off time for the activities of SRQ. In spite of the promises SRQ has continued its activities and ironically has expanded and increased its activities.
The management of the quarry is well aware of the fact that they are the producers of the following noxious material;

1. pollution produced by the massive trucking *,
2. dust that among other particles contains silica* produced by crushing of the rocks and the traffic passing the SRQ,
3. severe noise pollution produced by the crushers and conveyor belts, especially at nights and weekends,
4. Underground explosions during the weekdays.

** (Combination of the silica containing dust and diesel fuel fumes make up a deadly carcinogenic material. It also causes a particulate diseases called silicosis. Silicosis or miners' disease is considered to be as deadly as asbestosis)*

All of the above products and phenomena are proven health hazards. A proof of the SRQ management's awareness of the facts and to soften the blow they have engaged in a PR campaign by sending leaflets and publications to try and persuade us the sufferers, of their good intentions and their high value for the community.
Considering these facts we the inhabitants of the area are faced form one side with the argument that the quarry was here first and has the right of primacy. It is claimed that SRQ products are of great importance for the continued existence of the levies in the Delta. On the other side we hear the argument that the SRQ, by means lawful and sometimes not so lawful has been able to persuade the responsible authorities in the City to grant them permission to continue their activities. Even the court of law, the citizenry's only hope has not been able to settle the dispute.
As a result we the inhabitants through means outside our control and probably because of miscalculations of our elected officials in the City are tolerating the present situation in the hope that the law and common sense should prevail and a solution be found for our

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4
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continuous suffering. It is needless to say that there are at least four schools in the area which are affected by the noxious byproducts of the operations of the quarry. The final tally of the harm done to these young people and to our property and health will only be discovered many years down the road. 5

In the hope of finding a reasonable solution for this great problem and an end to the sufferings of the inhabitants of the Point San Pedro Road, 6

Yours truly,

Zia E. Ahari, M.D.
41 Heritage Drive
San Rafael CA 94901

Paul Watson
PAUL V. WATSON
43 Heritage Dr
San Rafael CA 94901

Fereshteh Sadrieh
42 Heritage Dr
S-R CA 94901

CANTELLO
ASSOCIATES

October 2, 2007

Mr. Tim Haddad
Environmental Coordinator
3501 Civic Center Drive Room 308
San Rafael, CA. 94903

San Rafael Rock Quarry

Dear Mr Haddad:

We are writing to express our concerns relative to the environmental impact of the quarry on our living conditions and health. We are residents of the Peacock Gap area. Our home is located very near to where Peacock Drive and San Pedro Road connect.

It is quite obvious to all who live close to the quarry that it produces a sufficient quantity of dust and pollution to warrant a close look as to how to analyze and fix the problem. Consequently, we request health/environmental studies be undertaken which will review the following: 1

1. Health issues which could result from the dust which we breathe on a daily basis and which settles on our property, plants and vegetables.

2. The speed of the trucks which transport the quarry's materials should be reduced to at least 25 miles per hour (as opposed to the current 35 mph) 2

3. How the emission of diesel fuel impacts the health of the surrounding community. 3

Thank-you for your consideration.

Very truly yours,

Bill and Beverly Cantello
4 Peacock Lane

4 PEACOCK LANE • SAN RAFAEL CALIFORNIA 94901 • TEL/FAX (415) 453-7105 • License - 0641207

STUART H. BROWN
85 MAIN DRIVE
BAYSIDE ACRES
SAN RAFAEL, CALIFORNIA 94901-2517

September 27, 2007

Mr. Tim Haddad
Environmental Planning Coordinator - Planning Division
Community Development Agency
County of Marin
3501 Civic Center Drive - Room 308
San Rafael, CA 94903

Dear Mr. Haddad:

RE: San Rafael Rock Quarry EIR Scope

The traffic impact element of the EIR should include determinations of the following:

1. The incremental truck traffic generated by the Quarry's operation of an asphalt plant. Trucks are required to bring asphalt base to the Quarry. More trucks then take the finished asphalt away. In almost all cases the trucks involved are tractor trailers. — 1

2. A related determination should be made of the increase in asphalt production since 1982, which, as I understand it, is your baseline for comparing operations. — 1

3. The effect on truck traffic of limiting deliveries to Marin County only. — 2

4. The incremental truck traffic generated by import of clay for the McNear brick plant. — 3

Given the problem with increased truck traffic to and from the Quarry, one offset would be to not permit an asphalt plant. There is no reason to permit the quarry to expand its operation from raw materials production to a manufacturing operation which requires the import of other raw materials. — 4

The same might be said for the McNear brick plant, to the extent that clay for bricks is imported. — 5

Sincerely,

Stuart H. Brown

Cc: Susan Adams (email)
Bonnie Marmor (email)

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2007 SEP 18 P 1:1

MARIN COUNTY
COMMUNITY DEVELOPMENT
AGENCY

September 13, 2007

Mr. Timothy Haddad
Environmental Plan Coordinator
Community Development Environmental Planning
3501 Civic Center Drive
San Rafael, CA 94903

Re: San Rafael Quarry
Amended Surface Mining and Quarrying Permit
Initial Study June 2007

Dear Mr. Haddad:

My family and I have lived in my home at 8 Surfwood Circle, San Rafael, CA since May 30, 1970. Our back property line is Point San Pedro Road. We are located next to the City of San Rafael Sewer Pumping Station.

You will recognize our back brick wall, as it is the clean brick wall, next to the pump station entrance on Point San Pedro Road, and not the diesel soot and dust encrusted wall of the home on the corner of Point San Pedro Road and Main Drive. My wall has been recently power washed.

Since the San Rafael Rock Quarry (SRRQ) was purchased by Dutra in 1986, etal, we have been subjected to unbelievable impacts from their quarrying and trucking activities. Prior to Dutra's purchase, Basalt Rock was an excellent neighbor. 1

I testified and presented video evidence of the truck impacts on our community in the Marin County Case relative to the impact of the truck trips generated by the SRRQ.

As I read the contents section VIII. Scope of Environmental Issues to Addressed in an Environmental Impact Record, Table VIII-1, item 6 Transportation/Circulation conclusions that the potential impacts were "Less than Significant", and pages 117-123, I thought I was reading the **Wizard of Oz** and Bill Dutra was the Wizard.

Transportation/Circulation section of this study completely accepts and regurgitates of the Order of the Marin County Superior Court and Dutra's "Trucker Management Plan".

JOSEPH W. CARAMUCCI, INC.
54 Mark Drive, Suite 102 / San Rafael, California 94903-2262 / (415)472-2254
email: caramucciinc@sbcglobal.net FAX (415)472-1040

The basic issue of the 1982 Negative Declaration Basalt Reclamation Plan, page 2, item F(9)(3) states:

"3. Any increases in extracted materials shall be transported by barge."

I(1) & I(2) Truck traffic could increase as a result of increased rock extraction.

Mitigation:

1. **See F(9)3.**

This study completely ignores and manipulates the historical records that are available and/or **should and must be made available** to determine so that "increases in extracted materials shall be transported by barge."

If the required historical records are not produced for this study, then an ANY inferances based upon from the incomplete documents should go against the interest of the applicant in this matter.

These records must be available for the County of Marin AND the public for review and analysis. 2

- **Where are the complete historical records for public review and why were they NOT used in this section of the report?**

The complete 22 plus page report, Basalt Rock, A Division of Dillingham Heavy Construction, prepared by Merrill Lynch, October, 1984 must be produced for public review with all supporting data, including tables 3, projected tonnage and revenue data.

This report makes reference to 3.0 million tons of aggregate to be shipped to the Delta region over next three years. Also, the SWOOP, (San Francisco Southwest Sewer Project) would require 1.2 million tons in 1985 and 1.2 million tons in 1986.

It is interesting to note that Table 1: San Rafael Quarry Tonnage and Average Daily Trips (1979 to 1983* and 1990 to 1999**) completely omits historical data from 1984 to 1999 and appears to estimate Barge Tonnage. [This chart was part of the March 27, 2000, PC Staff Report, page 7]

This information is the baseline for "increases in extracted materials shall be transported by barge."'

2

Any calculations by Tom Lai, who is not a traffic engineer, or Dutra's traffic engineers in 1999 using data beyond 1982 are not acceptable.

The 1979 SRRQ tonnage, 557,000 tons aggregate + 135,000 tons asphaltic concrete = 692,000 production records with class of products have not been used in this report.

- **Why not? How does this effect the 1982 baseline number of trucks for this study?**

- **If 25 tons loads were used in the computations, shouldn't the average number of trucks allowed on Point San Pedro Road be 69 trucks in and out vs 125 trucks based on 1982 tonnage?**

2

The traffic analysis historical, including 1999 and 2000 reports used 20 ton loads. Currently the SRRQ is using 25 ton loans.

Who allowed the increased tonnage to 25 tons per truck?

Will the tonnage in the trucks allow increase over time, as it appears it has occurred?

What is the impact on the vibrations to the home and damage to the roads due to the increased loads to 25 tons per truck?

What is the impact on people (especially young and seniors), walking or on bicycles, as 25 ton load trucks pass within 3 feet on Point San Pedro Road?

Transportation analysis of truck and barge traffic must be made by using complete certified weight master logs of materials shipped from the SRRQ. These certified weight master logs are required by California State Law. These records must be made available for public review.

3

- **Were these certified weight master logs used in any analysis as part of this study on transportation? If not, why not?**

- **How will this detailed and accurate information impact the Transportation/Circulation Report?**

- **Was the frequency of the trucks in and out of the SRRQ reviewed? If not why not?**

3

- **How does the frequency, notice, dust and diesel exhaust of the truck impact the residents on Point San Pedro Road?**

4

This Transportation/Circulation plan does not review any current or future proposed quarrying activities and their impacts relative to the California Delta Levy Repairs and/or the future San Francisco Airport expansion in San Francisco Bay that the SRRQ is or will be involved.

The Transportation/Circulation plan does not review any of the impacts from spillage of materials of into SF Bay during barge loading operations. The spillage issue was previously disclosed due to the shallow draft of the barge loading facility.

The SRRQ contracts with the State of California, Department of Water Resources and/or their agents will have significant impact on the operations of SRRQ.

5

A review Delta Risk Management Strategy for SRRQ potential plans to increase barge loading facilities, during an emergency, thereby bypassing EIR review and regulations has to be addressed by this EIR. See report prepared by URS Corporation for California Department of Water Resources. September 12, 2006.

- **Why have these issues not been included in this report, as mining and transportation activities will greatly increase ?**

Barge operations, i.e. loading, storage of materials, and barge movement was not addressed in any manner in this report.

6

- **Why have these issues of dust, spillage into the San Francisco Bay, diesel emissions from tug traffic, visual pollution due to fleets of loaded barges were not addressed in any manner in this study.**

There is no discussion on the impact of the operations of the SRRQ due to the increase availability of materials from Canada, that are currently being brought into the San Francisco Bay Area. 80,000 tons of aggregate are scheduled to arrive in San Francisco Bay every 9 days. Please see Polaris Minerals of Vancouver, B.C. website about Richmond California materials and facilities on San Francisco Bay. Alternative sources of materials must be discussed.

7

- **Why has alternative sources of materials not been addressed in this EIR?**

My concluding comment is as follows:

"Tell a lie often enough, loud enough, and long enough, and people will believe you."

8

There's a part of the human psyche that tends to accept that which is repeatedly put into the mind. As a result, the peddler of lies very often reaches a point where he/she believes that his/her lies are actually the truth. Very frequently, loving well-meaning people get caught in these false stories and perpetuate them.

8

Get to the truth of this EIR study by using real and accurate information.

Sincerely yours,

Joseph W. Caramucci

MARIN COUNTY COMMUNITY DEVELOPMENT AGENCY
PLANNING DIVISION

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2007 OCT -4 P 4:09
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COMMUNITY DEVELOPMENT
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SECOND PUBLIC SCOPING SESSION

ENVIRONMENTAL IMPACT REPORT FOR
SAN RAFAEL ROCK QUARRY AMENDED QUARRY PERMIT

RECEIVED
2007 OCT -4 P 4:09
MARIN COUNTY
COMMUNITY DEVELOPMENT
AGENCY

WRITTEN COMMENT FORM
October 3, 2007

Name/Affi [redacted] Mrs. Bonnie Casassa
216 Riviera Dr.
San Rafael, CA 94901

Address: _____

City: _____ Zip Code: _____ Telephone: 457-6501

Please provide comments and concerns regarding the environmental effects of the proposed project or the environmental process below.

I believe the Quarry personnel have made strong attempts at compliance and at being good neighbors. My property backs up almost to Pt. San Pedro road. The Quarry does not bother me. I would support the approval of the amended Quarry permit. 1

I believe only a very small number of neighbors are against the Quarry and that these neighbors maybe are more concerned with being in control that with the over-all good of the community

Please use backside of page for additional comments, if needed. This comment form may be handed in at the scoping session to County Staff or mailed to the attention of Tim Haddad, prior to **October 3, 2007**, at the Marin County Community Development Agency - Planning Division, 3501 Civic Center Drive, Room 308, San Rafael, CA 94903.

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MARIN COUNTY COMMUNITY DEVELOPMENT AGENCY
PLANNING DIVISION

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COMMUNITY DEVELOPMENT
AGENCY

PUBLIC SCOPING SESSION

ENVIRONMENTAL IMPACT REPORT FOR
SAN RAFAEL ROCK QUARRY AMENDED QUARRY PERMIT

WRITTEN COMMENT FORM
September 12, 2007

Name/Affiliation: Clark Smith

Address: 24 Hermitage Dr

City: San Rafael Zip Code: 94901 Telephone: 453-6637

Please provide comments and concerns regarding the environmental effects of the proposed project or the environmental process below.

The Quarry make it all look easy as they mow down the officials looking to negotiate them. They sure have quality legal teams don't they? The Dutras Bought this when it appeared the County would close em—

1

At any rate — Do we care about what Diesel Fumes do to humans? Do we care about the toxic dust? If so, slow them down or better yet close em down — Do human lungs mean anything to this Board? Or are they just to powerful —

2

Please use backside of page for additional comments, if needed. This comment form may be handed in at the scoping session to County Staff or mailed to the attention of Tim Haddad, prior to **September 17, 2007**, at the Marin County Community Development Agency - Planning Division, 3501 Civic Center Drive, Room 308, San Rafael, CA 94903.

i:th:projs:san rafaelquarry:scopingsession:RQcommentform.doc

September 11, 2007

Mr. Eric Steger, Senior Engineer
Marin County Department of Public Works
Marin Civic Center
3501 Civic Center Drive
San Rafael CA 94903

Dear Mr. Steger,

My husband Joseph Colton and I live at 408 Riviera Drive in Peacock Gap, and I write to inform you about our experiences with the nearby San Rafael Rock Quarry, and with comments and questions about the Initial Study.

We purchased our home on Riviera Drive in February 1994. Our realtor informed us there was a quarry nearby but that it would not be in operation long. When we were considering buying the house, in late 1993, she told us that it would close down by the end of 1994. We have lived here since February 1994 except for a period of time when we lived in Los Angeles County and rented the property at 408 Riviera. We lived in Los Angeles from September 2003 to March 2007 and had tenants at 408 Riviera during that time. Our house is built part way up a hill and is not on the flat section around the golf course. 1

Both my husband and I worked full time for most of the time we have lived here. From 1994 until January 1999 I had a job that included travel from Monday through Friday every week. My husband has always worked long hours. In short, we were hardly home the first five years that we lived here. We did notice the quarry, however. There were times when I would enter Pt San Pedro Road from Riviera Drive at 5:30-6:00 AM and see rock trucks lined up, parked, ready to enter the quarry. Often there were 15-20 of them. Then, as now, there is a white, powdery dust that covers the furniture, outdoor plants and cars, and it cannot be kept under control with anything short of daily dusting. Sometimes I would come home from work and the pictures on the walls would be crooked – a mystery to me, at first. At some point in that first five years I was home sick one day, and was almost launched from my bed by the mid-day blast. Our two dogs barked and ran around in fear. It was just like a very short but very strong earthquake jolt that rattled the windows. We have cracks in walls and ceilings, and in the brick patio that is built on the same foundation as the house, which get longer every year. After the first blast experience I understood why the pictures on the walls were crooked. The blast schedule was eventually published, I think after pressure from neighborhood groups, and life with the quarry achieved some measure of routine. 2

When we rented the house in 2003 I felt the need to write an explanation to the tenants about the quarry blasts, so they would not be surprised or call 911. So, along with instructions about how to operate the stove, etc., I explained what a blast was like, how

often they occurred, how their animals might respond and how they could become more informed about the quarry.

There is a low-grade noise, which is most noticeable in the late afternoon-early evenings from the back patio. It sounds like a motor running, a very deep sound, and when I first heard it I assumed it was the sound of a large tanker, coming across the water. Since I hear the sound daily, and it doesn't subside until later in the evening, I now assume it is some large piece of machinery at the quarry. 2

When we lived in Los Angeles from 2003-2007 we lived in a suburb in the San Gabriel Valley, two miles uphill from the 210 Freeway, one of the busiest freeways in the LA Basin. The freeway sound never stopped. We heard it whenever we were outside. In addition, there was black, grimy dust on everything, that I think was diesel exhaust and tire particulates. Unlike the white dust, it could be controlled with bi-weekly dusting. But here's the real difference: we knew we were near a freeway when we moved there, and that it wasn't going away. We purposefully lived in a "community" of over 8 million people. The only open space was at a 45-degree (or more) angle. When we bought in Peacock Gap, in contrast, what attracted us was its relative seclusion from freeway and town, and the nearby open space. The nights out here are very quiet and very dark. At the end of our block is a 2,000-acre State park. There is wildlife all around us. In other words, there are suburbs that are more urban and there are suburbs that are more rural. Peacock Gap is suburban homes and a golf course nestled in a wilderness setting. The quarry is a noisy, polluting, industrial nuisance in this setting. 3

Peacock Gap and the surrounding neighborhoods are also home to a variety of architecturally significant structures, most of which will be 50 years old in the proposed time extension of quarry operations, if they are not already. Our house was featured as the "Idea Home" of the year in Better Homes and Gardens in 1962, as the winner of an architectural contest. (September 1962 issue of the magazine attached, for your project files.) The San Francisco architects Chan/Rader Associates designed the Idea Homes, one other of which is across the street from us at 415. On Biscayne is a series of mostly one-story condos that were built in the 1950's by the Plywood Association of America as a demonstration project on how to use plywood for everything in home building, inside and out. There are many other unique examples of mid-century modern architecture and building techniques in Peacock and adjacent neighborhoods, a few by noted architects. The effects of blasting, year in and year out on these homes can only be negative, as cracks and slippages damage the homes unnecessarily (i.e., not as a result of natural seismic activity) and subsequent repairs may not preserve their unique character. 4

The SRRQ has had a number of methods of operation, based on what the neighborhood "pressure" groups did or did not complain about. They have been a very poor neighbor, making changes to their operations only when it became clear that not to do so would invite more notoriety or lawsuits. There have been many observable changes to the topography, like a hill built of slag where there was none before, since we moved here. 5

At one point there were many more trucks and greater material removal than was allowed by existing regulations. In other words, the quarry management does whatever it can get away with, and has consistently persisted in this behavior. The County, for its part, has been very slow to step up to its duty of overseeing quarry operations; indeed, the County has been negligent in the past, so this environmental review process was begun much later in time than it should have been. It is outrageous that for many years the quarry persisted in illegal practices that changed the topography, negatively affected wildlife and endangered human health and safety, with little or no oversight from the County, until private citizens took them to court. 5

Initial Study

1. Land Use and Planning

No additional comments at this time. 6

3. Geophysical

There is no analysis in the IS of the effect of quarry blasting up to and below 250 feet below sea level, on the nearby Hayward Fault. It is known that some human activity has caused seismic events, such as fluid injection into wells and reservoirs. Any negative effect that could increase the likelihood of a seismic event would be a potential impact to the quarry and its neighbors. The latest scientific opinion on the effects of below ground blasting should have been included in the IS and need to be addressed in the EIR. 7

4. Water

The Discussion sections in this element refer to the "project site," apparent from the context to mean the boundaries of the quarry property or possibly an even more narrow definition. This element should include the wider area affected by quarry operations. The relatively recent dust control mitigation effort (dust and road grime mixed with water laid onto Pt San Pedro Road by the street-cleaning truck operated by the quarry) may result in additional pollution entering the Bay, particularly during rainfall events. At a minimum, discussion of the effects of dust control mitigation on Pt San Pedro Road as it relates to water quality should be included in the EIR. 8

5. Air Quality

Further study of the effects of toxic air contaminants on the residential population is a welcome recommendation. The ubiquitous white dust is certainly not healthful and the survey cited is not sufficient. What needs to be established is the white dust's relative toxicity to humans living near the quarry, including all homes in which the white dust is noticeable. 9

10. Noise
No additional comments at this time. 10

11. Public Services
The Discussion section in 11.e. states that there would be no significant impact on McNear's Beach County Park recreational area from continued operation of the quarry. A more appropriate response would be to refer to the Land Use and Planning and Noise elements, and to include McNear's Beach County Park as part of the discussion on incompatible use and sensitive receptors in the EIR. 11

13. Aesthetics/Visual Resources
As noted above, there have been noticeable changes to the topography at the quarry that are visible from Pt San Pedro Road. Using 1982 as a baseline year, this element needs to be addressed in the EIR. 12

14. Cultural Resources
As noted above, there are many examples of mid-century modern architecture, potentially eligible for listing, in Peacock Gap and surrounding neighborhoods. There is no analysis regarding the effects of quarry blasting or dust accumulation on these structures. A complete inventory of all potentially affected structures is needed, followed by an assessment of continued blasting and dust accumulation on these structures. To determine the boundaries of the inventory I suggest drawing a circle with the quarry at the center, using the location of the most distant blasting complainant as the radius end point. This element needs to be addressed in the EIR. 13

15. Social and Economic Effects
There is no discussion of the negative economic effects of living near a quarry in the IS. The fact that the condominiums and houses closest to the quarry were built when they were is testament to the unique history of the quarry, including the County's past negligence. What reasonable person would not rely on City and County General Plans, when building, or buying, a residence? People in Marin Bay Park and the condominiums opposite the entrance to the quarry may have issues such as inability to work from home, or other issues related to incompatible land use and noise and vibration that could have a negative economic effect on them as a cohort. In addition, changes in the character of the community could occur over a long period of time due to the physical effects of the impact of blasting on homes and the resulting loss of value or change of use. The IS uses a 15-17 year timeline in this discussion but also states that the quarry may operate much longer. This element needs to be addressed in the EIR. 14

Please accept this letter and attachment as my comments on the SRRQ IS, comment period open until October 3, 2007.

Sincerely,

Merilee Colton

Merilee Colton
408 Riviera Drive
San Rafael, CA 94901
(415) 785-8815

cc: Susan L. Adams, Marin County Board of Supervisors
Timothy Haddad, County of Marin Environmental Plan Coordinator
John Edgecomb, Esq.
Dave Crutcher, SRRQ Committee

Attachment: September 1962 Better Homes and Gardens Magazine

MARIN COUNTY COMMUNITY DEVELOPMENT AGENCY
PLANNING DIVISION

PUBLIC SCOPING SESSION

ENVIRONMENTAL IMPACT REPORT FOR
SAN RAFAEL ROCK QUARRY AMENDED QUARRY PERMIT

WRITTEN COMMENT FORM
September 12, 2007

Name/Affiliation: Alyce Daunt

Address: 348 Knight Drive

City: San Rafael Zip Code: 94901 Telephone: 453-0249

Please provide comments and concerns regarding the environmental effects of the proposed project or the environmental process below.

I support all of the speaker's issues and wish to add what is affecting me. Allergy. The geologist (I did not catch his name) report was very scary and spoke to my problem. Allergies have gotten worse. I did not think of the dust (except on the table tops) as the possible irritant—now I do. How can such a strong report not be taken very seriously. Deke Welch stating that he did not like to see people jerked around (I think those were his words) that spoke for us all – Dutra is doing just that, aided by the powers that be-- manipulating everyone. The PR letters sent out periodically by Dutra only cause more negative conversation among us, and are not accomplishing what I am sure they expect with that tactic. We just want the quarry to abide by the original agreements and cease operation—they changed the rules in the middle of the game – how did that happen!!

1

Please use backside of page for additional comments, if needed. This comment form may be handed in at the scoping session to County Staff or mailed to the attention of Tim Haddad, prior to September 17, 2007, at the Marin County Community Development Agency - Planning Division, 3501 Civic Center Drive, Room 308, San Rafael, CA 94903.

MARIN COUNTY COMMUNITY DEVELOPMENT AGENCY
PLANNING DIVISION

PUBLIC SCOPING SESSION

ENVIRONMENTAL IMPACT REPORT FOR SAN RAFAEL ROCK QUARRY
AMENDED QUARRY PERMIT

WRITTEN COMMENT FORM

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2007 SEP 18 P 2:47
MARIN COUNTY
COMMUNITY DEVELOPMENT
AGENCY

Name: Robert J. David
Address: 15 Peacock Drive
City: San Rafael Zip Code: 94901 Telephone: 415/459-7139

Please provide comments and concerns regarding the environmental effects of the proposed project or the environmental process below:

On Tuesday, September 11, 2007, I sat on the bench in front of the firehouse on Point San Pedro Road between Knight Drive and Peacock Drive and counted trucks travelling to and from the Dutra San Rafael rock quarry. I was there for one hour, from 10 am to 11am, and only counted trucks that I could say with reasonable assurance were bound for, or returning from, the quarry. In the case of the eastbound trucks, I could verify the truck's destination because, from where I sat, I could eventually see it moving along the driveway that led to the quarry. But in most cases, such verification was hardly necessary; the vast majority of the trucks I counted had no conceivable reason to be on Point San Pedro other than to make pickups at the quarry.

In the one hour I was there, I counted a total of 56 trucks that were travelling either toward the quarry, or from the quarry. Just shy of one a minute.

The short stretch of roadway between Riviera Drive and Main Drive is one of the prettiest quarter miles in San Rafael. There's a small park across from Main Drive which attracts people on foot from the neighborhood and by car from outside the neighborhood. Some come to fish, but most people go there just because it's such a pretty spot. The view of the Bay from the park is quite beautiful and the walk from Riviera to the park would be delightful but for one thing: the incessant truck traffic.

If all these trucks aren't having an impact on the neighborhood environment, then I guess I just don't understand what's meant by an environmental impact. The roar of the trucks as they pass by interrupts conversation and destroys the serenity of the location. As you walk on the sidewalk along the Bay, air displaced by trucks travelling at the speed limit blows the hat right off of your head. After a few experiences like this, you simply lose interest in trying to enjoy this otherwise beautiful part of the neighborhood. 1

I know my truck survey was hardly scientific, but the number of trucks I counted is consistent with unrecorded observations I've made while walking along that stretch of roadway in recent months. At 56 trucks a minute, Dutra's proposal to limit truck traffic to the hours between 7am and 5pm truck would result in 560 one-way trips a day. Their proposed limit of 250 one-way trips per day would therefore seem like a dramatic reduction, until you realize that 250 one-way trips per day is precisely the limit that the quarry is supposedly operating under at this time. Either 10am to 11am is an inordinately busy time for truck traffic (which is contrary to my unrecorded observation that the traffic is busy all day long) or else the quarry is currently operating far outside the boundaries of the current limitations. Has anyone from the County done a more scientific survey of the traffic? Will anyone (other than Dutra) actually monitor the truck traffic once a new standard is adopted?

Furthermore, Dutra's proposed 250 one-way trips per day doesn't include trucks entering the quarry to patronize McNear Brick Company. How can the potential effects of Dutra's proposal with respect to truck traffic be fairly evaluated when it doesn't include those additional trucks? How many more trips per day does that represent? Does anyone even know?

I'll leave it to others to discuss all the other ways that the rock quarry affects the neighborhood and the environment and will just say this: whether it goes on all day long, or only in the morning, or only between the hours of 10am and 11am, a truck a minute is just plain ridiculous.

Robert J. David
September 16, 2007

MARIN COUNTY COMMUNITY DEVELOPMENT AGENCY
PLANNING DIVISION

PUBLIC SCOPING SESSION

ENVIRONMENTAL IMPACT REPORT FOR
SAN RAFAEL ROCK QUARRY AMENDED QUARRY PERMIT

WRITTEN COMMENT FORM
September 12, 2007

Name/Affiliation: BENJAMIN DIENSTEIN (PEACOCK GAP HOMEOWNER)

Address: 10 RIVIERA MANOR

City: SAN RAFAEL Zip Code: 94901 Telephone: 453-7611

Please provide comments and concerns regarding the environmental effects of the proposed project or the environmental process below.

my concerns

1- no time limit on duration of operations. 1

2- truck traffic does not indicate spacing of trucks- (many times 2-3 trucks follow each other on Point San Pedro Rd. creating congestion in downtown San Rafael at Irwin + Heatherton-) 2

3- Unfortunately the operation creates a public nuisance (noise, traffic, road deterioration, excessive atmospheric dust settling on property.) 3

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Please use backside of page for additional comments, if needed. This comment form may be handed in at the scoping session to County Staff or mailed to the attention of Tim Haddad, prior to **September 17, 2007**, at the Marin County Community Development Agency - Planning Division, 3501 Civic Center Drive, Room 308, San Rafael, CA 94903.

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MARIN COUNTY COMMUNITY DEVELOPMENT AGENCY
PLANNING DIVISION

PUBLIC SCOPING SESSION

ENVIRONMENTAL IMPACT REPORT FOR
SAN RAFAEL ROCK QUARRY AMENDED QUARRY PERMIT

WRITTEN COMMENT FORM
September 12, 2007

[redacted]

Name/Affiliation: JAMES DILLON

Address: 32 MARIN BAY PARK CT

City: SAN RAFAEL Zip Code: 94901 Telephone: 451 8210

Please provide comments and concerns regarding the environmental effects of the proposed project or the environmental process below.

1. NOISE - ARE THERE ANY LIMITS? CAN THEY SHUT DOWN AT 5:30 pm? INSTEAD OF WORKING ALL NIGHT?
2. HOURS OF OPERATION ARE TOO LONG. THEY KEEP US AWAKE WITH MACHINERY NOISE & TO LET THEM OPERATE BEYOND NORMAL BUSINESS HOURS (8:30-5) SHOULD NOT HAPPEN — 1
3. DUST- CARCINOGENIC SILICA! HOW CAN YOUR STAFF REPORT CLAIM THE DUST/SILICA/CARCINOGEN DOES NOT COME FROM THE QUARRY. ABSURD! IS YOUR STAFF LOOKING OUT FOR THE INVIRONMENT OR THE QUARRY? EVERY TIME THEY BLAST ON THE HILL, A LARGE CLOUD OF DUST ENDS UP ON AND IN my HOME. THIS IS A COUNTY HEALTH EMERGENCY, AND yet YOUR STAFF IS looking the other WAY! — 2
4. TRAFFIC & DIESEL FUMES ARE VERY BAD. — 3
5. PROPOSED MOVING OF OVERBURDEN to ABOUT 300 YDS FROM my HOME & CREATING A 180' HIGH pile! NO! I SUPPOSE YOUR STAFF WILL CLAIM THIS DOES NOT PUT SILICA IN my HOME. — 4

Please use backside of page for additional comments, if needed. This comment form may be handed in at the scoping session to County Staff or mailed to the attention of Tim Haddad, prior to **September 17, 2007**, at the Marin County Community Development Agency - Planning Division, 3501 Civic Center Drive, Room 308, San Rafael, CA 94903.

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It seems the fox is guarding the henhouse. It took a Judge's order to get the county to pretend to do anything about the Quarry operation. There should be an unbiased, outside agency to conduct the EIR. 5

MARIN COUNTY COMMUNITY DEVELOPMENT AGENCY
PLANNING DIVISION

PUBLIC SCOPING SESSION

ENVIRONMENTAL IMPACT REPORT FOR
SAN RAFAEL ROCK QUARRY AMENDED QUARRY PERMIT

WRITTEN COMMENT FORM
September 12, 2007

Name/Affiliation: DONNA DOUGHERTY

Address: 140 SAN MARCO DR

City: SAN RAFAEL Zip Code: 94901 Telephone: 415 459-2742

Please provide comments and concerns regarding the environmental effects of the proposed project or the environmental process below.

AS A HOME OWNER WHOSE BACK YARD VIEW CONSISTS MAINLY OF THE BAY AND THE QUARRY PENINSULA MY CONCERNS ARE IN REGARDS TO THE CONDITION OF THE HILL ONCE WORK IS COMPLETED. 1

IS IT DUTRA'S INTENT TO COMPLETELY REMOVE THE HILL OR WILL IT BE ABANDONED — LEAVING A BARREN, RAVAGED CLIFF WHERE WORK IS PRESENTLY BEING DONE?

Donna Dougherty
DRTSTUDIO@AOL.COM

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2007 AUG 23 P 1:49
MARIN COUNTY
COMMUNITY DEVELOPMENT
AGENCY

Please use backside of page for additional comments, if needed. This comment form may be handed in at the scoping session to County Staff or mailed to the attention of Tim Haddad, prior to **September 17, 2007**, at the Marin County Community Development Agency - Planning Division, 3501 Civic Center Drive, Room 308, San Rafael, CA 94903.

i:th:projs:san rafaelquarry:scopingsession:RQcommentform.doc

MARIN COUNTY COMMUNITY DEVELOPMENT AGENCY
PLANNING DIVISION

SECOND PUBLIC SCOPING SESSION

ENVIRONMENTAL IMPACT REPORT FOR
SAN RAFAEL ROCK QUARRY AMENDED QUARRY PERMIT

WRITTEN COMMENT FORM
October 3, 2007

Name/Affiliation: MARIE FISHER CICHY

Address: 9 MANDERLY RD

City: SAN RAFAEL Zip Code: 94901 Telephone: 415 456-0340

Please provide comments and concerns regarding the environmental effects of the proposed project or the environmental process below.

SEE OTHER SIDE

Please use backside of page for additional comments, if needed. This comment form may be handed in at the scoping session to County Staff or mailed to the attention of Tim Haddad, prior to **October 3, 2007**, at the Marin County Community Development Agency - Planning Division, 3501 Civic Center Drive, Room 308, San Rafael, CA 94903.

THE PROBLEM WITH QUARRY OPERATIONS IN ONE WORD: TRUCKS!

- The horrendous engine, tire and suspension noise from trucks. 1
- The carcinogenic exhaust pollution from the diesel truck engines. 2
- The filthy, grimy, unsightly dirt and dust that billows from the trucks. 2
- The unrelenting road congestion resulting from the truck traffic. 3
- The continuous, costly road damage caused by the trucks. 3
- The threatening size, weight and volume of the truck traffic. 4
- The looming threat of another major truck accident. 5
- The degraded quality of passenger comfort driving over truck-damaged roads. 6
- The inappropriateness of continual, heavy commercial truck traffic through an otherwise peaceful residential area. 7

THE SOLUTION TO ALL THE PROBLEMS THE QUARRY TRUCKS CAUSE? 8

CLOSURE OF THE DUTRA QUARRY!

MARIN COUNTY COMMUNITY DEVELOPMENT AGENCY

PLANNING DIVISION

PUBLIC SCOPING SESSION

ENVIRONMENTAL IMPACT REPORT FOR
SAN RAFAEL ROCK QUARRY AMENDED QUARRY PERMIT

WRITTEN COMMENT FORM
September 12, 2007

Name/Affiliation: Raymond Dale Friberg

Address: 19 Knight Dr

City: San Rafael Zip Code: 94901 Telephone:

Please provide comments and concerns regarding the environmental effects of the proposed project or the environmental process below.

All The Bay Area Depends on The Quarry Including The 2000 cc miles of Delta Please Save "IT" my Family Has Lived in San Rafael Since 1955 1

A8 • Wednesday, August 22, 2007 CALIFO

Schwarzenegger, Feinstein urge fixes for delta in crisis

By Noaki Schwartz
Associated Press

LOS ANGELES — State and federal officials must collaborate to restore the delta's ecosystem and preserve water deliveries to farmers and cities, Gov. Arnold Schwarzenegger and Sen. Dianne Feinstein said Tuesday in calling the crisis one of the state's most pressing challenges.

The two leaders appeared at a summit in Los Angeles, underscoring the growing attention being paid to the Sacramento-San Joaquin Delta.

"This is not an easy subject, but a subject that should involve all of California," Feinstein said. "Whatever it is that we do, we have to do it together, and it's going to be costly."

California leaders are scrambling to devise a strategy for the vast estuary, which serves as the hub of the State Water Project and funnels water to more than 25 million people in Southern California and the Bay Area.

REPAIRS NEEDED: Gov. Arnold Schwarzenegger and Sen. Dianne Feinstein speak Tuesday in Los Angeles before a delta summit to discuss the future of the state's water infrastructure. The governor is urging repairs to the delta levees to avoid a Katrina-like disaster.

AP photo/Nick Ut

The delta is suffering from myriad ills that experts say threaten the water supply to two-thirds of state residents, as well as native fish populations and other wildlife. Among the risks is that a massive earthquake could crumble the delta's fragile levees. There also are long-term concerns about the integrity of the earthen levees if sea levels rise under global warming scenarios.

At the same time officials are concentrating on the delta, the state and federal governments have been taken to court over concerns that water-pumping operations have led to the decline of the threatened delta smelt.

All this has occurred despite a joint state-federal partnership — known as the California and Federal Bay-Delta Program — that has spent an estimated $3 billion on water projects since 1998.

Please us... nded in at the scoping s... 7, 2007, at the Marin Co... oom 308, San Rafael, C...

i:th:projs:san

MARIN COUNTY COMMUNITY DEVELOPMENT AGENCY
PLANNING DIVISION

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COMMUNITY DEVELOPMENT
AGENCY

SECOND PUBLIC SCOPING SESSION

ENVIRONMENTAL IMPACT REPORT FOR
SAN RAFAEL ROCK QUARRY AMENDED QUARRY PERMIT

WRITTEN COMMENT FORM
October 3, 2007

Name/Affiliation: Ruth M Holland ("Jo" (HOLLAND))

Address: 24 PEACOCK CT.

City: San Rafael Zip Code: 94901 Telephone: 415-456-5417

Please provide comments and concerns regarding the environmental effects of the proposed project or the environmental process below.

FOR the SCOPING SESSION FOR THE SAN RAFAEL QUARRY PERMIT

My concern regarding the environment is how much of the dust in the trucks are in the air, and in our lungs. One can only look at the white track the trucks leave on San Pedro Rd going toward Highway 101 as opposed to the clear track on the same road coming to the quarry.

I don't know if the air tests have been significant or if they were taken when the trucks were active. - but it is very evident visually on San Pedro road so is it enough to worry about? My hope is that accurate tests have been, or will, be done. 1

Thank you

Sorry, I will not be able to attend the meeting

Please use backside of page for additional comments, if needed. This comment form may be handed in at the scoping session to County Staff or mailed to the attention of Tim Haddad, prior to **October 3, 2007**, at the Marin County Community Development Agency - Planning Division, 3501 Civic Center Drive, Room 308, San Rafael, CA 94903.

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Submitted at scoping meeting 10/3/07

WILLIAM E. HOSKEN

16 Marin Bay Park Ct.
San Rafael Ca. 94901
wehosken123@yahoo.com

October 1, 2007

Mr. Tim Haddad, Environmental Coordinator,
Marin Community Development Agency
3501 Civic Center Drive, Suite 308
San Rafael, CA 94903

Re: Comments on Scope of the EIR for SRRQ Amended Quarry Permit

Dear Mr. Haddad:

We believe that the project analysis contained in the Initial Study of June, 2007 for the subject project falls well short of the intent of the California Environmental Quality Act (CEQA) as it fails to identify a range of alternatives to the operating conditions and mitigation measures to be evaluated in the EIR as specified in 14 CCR&15082. Indeed the Initial Study identifies only the SRRQ (Quarry) proposed operating conditions for evaluation in the EIR--- conditions which are described in the SRRQ. Proposal (F.6 Proposal on page 28 of the Initial Study). 1

The SRRQ Proposal as presented is essentially the interim operating conditions negotiated between Marin County and the Quarry with no input of any kind from other stakeholders. There was no CEQA review or comment period of any kind from the public even though the interim operating conditions were opposed by the local community as being totally inadequate to mitigate the significant impacts of Quarry operations on the surrounding community. .Further the conditions outlined in the SRRQ Proposal (page 28 Initial Study) represent a significant expansion of the Quarry operations when compared to the 1982 baseline. 2

This letter uses the format of the Quarry's Proposal (Initial Study –page28) and provides a set of alternative operating conditions that would result in Quarry operations that we believe would be consistent with the impacts of the baseline of 1982. The following set of operating conditions reflect a broad review of material from county files, various consultant reports, public and court documents, and the extensive records and files of the Pt San Pedro Road Coalition\ We propose the following alternative operating conditions for evaluation in the EIR. 3

A. Mining Plan

1. *Main Quarry Bowl.* No change to Quarry Proposal . Bowl footprint to remain as is. New haul road shall be behind the present berm.which remains in place.
2. *South Hill.* No change to Proposal-- except that there shall be no intermittent mining on South Hill. Mining should be continued consistently until it has been mined to the extent allowed under the Amended Reclamation Plan. (complete by 12/30/11)

B Hours of Operation WILLIAM E. HOSKEN

1. *Crushing Plant.* 7 a.m. to 5 p.m. weekdays, year-round. No work on weekends or federal or state holidays. Exception allowed for government declared emergencies.

2. *Maintenance.* 7 a.m. to 5 p.m. weekdays, year-round. No work on weekends or holidays, except one Saturday per month allowed upon notice to County. No maintenance on marine equipment at the SRRQ facility.

3. *Barge Loading.* 7 a.m. to 5 p.m. weekdays, year-round. No work on weekends or holidays.

4. *Office Operations.* No change to Proposal.

5. *Truck Access .* No change to Proposal-- gate opens at 7 a.m. Trucks transporting mineral resources enter and leave the Quarry between 7 a.m. and 5 p.m., weekdays. No truck trips on weekends or holidays.

6. *Weather Restrictions.* No change to Proposal.

7. *Emergency Operations.* No change to Proposal.

C. Truck Traffic Changes

1. *Route Restriction.* Use Pt. San Pedro Road only. All trucks and traffic from the entire property shall use the McNears entrance to the property.. Current SRRQ entrance to be closed and road across the marsh removed.. An automatic traffic signal to be installed at the McNears entrance that operates when the Quarry is open.

2. *Truck Trips.* Change to 120 one-way trips (60 loaded trips) per day. Weight of load limited to 25 tons. Interplant transfers to Petaluma to be made entirely by barge. Provide a count of McNears trucks

3. *Truck spacing.* Monitor all trucks with at least a 90 second delay between all trucks at all times when leaving the Quarry.. Trucks to be limited to 25 miles per hour and the right lane of Pt. San Pedro Road. with a minimum of 1000 foot spacing.

D. Blasting changes

1. *Hours and Days.* No change to Proposal.

2. *Notification.* No change to Proposal.

3. *Vibration.* Blasting vibrations beyond the Quarry property boundary shall be limited to a maximum peak particle velocity of 0.1 inches per second, as measured on seismometers attached to the foundation of selected structures near the Quarry boundary. Blasting vibrations to achieve a "barely perceptible" level inside of structures.

3

E. Noise Changes WILLIAM E. HOSKEN

1. *Limits.* As measured at the Quarry property boundary, shall not exceed 50 dBa— (A weighted hourly average). Maximum level shall not exceed 60 dBa. Ldn standard shall not be used to establish standards for any noise measurements.
2. *Best Management Practices.* Installation of best available noise control technology and equipment. Pave Pt San Pedro Road with rubberized asphalt. Apply City of San Rafael noise ordinance.

F. Dust Control -- Changes

1. *Trucks.* Trucks shall be washed and tarped (except for asphalt loads). Rumble bars shall be installed on exit roadway.
2. *Sweeper.* Sweeper shall be vacuum type.
3. *Erosion Control.* No change to Proposal.
4. *Equipment.* Quarry shall meet the BAAQMD threshold standard for the facility as per Table 5-3, page103, of the Initial Study. For example, the PM10 standard for the entire facility is 80 lbs per day. Existing emissions of PM10 are 642 lbs per day.

A Health Risk assessment shall be conducted to verify the appropriateness of fugitive dust standards and safety of the surrounding community on a continuing basis over the life of the operation. Particular attention shall be focused on crystalline silica and diesel particulate emissions. ..

G. Visual -- Changes

1. *Buffer.* Present berm shall be maintained as is , including hydro-seeding until mining has ceased in the Quarry bowl. There shall be no new berms built or changes in the present berms, nor any activity in the NE Quadrant until final reclamation begins after shut down.
2. *Lighting.* Only properly shielded lighting necessary for security is permitted.
3. *Product Washing.* No product washing permitted unless the resulting pond fines are disposed of off site by barge.

. In conclusion , we formally submit our request that the scope of the EIR be sufficient to adequately evaluate the Quarry's operating conditions Proposal (IS page 28) and the alternative and mitigations measures we have proposed above, relative to the 1982 baseline operating conditions. Alternative operating conditions and/or mitigation measures should result in no significant impacts above or impacts mitigated to the 1982 baseline. .

3

Sincerely yours:

William E Hosken

MARIN COUNTY COMMUNITY DEVELOPMENT AGENCY
PLANNING DIVISION

PUBLIC SCOPING SESSION

ENVIRONMENTAL IMPACT REPORT FOR
SAN RAFAEL ROCK QUARRY AMENDED QUARRY PERMIT

WRITTEN COMMENT FORM
September 12, 2007

Name/Affiliation: SCOTT JONES / RESIDENT

Address: 12 SAN MARINO PL.

City: SAN RAFAEL Zip Code: 94901 Telephone: 453 6901

Please provide comments and concerns regarding the environmental effects of the proposed project or the environmental process below.

- The blasts are too strong and have led to cracking of neighborhood masonry / stucco etc. Reduce the quantity of explosive per blast 1
- The westbound lanes (loaded truck traffic vs empty) take a tremendous beating. The users of the Quarry need pay in to a dedicated maintenance fund for the road and the County needs to better maintain that road in conjunction with the City of San Rafael. This is the most heavily used specific truck route by volume and weight, in the County. Handle it better! 2
- Reduce truck transits in the morning commute. I drive it every day. The left turn on to 101 south causes large back ups which increase idling and reduce flow. Most trucks go south on 101. Make them leave the Quarry after 0900. 3

Please use backside of page for additional comments, if needed. This comment form may be handed in at the scoping session to County Staff or mailed to the attention of Tim Haddad, prior to **September 17, 2007**, at the Marin County Community Development Agency - Planning Division, 3501 Civic Center Drive, Room 308, San Rafael, CA 94903.

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MARIN COUNTY COMMUNITY DEVELOPMENT AGENCY
PLANNING DIVISION

PUBLIC SCOPING SESSION

ENVIRONMENTAL IMPACT REPORT FOR
SAN RAFAEL ROCK QUARRY AMENDED QUARRY PERMIT

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2007 SEP 18 P 1:17
MARIN COUNTY
COMMUNITY DEVELOPMENT
AGENCY

WRITTEN COMMENT FORM
September 12, 2007

Name/Affiliation: Jeffrey Kamys & Debra Kamys

Address: 176 San Marino Drive

City: San Rafael, CA Zip Code: 94901 Telephone: 4157880207

Please provide comments and concerns regarding the environmental effects of the proposed project or the environmental process below.

While noise and dust are a nuisance, damaging debris that may be inhalled by my family wife & 2 young children is of a more, much more greater concern for the.

1

I find it suspect that a report paid for by the dutra group could be of any value in this arena, and we have already seen a failure on behalf of the city & County in its ability to uphold restrictions on the quarry. I believe that an organization like the Epa should be involved since they have a limited local interest. Further the Homeowners should probably group together with its own local counsel to hire experts to study the environmental impacts of debris from the quarry. The city should greatly consider its long term liability in the area of environmental/hazardous materials in this matter before allowing a continued and or revised permit to be issued.

2

Please use backside of page for additional comments, if needed. This comment form may be handed in at the scoping session to County Staff or mailed to the attention of Tim Haddad, prior to **September 17, 2007**, at the Marin County Community Development Agency - Planning Division, 3501 Civic Center Drive, Room 308, San Rafael, CA 94903.

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Attention: **Tim Haddad**, Environmental Coordinator
Marin County Community Development Agency
3501 Civic Center Drive, Room 308
San Rafael, CA 94903

Fax 415-499-7880
1Oct07

Subject : **The Scoping Session for the San Rafael Quarry Amended Quarry Permit**

We wish to call attention to some of the drastic environmental effects of the Quarry operation. Dust – we have never lived in a place that is constantly shrouded in dust as this, whereas it ought to be a clean and serene environment as it is away from everything and surrounded by parks and water. All our plants, the patio, furniture, fence etc are always covered with a thick layer of dust. Lots of plants died, and the remainder is struggling. We waste a lot of water/time hosing/cleaning, and it does not make much difference. We have to keep the windows closed all the time; even then there is always a layer of dust covering everything. The atmosphere is simply saturated with dust particles. 1

Air Quality – awful, suffocating, long term health hazards, chronic obstructive airway diseases, mesothelioma...

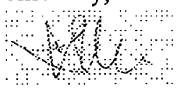
We live across from the pit, and on occasions, the blasts are just like earthquakes. We recalled an earthquake of the magnitude #5 on the Ritter scale when we lived near Santa Monica Bay in the early 80's. The blasts here feel just like that at times. It's unnerving. 2

Noise – problematic especially at night when they operate well into the night. This is simply unacceptable.

The site is a constant eye sore. And IS VERY Significant aesthetically if you have to look at it every day like we have to across from the site. 3

We think the Dutra Materials have made enough profits and caused enough devastation, and it's time to wrap up and give our environment back. In the meantime, they ought to purchase long term insurance for residents for insidious damages to eg foundations, walls, plumbing, health etc., and pick up the cleaning tab, not just the perfunctory cleaning of the point san pedro road. The public is better served if the site is used for eg a transport hub, bart, ferry etc; even low income housing. There isn't anything that can ever satisfy the corporate greed – it's a bottomless pit. 4

Sincerely,



K.Koh
150 San Marino Dr
San Rafael, 94901
Tel: 415-233-6142

MARIN COUNTY COMMUNITY DEVELOPMENT AGENCY
PLANNING DIVISION

PUBLIC SCOPING SESSION

ENVIRONMENTAL IMPACT REPORT FOR
SAN RAFAEL ROCK QUARRY AMENDED QUARRY PERMIT

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2007 AUG 29 P 12:59
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AGENCY

WRITTEN COMMENT FORM
September 12, 2007

Name/Affiliation: John D. and Gloria W. Lannom

Address: 117 San Marino Drive

City: San Rafael Zip Code: 94901 Telephone: 454-1403

Please provide comments and concerns regarding the environmental effects of the proposed project or the environmental process below.

We understand the need for the quarry product by Marin, other counties and levee reconstruction. 1

We do find objectionable the proposal to permit the quarry to operate from 0700 AM to 2200 PM May 1 through November 30. When we return home from work in the afternoon we would like to enjoy having our windows open and not be assaulted by the overpowering noise eminating from the rock crushing operation at the quarry. Please restrict the crushing operation during the above cited time frame to 07:00 AM to 05:00 PM. Is is really necessary for the quarry to operate after 5:00 PM? 2

We also believe that the amount of explosive utilized every day circa 11:40AM is excessive since the blast does shake our house and shifts photographs and paintings necessitating their having to be repositioned on a frequent basis. 3

We appreciate the quarry owners having provided a street sweeping truck to clean the mess on Pt. San Pedro Road by trucks using the quarry. But it would be appreciated if the truck could use more water to settle the dust instead of just raising it. 4

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Mr. Tim Haddad
Environmental Coordinator
3501 Civic Center Drive, Room 308
San Rafael, CA 94903.

September 28, 2007

Dear Mr. Haddad,

I have lived at 3 Peacock Lane, the corner of San Pedro and Peacock Drive since April 1997. During this near decade, I have not had one weekday of peace and quiet at home and have had to give up my enjoyment of reading and/or gardening outdoors on a beautiful day due to quarry truck noise and dust. On beautiful days, I cannot even leave windows or doors open due to the noise and dust. I have also given up on walking along the promenade due to speeding truck traffic that frankly frightens me. 1

As a former Business School Dean, I can assure you that I am pro- business and understand compromise. As a business professor advocating corporate social responsibility however, I would seriously question the practices of the quarry and policies of public administration. 2

My key concerns, those that have affected the quality of my life include:

1. Truck traffic including the convoy-style in the early morning and at peak times that differ, the speed, noise and dust;
2. The constant noise, day and night, 24/7 from the quarry and/or the brick factory; 3

Truck traffic should be limited to 25 mph. Reducing the speed of the trucks would greatly reduce the noise and fear. I have witnessed some, albeit few, trucks moving at slower speeds and thus have experienced the noise reduction.

Truckloads should be covered reducing the amount of particles dumped in our lungs, on our homes and grounds. Has a study been conducted to assess the health implications of the constant dust and fumes in the air resulting from general quarry activity, trucks and the street cleaning vehicle that really only stirs up more dust? I can report that our pool cover and furniture covers have to be changed well before the expiration date of their guaranteed life expectancy due to the grit and oily residue of quarry activity and truck traffic. In fact both Pool Covers Inc. and Brookstone Inc. have not charged us for one set of replacements since they could not believe the condition of the covers they had sold us. Our pool cover had to be changed again this year after only 2 years of a seven-year expected life span. Furthermore, oily residue can be found in a covered hot tub. Covers can be purchased but our respiratory systems cannot. 4

The quarry/factory noise is another set of issues. Common sense would dictate that in a residential area, noise abatement is sound and responsible policy. 5

The technicalities of all of your studies are beyond the scope of expertise of many of us. However, we realize that data is neutral until it is utilized. We know that statistics can be manipulated to tell whatever story one desires, that numbers in use are not objective. I would expect public officials to be honest and represent the residents as well as the corporation. For instance, it has been brought to my attention that noise level assessment was spread out over a 24- hour period. Shame on whoever was responsible for this if what I was told is in fact accurate. 5

As a public official, you will never wholly satisfy the quarry administrators nor the residents. However, at the end of the day, I would hope that you have satisfied your commitment to serving both with as much objectivity as is humanly possible. If we cannot satisfy both sides in this debate, where is the hope for Gaza, for Iraq and for future generations? 6

Thank you for your consideration.

Francoise O. Lepage, Ph.D.

DOMINICAN UNIVERSITY of CALIFORNIA 1890

Françoise O. Lepage, PhD
Assistant to the President for Special Projects
Dean and Professor Emerita
School of Business & Leadership
50 Acacia Avenue
San Rafael, CA 94901-2298
p. 415•485•3284
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flepage@dominican.edu

MARIN COUNTY COMMUNITY DEVELOPMENT AGENCY
PLANNING DIVISION

PUBLIC SCOPING SESSION

ENVIRONMENTAL IMPACT REPORT FOR
SAN RAFAEL ROCK QUARRY AMENDED QUARRY PERMIT

WRITTEN COMMENT FORM
September 12, 2007

Name/Affiliation: Chuck Louderback + Miranda Wagner
Address: 44 Marin Bay Park Ct
City: San Rafael Zip Code: Ca Telephone: 415 460 5136

Please provide comments and concerns regarding the environmental effects of the proposed project or the environmental process below.

Hours of operation should not exceed 7:00 PM. They often (3+) times a week work past 10:00 to 10:30. 1

Silica is present on, in, around my house, plants, our lungs, driveway - windows - walls, floors. It represents a health hazard + feels toxic.

Research via Internet discloses that silica is a serious hazard akin to asbestos - ie prolonged exposure creates lung disease + more. 2

Our neighborhood has risen up around the quarry, it's time has come to cease.

The rock quarry is a health hazard, noise nuisance and a blight on our neighborhood. 3

We want it closed down.

Please use backside of page for additional comments, if needed. This comment form may be handed in at the scoping session to County Staff or mailed to the attention of Tim Haddad, prior to **September 17, 2007**, at the Marin County Community Development Agency - Planning Division, 3501 Civic Center Drive, Room 308, San Rafael, CA 94903.

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MARIN COUNTY COMMUNITY DEVELOPMENT AGENCY
PLANNING DIVISION

SECOND PUBLIC SCOPING SESSION

ENVIRONMENTAL IMPACT REPORT FOR
SAN RAFAEL ROCK QUARRY AMENDED QUARRY PERMIT

WRITTEN COMMENT FORM
October 3, 2007

Name/Affiliation: TOM & FRANCINE MARTINDALE

Address: 13 PEACOCK LANE

City: SAN RAFAEL Zip Code: 94901 Telephone: 415-457-9678

Please provide comments and concerns regarding the environmental effects of the proposed project or the environmental process below.

IT IS VITALLY IMPORTANT THAT THE COMPOSITION OF THE INCESSANT DUST FROM QUARRY OPERATIONS BE TESTED AND ANALYZED. WE HAVE BEEN EXPOSED TO AN UNENDING AMOUNT OF DUST & DIRT PARTICLES GENERATED BY QUARRY TRUCK TRAFFIC FOR THE PAST TWENTY YEARS.

WE HAVE EXPERIENCED THE FOLLOWING SYMPTONS: PERSISTENT SNEEZING, ITCHY/WATERY EYES, & COUGHING. AIR FILTERS HAVE BEEN OF LITTLE EFFECT.

IN OUR VIEW, THE STREET CLEANING PROGRAM HAS BEEN INEFFECTIVE. THE LONG TERM HEALTH EFFECTS OF CONSTANT EXPOSURE TO THE HIGH LEVELS OF DUST/DIRT IS OF GREAT CONCERN.

1

Please use backside of page for additional comments, if needed. This comment form may be handed in at the scoping session to County Staff or mailed to the attention of Tim Haddad, prior to **October 3, 2007**, at the Marin County Community Development Agency - Planning Division, 3501 Civic Center Drive, Room 308, San Rafael, CA 94903.

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10/3/07 submitted at 2nd scoping session

October 3, 2007

Amanda Metcalf
29 Marin Bay Park Court
San Rafael, CA. 94901
Tel: 415-454-0945

Tim Haddad:
Marin County Community Development
Agency, Planning Division
3501 Civic Center Drive, Room 308
San Rafael, CA. 94903

Re: Second Scoping Session, October 3, 2007
Environmental Impact Report for SRRQ
Amended Quarry Permit

Dear Mr. Haddad:

I am writing to complain of the proposed limitations on the EIR to be done respecting the San Rafael Rock Quarry. All elements of SRRQ's proposal must be subjected to strenuous environmental review, including, but not limited to the following: 1

1. Effects of blasting and the dust created thereby on nearby structures and residents;

2. Effects of blasting on the health, safety and welfare concerns of residents, children, teachers and staff at San Pedro, Glenwood and San Rafael High Schools, and workers and visitors to parks in the vicinity of the quarry;

3. Effects of environmental pollutants, including diesel emissions, silica, etc. that are emitted by the quarry and or vehicles going to and from the quarry;

4. Effects on health, safety, general welfare and quiet enjoyment of residents' property of the unrelenting noises associated with operations, including the Brick Kiln, conducted on quarry property. 2

5. The effects on health, safety and welfare of residents, school children and others from trucks going to and coming from the quarry.

It is essential that the effects of SRRQ's operations on the health, safety and general welfare of residents and others affected by the quarry's operations be studied in depth as a part of the environmental review process.

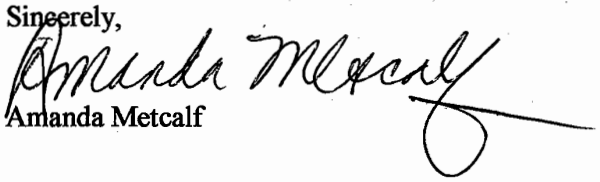
Over the past seven years my complaints and concerns regarding the above issues have been made known to the county in various ways, including the filing of a civil action for nuisances and damages against SRRQ (Metcalf v. San Rafael Rock Quarry, Marin County Superior Court, Case No. CV 014584, 014618, original filed in 2001); letters and emails sent to the County Board of Supervisors, The Marin County Community Development Agency and The Planning Department; and by public demonstration and complaints to the San Rafael Police Department and the Marin County Sheriff's Department.

I refer to, and incorporate herein by reference, the many emails I have sent the County, documenting my complaints against the quarry's operations, including complaints about dust, noise, blasting, late night and early morning operations and other violations of law, which are included in your records and were produced to the Superior Court as an attachment to a Status Report filed by the county earlier this year. 3

Also, attached here to is a copy of the Second Amended complaint I filed against the quarry which sets forth my complaints, concerns and claims against the quarry. The issues raised therein have not changed appreciably since the original complaint was filed over seven years ago.

I have invited county representatives as well as representatives of SRRQ to be present inside my home on an occasion when a typical quarry blast takes place. No one from SRRQ or from the county has accepted my invitation and I here extend it once again. You are invited to come and experience for yourself what it is like to live next to the quarry, to have your home shaken as if by an earthquake, to have quarry dust cover your home and your possessions, to breathe the dust and other pollutants emitted from the quarry on a daily basis and to lie awake in the wee hours of the morning unable to sleep because of the incessant noises emitted from the operations of an open pit mine. 4

Sincerely,



Amanda Metcalf

Attachments 5

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SUPERIOR COURT OF CALIFORNIA

COUNTY OF MARIN

AMANDA METCALF

Plaintiff,

vs.

SAN RAFAEL ROCK QUARRY, INC., BILL T. DUTRA, THE DUTRA GROUP, SAFECO INSURANCE CO., TRUSTEE, DUTRA VOTING TRUST, and DOES 1-500,

Defendants.

/

CASE NO. CV 014618

SECOND AMENDED COMPLAINT FOR DAMAGES INJUNCTION AND RESTITUTION

(UNLIMITED JURISDICTION)

(Consolidated with: **CV 014584**; CV 014602 and CV 014610)

Plaintiff brings this action and alleges upon information and belief as follows:

INTRODUCTION

1. This action arises out of the unlawful operation of the San Rafael Rock Quarry ("quarry"), located on Point San Pedro Road in an unincorporated area of Marin County abutting the City of San Rafael, by defendants San Rafael Rock Quarry, Inc., ("SRRQ"), Bill T. Dutra, The Dutra Group, Safeco Insurance Company and the Dutra Voting Trust, through and by its Trustee. The operation of the quarry has been expanded since SRRQ purchased it in 1986, despite zoning in 1982 which mandated that quarry operation not be expanded,

extended, or intensified.

2. Plaintiff is a homeowner in the area of San Rafael adversely impacted by the quarry's illegally expanded operations. Plaintiff had and continues to have the reasonable expectation that the quarry will operate in a lawful manner consistent with the zoning ordinance adopted by the County of Marin in 1982, which changed the zoning of the quarry property from Heavy Industrial to Residential and Commercial Multiple Planned District. The quarry was permitted to continue to operate after the zoning change, as long as it operated in accordance with the California Surface Mining and Reclamation Act (SMARA), codified as California Public Resources Code Section 2710, et seq, which prohibits any substantial deviation from the 1982 Reclamation Plan filed by the previous owners of the quarry. Despite the zoning prohibitions, SRRQ has substantially deviated from its 1982 Reclamation Plan by expanding, extending and intensifying the quarry's operations.

3. As a result of the quarry's expanded operations and intensified use, plaintiff and her family have been and continue to suffer injuries caused by the quarry. Plaintiff is made to suffer physical, mental and emotional distress from blasting, from noise at the quarry during all hours of the day and night, from the excessive dust, noxious fumes and diesel truck emissions from the quarry and its related operations and activities. Plaintiff has suffered and continues to suffer injuries to her person, loss of the quiet, peaceful and comfortable use of her property, loss of property, and damage to and diminution in value of her real and personal property, all caused by the unreasonable and illegal operations of the quarry.

4. Defendants, Bill Dutra, The Dutra Group, the related Dutra companies, The Dutra Trust and Safeco, (Dutra) are a multi million dollar conglomerate which owns and operates massive mining, dredging and related operations throughout the United States and the World.

Dutra has consistently ignored or rejected repeated requests from State and local governmental agencies, environmental groups and private citizens to bring their operations into compliance whith existing laws and prevailing mining and quarrying standards. Dutra has refused to put in place modern, more environmentally friendly machinery and equipment that would substantially reduce the harmful dust and fumes, the deafening noise and the damage to private property from blasting caused by the quarry's current operating methods. Dutra has been sued successfully by the State of Florida and the State of California for various violations of the lawrelated to their industrial operations. Yet despite lawsuits, court judgements and reprimands by the Marin County Grand Jury and direct pleas from hundreds of Marin County families and residents concerned about the health of their children and damage to the environment, Dutra and the San Rafael Rock Quarry have put increased profits over the public interests.

5. Plaintiff seeks a temporary, preliminary and permanent injunction prohibiting defendants from operating or using the quarry in a manner that exceeds or is inconsistent with the uses and levels of operation permitted by the 1982 Reclamation Plan, including, but not limited to prohibiting defendants from maintaining illegal and unsightly stockpiles of tailings, waste, and other materials on quarry property. Further, plaintiff seeks damages for trespass, battery nuisance, disgorgement of all revenues, profits, compensation and benefits obtained by SRRQ as a result of its unlawful, unfair and fraudulent business practices as hereinafter alleged.

THE PARTIES

6. Plaintiff AMANDA METCALF is an individual over the age of eighteen years, a resident of San Rafael, California, and the owner of real property located at 29 Marin Bay Park Court, San Rafael, proximate to the quarry.

7. At all times material to this Complaint, defendant SRRQ was and is a corporation licensed by and doing business in the State of California, which owns and operates the the San Rafael Rock quarry ("The Quarry") located at 1000 Point San Pedro Road, within the unincorporated territory of the County of Marin. Defendants The Dutra Group, and Safeco Insurance Comnany, are California corporations. Bill T. Dutra is an individual, The Dutra Voting Trust is a California entity, type unknown. All these defendants, referred to herein

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as "DUTRA", through and by their ownership of defendant San Rafael Rock Quarry were, and are the principal owners and operators and managers of the San Rafael Rock Quarry.

8. Plaintiff does not know the true names or capacities of the persons or entities sued herein as DOES 1 through 500, inclusive, and therefore sues these defendants by such fictitious names. Plaintiff is informed and believes and thereon alleges that each of said defendants was in some manner legally responsible for the facts and circumstances of the losses and damages hereinafter alleged. Plaintiff will amend this Complaint to set forth the true names and capacities of said defendants along with appropriate charging allegations when the same have been ascertained.

9. Plaintiff is informed and believes and thereon alleges that at all times mentioned herein each defendant was the agent, servant or employee of, or under contract with, each other defendant, and at all times mentioned herein was acting within the course and scope of such agency, contract and/or employment.

10. Defendants otherwise bear liability to plaintiff under theories of successor liability as set forth in the Civil Code § 1107 and/or elsewhere, *de facto* liability, implied successor liability, and/or Civil Code § 3521.

JURISDICTION AND VENUE

11. Superior Court unlimited jurisdiction is proper because plaintiff seeks equitable relief and the relief otherwise sought herein, exceeds the jurisdictional limit.

12. Venue is proper in Marin County because the wrongful acts perpetrated by SRRQ and Dutra occurred in Marin County, plaintiff resides in Marin County and the claims presented herein pertain to the use and enjoyment of real property located in Marin County. The unlawful acts alleged herein have and continue to have a direct effect on consumers within the State of California and, more particularly, within Marin County. Additionally, the trade and commerce described herein is carried on, in part, in the State of California and, more particularly, within the County of Marin.

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GENERAL ALLEGATIONS

13. The SRRQ property consists of almost 750 acres (over 1 square mile) of land and underwater areas located at the end of Pt. San Pedro and adjacent to the Peacock Gap neighborhood of San Rafael. For the past 15 years The Dutra Group has owned SRRQ. The Dutra Group is a California Corporation, which has been involved in dredging, engineering and marine construction activities throughout the United States and ahs rock quarry-related facilities in various Bay Area locations.

14. On January 23, 1997, the Dutra Group (owner of SRRQ) filed Chapter 11 Bankruptcy in Oakland, claiming $91, 794,473 in total assets and $102,093 in total liabilities (Federal Bankruptcy Court Case No. 97-40625).

15. On August 4, 1997, SRRQ, aka Dutra Materials, filed chapter 11 Bankruptcy in Oakland stating $32,500,000 in total assets and $89,500,000 in total liabilities (Federal Bankruptcy Court Case No. 97-47525).

16. A Bankruptcy Reorganization Plan was filed for SRRQ and the Dura Grup in Federal Bankruptcy Court on February 5, 1998.

17. On February 13, 1998, the Federal Bankruptcy Court entered an order approving the Reorganization Plan. On May 22, 2998, the Reorganization Plan went into effect. Key elements of the Plan included the following: 91) a complete transfer of ownership and control of the Dutra Group (which in turn owns SRRQ and the Dutra Petaluma Quarry properties); (2) a recorded memorandum of lease between SRRQ INC., (landlord) and the former owner of the quarry (tenant) for a certain real property containing "that certain residence and two appurtenant residential structures all located at the end of a private road called Pogy Point Road", and (3) a 5-year employment agreement between the Dutra Group (Company) and the

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former owner of the quarry (Employee)".

18. The Dutra employment agreement provides for a base salary of $300,000 per year and bonuses of $75,000 for performance meeting earnings before taxes (EBT) projections, and 25 percent of any excess over projected EBT up to a maximum of an additional $200,000/year.

19. On May 22, 1998, ownership of SRRQ went from a corporation with 100 percent of the voting stock owned by Bill T. Dutra to a 1,000,000 share Trust corporation which holds 50 percent of the voting stock shares (owned by Safeco Insurance Company), and the remaining voting stock shared by small California banks, neither of which owns more than 25 percent of said stock.

20. In 2002 shareholders of The Dutra Group and of Safeco complained to those respective companies about a fraud perpetrated upon the Dutra Group and Safeco shareholders and lenders by the embezzlement or "misappropriation" of in excess of $4.5 million by CEO, Bill T. Dutra, which fraud was discovered and reported by the Ernst & Young, LLP, accounting firm. Neither Safeco, The Dutra Group, The Dutra Voting Trust or SRRQ, Inc. took action to recover the diverted funds or acted to remove Bill T. Dutra from his position as the director, officer, manager and CEO of SRRQ, Inc., or the Dutra Group.

21. Safeco is the owner, lender, manager and surety of the San Rafael Rock Quarry, Inc., and, therefore, has ultimate responsibility for the actions and practices of the Company's management. Safeco plays an active role in directing the management of SRRQ and The Dutra Group. Safeco and the Dutra companies have been sued for in excess of $30 million by the Port of Miami and Dade County Florida for Dutra's unlawful activities in connection with dredging contracted for by public agencies in the State of Florida.

22. The quarry is located on the tip of Point San Pedro peninsula, immediately

adjacent to the city limits of San Rafael. Quarrying has occurred at the site since around 1900.

23. In 1941, Marin County adopted a Zoning Ordinance placing the property in an M-2 (Heavy Industrial) and A-2:B-2 (Limited Agricultural) Zoning District. The quarry area of the property was specifically zoned M-2.

24. In April 1972, Marin County's Planning Commission approved a use permit for Basalt Rock Company to quarry the property. Marin County's Department of Public Works issued a surface mining and quarrying permit to Basalt Rock Company on the same date.

25. In January, 1976, the Surface Mining and Reclamation Act ("SMARA") of 1975 became California State Law (see CA, Public Resources Code § 2777). (A true and correct copy of section 2777 of SMARA is attached hereto as Exhibit "B"). Although SMARA recognized the vested rights of pre-existing mining operations, it required that a Reclamation Plan be submitted for all ongoing mining operations existing on the effective date of the legislation, including that of Basalt Rock Company.

26. Basalt Rock Company submitted a Reclamation Plan.

27. In 1981, Basalt Rock Company withdrew the Reclamation Plan due to the finding of a new mineral resource on the subject property. In its place, Basalt Rock Company submitted an Amended Reclamation Plan. A true and correct copy is attached hereto as Exhibit "A".

28. In November, 1982, based in large part on representations contained in the above- referenced Amended Reclamation Plan, Marin County adopted a Zoning Ordinance re-zoning the Property to RMPC (Residential and Commercial Multiple Planned District). Surface mining/quarrying is not an allowed use in the RMPC Zoning District.

29. In December 1982, the Marin County Planning Commission approved the Amended Reclamation Plan.

30. Plaintiff is informed and believes and based upon said information and belief alleges that on or about February 28, 1986, The quarry was acquired by defendant SRRQ and Dutra.

31. Plaintiff further contends that SRRQ has extended and intensified its otherwise legal non-conforming use beyond that allowed under either the diminishing asset doctrine or

current land use entitlements. Plaintiff estimates that SRRQ has already quarried approximately 1.8 million tons more material from the existing pit than the amount that would have been quarried based on the 1982 Reclamation Plan's projected mineral reserves and the anticipated termination of mining activity in 1993.

32. On April 11, 2000, the Marin County Department of Public Works issued a Notice of Non-Compliance with the 1982 Reclamation Plan to SRRQ. The notice identified the following alleged violations:

a. The identified date for termination of mining and commencement of reclamation (i.e., 1993) had lapsed.

b. The maximum anticipated depth of the main pit had been exceeded by 53 feet. Subsequent to the Notice of Non-Compliance, Marin County's review found that the width of the main pit had been exceeded by up to 130 feet on the south and 80 feet on the north.

c. Truck traffic had significantly increased in violation of a mitigation of the negative declaration and condition imposed as part of the 1982 Amended Reclamation Plan. (A copy of the mitigation condition is attached hereto as Exhibit "C".) Plaintiff is informed and believes and thereon alleges that truck trips generated from The Quarry, routed along North San Pedro Road, have increased from approximately 270 trips per day circa 1981 to approximately 350-450 trips per day circa 1996 through 1998. Such intensification and increase in truck traffic and resulting noise and dust impacts are injurious to the health, safety and welfare and interfere with the comfortable enjoyment of life and property of plaintiff herein. Truck traffic has continued to increase since 1998.

33. The Notice of Non-Compliance specifically stated that the Notice and Order was not to take effect until a hearing on the matter had been held.

On November 1, 2000, the SRRQ waived formal hearing regarding the Notice and Order and the Order became effective. A true and correct copy of the letter is attached as Exhibit "D".

34. Marin County Municipal Code section 1.04.180 provides, in relevant part, that any condition caused or permitted to exist in violation of any provision of the Marin County

Municipal Code constitutes a public nuisance and may be abated as such.

35. Uniform Administrative Code section 309.1, as modified by Marin County Municipal Code section 19.04.055, provides that no structure shall be occupied until the building official has issued a certificate of occupancy.

36. Marin County Municipal Code section 22.77.030 provides that it is unlawful for any person to place or construct a pier on any tidelands without first having obtained a tidelands permit.

37. On December 20, 2000, the Marin County Community Development Agency inspected the quarry property and observed the following Marin County Municipal Code violations:

a The "main house" located on the property had been increased in size from approximately 2,950 square feet to approximately 4,950 square feet. Neither a building permit nor an occupancy permit was obtained for the structure on information and on information and belief no permit fees or real estate taxes have been paid on these improvements.

b The "cottage" located in the vicinity of the main house had been remodeled and increased in size by approximately 100 square feet. Neither a building permit nor an occupancy permit was obtained for the structure.

c The "radio house" on the site had been converted into a residence. Neither a building permit nor an occupancy permit was obtained for the structure.

d. The "old dock" has been reconstructed. Neither a building permit nor a tidelands permit was obtained for the dock.

e. Six administrative offices and a caretaker's unit totaling approximately 14,651 square feet were located on the Property. No building permits or occupancy permits were obtained for any of these structures.

38. In or about October, 2000, Marin County and the City of San Rafael caused an air quality study to be conducted in the vicinity of the SRRQ Property. The study revealed that SRRQ's operation resulted in emissions exceeding the federal standards for Total Suspended Particulate and Inhale Particulate Mass by 35 times. The presence of particulate and metals in or

about residential properties surrounding the SRRQ is injurious to the health, safety and welfare and interferes with the comfortable enjoyment of life and property of the plaintiff, her family, guests and invitees to plaintiff's property.

39. Since 1982, the quarry has expanded its hours of operation including the operation of heavy equipment, barge loading, cleaning and maintenance and other noisy industrial and mining activities and its trucking activities. In 1982 The Quarry operated from approximately 7:00 a.m. to 5:00 p.m. during weekdays only. Since 1982 they quarry has continued operating late into the evening and throughout the night, including the operation of heavy equipment, barge loading, cleaning and maintenance and other noisy industrial and mining activities. they have expanded to working until late at night, and frequently seven days a week. The hours of trucking activities have similarly increased and continue at all hours of the day and night. Such expanded and intensified operations violate the zoning ordinance applicable to the quarry as well as Section 2777 of SMARA.

40. Incident to the increase in quarrying activities from 1982 to the present, the blasting activities of The Quarry have increased in intensity and impact to the surrounding community. The blasting activities have resulted in unacceptably high air and ground vibrations, noise, and fugitive dust at nearby residential properties including the property owned and inhabited by plaintiff and her family. Said blasting activities also have caused physical damage to plaintiff's property and have caused plaintiff and her family to suffer severe emotional distress, fear, trauma, anxiety and annoyance. The above described impacts of the blasting are detrimental and/or injurious to the health, safety and welfare and interfere with the quiet, comfortable enjoyment of life and of the property of Plaintiff and her family.

41. Incident to quarrying activities, the SRRQ utilizes rock crushers, excavation equipment and loaders, all of which generate noise levels which are injurious to the general health, safety and welfare and interfere with the comfortable enjoyment of life and property of plaintiff and her family.

42. Incident to its quarrying operations the SRRQ destributes rock and other products via heavy diesel trucks which make as many as 800 trips a day over residential streets

into and out of the quarry (see Marin County Community Development Agency Traffic Data Table, copy attached hereto as Exhibit "F").

43. The SRRQ operates the quarry in violation of applicable laws designed to protect members of the public, including plaintiff and her family. On July 11, 1996, the Bay Area Air Quality Management District issued a Notice of Violation, citing the SRRQ for expanding its operations at The Quarry by constructing a new secondary plant, including three new secondary rock crushers, new conveyor belts and six new screens leading to eight new storage piles, without permits to construct or permits to operate. As a result of said Notice of Violation, the SRRQ agreed to operate The Quarry in such a way as to eliminate discharge of dust above certain levels. The Quarry emits large quantities of visible dust, in violation of the SRRQ's permit issued by the Bay Area Air Quality Management District, which is detrimental and/or injurious to the health, safety and welfare and interfere with the comfortable enjoyment of life and property of plaintiff and her family.

44. Between September 29, 2000 and October 30, 2000, professional consultants employed by the County of Marin, conducted tests of airborne particulate matter emitted by the quarry which had drifted into the adjacent Marin Bay Park neighborhood and the adjacent McNear's Beach County Park. These tests showed that The Quarry's emissions exceeded applicable Federal standards on 16 of the 30 days in the Marin Bay Park test and 10 of the 30 days in the McNear's Beach test. The presence of particulate and metals in or about residential properties surrounding the SRRQ is injurious to the health, safety and welfare and interferes with the comfortable enjoyment of life and property of the community. These emissions are injurious to the health, safety and welfare and interfere with the comfortable enjoyment of life and property of plaintiff and her family.

45. The acts and omissions of the Defendants complained of herein violate the following statutes of the State of California and ordinances of the County of Marin, as amended, and implementing rules and regulations:

(a) California Health & Safety Code §§ 41700, et seq., §§ 25500-25572, inclusive, § 39655, se seq., and § 42400.1, inclusive;

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(b) California Health & Safety Code §§ 25410, et seq.;

(c) California Code of Regulations, Title 19, §§ 2510, et seq.;

(d) Rules, Regulations and Standards of the Bay Area Air Quality Management District; including those set forth in BAAQMD Notice of Violations No. 29029 (No Authority to Construct and No Authority to Operate) as well as Regulation 6 (Particulate Matter And Visible Emissions);

(e) California Health and Safety Code §§ 39655 et seq..

(f) California Health and Safety Code §§ 25500, et seq.

(g) County of Marin Code, Title 22 (Zoning);

(h) County of Marin Code, Title 23 (Regulation and Control of Surface Mining and Quarrying Operations); and

(i) County of Marin Code, Chapter 7.90.

46. Plaintiff is a person for whose protection the above-mentioned state statutes, rules and regulations were enacted.

47. Attached hereto as Exhibit "E" is a true and correct copy of a summary of the June 6, 2001, Marin County Civil Grand Jury Report relative to SRRQ operations which is incorporated by reference herein.

48. The injuries and damages complained of herein resulted from conduct, occurrences or omissions which the above-mentioned state statutes, rules and regulations were designed and intended to prevent.

49. Defendants had and continue to have a duty to comply with each and every statute, rule and regulation mentioned above.

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UNITY OF INTEREST BETWEEN CORPORATIONS AND SHAREHOLDERS

Alter Ego Liability

50. There exists, and at all times herein mentioned there existed, a unity of interest and ownership between defendants SRRQ, Inc., and The Dutra Group, The Dutra Voting Trust, Bill T. Dutra and Safeco Insurance Company, such that any individuality and separateness between said defendants have ceased. Defendants SRRQ, Inc. and The Dutra Group, and each of them, are the alter egos of defendants Bill T. Dutra, The Dutra Voting Trust and Safeco Insurance Company, and each of them, in that Bill T. Dutra, Safeco Insurance Company and the Dutra Voting Trust, exercise control and domination of SRRQ, Inc., and The Dutra Group as alleged herein above.

51. Adherence to the fiction of the separate existence of defendants SRRQ., and The Dutra Group as entities distinct from defendants Bill T. Dutra, Safeco Insurance Company, and The Dutra Voting Trust, would permit an abuse of the corporate privilege and would sanction fraud and or promote injustice in that said defendants may continue to divert, and or approve, condone or ratify the diversion of funds from SRRQ, Inc. and the Dutra group with the result that any judgment obtained by plaintiff would be unenforceable. Further, given defendant SRRQ's and Dutra's past bankruptcy history, plaintiff may reasonably anticipate that these defendants would seek to escape payment of any judgment obtained by plaintiff in this action and/or the plaintiffs in the cases consolidated herewith, by seeking refuge under federal bankruptcy laws.

52.. Defendants The Dutra Group and SRRQ, Inc. are and at all times mentioned herein were, the alter egos of Bill T. Dutra, and there exists, and at all times mentioned has

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existed, a unity of interest and ownership between defendants such that any separateness between them has ceased to exist, in that defendant Bill T. Dutra completely controlled, dominated, managed and operated both corporate defendants and intermingled the assets of each to suit the convenience of himself and Safeco Insurance Company, by diverting and converting funds of both corporate entities to the use and enjoyment of Bill T. Dutra and Safeco. Plaintiff is a shareholder of defendant Safeco Insurance Company, who along with other owners and creditors of Safeco were and are being injured by the actions of defendants Safeco and Bill T. Dutra, and each of them, who continue to abuse the corporate privilege and continue to cause injury to plaintiff and others by their illegal activities which include, but are not limited to, the operation of the quarry.

Commingling or Manipulation of Assets

53. Defendant SRRQ, Inc. and The Dutra Group were and at all times herein mentioned were, the alter ego of defendants and Bill T. Dutra., Safeco and The Dutra Trust, and there exists, and at all times herein mentioned has existed, a unity of interest and ownership between the defendants such that any separateness has ceased to exist, in that defendant Bill T. Dutra used assets of the corporations for his personal uses and for the uses of Safeco and the Dutra Trust, caused assets of the corporations (SRRQ and The Dutra Group) to be transferred to themselves without adequate consideration, and withdrew frunds from the corporations' bank accounts for their personal and unauthorized use.

Corporation(s) as Mere Conduit(s)

54. Defendants SRRQ, Inc., and The Dutra Group are, and at all times mentioned herein were, mere shells, instrumentalities, and conduits through which defendants Bill T. Dutra and Safeco carried on a quarrying business in the corporate name exactly as they had

conducted it previous to incorporation, exercising complete control and dominance of such business to such an extent that any individuality or separateness of defendants SRRQ, Inc., and the Dutra Group on the one hand, and Bill T. Dutra and Safeco on the other, does not, and at all times herein mentioned did not, exist.

Diverting or Concealing Assets

55. Adherence to the fiction of the separate existence of defendants SRRQ and the Dutra Group as entities distinct from defendants Bill T. Dutra, Safeco, and The Dutra Trust would permit abuse of the corporate privilege and would sanction a fraud in that defendant Bill T. Dutra caused a sum in excess of $4.5 million to be withdrawn from funds of defendant SRRQ, Inc., and distributed to himself and/or to himself and Safeco, all for the purpose of avoiding and preventing attachment by creditors, including plaintiff, thereby rendering defendants SRRQ, Inc., and the Dutra Group insolvent and unable to meet their obligations.

Inadequate Capitalization

56. Defendants SRRQ, Inc., and/or The Dutra Group are, and at all times herein mentioned were mere shells and shams without capital, assets, stock or stockholders. Defendants SRRQ and The Dutra Group were conceived, intended and used by defendants Bill T. Dutra, Safeco, and The Dutra Trust as devices t avoid liability and for the purpose of substituting a financially insolvent corporation in the place of defendants Bill T. Dutra, Safeco, and the Dutra Trust.

57. Defendants SRRQ, Inc., and the Dutra Group are, and at all times mentioned were, so inadequately capitalized that, compared with the business to be done by the defendants and the risks of loss, their capitalization was and is illusory and trifling.

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Failure to Observe Corporate Formalities

58. Defendants SRRQ, Inc., and The Dutra Group are, and at all times herein mentioned were, controlled, dominated, and operated by defendants Bill T. Dutra, Safeco, and The Dutra Trust as their individual business and alter ego, in that the activities and business of these defendants were carried out without the holding of directors' or shareholders; meetings, no records or minutes of any corporate proceedings were maintained, and defendants Bill T. Dutra, Safeco and the Dutra Trust entered into personal and unauthorized transactions with defendants SRRQ, Inc., and the Dutra Group without the approval other directors and shareholders.

FIRST CAUSE OF ACTION

(Unfair Competition Pursuant to Business and Professions Code Section 17200, et seq.)

59. Plaintiff repeats and incorporates herein by reference, as though set forth at length, each and every allegation contained in Paragraphs 1-58, inclusive of this Complaint and further alleges against Defendants SRRQ. Inc., the Dutra Group, Bill T. Dutra,. Safeco, the Dutra Trust, and Does 1-500, as follows:

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60. California Business and Professions Code section 17200, *et seq.*, makes it unlawful for any person to conduct unlawful, unfair or fraudulent business acts or practices.

61. In addition to the above-described violations of zoning, property use and environmental and health and safety statutes and regulations, The SRRQ and Dutra, in violation of Uniform Administrative Code sections 301.1 and 309.1 and Marin County Municipal Code sections 19.04.055, 22.47.020 and 22.47.041 did, between 1992 and 1995, cause to be moved onto the quarry property office buildings and structures totaling approximately 14,651 square feet in area. Those buildings and structures continue to be occupied and used by SRRQ's administrative staff.

62. SRRQ has continued to operate under the auspices of the 1982 Reclamation Plan and the representations and obligations stated therein. Defendants' representations regarding the quarry, as contained in the 1982 Reclamation Plan, were and are furtive and/or misleading and/or likely to deceive the public in that defendants have falsely represented that they have not and would not substantially deviate from the Plan and would not expand or intensify their operations. Defendants' false and misleading representations constitute separate and continuing violations of section 17200, et seq. of the California Business and Professions Code.

63. Plaintiff has no adequate remedy at law and will suffer irreparable injury in that defendants will continue to make untrue and misleading representations in violation of section 17200, *et seq.*, of the California Business and Professions Code unless and until restrained by this Court.

64. Plaintiff respectfully requests that injunctive relief against defendants and each of them, issue to enjoin defendants from continuing to engage in the unlawful conduct alleged herein.

65. As a direct and proximate result of defendants' unfair business practices as alleged herein, plaintiff has been required to initiate legal action and has incurred and will continue to incur attorneys' fees and litigation costs in bringing the within action pursuant to statute. Plaintiff prays leave to amend this Complaint to plead the amount of those fees and

costs when they are ascertained.

SECOND CAUSE OF ACTION

(Damages and Injunctive Relief for Public and PrivateNuisance)

66. Plaintiff repeats and incorporates herein by reference, as though set forth at length, each and every allegation contained in Paragraphs 1 through 65 inclusive of this Complaint and further alleges against Defendants SRRQ, THE DUTRA GROUP, BILL T. DUTRA, SAFECO, THE DUTRA TRUST, and DOES 1-500, as follows:

67. Plaintiff herein has a proprietary interest in certain real and personal private property in Marin County.

68. The conduct of defendants constitute a nuisance within the meaning of California Civil Code section 3479 in that it was and is specially injurious to the health and offensive to the senses of Plaintiff and in that the defendants employed unreasonable, unnecessary and injurious methods in the operation of the quarry.

69. The public and private nuisance caused by defendants and each of them specially interfered with and disturbed Plaintiff's comfortable enjoyment of life and of her property and unlawfully prevented her reasonable and customary use of her real property.

70. The conduct of defendants and the nuisances created by defendants was the legal cause of the interference with the use and enjoyment of private property suffered by plaintiff, the legal cause of the diminution in value of plaintiff's property and the legal cause of personal injuries and emotional distress suffered by plaintiff.

71. The public and private nuisance caused by defendants as alleged herein was the legal cause of the injuries and damages suffered by plaintiff for which relief is sought as hereinafter prayed. Plaintiff seeks damages for the nuisances caused by defendants pursuant to Civil Code Section 3479 and Code of Civil Procedure Section 731.

THIRD CAUSE OF ACTION

(Trespass)

72. Plaintiff repeats and incorporates herein by reference, as though set forth at length, each and every allegation contained in Paragraphs 1 through 71 inclusive of this

Complaint and further alleges against Defendants SRRQ, THE DUTRA GROUP, BILL T. DUTRA, SAFECO, THE DUTRA TRUST, and DOES 1-500 as follows:

73. Defendants and each of them have allowed and continue to allow excessive dust and particulate matter and airbourne debris generated by the quarry opertions to be dispursed into the air beyond the limits of the quarry property and have caused and continue to cause said dust, particulate matter and airbourne debris to be deposited on plaintiff's property without her authorization, consent or approval. Defendants have continued to cause said dust and the materials contained therein to be deposited on plaintiff's property despite plaintiff's repeated objections and plaintiff's requests that defendants cease their injurious activities and omissions. The conduct engaged in by defendants and each of them constitutes actionable trespass against plaintiff's private property. As a result of the conduct of defendants and each of them, plaintiff has been injured in an amount to be proved at trial.

FOURTH CAUSE OF ACTION

(Battery)

74. Plaintiff repeats and incorporates herein by reference, as though set forth at length, each and every allegation contained in Paragraphs 1 through73 inclusive of this Complaint and further alleges against Defendants SRRQ, THE DUTRA GROUP, BILL T. DUTRA, SAFECO, THE DUTRA TRUST AND DOES 1-500 as follows:

75. Defendants and each of them have allowed and continue to allow excessive dust and particulate matter and airbourne debris generated by the quarry opertions to be dispursed into the air beyond the limits of the quarry property and have caused and continue to cause said dust, particulate matter and airbourne debris to be deposited in and on plaintiff's person. As a consequence of plaintiff's proximity to the Quarry plaintiff is forced to breathe the air contaminated by the fugitive dust and other harmful emissions from the quarry. Defendants, and each of them, have continued to disburse said contaminants into the air and have continued to cause plaintiff to breathe said contaminated air and have continued to cause excessive dust, particular matter and airborne debris to be deposited in and on plaintiff's person despite plaintiff's repeated objections and plaintiff's requests that defendants cease their harmful and

Attachment to Scoping Comment Letter HH

illegal conduct. In doing the things herein alleged, defendants committed the offense of battery against plaintiff in violation of plaintiff's personal rights as provided for by Civil Code Section 43.

As a result of the actions and omissions by defendants and each of them, as alleged herein, plaintiff has suffered damages in an amount to be proved at trial.

WHEREFORE, plaintiff prays judgment against defendants and each of them, as follows:

First Cause of Action:

1. For a permanent injunction barring defendants from further engaging in the wrongful conduct alleged herein, including but not limited to prohibiting defendants from unlawfully stockpiling or storing waste or other materials on quarry property;

2. For restitution of all ill-gotten gains including disgorgement of all revenues, earnings, profits, compensation and benefits obtained by defendants as a result of their wrongful activities;

3. For attorneys' fees pursuant to Code of Civil Procedure §1021.5;

4. For costs of suit;

5. For such other and further relief as the Court may deem just and proper.

Second Cause of Action:

1. For general and special damages accordingly to proof;

2. For judgment declaring the extent of SRRQ's remaining legal non-conforming right to mine the subject property or any portion thereof, if any;

3. For an order permanently restraining and enjoining defendants from employing unnecessary and injurious methods in the operation of the quarry; and from unreasonably interferring with Plaintiffs quiet and comfortable enjoyment of her property.

4. For costs of suit herein;

5. For attorneys' fees pursuant to Code of Civil Procedure § 1021.5;

6. For such other and further relief as the Court may deem just and proper.

//

Third Cause of Action:

1. For general and special damages according to proof;

2. For an order permanently restraining and enjoining defendants from committing further acts of trespass against plaintiff's property.

3. For costs of suit herein

4. For such other and further relief as the court may deem appropriate.

Fourth Cause of Action:

1. For general and special damages according to proof;

2. For an order permanently restraining and enjoining defendants from committing acts of battery against plaintiff's person;

3. For costs of suit herein;

4. For such other and further relief as the court may deem appropriate.

DATED: April 2, 2003

LAW OFFICES OF A. METCALF

BY: Amanda Metcalf
AMANDA METCALF
Plaintif and Attorney

Taylor, Tamara

From: Haddad, Timothy
Sent: Thursday, October 04, 2007 9:35 AM
To: Steger, Eric; Dan Sicular
Cc: Warner, Rachel; Taylor, Tamara
Subject: FW: The Dutra Quarry

Thanks,
Tim

From: BonitaMarmor [mailto:bonitamarmor@comcast.net]
Sent: Wednesday, October 03, 2007 10:43 PM
To: Haddad, Timothy
Cc: Denise Lucy; PollardGRC@aol.com
Subject: Fw: The Dutra Quarry

Dear Mr. Haddad,

A local resident asked me to forward this to you.....

----- Original Message -----
From: PollardGRC@aol.com
To: bonnie@sprcoalition.org
Sent: Wednesday, October 03, 2007 9:21 PM
Subject: The Dutra Quarry

Dear Mr. Haddad:

I am a resident at The Ridge in San Rafael. For many, many months I have noted that a Dutra truck arrives here around noon several days a week and parks in front of unit #56. The guys step out and push a device into the ground and take a reading. Then they leave. When my husband questioned them, he was told that they were taking a seismic reading. My husband, who majored in geology says that this doesn't make sense. I have questioned our Board and no one has given Dutra permission to do anything on this property. In addition, the truck often leaves a gray/white granular, but quite solid substance on the street. I am concerned that this could be a silica substance, which is quite toxic. 1

Sincerely,
Jackie Pollard
59 Heritage Drive
San Rafael, CA

MARIN COUNTY COMMUNITY DEVELOPMENT AGENCY
PLANNING DIVISION

PUBLIC SCOPING SESSION

ENVIRONMENTAL IMPACT REPORT FOR
SAN RAFAEL ROCK QUARRY AMENDED QUARRY PERMIT

WRITTEN COMMENT FORM
September 12, 2007

Name/Affiliation: ROBERT SCHIFF

Address: 48 SAN MARINO DR.

City: SAN RAFAEL Zip Code: 94901 Telephone: 415-453-1941 (cell) 515-1941

Please provide comments and concerns regarding the environmental effects of the proposed project or the environmental process below.

1. VISUAL IMPAIRMENT OF BAY VIEW 1

2. DUTRA HAS placed a "caretakers" house on what I think is called South Hill - just behind the McNear brick operation. This hill is being made larger + higher + is starting to block our Bay view. This would be illegal or at least not allowed if it were by any private individual - Dutra should be held to the same standard - 2

Also when questioned McNear always have responded immediately and Dutra has NEVER returned any telephone calls or letters. 3

August 20, 2007 -

Please use backside of page for additional comments, if needed. This comment form may be handed in at the scoping session to County Staff or mailed to the attention of Tim Haddad, prior to **September 17, 2007**, at the Marin County Community Development Agency - Planning Division, 3501 Civic Center Drive, Room 308, San Rafael, CA 94903.

i:th:projs:san rafaelquarry:scopingsession:RQcommentform.doc

216 San Marino Drive
San Rafael CA 94901
September 17, 2007

Marin County Community Development Agency
Attn: Tim Haddad
3501 Civic Center Drive, Room 308
San Rafael CA 94903

Re: Scoping Session for the San Rafael Quarry Amended Quarry Permit

1. Land Use and Planning

The Notice of Preparation states that "The Quarry will continue to crush, sort, and stockpile earth and rock *quarried from the site* and load barges with earth, sand and rock *quarried from the site* ... (italics added). I believe it is necessary to emphasize very clearly in any permit granted that rock, earth, and sand can only originate at the site. Wording should be included expressly forbidding use of the site for any storage and transshipment of materials that have originated elsewhere. Without specific wording to this effect, the Quarry operators could extend their operations indefinitely. 1

5. Air Quality

The suggestion has arisen that dust from the Quarry operations contains significant amounts of crystalline silica that can cause a number of adverse health conditions, including silicosis. I propose that the Agency investigate the feasibility of an epidemiological study of the residents of the San Pedro peninsula, most specifically Peacock Gap, to ascertain if there are any clusters of these adverse health effects, particularly silicosis. One would expect that the cohort of long-time residents should have no incidents of these health conditions; the presence of these conditions would be evidence for adverse effects from the Quarry dust. 2

6. Transportation/Circulation

The Initial Study concluded that transportation/circulation is an issue of low significance. This conclusion should be reexamined. The Permit would allow the Quarry 125 truck round trips per day. This would be 12 ½ trips from the Quarry per hour (about 1 every 5 minutes) if the trips were spread evenly throughout the day. The fact is that the trips are not spread evenly but rather are largely bunched into a few hours in the morning. Currently, trucks have been observed leaving the Quarry during the morning hours as frequently as the San Pedro Road traffic will allow. I recommend that the Permit set a minimum time interval between trucks leaving the Quarry. 3

Yours truly,

John J. Shook

John J. Shook

Cc: Point San Pedro Road Coalition

MARIN COUNTY COMMUNITY DEVELOPMENT AGENCY
PLANNING DIVISION

PUBLIC SCOPING SESSION

ENVIRONMENTAL IMPACT REPORT FOR SAN RAFAEL ROCK QUARRY AMENDED QUARRY PERMIT

WRITTEN COMMENT FORM
September 12, 2007

Name/Affiliation: MR. & MRS. DEAN E. SHOWERS

Address: 156 SAN MARINO DRIVE

City: SAN RAFAEL, CA Zip Code: ~~94901-1538~~ Telephone: 415.456.1618

Please provide comments and concerns regarding the environmental effects of the proposed project or the environmental process below.

(1) What are the seismic impacts of deep excavation to minus 400 feet MSL? 1

(2) Discuss noise impacts, especially truck backup warning signals & crushing operations after 5PM during the spring, summer & fall when neighbors are using the out of doors much more frequently. 2

(3) If quarrying operations extend outward under the current Bay shoreline (property line), what will be the effects on marine life and the Bay floor? 3

(4) If pillar mining is used in the quarrying of the South Hill, will the hill be stable during an earthquake? 4

(5) If surface mining is performed at the South Hill will the western face be configured to mitigate noise and air pollution from operations? 5

Please use backside of page for additional comments, if needed. This comment form may be handed in at the scoping session to County Staff or mailed to the attention of Tim Haddad, prior to **September 17, 2007**, at the Marin County Community Development Agency - Planning Division, 3501 Civic Center Drive, Room 308, San Rafael, CA 94903.

i:th:projs:san rafaelquarry:scopingsession:RQcommentform.doc

September 23, 2007

Tim Haddad
Environmental Coordinator
Marin County
3501 Civic Center Drive Room 308
San Rafael, CA 94903

I am sending this written letter because I am unable to attend meetings on the some Wednesday evenings because of a previous commitment. My husband attended the EIR scope meeting on September 12th at Glenwood Elementary School. He told me of the information that Rod Warters had presented. I contacted Rod who was kind enough to send his presentation to me. Concerned about the dust content Rod reported in our neighborhood, I called several organizations and to find out exactly who does monitor dust at the quarry. I called the Air Resources Board, the Federal Safety & Health Administration, Bay Area Air Quality Management District, and finally the Mine Health and Safety District where I spoke with Diane Watson, Supervisory Special Investigator. I asked her to send me through the freedom of information act the latest breathable air testing results they preformed at the San Rafael Rock Quarry #0400021.

I had learned previously that this 2004 breathable air monitoring process was done in a very careful manner and that some of the samples averaged .13mg per cubic meter per 8 hours of silica. At this writing, I have not yet received a copy of the study. I have attached information about the study posted on the MSHA (Mine Safety and Health Administration) web site.

I reviewed information at the CDC National Institute for Occupational Safety and Health (NIOSH) web site specifically the NIOSH Pocket Guide to Chemical Hazards for crystalline silica. Under exposure limits, the NIOSH REL (recommended exposure limit) listed is a TWA (time weighted average) of 0.05mg per cubic meter.

Wondering why no risk was reported as a result of the 2004 samples that appeared to be more than the NIOSH recommendation, I asked Diane Watson if she could explain how such standards are used. She let me know that her organization enforces standards based solely on the ACGIH 1973 standard of a PEL (permissible exposure limit) of 10mg per cubic meter. This seems far above what NIOSH is recommending in its new standards. However, until congress re-writes the Mine Act the Mine Safety and Health Administration (MSHA) is mandated to enforce only the 1973 standard.

Diane points out rightly so that to fully understand the formulas used to calculate the weighted time average of breathable air samples one would need a course in industrial hygiene. The calculations and methods used are done by well trained professionals in accredited labs. I am not an expert in industrial hygiene by any means. I only ask that the EIR being done employ the new NIOSH standards. The NIOSH web site has a great deal of information about the standards and why they are being changed. There are several studies supporting the toxicity of crystalline silica. In 1997, IARC (International Agency

1

for Research in Cancer) published a report concluding that evidence was sufficient to state that crystalline silica is a carcinogen. Note that 1997 is well after the 1973 standard being used by MSHA. NIOSH has also updated its guide to respiratory protection first published in 1987 to incorporate important advances in technology, risk assessment, risk management and updated OSHA standards.

1

It seems reasonable to me that the Marin County Supervisors and the Marin County Development Agency should accept no less than the most recent standards to protect its residents and those employed by businesses who may have exposure to respirable hazards.
Please see attachments for copies of the NIOSH materials and Health Sampling Results from Mine Safety and Health Ad. Web site for the San Rafael Rock Quarry.

Thank you,

Barbara Smith

Barbara Smith
24 Heritage Dr.
San Rafael, CA 94901

Attachments 2

NIOSH Publication No. 2005-149: Septemt

NIOSH Pocket Guide to Chemical Hazards

Silica, crystalline (as respirable dust)

CAS 14808-60-7

SiO_2

RTECS VV7330000

Synonyms & Trade Names
Cristobalite, Quartz, Tridymite, Tripoli

DOT ID & Guide

Exposure Limits
NIOSH REL: Ca TWA 0.05 mg/m^3 See Appendix A
OSHA PEL†: See Appendix C (Mineral Dusts)

IDLH Ca [25 mg/m^3 (cristobalite, tridymite); 50 mg/m^3 (quartz, tripoli) See: 14808607

Conversion

Physical Description
Colorless, odorless solid. [Note: A component of many mineral dusts.]

MW: 60.1	BP: 4046°F	MLT: 3110°F	Sol: Insoluble
VP: 0 mmHg (approx)	IP: NA		Sp.Gr: 2.66
Fl.P: NA	UEL: NA	LEL: NA	

Noncombustible Solid

Incompatibilities & Reactivities
Powerful oxidizers: fluorine, chlorine trifluoride, manganese trioxide, oxygen difluoride, hydrogen peroxide, etc.; acetylene; ammor

Measurement Methods
NIOSH 7500, 7601, 7602; OSHA ID142
See: NMAM or OSHA Methods

Personal Protection & Sanitation (See protection)
Skin: No recommendation
Eyes: No recommendation
Wash skin: No recommendation
Remove: No recommendation
Change: No recommendation

First Aid (See procedures)
Eye: Irrigate immediately

Breathing: Fresh air

Respirator Recommendations NIOSH

Up to 0.5 mg/m^3:
(APF = 10) Any particulate respirator equipped with an N95, R95, or P95 filter (including N95, R95, and P95 filtering facepieces) e quarter-mask respirators. The following filters may also be used: N99, R99, P99, N100, R100, P100. Click here for information on selection of N, R, or P filters.

Up to 1.25 mg/m^3:
(APF = 25) Any powered, air-purifying respirator with a high-efficiency particulate filter
(APF = 25) Any supplied-air respirator operated in a continuous-flow mode

Up to 2.5 mg/m^3:
(APF = 50) Any air-purifying, full-facepiece respirator with an N100, R100, or P100 filter. Click here for information on
or P filters.
(APF = 50) Any

Current Mine Information

Mine ID:	**0400021**
Operator:	**Dutra Materials**
Opr. Begin Date:	**5/12/1986**
Mine Name:	**San Rafael Rock Quarry**
Current Controller:	**Bill T Dutra**
Controller Start Date:	**5/12/1986**
Mine Status:	Active
Status Date:	9/16/1992
Mined Material:	Crushed, Broken Stone NEC
Type of Mine:	Surface
Location:	Marin County, CA
State:	CA

Operator History for Mine ID: 040002

Operator Name	Begin Date	En
Dutra Materials	5/12/1986	
Basalt Rock Div-Dillingham Heavy Const Inc	Unknown	5/1

How do I use this information? *Click Here*

Please note that the information provided by the Data Retrieval System is based on data gathered from various MSHA systems. As there may be a lag time in dat entered into those systems, there will also be a lag in the reflection of that data on the DRS.
Samples taken from: 01/01/2004 to 9/25/2007.
Some samples taken during this time period may not appear because of the time required to generate analytical results.
Note: Data for Samples only available from October 1996 on.

MSHA Action Code Translation Table

Code	Action	Code	Action
C	Citation or Order issued	E	Exceeds the PEL, but not the PEL x Error Factor
H	PEDS only - the Action Level for noise exposure was exceeded, but not the PEL, and an adequate Hearing Consevation Plan was in effect.	L	Lab results indicate exposure limit exceeded.
P	All feasible engineering controls completed	T	Citation or order terminated
X	Citation or order extended	N	Exceeds the PEL (code no longer used)

PEL: Personal Exposure Limit (% of 90dBA dose); PPE: Protective Equipment Used; Action: MSHA enforcement action taken; Overexposures shown in Red

Personal Health Sampling Results

Mine ID: 0400021 Current Operator: Dutra Materials
Please Note: Dutra Materials has been the current operator since 5/12/1986

Date	Location	Job	Contaminant	Conc'n	PEL	PPE	Cntrctr ID
5/12/2005	S - Active Production	Drill Operator, Rotary	Quartz, respirable, >1% Qtz	0.60	2.48		
5/12/2005	M - Crushing	Laborer, Bullgang	Quartz, respirable, >1% Qtz	0.30	0.68		
5/12/2005	W - Dredges & Barges	Dredge/Barge Operator	Quartz, respirable, >1% Qtz	0.27	0.90		
5/12/2005	M - Dry Screening	Laborer, Bullgang	Quartz, respirable, >1% Qtz	0.13	0.63		
5/12/2005	S - Ore Processing	Laborer, Bullgang	Noise dosimeter, 90dBA threshold dose	38.89	100.00	X	
5/12/2005	M - Dry Screening	Laborer, Bullgang	Noise dosimeter, 90dBA threshold dose	34.85	100.00	X	
5/12/2005	W - Dredges & Barges	Dredge/Barge Operator	Noise dosimeter, 90dBA threshold dose	27.65	100.00	X	
5/12/2005	S - Active Production	Drill Operator, Rotary	Noise dosimeter, 90dBA threshold dose	13.80	100.00	X	
5/12/2005	M - Dry Screening	Laborer, Bullgang	Noise dosimeter, 80dBA threshold dose	60.08	50.00	X	
5/12/2005	S - Ore Processing	Laborer, Bullgang	Noise dosimeter, 80dBA threshold dose	53.98	50.00	X	
5/12/2005	W - Dredges & Barges	Dredge/Barge Operator	Noise dosimeter, 80dBA threshold dose	33.60	50.00	X	
5/12/2005	S - Active Production	Drill Operator, Rotary	Noise dosimeter, 80dBA threshold dose	27.39	50.00	X	

G2-135

NIOSH Document: Pocket Guide to Chemical Hazards (2005-149) : Silica, crystalline (as respira...

(APF = 10,000) Any self-contained breathing apparatus that has a full facepiece and is operated in a pressure-demand or other pc pressure mode
(APF = 10,000) Any supplied-air respirator that has a full facepiece and is operated in a pressure-demand or other positive-pressu mode in combination with an auxiliary self-contained positive-pressure breathing apparatus
Escape:
(APF = 50) Any air-purifying, full-facepiece respirator with an N100, R100, or P100 filter. Click here for information on selection of or P filters./Any appropriate escape-type, self-contained breathing apparatus
Important additional information about respirator selection

Exposure Routes inhalation, skin and/or eye contact

Symptoms Cough, dyspnea (breathing difficulty), wheezing; decreased pulmonary function, progressive respiratory symptoms (silicosis); irritation eyes; [potential occupational carcinogen]

Target Organs Eyes, respiratory system

Cancer Site [in animals: lung cancer]

See also: INTRODUCTION See ICSC CARD: 0808

NIOSH Home | NIOSH Search | Site Index | Topic List | Contact Us

Attachment to Scoping Comment Letter MM

9/26/07

FAX 2 Pages incl cover

TO: Jim Haddad

cc: Rod Warters

From: Barbara Smith

Subject: Zuarry EIR

Here is the study from MSHA I referred to in my earlier faxed letter. I received it today. Again please note the exposure limits being used are far above it would appear than NIOSH.

Thank you

Barbara Smith

453-6637

Safety and Health Administration
tment of Labor
h Safety and Health Technology Center Laboratory
s Mill Road, Building 38, Pittsburgh, PA 15236
412-386-6893 Fax: 412-386-6948

MINE NAME: San Rafael Rock Quarry
LD OFFICE: VACAVILLE FIELD OFFICE
MINE ID: 0400021
EVENT No.: 1121997
AR No.: 1309

PERSONAL EXPOSURE DATA SUMMARY

ID: PED-0400021-051205-052605140820
(MIS - Mine ID - Date Sampled - DateTime printed)

ysis ber	Field Sample No.	Loc Code	Job Code	Cont. Code	Concentration	Exposure Limit	Short Term	Prot. Used	Action	Compl.	Employee	Occupation	Contaminant	Citation Number
44760	531105	31	634	523	0.61 mg/m3	2.49 mg/m3	N	N				DRILL OPERATOR	QUARTZ	
44761	531132	61	616	523	0.30 mg/m3	0.69 mg/m3	N	N				LABORER	QUARTZ	
44762	531090	37	372	523	0.27 mg/m3	0.90 mg/m3	N	N				BARGE ATTENDANT	QUARTZ	
44763	531107	67	616	523	0.13 mg/m3	0.64 mg/m3	N	N				LABORER, SECONDARY	QUARTZ	

in the Compl. Column indicates the sample exceeds the enforcement level for the contaminant. The error factor has been applied. If "OVER", complete Action and Citation Number.
n the analysis number column indicates Shift Weighted Average calculation for a consecutive series of partial shift samples.
the Short Term column indicates a collection time greater than 30 minutes; the concentration is based on 480 minute SWA (shift weighted average).

End of Report

NN

Dear Tim ~

Sorry, but I am unable to attend the Oct. 3rd scoping session about the Rock Quarry.

My question and concern is over the trucks leaving the Quarry uncovered. I was told that the Quarry is requiring trucks to be covered when leaving with a truckload of material. I have not seen one truck in compliance. The fumes are an obvious concern to me and my family. I can't walk on San Pedro Rd. during the week because the fumes from the trucks make us ill. My grandchildren often complain about the debris and fumes, as well. We need strong intervention.

Thank you - Susie Stern
@SUEZQ3@COMCAST.NET.
457-0507
Peacock Drive resident

1

G2-138

Marin County Community Development Agency
3501 Civic Center Drive, Room 308
San Rafael, CA 94903-4157

September 25, 2007

Attention: Tim Haddad, Environmental Coordinator

Sirs,

Re: Scoping Session for the San Rafael Rock Quarry Amended Quarry Permit

Thank you for the opportunity to comment on the specific issues to be included in the EIR and additionally for allowing comment on the scope of the issues to be considered.

We understand that the comments are to be limited to the Amended Quarry Permit rather than the Quarry's Amended Reclamation Plan however due to the significant overlap and interdependence between the 2 projects, some comments will, of necessity, relate to both. 1

As residents of the area since 2001, we have seen many changes in the Quarry's operations and that of its tenant, McNear Brickworks. None of those changes are consistent or compatible with the predominantly residential nature of the area. This is what the Initial Study has failed to address – times have changed and what was acceptable use 30 years ago no longer remains true. 2

We will present our comments only in relation to those Items deemed "Less than Significant with Mitigation" or "Less than Significant" by the Initial Study. Note that we will use the term "Quarry" to encompass all operations on the site including those of McNear's Brickworks.

Of course, many of the topics are inter-related and therefore our comments may seem repetitive in places. We also have some general comments which do not fit neatly into any of the categories so we have presented a section at the end to include those. 3

However, first we wish to comment on our concern regarding the use of a baseline in evaluating the AQP. It is our understanding that the baseline will be the Quarry's operations as set out in their 1982 operating permit. It is our contention that such a baseline is irrelevant in determining whether or not there is an adverse impact on the local community at this point in time.

Much has changed since the early 1980's in terms of the nature of the surrounding neighborhoods, mining technology, health information and other factors. To step back and consider the Quarry's operations in the context of its activities 25 years ago is totally inappropriate.

The correct method of evaluation is a zero-based approach i.e. is there an adverse impact now based on current operations & is there a likely adverse impact based on planned future operations. This is especially the case in Dutra's operations where there was a clear expectation that the Quarry would be closed several years ago. 4

Further, the analysis of the project contained within the Initial Study does not provide any alternatives to the operating conditions that are proposed by the Quarry. It makes the assumption that these conditions are acceptable to the community when in fact they are absolutely not. For example, the hours of operation are far too long. It is unacceptable that we be subjected to the noise, dust etc. after what would be normal working hours i.e. 5pm – the Brickworks is a notable offender here with fan noise persisting through the night. Also a 7am start is too early. There should be no work at all on weekends, holidays and such. The EIR needs to examine the Quarry's proposals and investigate alternatives – one of these alternatives must be closure of the operations now rather than in up to 17 years. 5

1) Population & Housing

That Population and Housing is considered a "less than significant" impact is beyond belief. The operation of the Quarry at current or expanded levels will continue to disrupt the lives of the local residents on multiple levels.

Housing is also affected. Since we moved into our house, many new wall and floor cracks have developed and blasting rattles our windows. Our home is being damaged by the operations.

6

2) Geophysical

The proposal calls for a large amount of material to be excavated from the site. The EIR must address a number of issues such as impact on groundwater, flow impacts, erosion, visual impact and blasting impacts on the surrounding residential and rural environments.

As we live in an earthquake zone, the EIR must also address whether increasing the pit depth will create potential hazards in the event of a quake.

Geophysical issues are clearly "significant" and must be addressed in the EIR.

7

3) Water

The San Rafael General Plan 2020 has as its number 1 goal, Clean Air and Water.

8

With regard to water quality, we are concerned with the following aspects of the Quarry's operation:-

- Soil erosion.
    - Clearly any mining operation contributes substantially to soil erosion. The latest example of which is the mining of the South Hill which has resulting in the removal of large numbers of trees, leaving exposed and barren dirt blown into the Bay and neighboring areas. We have previously supplied photos to the County of this effect
- Stormwater run-off
    - The quality of run-off affects the local biology of San Pablo Bay and the greater Bay area. Industrial run-off needs tighter control.
- Marsh degradation – the marsh no longer drains, which is of concern from the local habitat's point of view, but also from the perspective of mosquitoes and the West Nile virus.

Water must be considered a "significant" issue in the EIR.

9

4) Transportation/Circulation

Given the large number of fully-laden trucks that progress along Pt San Pedro Road, it is incomprehensible that the Initial Study concluded that Transportation/Circulation was of "less than significant" impact.

Transportation/circulation is significant for the following reasons:

- fully-laden trucks damage the road surface of Pt San Pedro Rd which is clearly not engineered to withstand this type & weight of traffic
- the trucks present a hazard to walkers/runners/bikers
- the trucks add to the already untenable congestion at the freeway end of Pt San Pedro road
- the trucks spew diesel fumes/particulate and dust into the neighboring residential area and also into the atmosphere contributing to pollution and global warming

10

5) Energy & Natural Resources

How the destruction of the local area not be considered a significant impact is truly mind-boggling.

Everywhere we are trying to preserve our natural resources from mining, forestry and general development and the Quarry is directly in opposition to these goals. 11

6) Hazards

Hazards are more than "less than significant with mitigation". The EIR needs to upgrade these to significant and consider the following hazardous issues:

- emissions of dust into the air in the neighborhood
- the discharge of carcinogenic diesel fumes by the trucking activities
- the transportation, storage and security of hazardous materials on site including blasting equipment, chemicals and other noxious materials 12

7) Public Services

Given that the trucks are destroying Pt San Pedro Rd, requiring the Public Works department to resurface the road at regular intervals this is an area of significant impact. 13

8) Utilities & Service Systems

The operations of the Quarry have significantly increased over the years. This must place additional strains on the utility services in the area – notably water/sewer services and electrical services. The issue is of great significance given the State's emphasis on conserving resources. 14

9) Aesthetics/Visual Resources

Clearly the existing berms are a visual eyesore. Further, the Brickwork operations are clearly visible from both Pt San Pedro Road and San Marino Drive – they are not attractive, and their size of operations has significantly increased – there are now huge piles of broken brick and other material stacked up directly within our view.

The destruction the South Hill is also an eyesore.

We do not see how this can be mitigated. 15

10) Cultural Resources

The Quarry is shown on the City of San Rafael's website as a potential film location. The EIR should review how often it has been used as such and whether any economic benefit has been obtained by the City as a result.

The Brickworks also has 2 smokestacks, no longer in use, which date back many years and do represent a link to our past. The EIR should consider whether there is architectural or historic merit to retaining these structures, despite their unattractiveness.

Nearby is the China Camp State Park, which is an important site for both Native American history and also Chinese American History. The EIR should evaluate the impact on this Park.

McNear's Beach Park is also a cultural resource in that it provides space for families to get together, barbecue, swim and play tennis. Right now, large portions of that Park get covered in dust from the Quarry operations. The EIR needs to consider the impact on this Park as well. 16

11) Social & Economic Effects Related to Physical Impacts

To conclude that Social & Economic Effects is "less than significant" is clearly short-sighted. Our lives are made misery - dust, noise, stress, damage to building etc. - by the operations of the Quarry and its sibling, the Brickworks. 17

12) General Comments

We believe that the timescale proposed by Dutra is too long. To have to suffer through another 17 or so years of mining activity and then a further number if years while the proposed remediations take place to facilitate the development and then the actual construction of the development is too much to ask of residents. 18

Once again we thank you for the opportunity to comment.

Yours truly,

Andrew Stokes & Ingrid Cornelissen
54 San Marino Drive
San Rafael CA 94901.

Charles M. Walther
41 Bay Way
San Rafael, CA 94901

RECEIVED
2007 SEP 18 A 11: 10
MARIN COUNTY
COMMUNITY DEVELOPMENT
AGENCY

Mr. Tim Haddad
3501 Civic Center Drive Room 3067
San Rafael, CA 94903

September 14, 2007

Dear Mr. Haddad,

I am writing about the Dutra Quarry EIR. I attended the September 12, 2007 hearing. I read the VIII. Scope of Environmental Issues, Table VIII-1 which shows the following issues with "Less than Significant" impact. I don't agree. I see them as very significant.

Population and Housing I have lived on Bay Way off San Pedro Road since 1982. When we purchased this house, we were told that the quarry would close in five years. The City Plan showed this. Since then, the quarry has continued to operate. This has had a negative impact on our property, as well as all others in the area. 1

Transportation/Circulation General and rock truck traffic has increased. In addition, the trucks are more powerful and therefore make more noise. Congestion at the freeway interchange has increased significantly due to new stores and increased shopping traffic at Montecito Shopping Center, including Trader Joe's, Whole Foods and other new shops. 2

Public Services The need for public services caused by the quarry operations include police to deal with traffic and accidents, health services to deal with respiratory and nervous problems, the Coroner to deal with the several traffic deaths, courts to deal with issues, Public Works to repair the road damage done by trucks, and other miscellaneous issues. 3

Social and Economic Effects Society is negatively impacted by the quarry operations. Quality of life is diminished by the noise and motion of the trucks on San Pedro Road and quarry operations including blasting. Health issues due to dust and noise are increased. The extension of hours from 5:00 PM to 10:00 PM is an outrage. It serves only Dutra. They have shown they have only their best interests at heart. The majority of people who live here commute and work from 7 AM to 6 PM, so our quality time for relaxing and family time is from 6 PM to 10 PM and weekends. The proposal to allow truck operations during this important time is not acceptable to our community. 4

Economic Effect - the value of our properties along the San Pedro corridor has been diminished by at least 10% by the quarry operations. These homes are valued at approximately $1,250,000 each. There are about 1000 houses. This totals a combined loss of over $1 billion. At ten percent downforce, this is an 5

impact of $100,000,000 of valuation on which the City and County do not collect taxes. The road repair costs are also significant. The Westbound lanes need much more work than the Eastbound lanes due to the weight of the loaded vs. light trucks. 5

Community Anxiety I have personal anxiety about the noise, traffic, and lack of response or action to our concerns by government. The entire community shares in this anxiety. This is due not only to noise and traffic but to the lack of good faith and failure to deliver on promises made: Dutra has skated issues and not been a "good neighbor" unless forced to do so by legal action. 6

The truck noise causes sleeplessness and anxiety - often I am awakened by the trucks as early as 4:00 AM. This is nerve racking and contributes to community anxiety. Imagine how bad it would be if the trucks ran until 10 PM.

Thank you for your work on this project.

Sincerely,

Charles M. Walther

Cc: City of San Rafael

Attachment: EIR Table VIII-1

VIII. Scope of Environmental Issues to be Addressed in an Environmental Impact Report

Table VIII-1 provides a summary of the conclusions reached in sections V and VI of this Initial Study regarding the potential for significant impacts of the project. Those topical issue areas for which there is the potential for a significant impact should be further evaluated in an EIR. Those topical issue areas for which impacts would be less than significant with incorporation of mitigation measures should be further reviewed in an EIR to determine the feasibility, adequacy, and legality of the mitigation measures identified in this Initial Study. Those topical issues where no potential of a significant impact is indicated need not be further reviewed in an EIR.

TABLE VIII-1
CONCLUSIONS REGARDING POTENTIAL SIGNIFICANCE OF IMPACTS

Topical Issue	Significant	Less than Significant with Mitigation	Less than Significant	Impact Reference
1. Land Use and Planning	☒	☐	☐	Impact 1.2
2. Population and Housing	☐	☐	☒	
3. Geophysical	☐	☐	☒	
4. Water	☐	☐	☒	
5. Air Quality	☒	☐	☐	Impact 5.2
6. Transportation/Circulation	☐	☐	☒	
7. Biological Resources	☒	☐	☐	Impact 7.1
8. Energy and Natural Resources	☐	☐	☒	
9. Hazards	☐	☒	☐	Impact 9.1
10. Noise	☒	☐	☐	Impact 10.1
11. Public Services	☐	☐	☒	
12. Utilities and Service Systems	☐	☐	☒	
13. Aesthetics / Visual Resources	☐	☒	☐	Impact 13.1
14. Cultural Resources	☐	☒	☐	Impact 14.1, Impact 14.2
15. Social and Economic Effects	☐	☐	☒	
Mandatory Findings of Significance	☒	☐	☐	Section VI, discussion items a, b, c, d

Submitted @ scoping session 10/3/07

MARIN COUNTY COMMUNITY DEVELOPMENT AGENCY
PLANNING DIVISION

SECOND PUBLIC SCOPING SESSION

ENVIRONMENTAL IMPACT REPORT FOR
SAN RAFAEL ROCK QUARRY AMENDED QUARRY PERMIT

WRITTEN COMMENT FORM
October 3, 2007

Name/Affiliation: Miranda Wagner

Address: 44 Marin Bay Park Ct

City: San Rafael Zip Code: 94901 Telephone: 415 460 5136

Please provide comments and concerns regarding the environmental effects of the proposed project or the environmental process below.

(1) I have attached a tiny sampling gathered off my Back terrace (Brick) encompassing maybe a 3 □ section. ALL I want to know is if this is dangerous. Public health Should be PRIMARY concern. Some people in community surrounding are more/less affected. I feel at Marin Bay Park we are heavily affected. This is what I breathe + what blows into my home. 1

(2) Noise — nuisance 2

(3) Trucks — too many 3

(4) Hours — too long. 7^a - 5^p max. 4

Please use backside of page for additional comments, if needed. This comment form may be handed in at the scoping session to County Staff or mailed to the attention of Tim Haddad, prior to **October 3, 2007**, at the Marin County Community Development Agency - Planning Division, 3501 Civic Center Drive, Room 308, San Rafael, CA 94903.

i:th:projs:san rafaelquarry:scopingsession:RQcommentform.doc

Haddad, Timothy

From: rod.warters@att.net
Sent: Tuesday, August 21, 2007 7:54 AM
To: eric steger; Haddad, Timothy
Subject: FW: RE: McNear's Beach
Attachments: McNears Beach.pdf

Hello Eric and Tim,

At Susan Adams suggestion I am forwarding the attached data on McNear's Beach Park for consideration in the scoping. If you require hard copies, please let me know the number and I will be happy to provide them. 1

Regards,

Rod Warters

Attachments 2

---------- Forwarded Message: ----------
From: "Adams, Susan" <SAdams@co.marin.ca.us>
To: <rod.warters@att.net>
Subject: RE: McNear's Beach
Date: Mon, 20 Aug 2007 01:40:38 +0000

Thank you for your email Rod. You may want to consider forwarding it to Eric Steger and Tim Haddad for inclusion for consideration in the scoping.

Susan L. Adams, Ph.D., RN
Marin County BOS, District 1
3501 Civic Center Dr. #329
San Rafael, CA 94903
415-499-7331
sadams@co.marin.ca.us

-----Original Message-----
From: rod.warters@att.net [mailto:rod.warters@att.net]
Sent: Saturday, August 18, 2007 9:44 AM
To: Adams, Susan
Cc: denice lucy; dave crutcher; William Hosken
Subject: McNear's Beach

Hello Susan;
I thought we had a good meeting last week on the quarry situation.
Attached is a small presentation I put together on McNear's Beach. Dave Crutcher sent the presentation to Scott Lutz at BAAQMD who also received the earlier Air Quality presentation. Dave Crutcher and I spoke to Scott Thursday and he said it looked like we have a problem. He is recommending high volume air monitoring devices be installed immediatly. We are to contact him Monday and work out the sites.

Rod Warters

8/28/2007

A Day at McNear's Beach Park

Attachment to Scoping Comment Letter RR

MEMORANDUM

To: Frances Brigmann, Director
From: Ed Hulme, Chief Park Ranger
Date: August 19, 1999

Subject: Impacts to McNear's Beach County Park Relating to Operations at the San Rafael Rock Quarry and Proposed Management Plan

It has come to my attention that Tom Lai, Senior Planner, at the request of Supervisor John Kress, is coordinating a discussion regarding the development of a management plan for operations at the San Rafael Rock Quarry. As neighbors that share an extensive property line, and as public servants to our park visitors, I feel that it is important for our department to be involved in the discussion with the goal of reducing impacts to the area. As you know, Supervising Ranger Rob Ruiz lives at the McNear's Beach ranger residence and our Superintendent, Ron Paolini, started his service with the County of Marin there about 30 years ago. I feel that we have extensive knowledge and "history" regarding the site and could contribute significantly to the plan.

Following is a list of impacts that we believe are associated with quarry operations and a few suggested conditions that would likely reduce impacts to our property and to our visiting public.

Hours of Operation: We recommend that Monday through Friday, 7 am to 5 pm be the approved hours for all quarry operations, including; excavation, dynamiting, barge loading, heavy equipment operation and anything generating noise and dust. Those hours would allow for the park to be enjoyed when they might normally expect some peace and quiet.

Dust Control: The amount of dust in the park is probably our worst problem. A heavy layer of dust is almost always in evidence, except during the rainy season. We have concern over possible respiratory/health impacts; equipment damage; to our service carts, computer, fax machine; dust in the pool, extra cleanup work; causing excessive back-washing and failure of our sand filter to perform at an optimum level. The layer of dust causes our plant material to suffer it has an impact on native fauna. The dust and the noise reduce use of Starvation Gulch and South Beach areas and thus reduces our income generating potential. Dust intrusion is also a significant problem at the park residence and the residents are often required too close their windows for long periods.

MARIN COUNTY
PARKS & OPEN SPACE

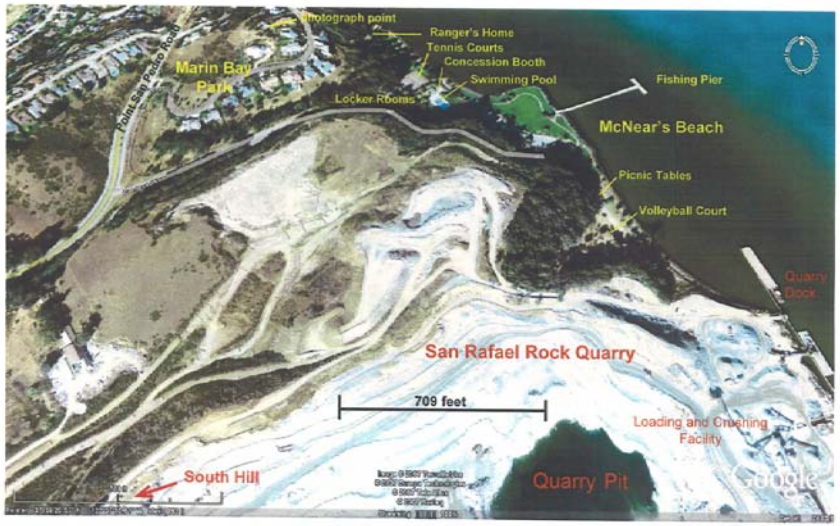
AUG 2 0 1999

RECEIVED

Bill Hosken recently sent me this 1999 memo from Ed Hulme, Chief Park Ranger McNear's Beach Park, to Marin County Director, Frances Brigmann concerning the impact of the SRRQ operation on conditions at McNear's Beach Park.

A recent study showed that the "dust" is composed of respirable crystalline silica and kaolinite. On August 9th, 2007, I decided I would visit McNear's Beach County Park and see what had transpired in the area of dust control since August 19, 1999 when the memo was prepared*

Rod Warters
August 9th, 2007



McNear's Beach is located immediately northeast of the San Rafael Rock Quarry (SRRQ). The residential area of Marin Bay Park is north of the Quarry. The site from which the following photographs of South Hill were taken is labeled 'photograph point'.

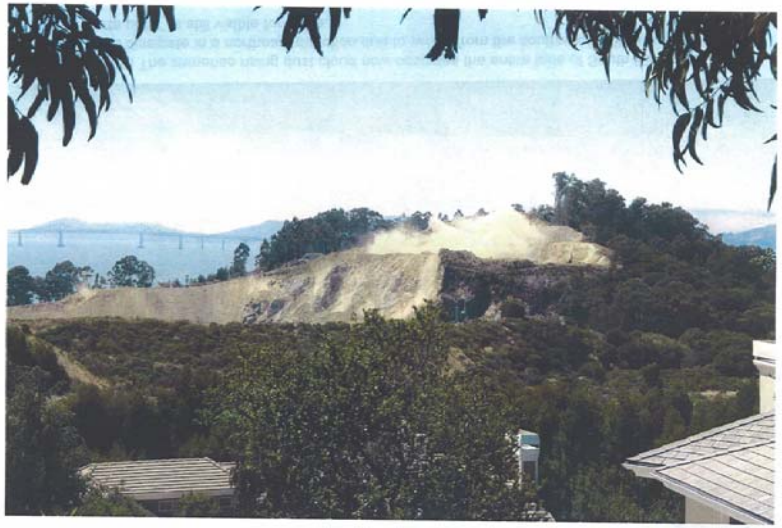
Attachment to Scoping Comment Letter RR

The visit began with a view of the new South Hill rock extraction site from the water tower at Marin Bay Park. The time is 11:29 AM August 9th, 2007.

Promptly at 11:30 AM an explosion using 11,924 pounds of explosive was detonated on the northeast face of South Hill. A large dust cloud is observed rising into the atmosphere. The detonation moved 28,611 tons of rock with 22 holes shot. Note the green "porta potty" for scale.

Attachment to Scoping Comment Letter RR

By 11:31 AM, the dust cloud has began to spread over the face of South Hill



Time 11:31.30 AM From the vantage point at Marin Bay Park, the roofline of residences may be observed in the foreground as the dust cloud rises.

Time 1:32 AM The immense rising dust cloud now occupies the entire face of South Hill and is beginning to dissipate in a northeast direction due to winds from the southwest off the Bay. Note the green "porta potty" is still visible for scale.

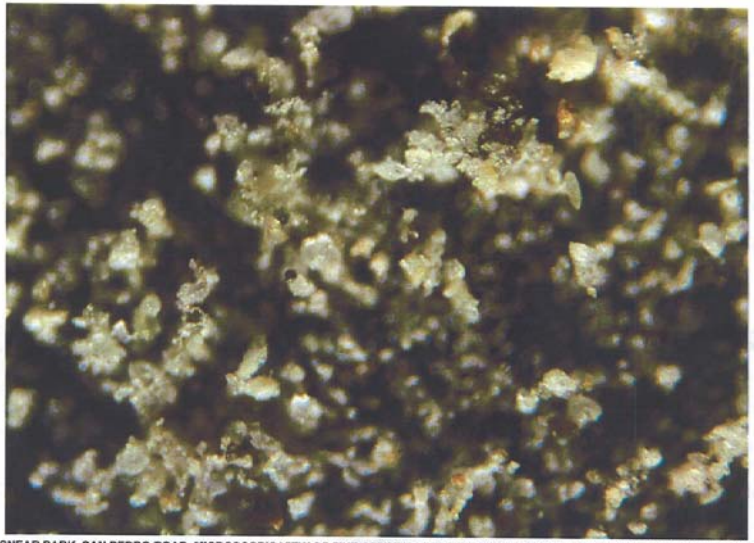
Time 11:33 AM. The dust cloud is now being widely dispersed through the neighborhood and toward McNear's Beach. While standing on the observation point taking these pictures, I could actually "smell" the dust.

Attachment to Scoping Comment Letter RR

Leaves of trees and bushes at McNear's Beach are coated with a fine white dust. Petrographic microscope analysis conducted in a previous study* showed the dust is composed mostly of respirable free crystalline quartz.

The edges of the leaves are turning brown. The dust is widespread and pervasive.

Attachment to Scoping Comment Letter RR



MCNEAR PARK, SAN PEDRO ROAD. MICROSCOPIC VIEW OF FINE CRYSTALLINE QUARTZ WITH HIGH PERCENTAGE KAOLIN CLAY WHICH 'BINDS' QUARTZ CRYSTALS FOR WIND TRANSPORT. DUST IS VERY PREVELANT IN LOCKER ROOMS, AROUND SWIMMING POOL AND ON TENNIS COURTS. THE RANGER IN CHARGE OF PARK REPORTS LEAVES ON TREES ARE COVERED IN WHITE DUST IN SUMMER AND HE OFTEN HAS TO BLOW DUST FROM TENNIS COURT USING A POWER BLOWER. From previous study* Feb 1, 2007 HRW

The tennis courts are covered with white silica dust. According to workers at McNear's Beach, the courts are periodically cleaned with a blower and washed down in a futile attempt to control the omnipresent and reoccurring dust. Frequent youth tennis camps are conducted during the summer on these courts. Dust covers the cars and seeps into buildings. "It never ends!"

Attachment to Scoping Comment Letter RR

A large group of children were enjoying the park on August 8th, 2007. They were observed playing in the grass (where there is doubtlessly a large dust concentration) and enjoying the day.

The swimming pool is very popular. It is suspected that the discoloration on the pool deck is due to silica dust concentration as discussed in the attached memo.

Attachment to Scoping Comment Letter RR

Conclusions

It may be initially concluded that little has changed since Chief Park Ranger Ed Hulme wrote his memo to Director Frances Brigmann on August 19th, 1999. In 1999 it was believed that the dust was inert and not a serious health threat. It was not known that the "dust" was actually composed of respirable crystalline silica, a known cause of silicosis and a probable carcinogen.* So what *has* changed is our basic knowledge that a serious health threat may exist, and has existed for years where dust from the quarry can be inhaled by users of McNear's Beach Park and residents of the community.

So what should we do?

Should health warnings be posted at McNear's Beach next to the warnings about the coyotes? Or should McNear's Beach be closed as a health hazard while residents of the community are medically evaluated for respiratory illness?

*An Assessment of the Possible Effect on Public Health of Respirable Free Silica Dust, Peacock Gap, San Rafael California, March 21st, 2007. A report on file Marin County Community Development Agency

Haddad, Timothy

From: Steger, Eric
Sent: Tuesday, August 21, 2007 3:55 PM
To: Sicular, Dan
Cc: Warner, Rachel; Haddad, Timothy
Subject: FW: blasts photos

Attachments: blast-close-1.jpg; blast-medium-shot.jpg; blast-wide-1.jpg; blast-wide-2.jpg; blast-wide-3.jpg

Please consider this info as comments on EIR scope. Thanks.

-----Original Message-----
From: Lucy, Denise [mailto:DLucy@dominican.edu]
Sent: Tuesday, August 21, 2007 3:43 PM
To: Adams, Susan; Steger, Eric
Cc: dfcrutcher@sbcglobal.net; Marmor, Bonnie; wehosken123@yahoo.com; rod.warters@att.net; metcalflawfirm@aol.com
Subject: FW: blasts photos

Hi Susan,

Here are the photos that our neighbor took a couple weeks ago of the most recent blast. The dust is worrisome and shocking.

Denise M. Lucy, Ed.D.
Executive Director, Institute for Leadership Studies Professor, Business & Organizational Studies

Dominican University of California
School of Business & Leadership
50 Acacia Avenue
San Rafael, CA 94901

415-485-3291
415-686-1586 (mobile)
415-458-3749 (fax)
DLucy@dominican.edu
http://leadership.dominican.edu

-----Original Message-----
From: Stefan Sargent [mailto:stefan@stefansargent.com]
Sent: Saturday, August 11, 2007 8:40 PM
To: William Hosken; rod warters; Lucy, Denise
Subject: Re: blasts photos

Blast on Aug 3 - five stills

S

Stefan Sargent
1 (415) 235 6231
704 Point San Pedro Rd.,
San Rafael CA 94901

http://stefansargent.com

G2-157

9/12/07
AQP.
Scoping

Scoping Meeting Comments re SRRQ Mining Permit September 12, 2007

Good Evening. Thank you Mr. Chairman, My name is Rod Warters and I live in the Peacock Gap neighborhood. I am a professional Geologist who conducts technical studies for oil and gas companies worldwide. I am concerned that the proposed EIR study will not include analysis of the mineralogy and source of the wide spread dust occurrence in our neighborhood and properly relate dust emission to health issues.

Last fall I observed what seemed to me to be an abnormal amount of dust accumulating in our neighborhood. As a result, I collected dust samples from McNear's Park, the St. Sylvester's Church, Pt. San Pedro School and other sites. Microscopic mineralogical examinations of the dust showed it to contain crystalline silica of respirable size, a known human carcinogen. The samples from the school and the church also had high concentrations of a black iridescent petroleum residue, probably diesel emission. 3

As a check on my findings I sent a sample to an independent lab for analysis. The independent lab analysis showed the sample contained 25.3% crystalline silica between 7.5 and 1 micron in size. The entire sample was below the PM 10 standard for respirable material . This is respirable material that if inhaled will stay in the lungs. Crystalline silica under magnification looks like the picture I have included on the poster, sharp angular rock fragments, about the size of bacteria. The World Health Organization classifies inhaled crystalline silica as a Group1 carcinogenic mineral meaning it is causes cancer in humans. Some of crystalline silica's neighbors on the list are Radium, Thorium, Plutonium, Asbestos, radioactive iodine, arsenic etc.

If you inhale about one heaping teaspoon of crystalline silica in a lifetime, you also have a 30% chance of developing silicosis . If you inhale two heaping teaspoons in a lifetime, the risk of developing silicosis is increased to 90% .

The amount of exposure needed to develop lung cancer is poorly understood by the scientific community. Most of us would not wish to be exposed to thorium, plutonium or respirable crystalline silica.
I would think we have a zero tolerance.

The Initial Study Page 105 paragraph 6 and continuing to page 106 states;

"Concentrations of crystalline silica were analyzed in 15 of the PM-IO filters collected in 2004 as a part of the County-sponsored air quality study. Detectable quantities (greater than 0.5 micrograms per cubic meter) of crystalline silica were NOT found in any of the fifteen filters tested.

3

The EIR must find out why the County Dust Study could find no dust when the tennis courts at McNears park are covered with a grey dust, the leaves are coated with same, and the westbound Point San Pedro road by the exit from the quarry is white compared to the east bound roadway. And of the neighborhood complaints filed with the county more than one third of the complaints are about dust.

Table 5-3 page 103 of the Initial Study shows the Quarry emits 642 pounds of PM10 material PER DAY as fugitive respirable dust. What happens to this dust? This must be addressed by the by the EIR.

The report goes on to state page 106, paragraph 2

A study by a concerned neighbor of SRRQ (Warters, 2007) found that dust scrapings taken in 1994 and in 2004 from several sites in the vicinity of the Quarry and submitted for laboratory analysis contained up to 25.3% crystalline silica. This is not surprising, given that silica makes up much of the surface of the earth, and much of it is in crystalline form.

As a practicing geologist I can assure you that this statement is scientific nonsense. The observation that *silica makes up much of the surface of the earth, and much of it is in crystalline* form is of no consequence with respect to respirable material . What we are talking about here, is dust created by quarrying and crushing of rock which creates the sharp particle of crystalline silica, and the fact that the dust in the air of our neighborhood contains crystalline silica, a Group 1 carcinogen. I can assure you, that what we would call normal dust on our earth is NOT made up of crystalline silica. 3

There have been three other recent studies of dust . All conclude that there are significant quantities of respiriable silica in the air and being deposited in the neighborhood surrounding the SRRQ. These studies are 1. Slakey and Associates of 1994; 2. Onsite Environmental Labs Report entitled Ambient Sampling Around the Perimeter of the San Rafael Rock Quarry—for total Suspended Particulates 3. An Assessment of the Possible Effects on Public Health of Respirable Free Silica Dust, Peacock Gap, San Rafael, California, I authored in the spring of this year.

We have a big data disconnect which must be solved by the proposed EIR. The health threat caused by the dust problem also requires a full and independent Health Assessment analysis by appropriate health professionals. Thank you for your attention.

10/3/07

Mr. Tim Haddad, Environmental Coordinator,
Marin Community Development Agency
3501 Civic Center Drive, Suite 308
San Rafael, CA 94903

Re: Scoping Comments on EIR for SRRQ Amended Quarry Permit and San Pedro Elementary School

Dear Mr. Haddad:

The Initial Study properly recognizes that schools are considered to be "relatively sensitive to poor air quality because of the very young" (page 107, Initial Study). However, the Initial Study does not address a significant potential health threat to San Pedro Elementary School because of quarry operation.

San Pedro Elementary School is located on Point San Pedro Road, approximately 1.5 miles west of the elevated present rock extraction operation on South Hill. Starting at 7:00AM and concluding at 5:00PM, 250 quarry trucks per day pass directly in front of the school on their way to and from the quarry. This is an average of 25 trucks per hour or one truck each 2 minutes and 40 seconds every day during the school year. The trucks discharge diesel exhaust and spread crystalline silica dust.

California State Law defines TAC's (Toxic Air Contaminants) as air pollutants having carcinogenic effects. Diesel Particulate Matter (DPM) was designated a TAC in 1998. Many known and potential cancer-causing substances such as arsenic, benzene, formaldehyde, nickel, and polycyclic aromatic hydrocarbons are present in the exhaust gases, some of which are bound to the surfaces of the diesel-exhaust particles. Diesel exhaust particles are small enough, less than 10 microns in diameter, about the size of bacteria to be inhaled deep into the lungs. Exposure to diesel exhaust can irritate the eye, nose and throat, cause respiratory symptoms such as increased cough, asthma, chest tightness, and wheezing. Peoples exposed to diesel exhaust have been shown to incur an increased risk of developing lung cancer. 1

As part of the County sponsored air quality study in 2004, concentrations of Diesel Particulate Matter (DPM) were monitored hourly over a two month period using a station established 18 meters from the center of Point San Pedro Road near Heritage Drive, approximately 1.3 miles east of San Pedro School. The 1,400 sample study indicated spikes in DPM concentrations from 15 to 45 nanograms per cubic meter (ng/m3) during quarry workdays with weekend concentrations less than 5 ng/m3. This indicated that quarry trucks were the source of carcinogenic DPM emissions in the area. No monitoring device has ever been installed at San Pedro School.

In February of 2007 with the permission of school authorities, I gathered dust samples from exterior window sills at San Pedro School. The samples when examined under petrographic microscope, showed a preponderance of respirable crystalline silica and a black iridescent respirable substance believed to be diesel emission. The sample differed greatly from samples

taken from 20 Marin Bay Park Ct. in that diesel emission was not a large component of the Marin Bay Park sample. (see attached poster, exhibit A)

Crystalline silica, a known carcinogen, was discussed at the previous scoping session in September 2007, and in a previous study submitted to Mt Haddad's office by Warters.

It is apparent, that the San Pedro School is receiving a "double whammy" of both carcinogenic crystalline silica and diesel emission. This is an unacceptable threat to the health of the staff and children attending San Pedro Elementary School. We must never forget that the effect of these pollutants are additive through the life of an individual. A child at San Pedro School begins to inhale diesel emission and crystalline silica at age 5 and the effects are cumulatively with him his entire life! 1

I believe an immediate full and independent health assessment analysis conducted by appropriate health professionals must be conducted. The analysis should determine the health impact of diesel emissions and crystalline silica at San Pedro School and the community at large.

Rod Warters

Rod Warters
558 Biscayne Drive
San Rafael, 94901
October 3, 2007

MARIN COUNTY COMMUNITY DEVELOPMENT AGENCY
PLANNING DIVISION

PUBLIC SCOPING SESSION

ENVIRONMENTAL IMPACT REPORT FOR
SAN RAFAEL ROCK QUARRY AMENDED QUARRY PERMIT

WRITTEN COMMENT FORM
September 12, 2007

Name/Affiliation: Don Widdon MD

Address: 12 Marin Bay Park Ct

City: San Rafael Zip Code: 94901 Telephone: 415-256-9987

Please provide comments and concerns regarding the environmental effects of the proposed project or the environmental process below.

I have several questions regarding the focus of the EIR, in particular the potential health risk of quarry operations which have been understated, are potentially severe, and need to be clarified and eliminated.

(1) Dust - Health risks. For years I have been troubled by volume of dust resulting from daily quarry operations. As a physician I am particularly concerned about a recent mineralogy study confirming a wide distribution of Silica microparticles (less than 10 microns); majority less than 5 microns detected and sampled in a broad geographic area within the prevailing wind "distribution of the quarry" detected in parks, schools, churches, homes, impacting a large segment of the population of Pt San Pedro, not to mention, presumably the quarry workers. In my opinion, the particles, which presumably emanates from the quarry (needs to be verified) are of a size and character that could cause cumulative, progressive and irreversible health consequences to this segment of Marin county. If it is verified that these particles arise from the quarry, a study that needs to be done, there should be ZERO tolerance for continuing

1

Please use backside of page for additional comments, if needed. This comment form may be handed in at the scoping session to County Staff or mailed to the attention of Tim Haddad, prior to **September 17, 2007**, at the Marin County Community Development Agency - Planning Division, 3501 Civic Center Drive, Room 308, San Rafael, CA 94903.

operation of the quarry as long as silt 7.5 micron ② silica particles are being disseminated. This is a serious public health risk in my opinion.

To clarify - crystaline silica of the size being detected, when inhaled, ends up in alveoli, the smallest end branches of the lungs. It is not effectively removed or cleared (macrophages from the immune system attempt to remove the particles). The irregular pleomorphic forms demonstrated on the micrographs are more hazardous than spheres, more difficult to clear and result in ongoing inflammatory process in the lung that can result in interstitial fibrosis, a debilitating progressive disease, an increased incidence and risk of lung cancer, auto-immune disorders, renal disease and exacerbation of all concurrent respiratory ailments — asthma, emphysema, bronchitis, allergic disorders. The young & elderly are particularly at risk but all are exposed (Asbestos is a "needle like" fiber of this size with more well known health consequences). I am certain that this will be adversely affecting public health probably resulting in higher morbidity and mortality in this segment of the population — and it is preventable. (A study was done in our neighborhood - September 2000, regarding dust - what were the results?).

1

The additional carcinogenic effect of diesel fuel from trucks and trace metals in the dust just compounds the problem. (3)

Silica microparticles of the size detected result in a cumulative lifelong health burden as they are not effectively cleared from the lungs. Comparing the distribution of particle size in your report and the mineralogy report there seems to be a broad geographic distribution of sub 2.5 μ (micron) particles sampled in mineralogy study. This implies the smaller particles are carried further by the wind (which seems likely) and persist longer once deposited. Furthermore the dust in question lingers in and outside our houses at the beach, in the parks, at the golf course. If the quarry closed shop today I suspect that we would be inhaling these particles for quite a while. Therefore looking at a threshold tolerable level that is placed into the environment on a daily basis by the quarry is not an acceptable or accurate assessment of risk. The amount of toxic material released into the environment needs to be assessed as potentially cumulative (on an environmental and physiologic level) and lifelong burden, much like the assessment of radiation risk.

1

EIR — San Rafael quarry

I did not see this issue adequately addressed or mitigated in the EIR proposal. I request that the following questions be addressed: (4)

(1) A thorough analysis of the quarry pit and mining sites confirming that pleomorphic sub alveolar sized silica is arising from the quarry.

(2) A confirmation of distribution and analysis of the cummulative deposition of such particles in the neighborhood

(3) A zero tolerance and threshold for any additional such particles contaminating the environment due to quarry operations

(4) If verified, the quarry initiate a clean up project for dust in the houses, in the neighborhood and repair both physical damages due to dust and clean up fugitive dust causing public health risk.

(5) A dust study was done in the neighborhood, September 2000. What were the results? I did not see any

(2). Dust - Non-health issues. appropriate attribution of dust in and around our houses to quarry operations. There is a continual build up of dust requiring cleaning, power washing resulting in paint damage and causing general deterioration of siding, decks, railing & painting in our houses and limiting use of our back yards. The quarry should be held accountable for "fugitive dust" and the cost of clean up and repair of damages.

1

2

EIR - San Rafael Quarry.

(3) Noise. I hope that the quarry is held to the same noise "nuisance" standards as the rest of San Rafael. We should be able to use our yards and recreational areas without annoyance. For years the noise levels from quarry operations were intolerable, keeping you up at night, limiting use of your decks, yards and the outdoor recreational activities that drew us to Marin. While improved since the court has become involved noise levels need to be further reduced, operational hours limited and the noise of blasting, akin to a sonic boom, curtailed. Low level noise, besides a nuisance contributes to hearing loss and is a health issue. I suggest that the allowable decibel levels be the same as the rest of San Rafael, not a separate standard. (5)

(4) Blasting / Vibration Damage. I have personally witnessed significant blasts that have resulted in movement in the framing of my house, fallen & damaged paintings & artwork in my house & paid for repairs to framing, repaired cracks, seams. Based on empiric observation & experience I am a believer that repeated blasting from quarry operations loosen screws, nails, joints, framing and cause cracks in plaster, seams, driveways, etc. This has been my experience, the experience of neighbors and the opinion of a structural engineer whom I have contacted. I own other older properties and have not had any of these problems.

3

EIR - San Rafael Quarry (6)

I have heard the quarry's argument about vibration damage based on solitary (not repeated) blasting to a "generic" house in different terrain. The empiric data is in our neighborhood not in a hypothetical case that does not reflect our conditions, construction style and blasting frequency pattern. Please address this question. 3

Thank you for your consideration of these matters.

Sincerely,
Donald Widdler MD

MARIN COUNTY COMMUNITY DEVELOPMENT AGENCY
PLANNING DIVISION

PUBLIC SCOPING SESSION

ENVIRONMENTAL IMPACT REPORT FOR
SAN RAFAEL ROCK QUARRY AMENDED QUARRY PERMIT

WRITTEN COMMENT FORM
September 12, 2007

Name/Affiliation: RAY WITTENBERG (HOME OWNER)

Address: 43- SAN MARINO DRIVE

City: SAN RAFAEL, CA Zip Code: 94901 Telephone: 415-721-7814

Please provide comments and concerns regarding the environmental effects of the proposed project or the environmental process below. PURCHASED HOME APPROX 2 YEARS AGO, EVERY DAY EXPERIENCE EXPLOITING THAT ROCKS AND BLASTS MY HOME AND CAUSES VISIBLE DAMAGE TO THE WALLS. 1

ALSO THE HOUSE IS COVERED WITH CEMENT STYLE DUST, HOURS TO WASH CAN EVERY DAY TO WASH OF THE DUST FROM THE EXTERIOR, THERE ALSO MAY BE HEALTH HAZARDS BREATHING THIS DUST EVERY DAY. 2

KIND REGARDS
Ray Wit
8-19-2007

Please use backside of page for additional comments, if needed. This comment form may be handed in at the scoping session to County Staff or mailed to the attention of Tim Haddad, prior to **September 17, 2007**, at the Marin County Community Development Agency - Planning Division, 3501 Civic Center Drive, Room 308, San Rafael, CA 94903.

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MARIN COUNTY COMMUNITY DEVELOPMENT AGENCY
PLANNING DIVISION

SECOND PUBLIC SCOPING SESSION

ENVIRONMENTAL IMPACT REPORT FOR
SAN RAFAEL ROCK QUARRY AMENDED QUARRY PERMIT

WRITTEN COMMENT FORM
October 3, 2007

Name/Affiliation: RAY WITTENBERG & THO THI NGOC VU

Address: 43-SAN MARINO DRIVE

City: SAN RAFAEL, CA Zip Code: 94901 Telephone: 415-305-4925

Please provide comments and concerns regarding the environmental effects of the proposed project or the environmental process below.

EVERY DAY ~~EXPLOSIONS~~ EXPLODE DYNAMITE THAT SHAKES MY HOME, VISIBLE DAMAGE CRACKS ON SHEET ROCK, CEMENT TYPE DUST ON AUTOS AND HOMES, NOT ABLE TO KEEP AUTO OR ANYTHING OUT SIDE HOME CLEAN. I AM VERY CONCERN ABOUT THE HEALTH DAMAGE CAUSED BY BREATHING THE DUST DAY IN AND DAY OUT. AND THE CONSTANT LARGE TRUCK TRAFFIC ON ST. PEDRO ROAD. 1

THE CLEANING TRUCKS DO NOT CLEAN THE CEMENT TYPE DUST THAT LANDS EVERYWHERE. 2 3

Please use backside of page for additional comments, if needed. This comment form may be handed in at the scoping session to County Staff or mailed to the attention of Tim Haddad, prior to **October 3, 2007**, at the Marin County Community Development Agency - Planning Division, 3501 Civic Center Drive, Room 308, San Rafael, CA 94903.

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MARIN COUNTY COMMUNITY DEVELOPMENT AGENCY
PLANNING DIVISION

SECOND PUBLIC SCOPING SESSION

ENVIRONMENTAL IMPACT REPORT FOR
SAN RAFAEL ROCK QUARRY AMENDED QUARRY PERMIT

WRITTEN COMMENT FORM
October 3, 2007

RECEIVED
2007 SEP 21 A 11:29
MARIN COUNTY COMMUNITY DEVELOPMENT AGENCY

Name/Affiliation: Ray Zerbib

Address: 4 MAIN DRIVE.

City: SAN RAFAEL CA Zip Code: 94901 Telephone: 415-458-0572

Please provide comments and concerns regarding the environmental effects of the proposed project or the environmental process below.

ROAD SHAKES 1

MY KIDS HAS ASTHMA MY SON I HAVE A HEART CONDITION FROM SO MUCH DIESSEL 2

HOUSE ON THE SIDE OF ROAD A LOT OF DAMAGES. 3

TRUCK Rolling AROUND 6:45 AM. TILL LATE AFTERNOON

APROX. IN THE MORNING. EVEY 35 TO 50 SECONDS THE HOUSE SHAKES FROM TRUCKS AND SOME HAS DOUBLE BOX WERE IT BOUNCES 4
DRIVE FAST THEY KNOW WHEN COPS ARE WATCHING BY HAVIN CBS RADIOS
PICTURE OF DAMAGE TO THE HOUSE

Please use backside of page for additional comments, if needed. This comment form may be handed in at the scoping session to County Staff or mailed to the attention of Tim Haddad, prior to **October 3, 2007**, at the Marin County Community Development Agency - Planning Division, 3501 Civic Center Drive, Room 308, San Rafael, CA 94903.

Attachments 5

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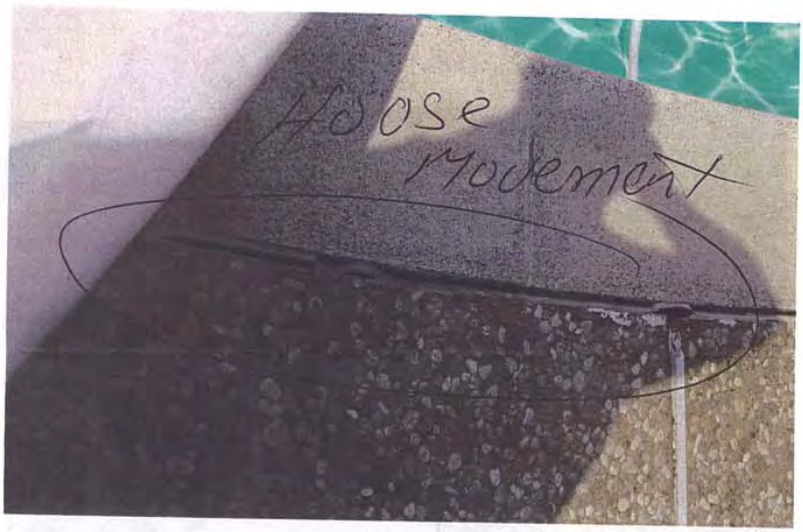
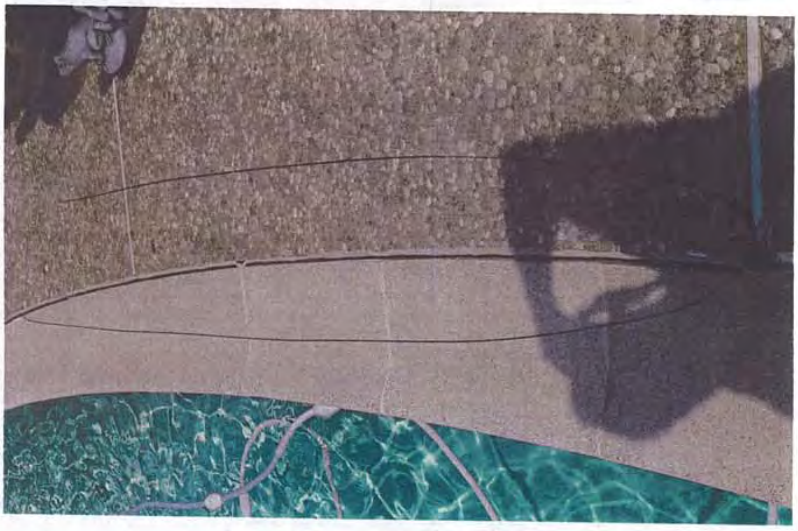
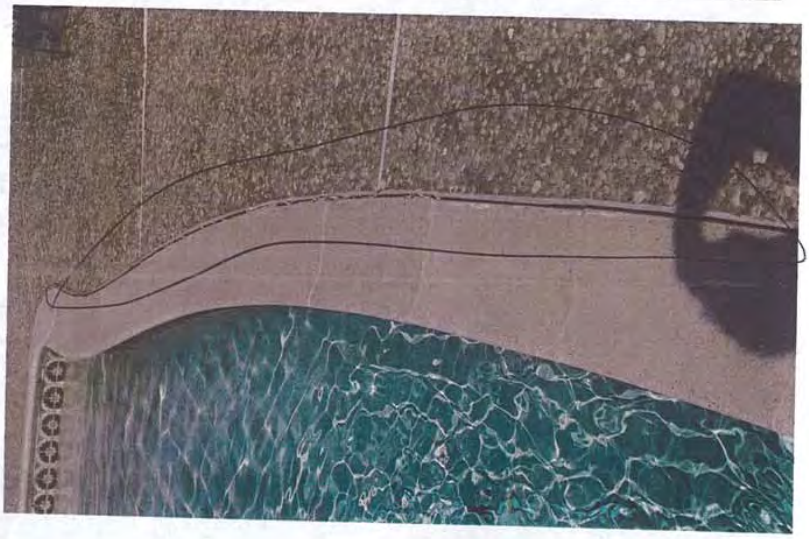
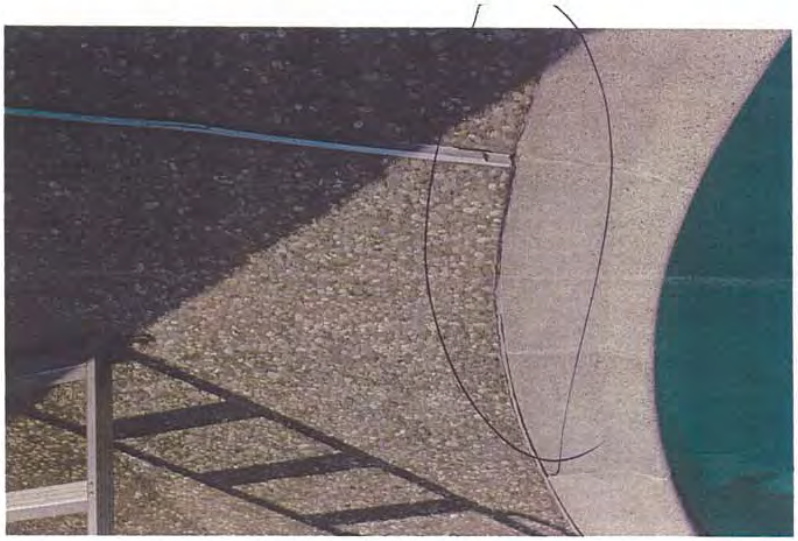
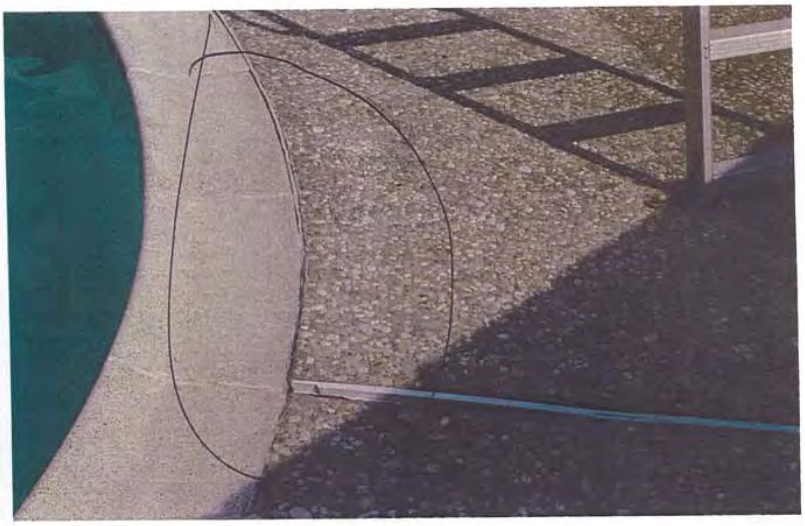

Loose
Movement









October 2, 2007

Ira Alderson
7 Margarita Drive
San Rafael, CA 94901-2325

Tim Haddard
County of Marin - Community Development Agency
3501 Civic Center Drive, Room 308
San Rafael, CA 94903

Re: San Rafael Rock Quarry
Environmental Impacts for Study

Dear Mr. Haddard:

I live at the corner of Margarita Drive and Pt. San Pedro Road, and am proposing two areas of study in the course of the environmental review that the County is undertaking in connection with the new mining permit sought by the Quarry.

The proposed daily level of 125 truck round trips is high. It appears to be based on a single year of exceptionally robust operations, and not a normalized historical year of average operations. Over the years there has been real variation in the level of truck trips, and trying to peg the level for years ahead to a high base is unsound. The quarry is not a compatible use given the surrounding residential build-up allowed over the past 25 years or so by government planners, so now setting the trip level high just exacerbates the problem. The EIR should study the historical truck traffic from the quarry and derive a level based on a normalized historical average year. 1

Mixing cars with heavily loaded trucks on a residential thoroughfare is not safe. One Westbound stretch of Pt. San Pedro Road particularly problematic is the block between Villa Real and Margarita Drive – it is a semi-blind curve with a downhill grade of about 12%, and at the bottom is the intersection of Pt. San Pedro and Margarita Drive. Even if loaded rock trucks follow the 35 MPH speed limit coming downhill, it is challenging to stop if a car pulls out in front from Margarita Drive. I have lived here, on 2

the intersection corner, for quite a while and have seen some terrifying near misses. I think, when the worst happens, the County will be partly to blame because it just kept letting loaded rock trucks barrel down Pt. San Pedro Road. If (when) a loaded gravel truck hits a SUV full of kids, it will be horrid carnage. To appreciate this, maybe you should spend 30 minutes or more on the North side of the intersection, looking eastward and up the sloping road curve. The EIR should, through the use of traffic planning analysis, study this and other stretches of the Pt. San Pedro Road corridor to assess the probabilistic incidence of accidents based on various levels of truck traffic. (How much more is the probability of fatal accidents if truck traffic is allowed to be set at 125 round trips compared to various lower levels?)

2

If you would like additional information, please call (457-0270). Thank you for considering these recommendations.

Sincerely,

Ira R. Alderson
457-0270

C. Pt. San Pedro Road Coalition

Submitted by Roger Roberts at SRRQ AQP Scoping Session →

MARIN CONSERVATION LEAGUE
1623A Fifth Avenue • San Rafael, CA 94901
(415) 485-6257 • Fax (415) 485-6259
e-mail: mcl@marinconservationleague.org • website: www.marinconservationleague.org

November 28, 2005

Mr. Tim Haddad, Environmental Coordinator
Marin Community Development Agency
3501 Civic Center Drive, Room 308
San Rafael, California 94903

Subject: Scoping Comments for The Environmental Impact Report (EIR):
San Rafael Rock Quarry Amended Reclamation Plan

Dear Mr. Haddad:

In response to the County's Notice of Preparation for the San Rafael Rock Quarry Amended Reclamation Plan, Marin Conservation League requests that the following comments be considered in developing the scope of the Draft Environmental Impact Report.

First, we note that the proposed Reclamation Plan is a rolling reclamation process that will take place during the continuation of quarrying operations for a period of years. This will lead to a specified mix of land uses in designated areas of the site as is shown in Drawing E-6. These future land uses, as described in the Amended Reclamation Plan, are as follows:

Residential:	102.9 acres
Commercial & Mixed Use:	42 acres including the Marina
Community Facilities:	10.6 acres
Open Space:	69.3 acres including 49 marsh acres
Perimeter Tree Grove:	3.3 acres

We note that these various land uses are precisely identified and located on the site along with the planned major access routes. This Future Land Use Map constitutes a conceptual Master Plan for the site, and it is obvious that the proposed Reclamation Plan is designed with these particular land uses in mind at the locations described. The merits of this proposed Future Land Use Map are not a matter for debate at this time. Nonetheless, we request that the EIR thoroughly determine and analyze the full range of potential environmental impacts associated with the quarrying operations and the implementation of the rolling reclamation plan itself, as well as those associated with the intended ultimate mix of land uses proposed for the site. In short, we believe that the EIR must address the environmental impacts of the process of combined quarrying and reclamation of the site and its planned future land uses. 1

In this connection, the EIR must also be prepared in the context of the Draft 2005 Countywide Plan now being reviewed for adoption; the existing Peacock Gap Neighborhood Community Plan; and the City of San Rafael General Plan, within whose planning jurisdiction this site also lies. This is absolutely necessary to ensure that the Reclamation Plan is consistent with all the relevant local land use planning policies.

MARIN CONSERVATION LEAGUE

We question whether the rolling reclamation plan as proposed is in the best interest of the community, in that it will involve continuous quarrying along with unrelenting spoil-generating earth moving activities for the duration of the quarry's operations. The DEIR should consider alternative quarrying and reclamation plans that would have fewer potential environmental impacts on the community. For example, an alternative plan with fewer impacts might be accomplished by restricting the increased rock mining operations during the early years to the existing quarry pit, and delaying the quarrying contemplated for the South Hill area until the later years of operations. South Hill overburden could then be placed directly into the Main Quarry Bowl rather than moved back and forth across the site as is proposed in this Reclamation Plan. The topsoil of the South Hill area could still be used periodically as blending material for the rock fines as planned on a batched basis and placed in a single stockpile for later use. We urge that the County and its EIR Consulting team also identify and analyze an environmentally preferable mitigated alternative Reclamation Plan that minimizes the overall impacts of the Reclamation Plan as currently proposed.

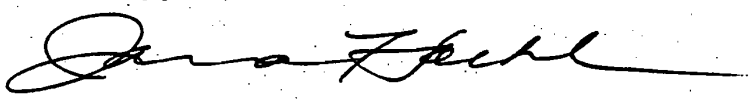
We agree with the many specific EIR scoping issues identified by the San Pedro Road Coalition (incorporated herein by reference). We do not wish to repeat their comments here. We do want to underline, however, the need to protect, preserve, and restore the entire marsh and bayfront areas as delineated in the Draft 2005 Countywide Plan. First, we believe that restoration of the marshlands on the site should be implemented immediately rather than delayed to some indeterminate future date. Second, all precautions must be taken to prevent any degradation of these areas. The proposed stockpiles of spoil material in the Northeast Quadrant of the site, as proposed in the Reclamation Plan, raise concerns over the risk of sedimentation and water runoff effects in the marsh area, in adjacent County Parklands, and in other bayfront lands. Another area of concern is the long range potential for sedimentation in the Marina Harbor itself and its entrance, inasmuch as the Marina Harbor will be a natural stillwater trap for both tidal waters and sediment over time. These areas should all be preserved and protected, and the risks must be clearly defined, understood, and strictly controlled. The DEIR should detail how this will be accomplished and not leave it for future studies to determine.

1

We look forward to the DEIR's analysis of the potential impacts we have outlined above, and its recommendations for effective mitigation measures.

Thank you for your consideration.

Sincerely yours,



Jana Haehl, President

San Rafael Rock Quarry AQP Scoping Summary Minutes
September 12, 2007

These minutes are meant to highlight key points brought up by each speaker at the scoping session, and are not intended to be an exact transcription of what was said at the meeting.

Aimi Dutra, SRRQ Dutra Materials:

- Team is available to answer questions.
- Mailing with information was sent out to neighbors of the Rock Quarry.
- More meetings will occur later in September.

1

Bonnie Marmor, Pt. San Pedro Road Coalition:

- Concurs with CDA decision to require an EIR following the initial study. The Initial Study was thorough and identified potential significant effects of Amended Quarry Permit.
- However, initial study underestimated the significant impacts such as damages as a result of blasting and detrimental effects on air quality.

2

- Scope of EIR based on 1982 Baseline, which has been determined based on incomplete and inaccurate facts.
- New rules must be reexamined against an accurate benchmark- County should reexamine the inaccuracies of the 1982 baseline determinations.

3

- Land Use and Planning- Resulting incompatibly of Quarry operations and neighboring land uses. Since the approval of the permit in 1972 and 1982, there has been an increase in residential density in proximity to the Quarry. Quarry operations will impact people nearby more often. EIR should accurately characterize existing land uses around the Quarry; analyze view of Quarry, sound of blasting, vibration, air borne pollutants, and traffic impacts. Changes in number of housing units, access from nearby homes to recreational areas, and long-term cumulative effects/impacts of proposed projection on the surrounding residential neighborhoods and recreational areas. Compare these impacts to the prior permit on the same geographic area.

4

- EIR should discuss strategies to comply with relevant policies in the new Countywide Plan. Buffers between designated mineral source sites, and incompatible land uses such as residential areas should be included in the EIR. Best management practices must be required in order to reduce hazards, nuisances, and adverse environmental impacts. Wetlands protection should be included in the EIR, and County code needs to be amended to require mining operations to buffer wetlands from mining activities. Visual mitigations should also be discussed in the EIR.

5

- Biological Resources- EIR should discuss how the project will conform to setbacks established by the County with regards to the Baylands Corridor. WCA setbacks; IS notes that residential development

6

since the last permit approval has reduced the buffer between the Quarry and residential land uses. This needs to be discussed in EIR. IS discusses how proposal to eliminate production limitations will likely result in additional tons of particulate material to be released into the air each year. Some of the material will end up in the marshland and have diking or filling effects. The EIR should evaluate how the proposed additional quarry activities will cause particulate matters to settle in marshlands, whether that will have a diking and filling effect, and whether those diking effects can be mitigated, and whether those effects can be mitigated in order for the project to be consistent with the Northwest Quadrants designation as a Bayfront Conservation Zone. EIR should rely on Cowardin definition of wetlands- meeting requirements of all agency jurisdictions. EIR should also consider impacts of mining and barge operations on bird, terrestrial and marine life. 6

- Noise- EIR must discuss impacts of noise from the Quarry operations. Impacts on people and wildlife. Disagrees with statement that mitigation measure 10.3 would reduce blasting below the threshold of significance. 7
- EIR should also examine how the ground compositions of the area will influence the blasting vibrations on homes. Whether some homes are on fill or bedrock should be discussed. Cumulative effects of blasting and constant noise and vibrations. Long-term effects of blasting on health and quality of life. Issues raised in ARP letter are still relevant for the AQP. 8

Trip Allen, Sierra Club:

- Quarry operation permit is complex to separate from ARP. Which operation activities address mineral extraction? Reclamation activities especially with respect to the Northeast quadrant should be addressed, as Northeast quadrant was previously used for mining activities, but has still not undergone reclamation. 9
- He has grave concerns with respect to the marsh and the filling of the marsh. The marsh represents critical wetlands habitat. The quality of the wetlands are diminishing due to fill operations. A mitigation that should be considered in the EIR is a replacement of existing tubular culverts with bridge culverts. This would improve the value of the wetlands as a viable habitat and provide connectivity between neighboring habitats for wildlife to pass through. 10
- Runoff and sediment is another important issue that should be discussed in the EIR. 11
- Mineral extraction activity, particularly when explosives are used should also be analyzed. Are soluble metals finding their way into the Bay, or runoff into wetlands? Will there be testing involved? 12
- Blasting is a significant environmental concern; expansive media is an alternative quarrying technique, which is not being used at the San Rafael Rock Quarry at this time. The use of expansive material should be studied particularly as it relates to the sensitive noise environment, because it can 13

reduce the sites of larger blasts. Alternatives section should discuss how the use of expansive media can reduce the impacts of blasting on the neighbors. 13

Arlette Cohen, Neighbor and Former Member of Pt. San Pedro Road Coalition:

- Concerned about emissions, benzene and formaldehyde, which have been used in excess according to the Bay Area air quality authorities in the past. Children and seniors present in the area are susceptible to air emissions like benzene and formaldehyde and other carcinogens. 14
- Blasting is loud and intense. Blasting caused impacts to her home. Cracks in neighborhood home foundations. Impacts on wildlife. What are the future projections of the site? Can a visual simulation be made, and include more current photographs of site. 15
- Saltwater can't get through to the marsh, now the marsh has become a freshwater marsh. County has had to spray for mosquitoes. The marsh used to be stopping point for migratory birds, now very few birds visit the marsh, as the quality of the habitat has declined due to diking of the Bay to stop the flooding of Point San Pedro Road. 16

Frank Everrini:

- Neither he nor his family has ever had any problems with the Quarry. 17

Joe Caramucci:

- 109,000 diesel truck trips down Point San Pedro Road due to the Quarry operations, left diesel emissions and silt on nearby wall. Dust and diesel impacts need to be addressed in the EIR. Truck traffic between commuter hours. Diesel and dirt coats his walls from the Quarry operations. 18
- Transportation aspect of the Initial Study does not discuss the historical record of the 1982 baseline truck trips. The Coalition has tried to get information about what transpired (in regards to traffic) from 1979 to 1983. The Basalt report from Merrill Lynch discussed quarry operations and how much could be transported out by truck, and how much should be going out by barge. The IS has not used this information in the traffic analysis. The EIR should discuss the use of barges and tugs. The EIR should also discuss the diesel emissions due to the tugs and barges, and the spill of rocks into the bay from the barges. Why was the 1979 Production of the Quarry Aggregate tables used in the Planning Commission report not used in the IS? Why did the truck weight increase from 20 to 25 tons in the historical record? The impact of increased vibrations due to heavier trucks should be discussed. There should be detailed records of how productions of the quarry operations have left the quarry, either by barge or truck. These records should also be included and analyzed in the EIR. Increased production that will be going on for the delta projects should also be reflected in the EIR. 19

Greg Giffra:

- Supports the Quarry. They have set up dust monitoring stations, roadway cleaning utilizing street sweepers, and truck driver safety meetings to promote courtesy on the roadway. 20

Rod Warters, Professional Geologist:

- Concerned that the EIR will not properly analyze the impacts of dust emissions due to mineral extraction, and relate the dust impacts to health issues. He observed an abnormally high amount of dust settling in his neighborhood. He collected dust samples from various sites around the area. Microscopic examination of the dust showed it to contain Crystalline silica of respiratoral size, a known human carcinogen. The samples that he took from the school also contained evidence of a black petroleum residue, probably from the diesel emissions. He sent his samples to another lab to check his findings and found that the samples contained 25 and 1 micron in size of Crystalline silica. This is respiratoral material that if inhaled will stay in the lungs. World Health Organization classifies Crystalline silica as a group one carcinogenic material, which means it can cause cancer in humans. 21
- The EIR should explain why the County dust study could find no Crystalline silica contrary to what he has observed. The EIR needs to address where the dust settles as a result of quarry operations. Other studies have concluded that there are significant levels of Crystalline silica in the neighborhood surrounding the Quarry. A full and independent health assessment analysis by appropriate health professionals is needed.

Dave Crutcher:

- Hours of Quarry operations are being extended compared to the 1982 baseline. Hours late in the evening are proposed for continued Quarry operations. Homes were built around the Quarry with the assumption that the Quarry would keep the 1982 baseline of operations. Higher demand for quarry extractions due to upcoming projects has resulted in increased quarry operations, including extended hours, in order to meet the demand. This will impact the quality of life for neighbors who live close to the quarry and who have to hear blasting during extended hours. Blasting needs to be thoroughly analyzed as a significant impact in the EIR. Dust is propelled into the air as a result of blasting. Some of the dust settles, and some of it doesn't. He sweeps up the dust in his backyard. He disagrees with the finding that the Quarry produces an insignificant amount of dust. 22

Jonathon Frieman, Original Member of Point San Pedro Road Coalition:

- Cultural resources: The hole created by the blasting on top of the hills. Please consider the impacts of the quarry on cultural resources, blasting and dust impacts. Quarry trucks speed constantly and recklessly, and the truck diesel is carcinogenic. Peak traffic is constant while the Quarry is open. 23 24

Noise levels are astonishing at about 60 or 70 dba. He is sensitive to loud noise. Cultural resources need to be measured and addressed in EIR. 24

Alan Schaevitz, Board Member of Point San Pedro Road Coalition:

- Though CEQA only requires a 45-day review policy for an EIR, he requests that the time period be extended for the public to have more than enough time to review the document. Preferably 90 days. 25

Roger Roberts, Marin Conservation League:

- Intends to follow the ARP and AQP EIR process. This EIR cannot separate itself from the ARP EIR. The ARP incorporates several alternatives which might reduce the impacts on the neighborhood. These alternatives should be incorporated in the analysis on the AQP EIR. He endorses many of the remarks made by the Point San Pedro Road Coalition, particularly with respect to buffering. The EIR should provide analysis on an overlay basis for the adequate buffering to meet noise and dust control standards, etc, and protection of the wetlands. If all of this is incorporated, we want to know what the best buffer should be. 26
- Mitigation Measures: The EIR should tell us in detail what are the best management practices that are necessary in order to achieve the mitigation measures contemplated. 27

Ingrid Cornelisshn,

- Dust impacts on her house. Finds dust on her backyard dining table. 28
- Blasting is difficult to endure. Cracks on the walls of her house due to blasting. 29
- Noise impacts. 30

Steve Borden:

- Quarry has provided street sweeping service. 31
- Dust on his house from the last six months has been due to the neighboring golf course. 32
- His foundation has also cracked, however he had it resettled.
- House shaking due to the trucks and windows cracking, it's all because they live on filled wetlands. These problems will persist regardless of quarry trucks. 33

Deke Welch:

- Is there an availability of equivalent materials, in terms of quality, quantity and availability? Please discuss in EIR. 34

Charlie Walther:

- Community Anxiety impacts. Told that the Quarry would be shut down within 5 years when he bought his house. Increasing truck traffic and truck load *is* a significant impact, contrary to initial study findings. Public services, traffic mitigation, accidents that happen in the intersection, road 35

repair, noise, dust, health impacts, these are costs to the community. Social and economic impacts, less than significant according to the IS. Disagrees with IS. 35

Roger Roberts:

- Submitted a letter related to the ARP in November 2005 on concerns we had on the ARP. There is a lot of cross over on the ARP and AQP. Please accept the same letter we submitted in 2005 and use it as part of the AQP EIR analysis. 36

San Rafael Rock Quarry AQP Scoping Summary Minutes
October 3, 2007

These minutes are meant to highlight key points brought up by each speaker at the scoping session, and are not intended to be an exact transcription of what was said at the meeting.

Denise Lucy, Pt. San Pedro Road Coalition:

- Submitted 21 page letter with comments.
- Blasting, Transportation & Baseline (and how it was determined) are main issues. [1]
- Information used to determine baseline was inadequate, specifically referring to production and transportation of Quarry materials by truck and barge. The EIR needs an accurate baseline. [2]
- EIR should look at trucking and barging impacts and more alternatives than what is mentioned in the IS. [3]
- IS did not address Merrill Lynch report with important information about the 1979 production levels of the Quarry. If Merrill Lynch report had been included in the average, it would have reduced the historical average production amount by 200,000 tons. [4]
- IS states that there are no known records of the number of truck trips in 1982. An estimate was given by the County that half of production was shipped by truck and the other half by barge. However, these statistics do not seem to be based on other available data, such as the testimony of Norman Gilroy & Associates at the 2004 Court trial in which he states that the vast majority of Quarry products (in 1982) are shipped out by barge. The IS did not consider this testimony in the analysis. [5]
- Barging: The IS assumes that barging has few negative impacts. However, barging is noisy and creates a lot of dust.
- EIR should analyze the impact of barging and trucking Quarry materials out of the county. Consider the impact if Quarry materials were not shipped out on trucks, but shipped out on barge, what would be the impacts of these activities?
- The EIR should also consider the best available management mining techniques. [6]
- The EIR should also include Court records and the ongoing complaints from the community about both trucking and barging operations. [7]
- Blasting: The IS bases it's conclusions regarding mitigation of blast effects on a report prepared by Revy Associates. The report does not properly evaluate numerous complaints made by neighbors on the effects that blasting has had on their lives, such as shaking and damage to the homes. The EIR should discuss what may reduce the shock that nearby homeowners receive when the Quarry is blasting. [8]

- The EIR should also consider the cumulative negative impacts of quarry activities on the residents and the environment taken as a whole.
- The EIR should consider the cumulative pollution effects of all Quarry sources in combination with other nearby non-Quarry operations such as McNears Brickyard, other construction projects in the neighborhood, diesel from ships and particulates from nearby refineries.
- Cumulative impacts need to be considered given that the population has grown around the Quarry since 1982.

9

Rod Warters, Professional Geologist:

- IS recognizes that schools are sensitive to poor air quality. But, the IS does not address the significant potential health threat to San Pedro Elementary School due to Quarry operations. Truck trips occur an average of every 2 minutes and 24 seconds everyday during the school year, and they emit diesel exhaust and spread crystalline silica dust. Diesel particulate matter was classified by the State of California as a toxic air contaminant. People who are continuously exposed to diesel exhaust are known to have an increased risk of developing lung cancer.
- Study conducted in 2004 indicated that Quarry trucks were the source of carcinogenic diesel particulate matter in the area.
- During 2007, with the permission of school officials at Point San Pedro Elementary School, he gathered dust samples from the exterior window sills at the school. The samples when examined under a petro-graphic microscope showed evidence of respirable silica and a black respirable substance believed to be diesel emission.
- Crystalline silica is a known carcinogenic. Point San Pedro School is constantly receiving both Crystalline silica as well as diesel emissions from the truck traffic. This is an unacceptable threat to the health of the students and staff at the school. The effects of inhaling these toxins are cumulative. A full scale health analysis conducted by health professionals is warranted, and the analysis should determine the health impact of inhaling diesel emissions and crystalline silica at San Pedro school and the community at large.

10

Dr. Francoise O'Lepage:

- Life has been impacted by Quarry truck noise and dust. During the week days, she cannot leave doors and/or windows open due to the dust. Also feels frightened when walking along the promenade due to speeding Quarry trucks.

11

- Impacts she hopes to see analyzed: Truck traffic, including the convoy style in the mornings and at peak times, including speed, noise and dust.

12

- Noise pollution day and night either from the Quarry or the McNears Brickyard or both. Truck speeds should be limited to 25 miles per hour and enforced. When trucks obey the recommended speed limits, the noise is greatly reduced. Trucks should be covered to reduce the amount of particles that escape as dust. Has a health study been conducted to analyze the health impacts of diesel emissions and dust from the Quarry? 13
- Oily residue can be found in a covered hot tub as well as her pool cover, which she has had to replace several times sooner than expected due to the residue from the dust. 14
- Noise impacts: In a residential area noise abatement is a sound and reasonable policy. 15
- The noise level assessment should not have been spread-out over a 24-hour period.

Amanda Metcalf:

- Marin County allowed the development of schools and homes around an open pit mine. Marin County has failed to regulate the Quarry, oversee its operations, and failed to enforce the Quarry's years-long blatant refusal to comply with the law. 16
- Marin County has failed to adequately address health impacts from the dust and effects on people and property due to blasting. 17
- The Civil Rights Movement is similar to the situation of the neighbors speaking out against the Quarry. Marin County should be ensuring the citizens of the County their rights to good health and their safety and welfare against corporate interests that threaten them. 18
- She feels disheartened when County representatives respond to her complaints by saying that the County must represent the interests of all the people, which includes the Quarry as well as private citizens.
- The County's position should be to ensure that the local for-profit organizations do not tread on the rights of private citizens to enjoy peace and quiet in their homes, the right to breathe clean air and to be free of health hazards that are carelessly emitted by environmental polluters. 19
- Private citizens are afraid to come forward because of the consequences of going on record stating that their property is damaged due to the proximity to the Quarry, as this might affect the value of their homes.
- Because the Quarry operations are no longer compatible with the surrounding community, the San Rafael Rock Quarry should be shut down.

H.C. Jackson:

- Gathering information about the Rock Quarry for the Board of Directors of the HOA. 20

Don Widder, Physician:

- He believes health risks are understated in the IS. 21

- The Geology Report as submitted by Rod Warters is not addressed in the IS, and he asks that the study be discussed in the EIR. 22
- Dust Issue: Crystalline silica is a known result of Quarry activities including blasting and grinding, which is the only explanation for its broad distribution in the areas where it's been found in San Rafael.
- Silicosis is the most common environmental occupational respitory disorder in the world. Silicosis is a progressively debilitating potentially lethal disorder, for which there is no cure except potentially lung transplantation. Can have a latency period of 10-20 years.
- The IS allowed a low threshold for the emission of the airborne particulates, he thinks the threshold should be zero. There is also not enough information about the extent to which these particles are present in the community.
- He would like to see a confirmation in writing that the particulate dust arises from the Quarry, or admittance by the Quarry that the dust particles are being emitted by the Quarry operations. 23
- Samples need to be extracted from the Quarry pit by the appropriate scientific methodology, and correlated with samples obtained from various areas throughout the neighborhood to verify Crystalline silica (along with other fugitive dust) is in fact rising from the Quarry.
- If it is confirmed that the dust is from the quarry, an appropriate clean up process needs to begin.
- Dust study was conducted in Marin Bay Park, and the results of the study were never publicized. The study needs to be incorporated into the EIR.
- The EIR should discuss how to safely clean the dust off of property.
- Diesel Emissions: Studies by the EPA have shown a positive relationship between school proximities to freeways and asthma occurrence.
- Breathing diesel silica can cause serious life-long health ailments mostly among children and the elderly. There should be no arbitrary low threshold as stated in the IS, as breathing these particulates should not be tolerated because of the associated health risks. 24
- Noise: Low levels of noise over a prolonged period of time can cause an acceleration of hearing loss, or cause hearing loss.
- Tolerable thresholds that should be considered in terms of Quarry noise should be the same as those considered for nuisance levels in the City of San Rafael, as there shouldn't be two separate standards. 25

Marie Fisher Cichy:

- Trucks: The noise generated by the trucks, the carcinogenic pollution from the diesel of the trucks, the filthy and grimy dust that billows from the trucks, the unrelenting road congestion resulting from the truck traffic, the continuous costly road damage caused by the trucks, the looming threat of another 26

major truck accident, the degraded quality of passenger comfort of driving over truck-damaged roads, and the continual heavy commercial truck traffic through an otherwise peaceful residential area. 26

- The solution: the closure of the Dutra Quarry. Concurs with Amanda Metcalf's earlier comments. 27
- Quarry has degraded the value of the 3,000+ homes in the vicinity of the Quarry. 28

Bonnie Marmor:

- Speaking out on a personal note.
- Following her husband's illness, they moved to Marin to a home with a view of the water.
- They adopted a daughter from an industrial-polluted area in the Ukraine. The child suffered from birth defects, which as research shows, can be a result of exposure to pollutants.
- During the 10-months that she stayed home with her daughter that she became familiar with the trucks.
- She began to be concerned with the emissions her daughter was breathing. Her daughter now attends school very close to the Quarry, as well as living in close proximity to the Quarry. Her daughter has been diagnosed to have asthma. 29
- Bonnie, also has asthma, which has increased in seriousness. She has suffered from serious bouts of bronchitis and asthma requiring her to take repeated doses of steroids.
- There is no warning about the dangers of living in the area. There is no way to know the extent of the dangers that families around the Quarry are facing.
- Other families in the neighborhood may also be experiencing the same health problems that she spoke about, but are afraid to come forward and speak out about it.

Veronique Rastein:

- Exposed to diesel fumes, and will be very ill as a result of her exposure for the rest of her life.
- Concerned about the levels of diesel in the air.
- Dust accumulates on her outdoor glass table, and she wonders how much of it is she breathing. 30
- Her health condition has gotten worse over the past several years. She wonders if the exposure to the dust and diesel emissions have worsened her underlying condition.
- She contacted Jeff McNear about the noise coming from the brickyard. She began a dialogue with him about how the noise from the brickyard affected her life. He made many efforts to help remedy the situation. She felt that her needs were heard by him. 31
- Similarly, she contacted Aimee Dutra, and invited her over to her house to experience the shaking from the blasting at the Quarry. Aimee Dutra has also been extremely gracious, assuaging some of her concerns about the view and hearing her concerns about the dust. 32

- She agrees with the concerns raised at the hearing, but she is also grateful for McNear's and Dutra's attentiveness to hear her concerns.
- She hopes that this model of communication can be used more.

33

APPENDIX H

Applicant's Project Objectives for the Amended Reclamation Plan

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Appendix H: Applicant's Objectives for the Project

The following objectives were enumerated by SRRQ as their objectives for the project:

- Amend ARP82 to provide an increase in average depth of the Main Quarry Bowl to -350' MSL, and a sedimentation pond with a bottom elevation of -400" MSL at the easterly end of the Main Quarry Bowl, consistent with the Marin County Superior Court's Orders, mining activities remaining to be performed under ARP82, current geotechnical studies, resource needs, and market conditions;

- Amend ARP82 to provide a projected duration of mining activities of 15-17 years from the date of approval of ARP04, consistent with the Marin County Superior Court's Orders, mining activities remaining to be performed under ARP82, current geotechnical studies, resource needs, and market conditions;

- Update ARP82 to bring it into compliance with current requirements of SMARA, as required by the Marin County Superior Court's Orders;

- Clarify without substantive change portions of ARP82 concerning current ownership, operation and tenancy, permit and land use status, the nature of proposed fill materials an revegetation for reclamation, and mitigation measures to reduce visual impacts and noise during reclamation;

- Adopt a phased reclamation schedule, as requested by the Lead Agency and consistent with SMARA, to enable commencement of certain reclamation activities while mining is still ongoing in other portions of the site;

- Maintain reclamation activities and objectives in ARP04 that are consistent with the Second Uses adopted in ARP82; and

- Transfer for consideration in the parallel administrative proceedings certain conditions of approval of ARP82 that are more appropriately characterized as operating conditions, subject to separate review under applicable legal authorities, and subject to SRRQ's consent to such review for adoption of economically viable conditions without waiver of vested mining rights, as provided in the July 15, 2004 Order of the Marin Superior Court.

APPENDIX I

Harbor and Coastal Analysis Technical Reports

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COAST & HARBOR ENGINEERING

Technical Memorandum
Review of Harbor Feasibility Study
San Rafael Rock Quarry Marina

1. Introduction

Coast & Harbor Engineering (CHE) was contracted by Environmental Science Associates (ESA) to perform an engineering review of the Moffatt & Nichol (M&N) feasibility study for the proposed San Rafael Rock Quarry Marina. In the process of preparing the following Technical Memorandum, CHE reviewed the feasibility study report and additional historical data described below. Figure 1 shows the project site location.

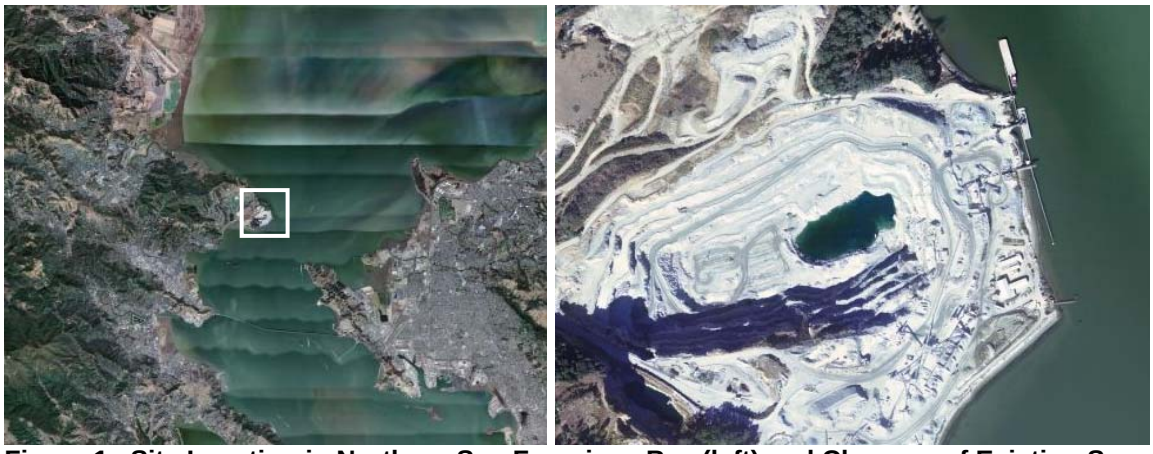

Figure 1. Site Location in Northern San Francisco Bay (left) and Close-up of Existing San Rafael Rock Quarry, County of Marin, CA (Aerial Photo USGS 2004).

The review methodology includes evaluation of assumptions, technical approach, and the input data that were used for the feasibility study. For each particular assumption, approach, input information or conclusion presented in the feasibility study, a determination of either "Reasonable" or "Questionable" was assigned. "Reasonable" in general means that the parameter is appropriate, typical of those used in the industry, and that CHE generally agrees with the particular statement or conclusion. If "Questionable" was assigned, additional analysis was performed and/or discussion was provided to evaluate potential effects of this parameter on the study results and conclusions.

For the convenience of the reader, the review of feasibility study conclusions and the review summary are presented in the main body of the Technical Memorandum (see Section 2), while the detailed review comments and discussion are included in Appendix A.

In Section A.1 of Appendix A, Tables A1 and A2 provide an evaluation of relevant project parameters from the M&N study and assign a "Reasonable" or "Questionable" ranking. Section A.2 of Appendix A provides a more detailed analysis and descriptions of the effects of the assumptions labeled as "Questionable" on study results and conclusions. The peer review methodology described above has allowed CHE to arrive at a professional and objective opinion regarding the M&N study.

The following reports and data were provided to CHE prior to and during the course of the review:

- Harbor Feasibility at San Rafael Rock Quarry, San Rafael Rock Quarry Amended Reclamation Plan 2004, M&N, October 1, 2004 (M&N No. 5487)
- Proposed rock quarry contours prior to marina construction in AutoCAD format on CD provided by ESA
- Proposed marina entrance width, slopes and jetty locations in AutoCAD format on CD provided by ESA

In addition to the data described above, existing meteorological data, hydrodynamic data and hydrographic survey data were evaluated. These data were obtained from previous CHE San Francisco Bay projects.

2. Evaluation of Feasibility Study Conclusions

Specific conclusions stated in the M&N study are provided in Table 1, left column. Table 1, right column includes a brief summary of the CHE evaluation[1] of these conclusions.

Table 1. Summary Evaluation of M&N Feasibility Study Conclusions

Section	M&N Assumption/Approach	Reasonable Based on Peer Review of M&N Study and/or CHE Analysis?
SUMMARY	The proposed harbor entrance channel is in a good location and the orientation will minimize the waves entering the harbor basin.	Reasonable.
	The proposed harbor entrance channel location would provide immediate access to deep water.	Reasonable.
	Two parallel jetties extending out into approximately -5 ft MLLW (-8 ft NGVD) are required to stabilize the channel and prevent the channel bank material from slumping.	Reasonable.

[1] Detailed evaluations of all important data in the report are presented in Appendix A

Section	M&N Assumption/Approach	Reasonable Based on Peer Review of M&N Study and/or CHE Analysis?
	Jetties would not be expected to negatively impact adjacent shorelines	Questionable. At least some very basic quantification of these predictions should be performed.
	Tidal current speed in the proposed entrance channel will not be strong enough to maintain the depth of 12 ft MLLW (15 ft NGVD).	Reasonable.
	The sedimentation rate in the entrance channel is expected to vary from several inches to about one foot per year.	Questionable. It is likely that the channel area (specifically seaward of the jetties) will experience higher sedimentation rates, particularly following initial dredging.
	Sedimentation inside the harbor basin will not be a problem due to its deep water depth.	Reasonable.
	Wind generated waves inside the harbor basin are not considered to be a problem for the proposed harbor.	Reasonable.
	Establishing a “no-wake” policy could minimize boat waves.	Reasonable.
	Applying a 2:1 slope between +6ft and -6ft NGVD could minimize wave reflection at the perimeter wall.	Reasonable.
	The harbor is not likely to have a resonance problem.	Reasonable.
	Excessive wave oscillations will not likely happen.	Reasonable.
	Tide induced flushing is likely to be adequate to prevent water quality problems for the surface water.	Reasonable.
	Harbor water quality can be maintained by preventing the discharge of pollutants into the harbor basin through the use of recognized Best Management Practices (BMPs).	Questionable. It is likely that marina uses are not the only potential cause of water quality degradation in the marina bottom water.
	The configuration of the quarry basin allows for a well-protected basin to support a potential marina.	Reasonable.
	Float and anchoring systems will be more expensive than comparable marina systems due to the conditions within the SRRQ basin.	Reasonable.

Section	M&N Assumption/Approach	Reasonable Based on Peer Review of M&N Study and/or CHE Analysis?
	A portion of the increased costs associated with marina float and anchoring system construction and maintenance will be offset by the lack of initial and future maintenance dredging requirements.	Questionable. Initial excavation and dredging are required for the entrance channel.
	The existing quarry product loading pier could be modified to serve as a passenger loading facility for commuter ferry service within San Francisco Bay.	Questionable. No evaluation of the loading pier suitability or structural stability, or ferry service feasibility has been performed.

Based on reports provided by M&N, available data and CHE's review and analysis, it is our opinion that the methodology, input data and level of engineering analysis performed by M&N are acceptable at a reconnaissance level only (the level of study is not defined in the report). Deficiencies in input data and assumptions were identified by the peer review and limit the application of the study as a typical industry-standard feasibility study. Many different environmental parameters (winds, waves, currents, etc.) were presented without any basis and therefore cannot be evaluated, and are not considered sufficient for feasibility-type analysis or design.

Based on specific M&N conclusions (Table 1, left column), the general conclusion of the M&N report is as follows: Marina is feasible considering wind, waves, sedimentation, water quality, impacts to adjacent shorelines, marina floats and anchoring systems aspects. Based on information provided in the study and our own evaluation, we concur that the marina is feasible with respect to wind, waves, surface water quality, marina floats and anchoring systems aspects. We also agree that the marina may be feasible from the perspective of channel sedimentation and maintenance dredging requirements. However, dredging volumes may be larger than guessed by the M&N report.

Other aspects of harbor feasibility, including bottom water quality inside the marina and impacts to adjacent shorelines, have not been adequately addressed by the M&N study and require further analysis. It is likely that marina uses are not the only potential cause of water quality degradation in the marina bottom water; therefore bottom water quality should be evaluated in greater detail using 3D numerical modeling in consultation with biologists and chemists. Impacts to adjacent shorelines should be addressed using at least some basic quantification of sediment types at the site, longshore sediment transport levels and transport expected to be altered (if any) by the proposed jetties.

3. References

Moffatt & Nichol Engineers (2004) Harbor Feasibility at San Rafael Rock Quarry, San Rafael Rock Quarry Amended Reclamation Plan 2004, M&N, October 1, 2004 (M&N No. 5487)

U.S. Army Corps of Engineers. (2002). Coastal Engineering Manual, CEM 1110-2-1100.

APPENDIX A

DETAILED REVIEW AND COMMENTS

A.1 Evaluation of M&N Study Assumptions, Approach and Input Data

The review of assumptions and data used for analysis are presented in a table format. Table A-1 evaluates the assumptions and data discussed in M&N report Section "Existing Conditions". Table A-2 evaluates assumptions and results of the analysis discussed in M&N report Section "Harbor Feasibility".

Table A-1. Review of Assumptions, Approach and Data, Existing Conditions Section, M&N Report

Section	M&N Assumption/Approach	Evaluation
SITE OBSERVATIONS	Reach 1 area has gravel/cobbles, indicating some erosion.	Reasonable.
	Natural winnowing of the beach material (in Reach 2) seems to be taking place from the south to the north, most likely caused by the predominant wave activity from the south.	Reasonable.
	The shoreline along Reach 4 is generally stable, with no scarps or other evidence of erosion or deposition visible.	Reasonable.
WINDS	Prevailing winds are from the south and southwest directions.	Reasonable.
	The average hourly wind speed at SRRQ is 11 mph.	Reasonable. However, this wind speed is not usable without definition of sampling time, record length, etc.
	The maximum sustained wind speed is 32 miles per hour.	Reasonable. However, this wind speed is not usable without definition of event return period, sampling time, record length, etc.
	Sometimes the pressure gradient reverses and wind from the east occurs. This is more common in late winter and the winds are much weaker.	Reasonable.

Section	M&N Assumption/Approach	Evaluation
WAVES	Since the south wind does not exceed 30 mph for most of the time, the predominant waves from the south would be less than 3 feet, with a peak wave period of less than 3.5 seconds.	Reasonable. However, wind and wave statistics are not defined and therefore not usable.
	Similarly, waves coming from San Pablo Bay rarely exceed 3 feet and 3.5 seconds.	Reasonable. However, wave prediction methods and statistics should be defined.
	Maximum wave heights could reach about 5 feet in the vicinity of the site.	Reasonable. However, wave prediction methods and statistics should be defined.
CURRENTS	Tidal benchmark data for Richmond Chevron Oil Pier (CA 9414863), obtained from the National Ocean Service (NOS) is representative of tidal variation at the project site.	Reasonable.
	Tidal currents dominate the water circulation and mixing patterns in the vicinity of the site.	Reasonable.
	The 100-year water level in the vicinity of the project site is estimated to be 9 feet above MLLW.	Reasonable.
	Typical maximum ebb tide current speeds in the San Pablo Strait Channel could be 3-4 knots (5-7 ft/s).	Reasonable.
	Typical maximum flood tide current speeds could be 2-3 knots (3-5 ft/s).	Reasonable.
	Closer to the SRRQ shoreline, the maximum tidal current speeds reduce to 1.5-2 knots (2.5-3.5 ft/s).	Reasonable.
	These speeds are high enough to limit the deposition and accumulation of suspended sediments, which is evident from the lack of mudflats along the shoreline.	Reasonable.
SEDIMENT TRANSPORT	The dredged material is characterized as mostly silt or clay, which indicates that no active sand transport processes (either longshore or cross-shore) occur in the vicinity.	Questionable. See Section A.2, comment 1.
	The coarser material on the beach is likely a relic of artificially placed fill material, and some of it may also be coming from erosion of the embankments which is transported around the point by the predominant south waves.	Reasonable. Armoring of the original mixed-size beach material (winnowing of fines) is also likely to be a cause of the presence of mostly coarse material.

Section	M&N Assumption/Approach	Evaluation
	Typical sedimentation rates for silt/clay in nearby quiescent areas ranges from several inches to one foot per year.	Reasonable.

Table A-2. Review of Assumptions, Approach and Data, Harbor Feasibility Section, M&N Report

Section	M&N Assumption/Approach	Evaluation
ENTRANCE CHANNEL	This orientation minimizes wave propagation into the harbor both from the south and infrequent north waves.	Reasonable.
	The sand and mudflats immediately adjacent to the proposed entrance channel will not migrate into the entrance channel, as long as short entrance jetties are constructed on either side of the proposed channel. The proposed jetties should extend to a depth of approximately 5 feet below MLLW (8 feet below NGVD).	Questionable. See Section A.2, comment 2.
	The proposed jetties will not cause an adverse effect on the adjacent shoreline…	Questionable. Jetty may intercept sediment transport that results in sediment deficit on down drift site of the shoreline.
	Since the water depths are so great within the harbor basin, the opposite may be preferable (minimize the size of the entrance channel so as to keep currents high enough to limit sediment deposition from occurring within the entrance channel).	Reasonable. However, entrance channel dimensions should take into consideration water quality effects.
	A design entrance channel water depth of 12 feet below MLLW (15 feet below NGVD), 2H:1V side slopes, and an entrance channel width of 75 feet at the design depth are recommended.	Reasonable. However, entrance channel dimensions should take into consideration water quality effects.
	The maximum tidal current is estimated to be approximately 0.67 feet/second in the entrance channel.	Questionable. See Section A.2, comment 3.
	The associated maximum bottom shear stress (the force per unit area exerted by tidal currents over the bottom) is estimated to be 0.00082 lbs/ft^2.	Questionable. See Section A.2, comment 4.

Section	M&N Assumption/Approach	Evaluation
	For typical San Francisco bay mud, the critical shear stress for deposition (the minimum amount of shear stress required to keep the sediment particles in suspension) ranges from 0.001~0.002 lbs/ft^2 and the critical shear stress for erosion (the amount of shear stress required to initiate bottom sediment particle motion) is usually greater than 0.002 lbs/ft^2.	Reasonable. However, it should be taken into consideration that sediment in the channel may also include sandy sediment observed on the adjacent shorelines.
	…the entrance channel will need to be maintenance dredged.	Reasonable.
WAVES	Although a maximum wave height of 5 feet could occur in the vicinity of the project site…	Reasonable. However, since no statistical definition of this wave height or frequency of occurrence is given, this information is not useful and this statement cannot be evaluated.
	…the orientation of the proposed entrance channel will prevent large waves from coming into the harbor basin.	Reasonable.
	…the maximum predicted wave heights in the E-W and N-S directions will be only 0.7 and 0.5 feet (without taking into account the wave reduction benefits offered by the potential presence of vessels and marina floats), with peak wave periods of 1.4 and 1.1 seconds, respectively. These are not considered a problem for the proposed harbor.	Reasonable.
	Typical boat generated waves for different vessel types and speeds inside the harbor can be limited to under 0.7 feet if a speed limit of 5 knots is established.	Reasonable.
	…the estimated wave reflection coefficient will range from 1.0 for a vertical wall to 0.4 for a slope of 2H:1V. [ ]. The 2H:1V slope option is acceptable for reducing wave reflection.	Reasonable.

Section	M&N Assumption/Approach	Evaluation
	Given the proposed basin length of approximately 2,300 feet, width of approximately 1,100 feet and depth of 350 feet, the natural periods along the axis of the basin length for the first 3 oscillation modes are estimated as 87 seconds (fundamental mode), 29 seconds (2nd mode) and 17 seconds (3rd mode).	Reasonable.
	Similarly the natural periods along the axis of the basin width for the first 3 oscillation modes are 41, 14 and 8.3 seconds. Since the possible incident wave period never exceeds 4 seconds, resonance will not likely occur.	Reasonable.
	Given the proposed harbor basin surface area of approximately 58.2 acre, averaged channel cross-sectional area of approximately 1,600 square feet and the channel length of approximately 550 feet, the basin natural period for the Helmholtz resonance is estimated to be 18 minutes. This does not fall into any period range of the tidal constituents, and therefore Helmholtz resonance will not likely occur.	Reasonable.
SEDIMENTATION PATTERNS	…basin will act as a sediment sink. Sedimentation inside the basin will not be a problem due to its deep water depth.	Reasonable.
WATER QUALITY	The total volume for the proposed harbor is estimated as 12,570 acre-feet below NGVD datum.	Questionable. See Section A.2, comment 5.
	The diurnal tidal prism (the volume different between the MHHW and MLLW) is calculated as 352 acre-feet.	Questionable. See Section A.2, comment 6.
	For completely mixed conditions (mixing takes place evenly throughout the basin and in the tidal range), the flushing time would be about 35.7 tidal cycles (18.5 days).	Reasonable. Theoretical total mixing would take place after 40 tidal cycles.

Section	M&N Assumption/Approach	Evaluation
	In reality, the residence time will vary largely depending on the location (near the entrance channel or not) and the depth (surface or bottom). Areas near the entrance channel will experience a faster flushing rate than areas in the most distant ends of the basin.	Reasonable.
	The tidal forcing will not be strong enough to induce vertical mixing all the way down to 350 feet even for spring tides, although it will flush water depths that are deeper than the entrance channel.	Reasonable.
	For the potential long residence times in the harbor, controlling pollutant discharge will therefore be critical to maintaining water quality. Harbor water quality can be maintained by preventing the discharge of pollutants into the harbor basin through the use of recognized Best Management Practices (BMPs).	Questionable. See Section A.2, comment 7.
FLOAT SYSTEM	The size of the quarry pit (approximately 2,300 feet x 1,100 feet) would allow for berthing of an estimated 600 recreational vessels of various sizes and type. The configuration of the quarry basin allows for a well-protected basin to support a potential marina.	Reasonable.
	A potential marina in the SRRQ site would be able to be constructed and anchored similar to a freshwater marina at an inland lake with a few exceptions: [ALL BULLET POINTS].	Reasonable. However, caution should be exercised in evaluation of anchoring/float costs due to the unique nature of the system.

A.2 Detailed Review Comments

The following are more detailed comments for the parameters in Section A.1 determined to be "Questionable":

1. It appears that the dredging was conducted at depths of approximately 16 feet, MLLW. The project-related sediment transport issues relate to shallow near-shore areas that may have different sediment characteristics. More detailed analysis of distribution of sediment along the dredged channel is required to validate this assertion.

2. Sedimentation will occur in all areas of the entrance channel. However, if the entrance channel is dredged to -12 feet (MLLW) and the jetties only block long-shore sediment transport at elevations above -5 feet (MLLW), wave heights and periods indicate that increased sedimentation is likely to occur in the outer part of the channel, particularly during storm events. Sedimentation estimates should be increased in the outer channel area, particularly for the first several years following construction.

3. Provided estimate of depth-averaged current speed is reasonable, however currents will be consistently lower at the bottom where re-suspension could occur. Assuming 0.67 feet/second at mid-depth, velocity at the bottom (0.32 feet from seabed) will be closer to 0.51 feet/second assuming logarithmic velocity profile and bed material diameter = 0.01 mm.

4. Velocity will be lower than predicted here at the bottom, therefore shear stress at the bottom will be lower and less re-suspension will occur. For bottom velocity of roughly 0.51 feet/second from above, bottom shear is approximately 0.00054 lbs/ft^2 (calculated according to Coastal Engineering Manual, 2002).

5. Calculations using contour data from AutoCAD indicate a water volume of approximately 10,900 acre-feet below NGVD datum, including the entire entrance channel.

6. Mean Higher High Water (MHHW) at Point San Pedro is 5.93 feet (MLLW) according to NOAA Station ID 641 (122°26’80’’W, 37°59’40’’N). The basin area is approximately 46.4 acres, therefore the volume described is approximately 275 acre-feet.

7. Best Management Practices (BMPs) can be used to minimize water quality degradation due to marina activities. However, the quarry bottom is a unique environment in which natural water quality degradation over time is still a concern. Biological and chemical water resource specialists should be consulted regarding long-term bottom water quality in the quarry bowl.

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COAST & HARBOR ENGINEERING

SAN RAFAEL ROCK QUARRY MARINA

COASTAL ANALYSIS TECHNICAL REPORT

Submitted to:

COUNTY of MARIN

ESA

January 2007

SAN RAFAEL ROCK QUARRY MARINA
COASTAL ANALYSIS TECHNICAL REPORT

EXECUTIVE SUMMARY

Circulation and water quality associated with construction of a new marina in the San Rafael Rock Quarry were analyzed using tidal current circulation and water quality numerical modeling tools. Tidal current circulation modeling was performed using a verified San Francisco Bay circulation numerical model for both existing and post-construction conditions during summer and winter time periods. The model was shown to accurately represent existing tidal current conditions near the project site through comparison with measured current data near the site.

The circulation modeling results indicate that project construction is not expected to cause changes in current patterns outside the marina except in the immediate vicinity of the entrance channel and immediately downstream of the jetties along the shoreline. Changes in currents are not expected to be measurable at locations farther than approximately 200 feet offshore of the existing shoreline. The largest predicted change in current speed during the winter (stronger flow) simulation was a speed reduction of approximately 23% at locations along the shoreline in the lee of the jetties during ebb tide, and no significant increases in current speeds were predicted.

Circulation and water quality modeling was conducted for the proposed marina for summer and winter conditions and shows that residence time for the upper water column (top 30 feet) at the farthest point inside the marina will be approximately 3 weeks. Practical experience indicates that residence times of approximately 3 weeks are generally sufficient in San Francisco Bay to prevent water quality problems. The residence time in the lower parts of the water column in the basin (between depths of 30 and 400 feet) has not been evaluated here. However, it is likely that water exchange at the bottom would be minimal (residence times of months to years), and is likely to be controlled by other circulation processes (temperature, salinity, wind-generated currents, etc.) in addition to tidal current circulation. Long-term bottom water quality should be evaluated using three-dimensional circulation/water quality modeling tools in consultation with biologists and chemists prior to construction.

1. INTRODUCTION

The following circulation and water quality analysis was performed by Coast & Harbor Engineering, Inc. (CHE) upon request by Environmental Science Associates (ESA) as part of the Environmental Impact Report (EIR) being developed by ESA for Marin County, CA. The proposed project entails flooding the existing San Rafael Rock Quarry and constructing a marina within the basin. The circulation and water quality analysis goals included:

1. Evaluation of potential changes to San Francisco Bay circulation and water quality caused by project construction, and
2. Assessment of general circulation and surface water quality conditions inside the marina following construction.

Figure 1-1 shows the project site location near San Pablo Bay (left) and the quarry basin (right).

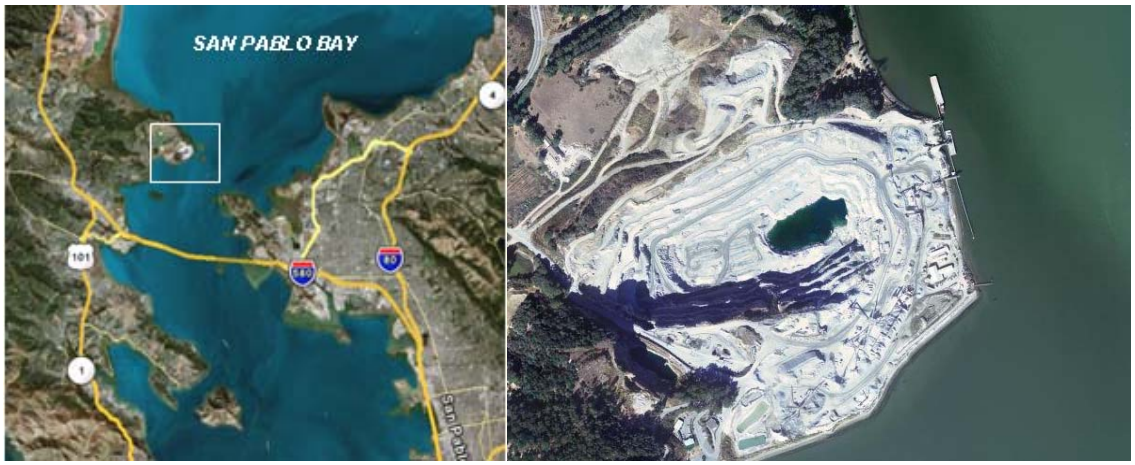

Figure 1-1. Project site location in San Pablo Bay (left, Google Earth) and site close-up aerial (right, USGS February 2004).

2. DESCRIPTION OF PROPOSED PROJECT

The proposed project details were obtained from AutoCAD drawings sent to CHE by ESA (on CD via mail) and CSW/Stuber-Stroeh (CSWST2, via email) in digital format. Data included the existing basin conditions as well as conditions assumed prior to flooding and marina construction. Figure 2-1 shows the existing conditions observed inside the quarry basin on December 1st, 2006. Figure 2-2 shows the proposed marina basin, entrance channel and jetty from the project database provided to CHE by ESA and CSWST2. These features were largely conceptual in the drawings but sufficient information was obtained to generate realistic features.

The jetty and channel dimensions (depth, slopes, location) were obtained from the AutoCAD and the M&N feasibility study (Moffatt & Nichol 2005). The entrance channel was assumed to have bottom width 65 feet, with side slopes 2H:1V and depth 12 feet (MLLW). The jetties were assumed to extend (jetty toe) to existing depth 5 feet

(MLLW), and were assumed to have centerlines as shown in the AutoCAD with side slopes 2H:1V.

Figure 2-1. Quarry conditions on December 1st, 2006.

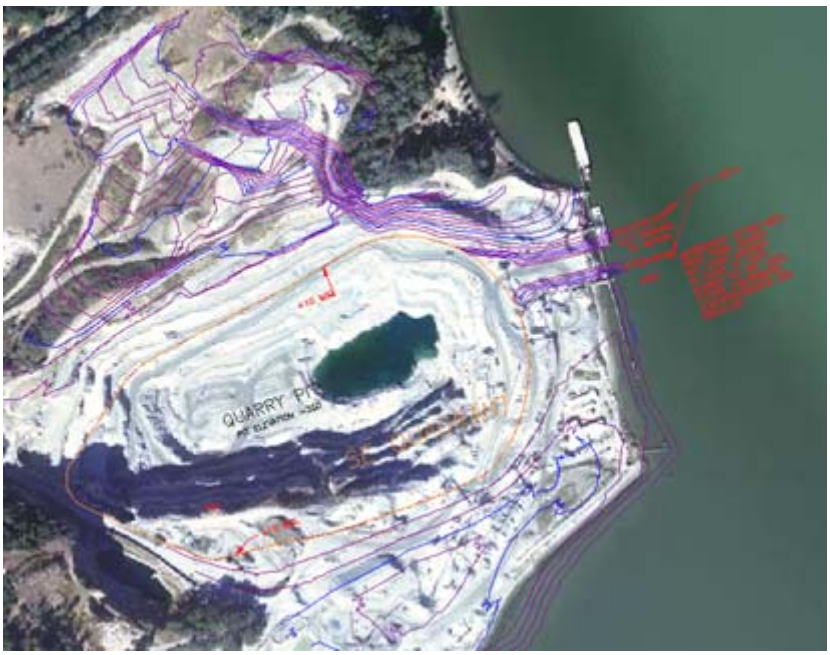

Figure 2-2. Proposed entrance channel configuration from AutoCAD (ESA 2006).

3. CIRCULATION AND WATER QUALITY IMPACT ANALYSIS

Tidal current circulation near the project area is relatively strong and dominates all other types of flows. Circulation modeling simulations were performed to determine flow velocities near the project site during various conditions, including moderate and more extreme tidal conditions. Water quality changes were evaluated with respect to changes in tidal hydrodynamics.

3.1 Circulation Modeling Description and Setup

Tidal circulation modeling was performed with the ADCIRC model (Leuttich *et al* 1992). ADCIRC is a multi-dimensional circulation model capable of simulating current flows and water level fluctuations caused by ocean tides, river flows, winds and surface waves. For San Francisco Bay conditions, ADCIRC simulations were performed in depth-averaged mode (two-dimensional) since it was assumed that the majority of the currents outside the quarry basin do not contain significant vertical stratification, therefore depth-averaged flow approximations are reasonable. Figure 3-1 shows the full ADCIRC modeling domain (left, middle) and modeling domain near the project site (right). The modeling input bathymetry data, domain construction, boundary conditions and verification with measured current data are described in detail in Appendix A.

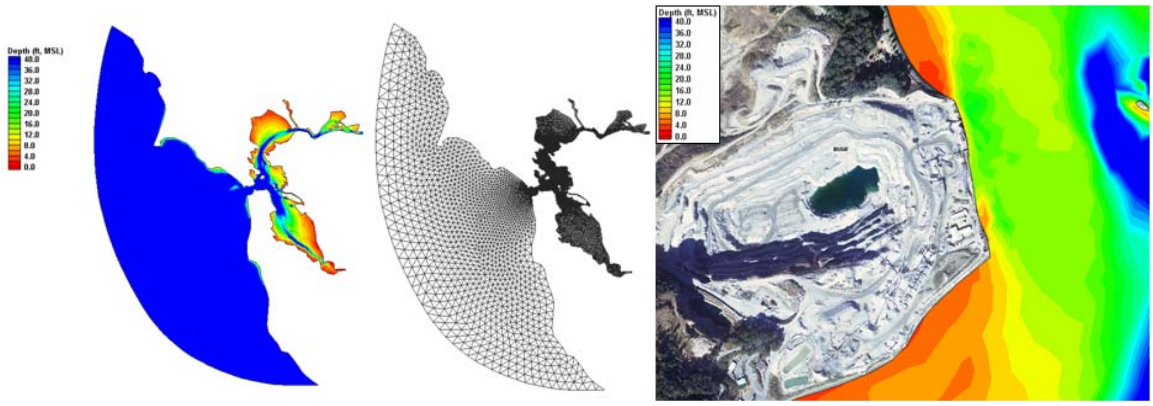

Figure 3-1. ADCIRC modeling San Francisco Bay domain depths (left), finite element mesh (middle) and depths near project site (right).

3.2 Circulation Modeling Scenarios

Modeling of tidal current circulation in San Francisco Bay was conducted for two different two-week periods: July 2002 (summer) and December 1999 (winter). These periods included mixed tides with lower current speeds (summer) and periods with stronger current speeds (winter). Therefore the results of the modeling are considered to be representative of a wide range of natural conditions.

The verification of the circulation model with measured data from these two periods is described in detail in Appendix A. The winter simulation was used for evaluation of project-induced changes in circulation. This period had the largest tidal ranges found within the present tidal epoch (19-year period), based on predicted tide data. This period of time was assumed to represent a conservative period for evaluation of project-induced

changes in circulation, because magnitudes of changes are assumed to be larger during periods with stronger currents.

Two different project conditions were constructed in the model:

- Existing conditions, assumed to be those in existence at the time of this report.
- Post-construction conditions. These are conditions assumed to exist in the quarry basin after cessation of mining operations and after construction of the entrance channel and jetties.

Figure 3-2 shows the existing conditions modeling domain near the project site (left) and the post-construction domain (right). The post-construction domain was constructed using the prescribed entrance configuration (width, slopes and depth) and jetty extents (depth of toe) provided to CHE (Moffatt & Nichol 2005).

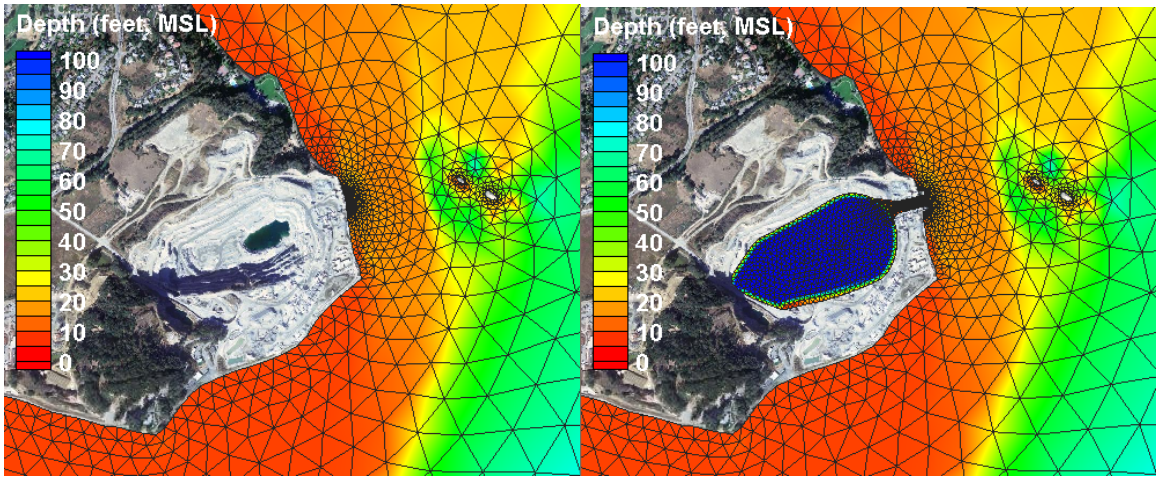

Figure 3-2. ADCIRC model domain close-up near project site for existing conditions (left) and post-construction conditions (right).

3.3 Circulation Modeling Results

The maximum current velocities in the project area during the winter simulation are approximately 4.0 feet/sec between the shoreline and the offshore islands during peak ebb tide and 2.0 feet/sec during peak flood tide. Current speeds are typically stronger near the project site during ebb tide. Figure 3-3 shows the maximum flood (left) and ebb (right) current velocities through the San Pablo Strait during the winter (stronger currents) simulation.

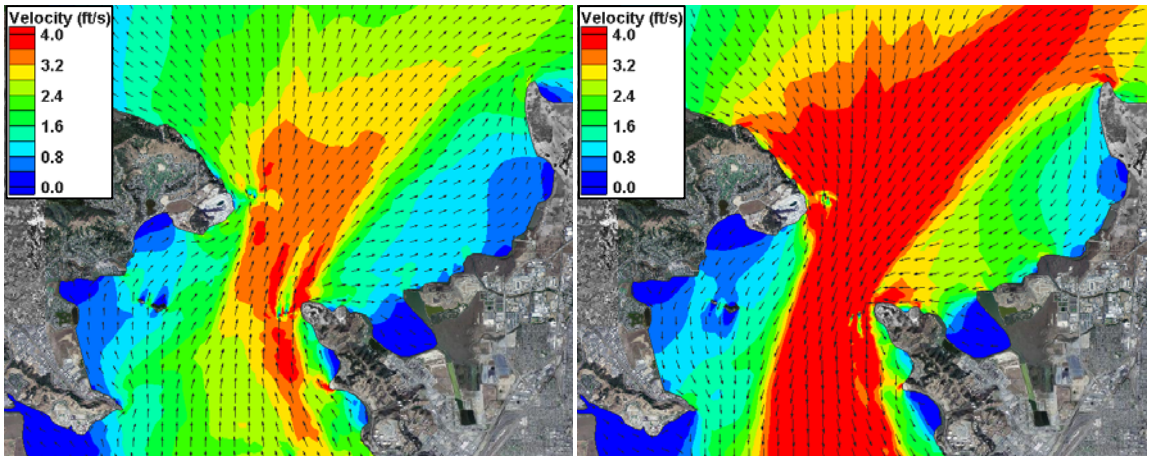

Figure 3-3. ADCIRC model existing conditions flood (left) and ebb (right) current velocities. Color contours represent speed, vectors represent direction.

Figure 3-4 shows a snapshot of ebb current speeds near the project site for existing conditions (left) and post-construction conditions (right) at 12/20/1999 21:30:00 (UTC). Some noticeable changes in current speeds are found downstream of the jetties near the shoreline, as expected since the jetties are shore-normal structures that stretch out into the alongshore flows. Figure 3-5 shows a snapshot of flood current speeds near the project site for existing conditions (left) and post-construction conditions (right) at 12/20/1999 03:00:00 (UTC). Changes on flood tide are only found in the immediate vicinity of the entrance channel.

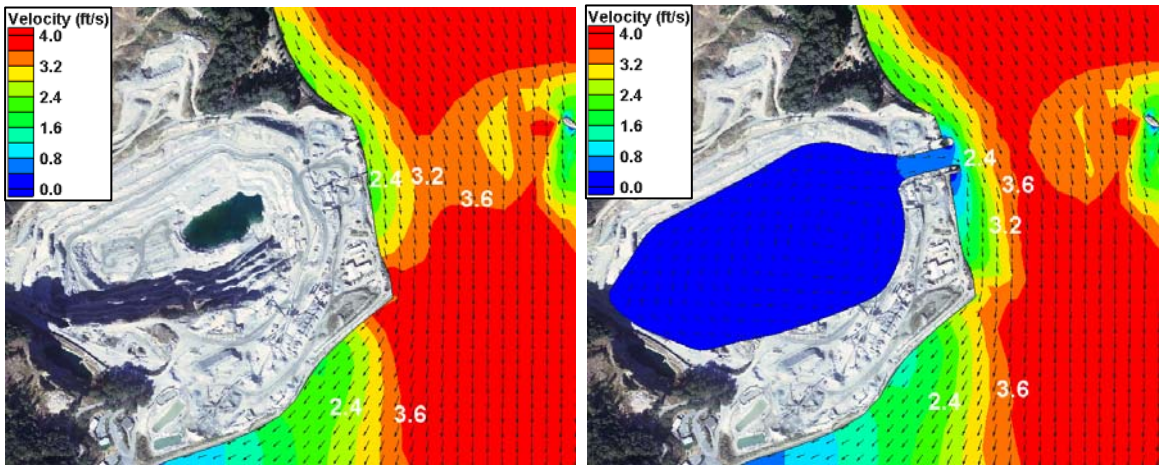

Figure 3-4. ADCIRC model ebb current velocities for existing conditions (left) and post-construction conditions (right) at 12/20/1999 21:30:00 (UTC).

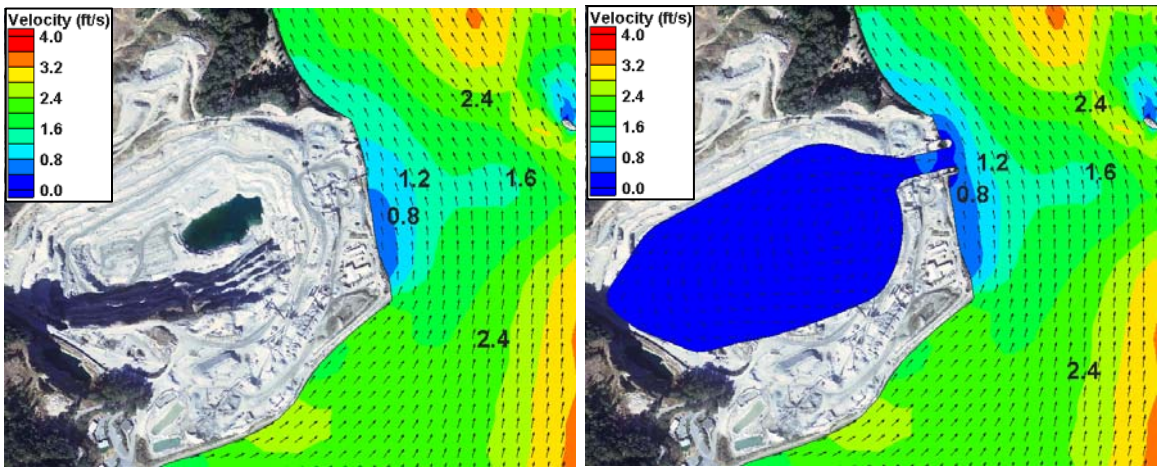

Figure 3-5. ADCIRC model flood current velocities for existing conditions (left) and post-construction conditions (right) at 12/20/1999 03:00:00 (UTC).

Gauges were setup in the numerical model to extract velocities and provide a more detailed evaluation of project-induced circulation changes. Figure 3-6 shows Stations 1-6 with the post-construction model geometry. Stations 1 and 2 are located 200 and 300 feet offshore of the existing shoreline, respectively. Stations 3 and 4 are approximately 1,000 feet south of the entrance channel centerline, and Stations 5 and 6 are approximately 1,700 feet north of the entrance channel centerline.

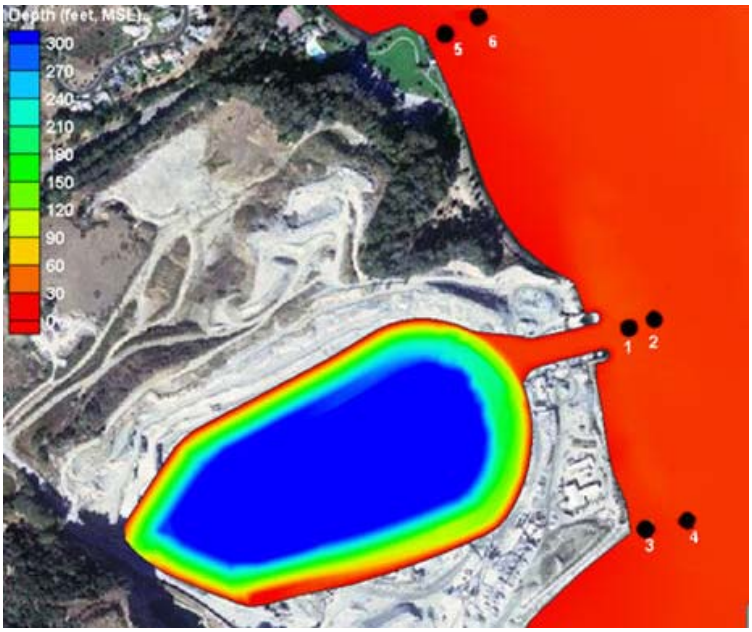

Figure 3-6. ADCIRC model internal gauge locations.

Figure 3-7 (top row) shows time series of velocity at Stations 1 (left) and 2 (right) for existing and post-construction conditions, with negative velocities indicating ebb currents. This figure shows that in front of the entrance channel, the maximum ebb current speed is reduced approximately from 3.5 to 3.2 feet/sec (9%) at Station 1 and the changes are not measurable at Station 2.

Figure 3-7 (middle row) shows time series of velocity at Stations 3 (left) and 4 (right) for existing and post-construction conditions. This figure shows that in nearest to the shoreline, the maximum ebb current speed is reduced approximately from 4.7 to 3.6 feet/sec (~23%) at Station 3 and from 4.2 to 3.8 feet/sec (~10%) at Station 4. The reductions in velocity appear to be the largest downstream of the jetties in the nearshore zone (Station 3) during ebb tide.

Figure 3-7 (bottom row) shows time series of velocity at Stations 5 (left) and 6 (right) for existing and post-construction conditions. This figure shows that in nearest to the shoreline, the maximum flood current speed is reduced approximately from 2.4 to 2.1 feet/sec (~13%) at Station 5 and from 2.4 to 2.2 feet/sec (~8%) at Station 6. The reductions in velocity downstream of the jetties in the nearshore zone (Station 5) appear to be the largest during flood tide.

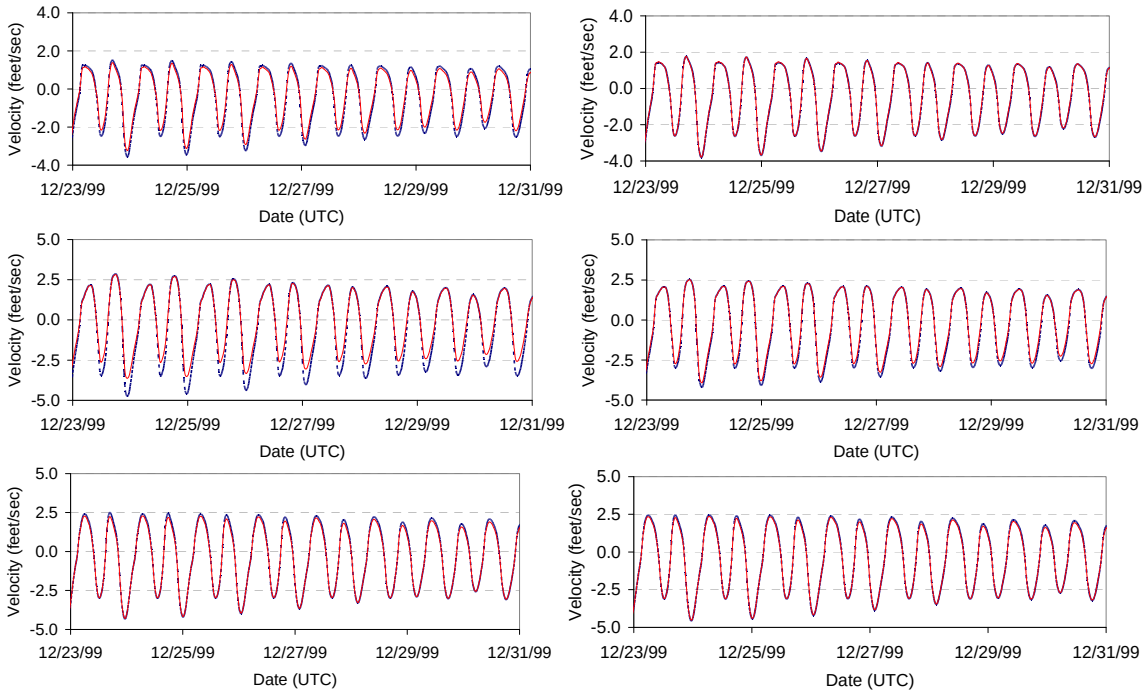

Figure 3-7. Time series of current velocity at Stations 1-6 (left to right, top to bottom) for existing conditions (dashed line) and post-construction conditions (solid line). Negative velocities indicate ebb currents.

3.4 Summary of Circulation and Water Quality Impact Analysis

Two different tidal circulation conditions (summer and winter) were evaluated for existing and post-construction conditions using the San Francisco Bay ADCIRC model. The ADCIRC model was successfully verified using measured current data near the site and predicted tide data for both time periods. The modeling results indicate that the construction of the entrance channel and flooding of the quarry basin is not likely to alter circulation patterns outside the immediate vicinity of the proposed jetties and entrance channel.

Some areas near the shoreline experience a reduction in current speeds downstream of the shore-normal jetties. The reductions are not expected to cause a change in sedimentation or erosion patterns since the velocities are still generally high enough to prevent sedimentation of fines. The circulation modeling results are believed to represent a conservative evaluation of potential impacts, meaning that in reality the changes caused by the basin and jetty construction are expected to be smaller than reported.

In areas of strong tidal currents, water quality in San Francisco Bay is dominated by tidal current circulation processes; therefore it is assumed that tidal current circulation processes are directly related to water quality processes. Since no measurable changes in circulation are observed outside the project area, no measurable changes in water quality are expected outside the project area.

4. CIRCULATION AND WATER QUALITY WITHIN PROPOSED MARINA

Tidal current circulation modeling was also conducted to determine the current velocities near the project site and within the marina basin following construction for the purpose of evaluating future water quality inside the marina. Water quality within the marina was evaluated using numerical dye flushing simulations, the results of which include approximate residence times.

4.1 Methodology

The unique nature of the proposed project requires a unique approach for the modeling methodology. Figure 4-1 shows a cross-section through the proposed marina entrance channel (after flooding) and a conceptual diagram of processes affecting the circulation and water quality in the basin. These processes include tidal current circulation, wind-generated currents, temperature and salinity (density) gradients, as well as fresh water and ground water influences. Freshwater input will likely be prevented, and from the present basin conditions it appears likely that ground water input will be negligible.

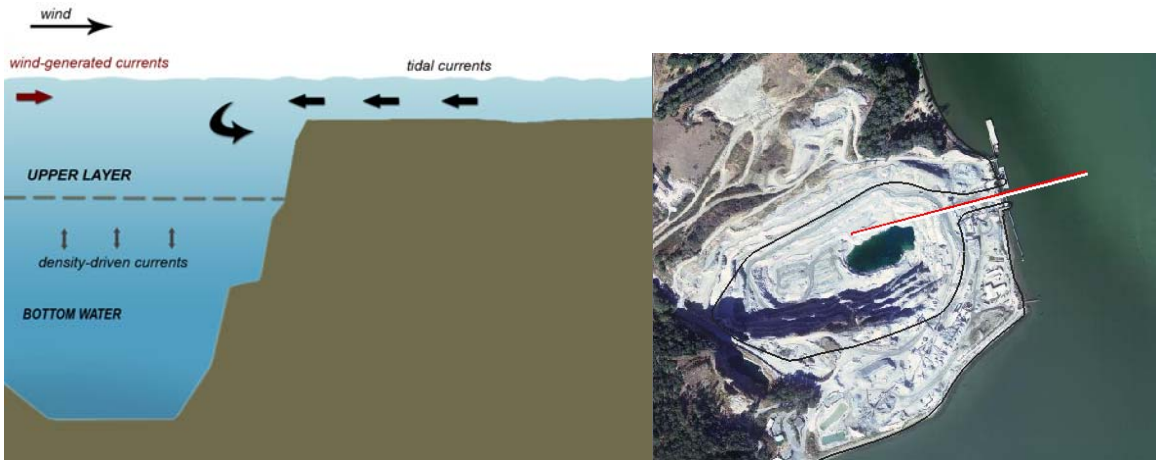

Figure 4-1. Conceptual diagram of potential water exchange mechanisms in the proposed marina basin (left, not to scale) and cross-section location (right).

Tidal exchange through the marina entrance is a force that is applied to the upper layer of water in the basin and forms surface horizontal tidal currents. Due to turbulence exchange and other forces, some small vertical tide-induced currents near the surface are likely to extend down towards and mix with the adjacent water beneath, however these surface forces will be attenuated quickly with depth. Temperature and salinity (density) gradients may generate some vertical exchange over certain water depths. However, in the absence of long-term and extensive analyses there is no practical and reliable way to predict these gradients and water exchange in the deep areas of this water basin that does not presently exist.

Considering the complexity of these factors it was concluded (and coordinated with ESA prior to development of this analysis) that the use of three-dimensional modeling tools to evaluate long-term stratification and exchange through the entire water column (400 feet) for project conditions was not appropriate within the analysis time frame and scope. The water quality analysis herein was conducted for the upper layer of the water column with the understanding that more detailed analysis of basin bottom water quality should be deferred until later phases of the project. For the purposes of this analysis, a two-dimensional model was selected as the primary water quality analysis tool. To evaluate surface water circulation within only the upper water level, a solid horizontal boundary was inserted in the circulation and water quality models at elevation -30 feet (MLLW).

4.2 Circulation Modeling Results

Circulation inside the proposed marina with a solid boundary discussed above (at depth 30 feet, MLLW) was evaluated using the ADCIRC model. The results of ADCIRC modeling indicate that peak current velocities are expected to reach approximately 0.6-0.8 feet/sec in the entrance channel. However, even for the top 30 feet of the water column, tidal current speeds inside most of the basin are expected to be small (less than 0.1 feet/sec). Currents generated by other factors (winds, etc.) are likely to be similar in magnitude to tidal currents at some times.

4.3 Water Quality Modeling Description

Water quality was evaluated in the marina using calculations of residence time, or general time for the marina water to exchange with San Francisco Bay water. To calculate residence time, dye flushing simulations were performed with the water quality model RMA4 (Coastal & Hydraulics Laboratory 2001). RMA4 is a two-dimensional finite element model capable of simulating dispersion and decay of multiple constituents under forcing from tidal current velocities and water level fluctuations, as well as other forces. The results of the depth-averaged ADCIRC model (water level fluctuations and current velocities) were used as input into the RMA4 model.

4.4 Water Quality Modeling Scenarios and Results

Residence time was determined using a series of dye flushing tests, where the marina started with initial concentration 100% and areas outside the marina started with initial concentration zero. Residence time was calculated as the approximate time required for dye concentrations within the marina to be reduced to below 36.8% (actually 1/*e*) of the original concentration through dispersion and exchange with San Francisco Bay water with zero concentration. In order to develop more conservative (longer) residence time estimates, summer conditions (smaller exchange) were used as input into the water quality model. In addition, a conservative dispersion coefficient (small) of 0.5 feet^2/sec was used.

Figure 4-2 shows the depth-averaged dye concentrations (initially 100%) after 1, 20, 40 and 180 days (left to right, top to bottom) in the full-depth basin. After approximately 40 days, concentrations reach below 40%, and after 180 days, concentrations reach nearly zero. Figure 4-3 shows the locations of dye measurement Points A-D within the marina. Figure 4-4 shows the depth-averaged dye concentrations as a function of time at Points A-D for the full-depth marina (left) and for the marina with its depth reduced to 30 feet (MLLW). As discussed in Section 4.1 above, the reduced-depth configuration has been introduced at this time to demonstrate the approximate residence time for surface water assuming that the top 30 feet of water is reasonably well-mixed.

Figure 4-5 summarizes the residence times for existing conditions and the two marina post-construction conditions (full-depth and 30-foot depth) for summer and winter conditions. Residence times at Points A-D vary between 4 and 39 days during winter conditions with full marina depth, 4 and 47 days during summer conditions with full marina depth, and between 2 and 19 days for summer conditions with reduced marina depth (30 feet, MLLW).

The results indicate that a reasonable residence time to be expected for the surface water (approximately top 30 feet) is less than 3 weeks. Considering the conservatism included in the analysis through the dispersion coefficient, the lower summer currents, as well as exclusion of winds and wind-waves as mixing factors, the water quality in the surface water in the basin is expected to be adequate. However, it should be noted that due to the small magnitudes of the tidal currents in the basin, during some periods of time with stronger wind-generated currents may cause temporary reductions in surface water quality due to buildup of debris in certain areas.

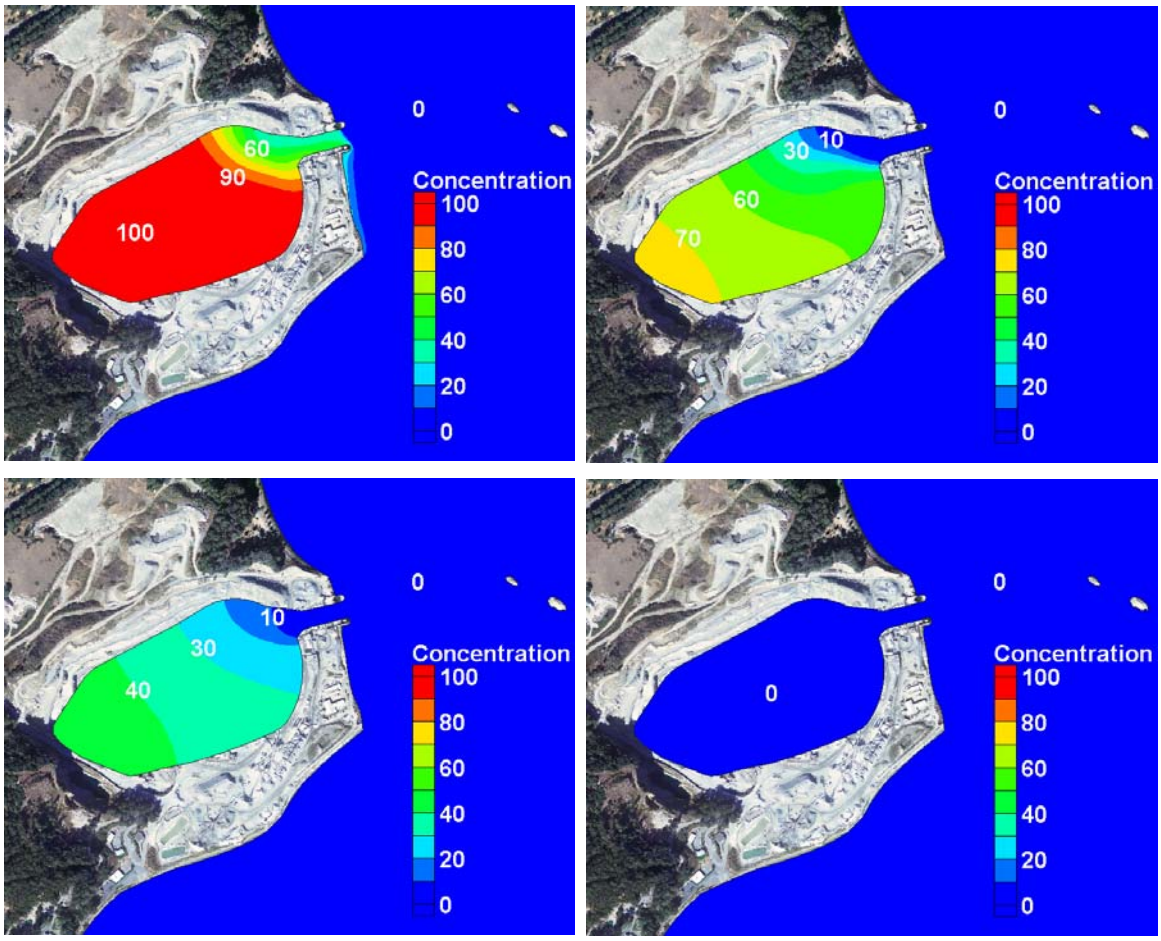

Figure 4-2. Depth-averaged dye concentrations after 1, 20, 40 and 180 days (left to right, top to bottom).

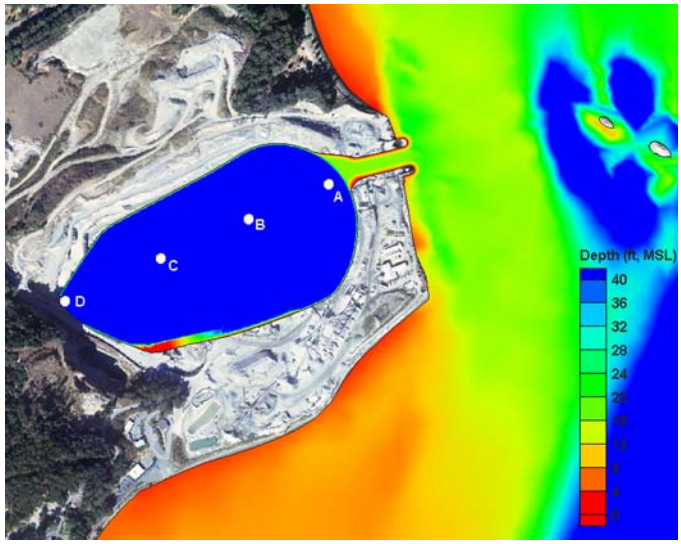

Figure 4-3. Dye concentration measurement points within marina.

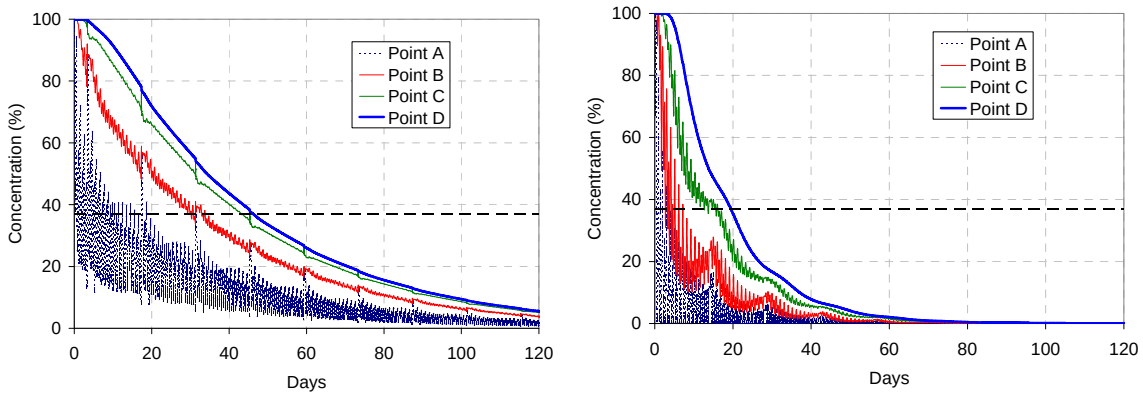

Figure 4-4. Depth-averaged dye concentrations as a function of time at Points A-D for full-depth marina (left) and for marina with total depth 30 feet at MLLW (right).

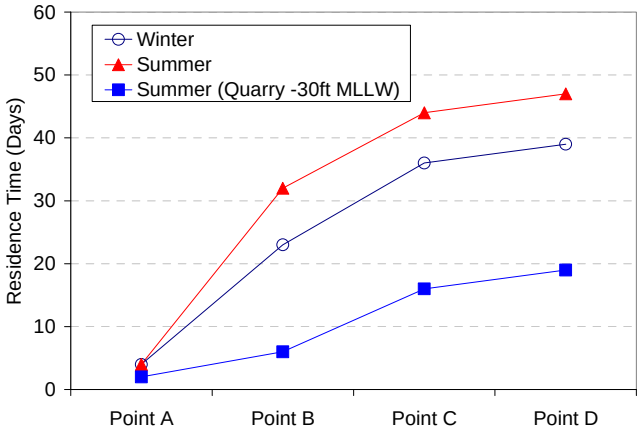

Figure 4-5. Residence time estimates at Points A-D for summer conditions, winter conditions and winter conditions with reduced-depth marina.

Typically residence times are evaluated in a relative sense, i.e. used in comparison with residence times calculated for existing conditions, where the existing water conditions in the field are known. Since the basin is not presently flooded, residence time estimates cannot be compared with a pre-existing known water quality condition. Also, to obtain highly accurate residence times, the water quality model requires calibration with a field dye study. Since these data were not available for the study, residence time estimates should be used with caution.

Residence time within the lower parts of the water column in the basin have not been evaluated in detail here. The bottom water is not expected to experience any measurable current velocities due to tidal current circulation. Circulation processes are likely to be driven by differences in temperature, salinity or other factors, in addition to tidal currents. Three-dimensional circulation and water quality modeling simulations including these factors should be performed in order to determine future bottom water quality in the marina. Biological and chemical analysis should be included to evaluate the impacts of other long-term processes and their implication to future bottom water quality.

5. REFERENCES

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APPENDIX A

ADCIRC MODEL DEVELOPMENT AND VERIFICATION

Tidal circulation modeling was performed with the ADCIRC model (Luettich *et al* 1992). ADCIRC is a multi-dimensional circulation model capable of simulating current flows and water level fluctuations caused by ocean tides, river flows, winds and surface waves. For San Francisco Bay conditions, ADCIRC simulations were performed in depth-averaged mode (two-dimensional) since it was assumed that the majority of the currents outside the quarry basin do not contain significant vertical stratification, therefore depth-averaged flow approximations are reasonable.

A1. ADCIRC Model Bathymetry and Domain

Circulation caused by tidal fluctuations within San Francisco Bay is complex. Evaluation of tidal currents within most areas of San Francisco Bay requires modeling the propagation and transformation of tides under the Golden Gate Bridge and through the various channels and shallows of the bay. The model bathymetry was compiled from various sources, including the following:

- United States Army Corps of Engineers, miscellaneous surveys 1980-present
- United States Geological Survey (USGS), miscellaneous surveys 1990-present
- Coast & Harbor Engineering, Inc. (2000, 2002)

The bathymetry data for areas surrounding the site were obtained from a 1983 U.S. Army Corps of Engineers survey. Although they are relatively old, these data were complete and appeared to represent a reasonable approximation of the area bathymetry. No additional data near the project site were found within the time frame of the analysis.

Figure A-1 shows the full-bay ADCIRC modeling domain with depths (left) and finite element mesh (right). The ADCIRC modeling domain for existing conditions consisted of 39,900 elements and 21,375 nodes. Inclusion of bays and rivers inside the estuary past the project site (Suisun Bay, rivers, etc.) was shown to have a negligible effect on results near the project site and hence these areas were not included in the model. Figure A-2 shows the existing conditions and post-construction modeling domains near the project site.

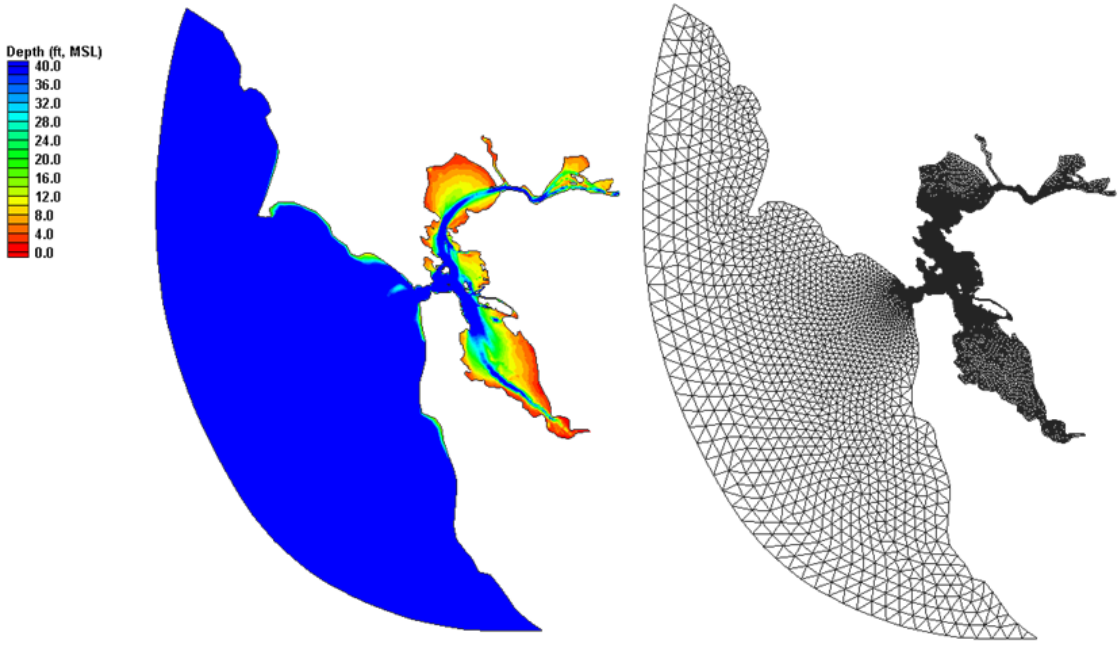

Figure A-1. ADCIRC modeling San Francisco Bay domain with depths (left) and finite element mesh (right).

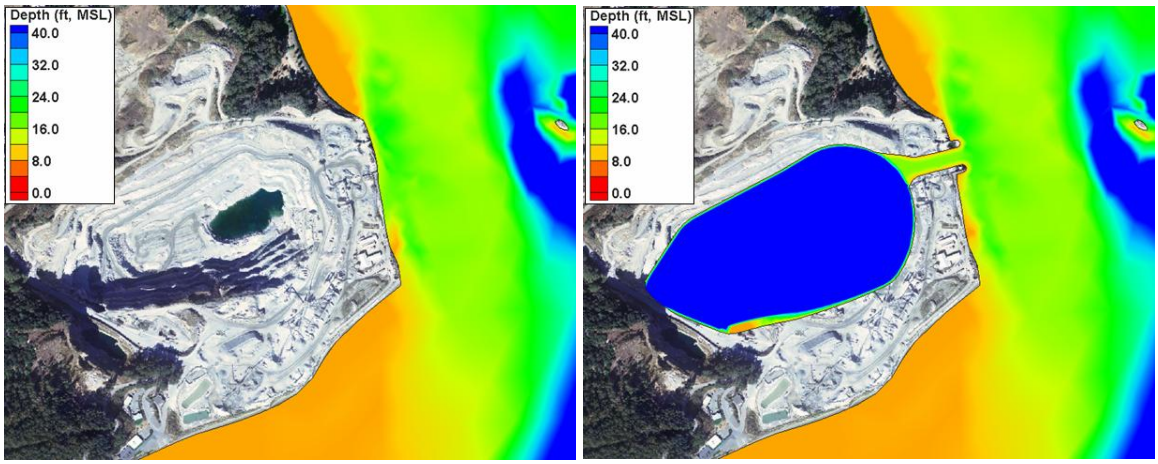

Figure A-2. ADCIRC modeling domain close-up for existing conditions (left) and post-construction conditions (right).

A2. ADCIRC Model Boundary Conditions

Forcing of the San Francisco Bay model requires detailed tidal constituent data at each calculation node along the offshore boundary of the model. Tidal constituent data consist of unique amplitude and phase data for each tidal constituent at each offshore node. For the present analysis, these amplitude and phase data for the largest 13 tidal constituents were obtained from a worldwide database (LeProvost *et al* 1994).

Two different simulation periods were chosen for which field data were available for validation:

- Summer: 14-day period beginning on July 8th, 2002 at 00:00 (UTC). This period represents a mixed-tide period with relatively lower tidal flows.
- Winter: 14-day period beginning on December 18th, 1999 at 00:00 (UTC). This period contains the largest tidal range in the present tidal epoch (19-year period) and represents periods with relatively high tidal flows.

No additional boundary conditions were prescribed for the analysis. Although river flows from the San Joaquin and Sacramento Rivers are known to increase current velocities through San Pablo Bay, the impact analysis was focused on general impacts of stronger day-to-day conditions. Therefore, currents generated by river flows were not included in the analysis.

A3. ADCIRC Model Verification

Prior to application for the circulation and water quality impact analysis, the ADCIRC model was verified with measured current data and predicted tide data near the project site. Modeling parameters such as roughness (0.002) and eddy viscosity (32.2 ft^2/sec) were not altered from previous San Francisco Bay model calibration and verification efforts. The model was verified for two independent time periods without any modifications to the domain, boundary conditions or input variables.

Measured current data were available from an Acoustic Doppler Current Profiler (ADCP) deployed from 1999-2002 near the Richmond-San Rafael Bridge (I-580), located at 37°55'45.5"N, 122°25'30.0"W. The ADCP was deployed by NOAA under the PORTS real-time observation network (http://sfports.wr.usgs.gov/SFPORTS/). Predicted tide data were extracted from NOAA data for the Point San Pedro Station (NOAA Station ID 641), located at 37°59'40"N, 122°26'80"W. Figure A-3 shows the current and tide measurement station locations and the project site.

Figure A-4 shows the winter measured and ADCIRC depth-averaged current speeds at the Richmond Gauge, as well as the predicted (NOAA) and ADCIRC tidal fluctuations at the Point San Pedro Station. The velocities on ebb and flood tide and tidal fluctuations are well predicted by the ADCIRC model. Figure A-5 shows the summer measured and ADCIRC depth-averaged current speeds at the Richmond Gauge, as well as the predicted (NOAA) and ADCIRC tidal fluctuations at the Point San Pedro Station. The velocities on ebb and flood tide and tidal fluctuations during this period are also well predicted by the ADCIRC model.

The ADCIRC model developed for the project was therefore determined to be a reliable tool for analysis of project circulation and water quality impacts and of surface water quality in the proposed marina.

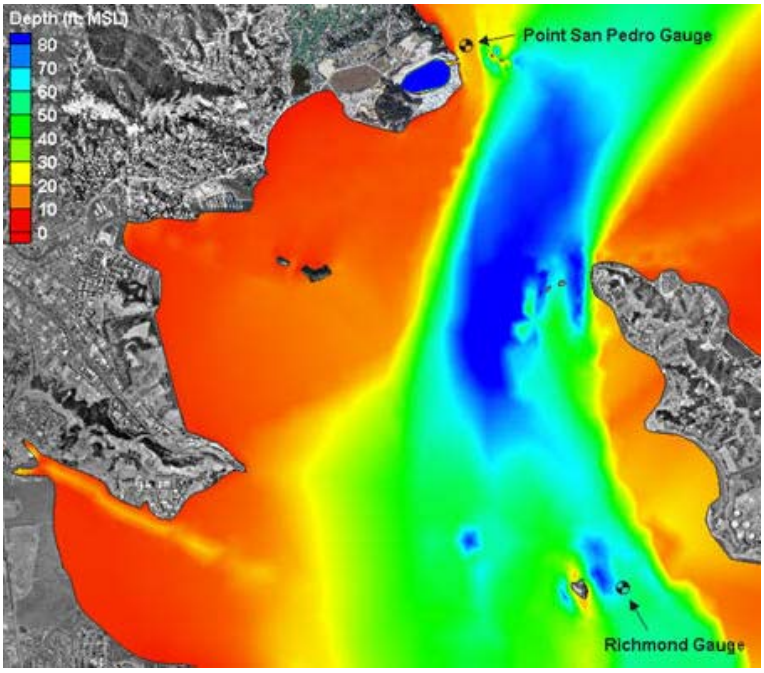

Figure A-3. Field measurement gauge (Richmond) and predicted tide location (Point San Pedro) used for ADCIRC model verification.

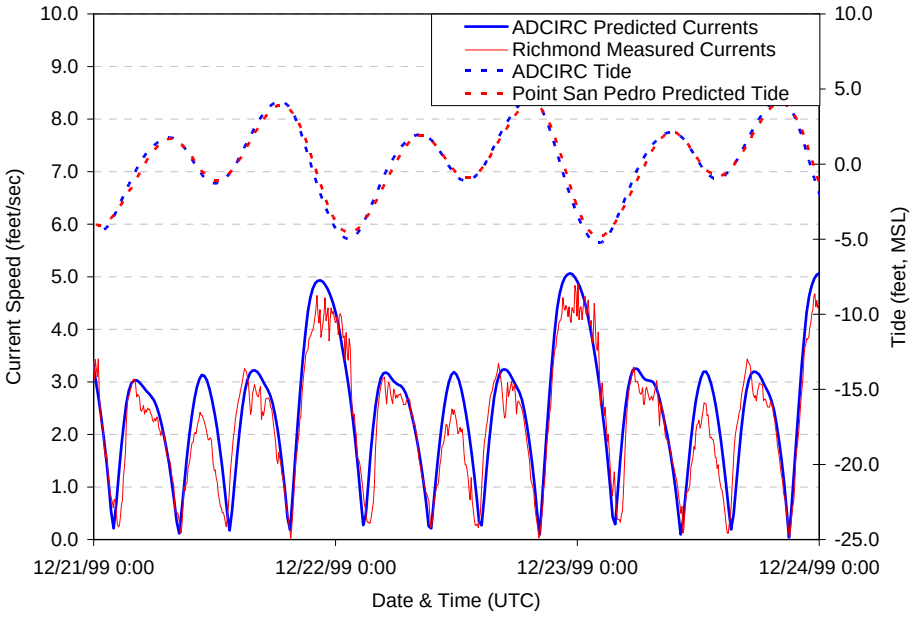

Figure A-4. Measured and predicted tides and currents at Richmond Gauge and Point San Pedro Gauge (NOAA) during winter simulation.

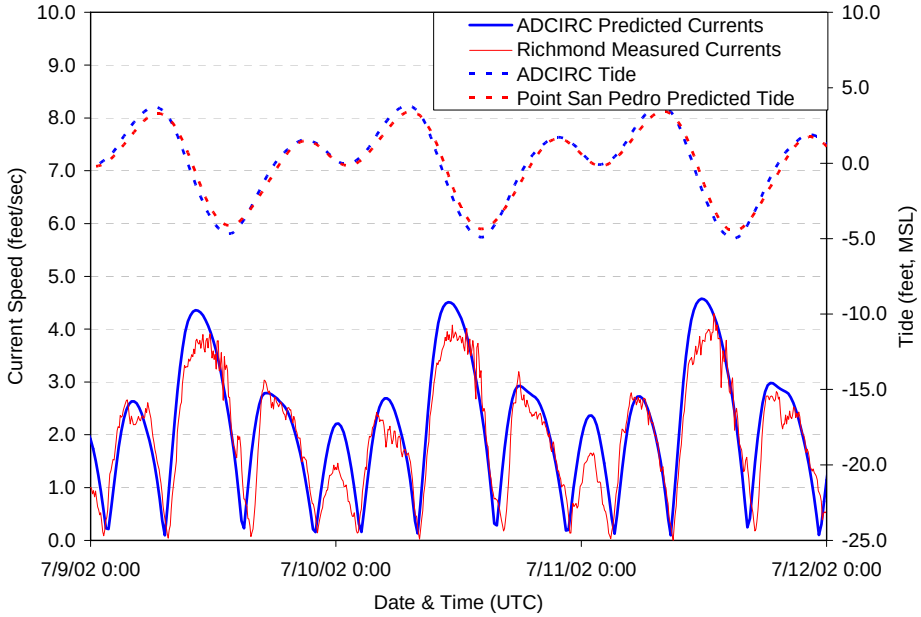

Figure A-5. Measured and predicted tides and currents at Richmond Gauge and Point San Pedro Gauge (NOAA) during summer simulation.

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APPENDIX J

Assessment of Rock Blasting Practices and Impacts

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ASSESSMENT OF ROCK BLASTING PRACTICES AND IMPACTS FOR PROPOSED AMMENDMENTS TO THE MINING PERMIT AT THE SAN RAFAEL ROCK QUARRY MARIN COUNTY, CALIFORNIA

JANUARY 2007

Prepared for:
ENVIRONMENTAL SCIENCE ASSOCIATES

Prepared by:
Gordon F. Revey, Principal, REVEY Associates, Inc.
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REVEY Associates, Inc.

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1.0 INTRODUCTION AND SCOPE

San Rafael Rock Quarry (SRRQ) has submitted a proposal regarding amendments to its existing Surface Mining and Quarrying Permit, No. Q-72-03, issued by the County of Marin in 1972. The proposed amendments apply to SRRQ's ongoing quarrying and related production operations. As required by California law (CEQA Guidelines § 15063), the potential for significant environmental impacts must be studied before mining permits are approved or amended. In response to this need, the County of Marin has retained Environmental Science Associates (ESA) to review potential environmental effects of the proposed project and determine whether identified impacts can be mitigated. These determinations will be the basis of preparing an informed decision regarding the need for an Environmental Impact Report (EIR).

Rock blasting work is an integral part of the proposed SRRQ mining operations. Ground vibration and blast noise (air-overpressure) generated by current and past rock blasting is felt by neighbors to the SRRQ operation. ESA has retained REVEY Associates, Inc. (RAI) to evaluate the impacts of vibration, noise and other potential effects that could result from the proposed amended mining plan. Hence, potential blasting impacts are identified in this report and practical mitigation measures are recommended.

On October 10, 2006, Gordon F. Revey (author) visited the SRRQ operation to: 1) study the topography of the site; 2) determine the proximity of neighboring property; and 3) observe current blasting practices. Messrs Paul Mitchell and Dan Sicular of ESA accompanied the author and pointed out where planned future mining excavations would be located at the site. References used in this evaluation include historical blasting and monitoring records and evaluations of SRRQ of the blasting by others (Redpath, 2000; Floyd, 2000). The general layout of the SRRQ operation is show in Figure 1.1.

In order to acquaint the reader with the physical science of blast effects, including ground vibration and air-overpressure (noise), short technical summaries about physical blast effects are included in the body of this report.

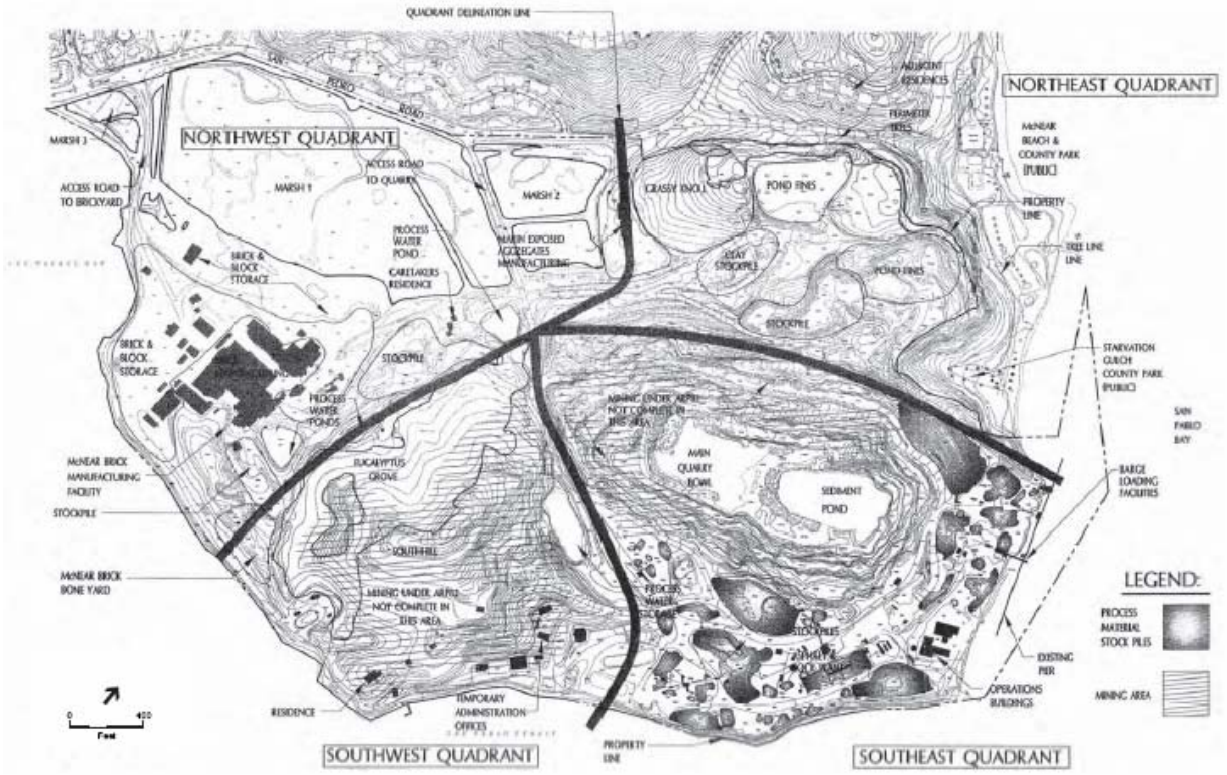


Figure 1.1 – San Rafael Rock Quarry Site Map

1.2 Rock Excavation Methods

When blasting methods are used to fragment rock to facilitate excavations and mining work, neighbors to the work often wonder if other methods, including the use of hoe-rams and dozers with rippers or expansive chemicals placed in drilled holes, could be used in lieu of blasting.

If mechanical ho-rams were used to break rock, mined at a rate of 2,000,000 tons/year, a fleet of 30 or so ho-rams would be needed and the continuous noise made by the impact hammers would be more than unbearable to neighbors.

When expansive concrete products like Bristar® or equivalent agents are used, they are used in holes drilled in 10-foot lifts, spaced on 2-foot square patterns. After waiting 10 to 20 hours, hairline cracks appear in the rock and heavy mechanical equipment and/or impact hammers can then be used to excavate it. The cost of this form of breakage, compared to blasting with holes spaced 18 or so feet apart in 50-foot-high benches, would be hundreds of times greater.

Because of the cost and environmental (noise) limitations of these methods, conventional blasting is the only practical method of breaking large quantities (> 2,000,000 tons/year) of hard rock like the sandstone found at the SRRQ operation. Moreover, the author knows of no full-scale quarry or mining operations in the world that use methods other than blasting to break hard rock.

2.0 BLAST EFFECTS, DAMAGE CRITERIA AND HUMAN RESPONSE

Before analyzing potential impacts of the specific blasting operations proposed at the SRRQ site, the following pages and subsections 3.1 through 3.6 provide a general technical review of the physical effects of blasting, prediction methods, damage criteria, and human response.

When explosive charges detonate in rock, they are designed so that most of the energy is used in breaking and displacing the rock mass. However, some of the energy can also be released in the form of transient stress waves, which in turn cause temporary ground vibration. Detonating charges also create rock movement and release of high-pressure gas, which in turn induce air-overpressure (noise), airborne dust and audible blast noise.

In the very-near zone, crushing usually occurs in the rock around the charge. The extent of this compressive and shear failure zone is usually limited to one or two charge radii (half the diameter of the charge). Beyond the plastic crushing zone, the rock or ground is temporarily deformed by elastic strain waves. For some distance, tangential strain intensity exceeds the rock's strength and new fractures are created. The magnitude of dynamic strain and particle motion decreases as distance from the charge increases. Radial cracks are created in rock around detonating charges as a result of induced strain that exceeds the rock's tensile strength. These cracks generally do not extend farther than 26 charge radii (Siskind, 1983). For instance, if the diameter of the charge is 5 inches, radial cracks might extend 65 (5/2 x 26) inches into adjacent rock.

2.1 Vibration Ground Waves

Within and beyond the cracking zone, stress waves spread through the rock mass and along the ground surface. Some waves pass through the "body" of the rock mass. Primary compression waves and shear waves are examples of body waves. Other surface vibration waves travel along the ground surface similar to the way waves travel along the surface of water. In an ideal isotropic and homogenous rock mass, wave energy would travel evenly in all directions. However, most rock masses are far from ideal, so wave energy is reflected, refracted and attenuated by various geological and topographical conditions. The elastic properties of rock greatly influence vibration magnitude and attenuation rate. When seismic waves pass through the ground, ground particles oscillate within three-dimensional space. Soon after blasting has stopped, vibration energy dissipates and the ground particles become still.

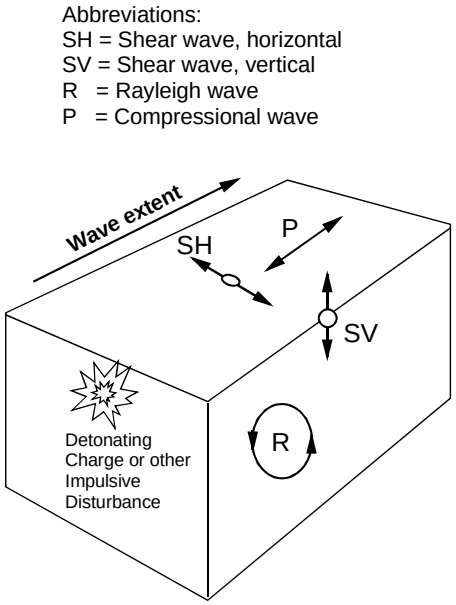


Figure 2.1 – Typical Vibration Waves

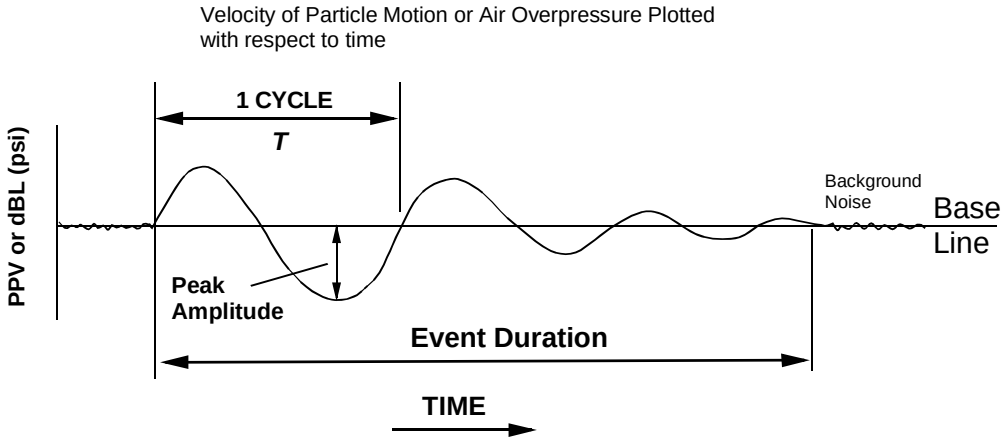


Figure 2.2 – Idealized Vibration or Air Overpressure Time—Intensity History Plot

The intensity of ground motion can be measured in several ways. These measures include:

- Particle displacement
- Particle velocity
- Particle acceleration
- Vibration frequency

Displacement is a measure of ground particle travel distance or location with respect to time. Particle velocity measures the speed of movement and acceleration is the rate of velocity changes. Vibration frequency is a measure of ground particle oscillations occurring per second of time. Frequency is reported in units of Hertz (Hz), which is equivalent to cycles per second.

Standard industry damage criteria and "safe levels" of ground motion are generally based on particle velocity and frequency of motion. The response of humans to ground motion is primarily influenced by ground motion velocity and duration of the motion. Vibration intensity is expressed as Peak Particle Velocity (PPV) or the maximum particle velocity of the ground. Since ground-shaking speeds are generally quite low, it is measured in inches per second (in/s).

Persons not familiar with vibration science often confuse particle velocity values with ground displacement. For instance, if a measured peak or maximum particle velocity is 0.25 inches, the ground has NOT moved a quarter of an inch. The actual temporary particle movement or displacement would be much less because in one second of time ground particles disturbed by blast vibration waves will oscillate back and forth many times in a second. This is why frequency of motion is important because, unlike earthquakes where frequency of motion is quite low, cycles of ground particle shaking (frequency) caused by blasting usually occurs at 10 to 50 hertz. Since the ground particles are shaking back and forth or up and down so quickly, similar to running in place, they do not move very far. In fact, all of the actual temporary ground motions near residential structures caused by blasting at SRRQ have been less than the thickness of a human hair (≈ 0.008 in). It should also be understood that one particle of ground moving say 0.005 inches has not been separated by that much from ground particles beside it; because, like ballroom dancers, oscillating particles of ground are just slightly out of step so the actual separation and strain between them is much smaller.

2.2 Vibration Perception and Damage Criteria

The average person is quite sensitive to ground motion. Levels of motion as low as 0.50 mm/s (0.02 in/s) can be detected by the human body when background noise and vibration levels are low.

In Report of Investigations RI 8507, the US Bureau of Mines (Siskind, 1980) recommended the safe ground motion limits defined by the curves shown in Figure 2.3. These limits, ranging from 0.5 to 2.0 in/s, are the basis for most regulatory blast-induced vibration levels in most State and federal jurisdictions throughout the United States, are specifically intended to prevent cosmetic crack damage in plaster or drywall in typical wood frame homes. Significantly higher PPV limits, ranging from 5.0 to 20 in/s (Oriard, 1980; Siskind, 1993; Revey,2006), are used to protect concrete, steel structures, buried pipes and other structural elements of buildings.

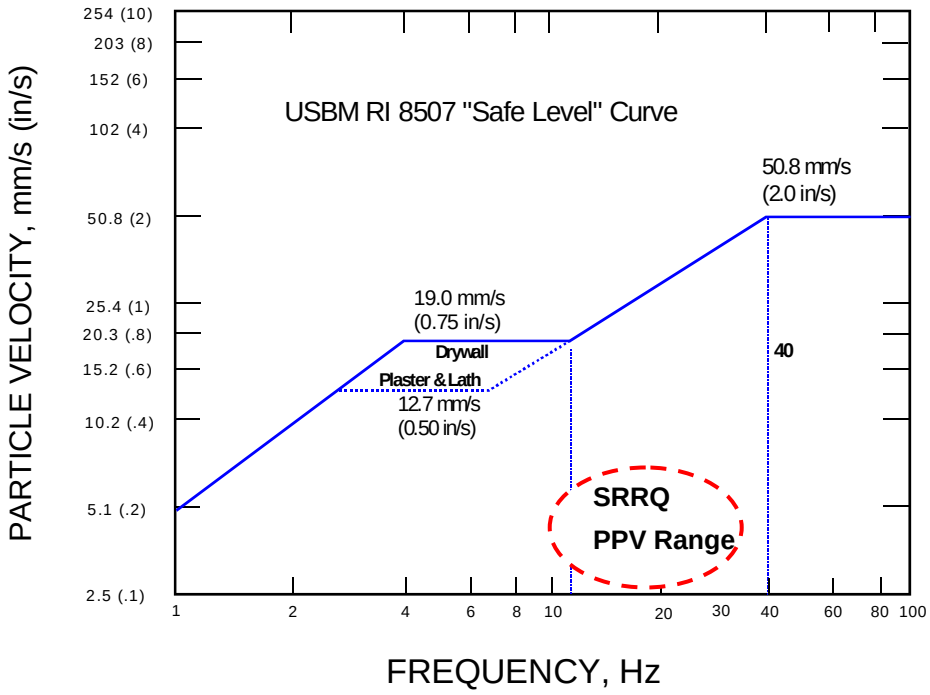


Figure 2.3 -- USBM "Safe Level" vibration curve from RI 8507

Vibration data evaluated in this report includes hundreds of monitoring records measured from October 25, 2004 to November 1, 2006. These measurements were made with seismographs operated by SRRQ and by Vibra-Tech – a firm contracted to do independent monitoring by Marin County. An audit of all printed seismic monitoring reports indicates that these measurements are accurate. Equipment was calibrated by the manufacturer within the industry standard 12 month period before time of use. Ground motion and air-overpressure plots conform to expected intensities, durations and energy arrival times consistent with the blast designs and locations to which they are related. The intensity range of ground motions, measured near residential property during this time, based on frequency of motion and intensity is indicated in the circled range overlying the safe levels recommended by USBM shown in Figure 2.3. Since the range of measured motions near residential properties near SRRQ are well below the very cautious USBM limits, it is reasonable to conclude that blast-induced motion has caused no new damage or even the extension of existing cosmetic cracks in plaster or drywall at any property near SRRQ.

2.3 Blast Vibration Intensity Predictions and Site-Specific SRRQ PPV Curve

It is standard practice to use scaling relationships to predict vibration intensities at various distances. These relationships, based on similitude theory, are used to develop empirical relationships between ground vibration particle velocity, charge weight, and distance. Distance is scaled by dividing it by the square root of the maximum charge weight firing at any time within a blast. This single scaled distance variable can than be used to predict vibration intensity (PPV).

The scaling relationship between peak-particle-velocity (PPV) and scaled distance (D_s) is shown below in Equation 2.1.

$$PPV = K\left(D/\sqrt{W}\right)^{m} \qquad or \quad PPV = K\left(D_s\right)^{m}$$ Equation 2.1

Where: PPV = Peak Particle Velocity (in/s)
D = Distance (ft)
W = Maximum Charge-weight-per-delay (lb)
K = Rock Energy Transfer Constant (K-Factor)
m = Decay Constant (curve slope)
D_s = Scaled Distance ($ft\text{-}lb^{-0.5}$)

Site-specific constants, ***K*** and ***m***, can be determined by performing a regression analysis of historical peak particle velocity (PPV) and D_s data pairs. In simple terms, for any given site, ***K*** is a measure of how much vibration energy is transferred to the ground near the explosive charge and ***m*** defines how fast the energy attenuates with distance. For practical prediction purposes, standard statistical methods can be used to develop upper-envelope and 95% probability curves that can be used to make "worst-case" predictions of vibration intensities occurring at any location around data-specific location.

When plotted in log-log scale, the exponential relationship between scaled distance and PPV generally follows a straight line with a negative slope (***m***) – ranging from -1.0 to -1.6; and Y-intercept (***K***) values varying between 24 and 605, as defined by Oriard (1972) – see Figure 2.4. The ***K*** value (amount of energy at the source) is higher when charges are more confined and/or rock has a high stiffness ratio (Young's modulus of elasticity). Site constants ***K*** and ***m*** are also influenced by ground water, topography and other in situ ground conditions.

Vibration data from measurements made by Vibra-Tech during year 2005 is plotted in Figure 2.5. This data, which include 181 points, all falls well within the expected range defined by Oriard for bench blasting – the method used at SRRQ. Considering that there are 181 data points, the data also plots with very good linear correlation. In this case, the coefficient of correlation is 0.796; a correlation of 1.0 would indicate all data fits the curve perfectly.

For prediction purposes, the maximum intensity of ground motion at any locations around the SRRQ operation can be calculated using Equation 2.2. This equation is based on the upper boundary of the data, located about two standard deviations above the best fit curve where the K factor = 18.8. Statistically, predictions of vibration intensity made with this formula will be greater than measured vibrations 95% of the time; In effect, these are "worst case" predictions.

$$95\%\ UpperEnvelope\ SRRQ\ PPV = 40.1\left(D/\sqrt{W}\right)^{-1.28}$$ Equation 2.2

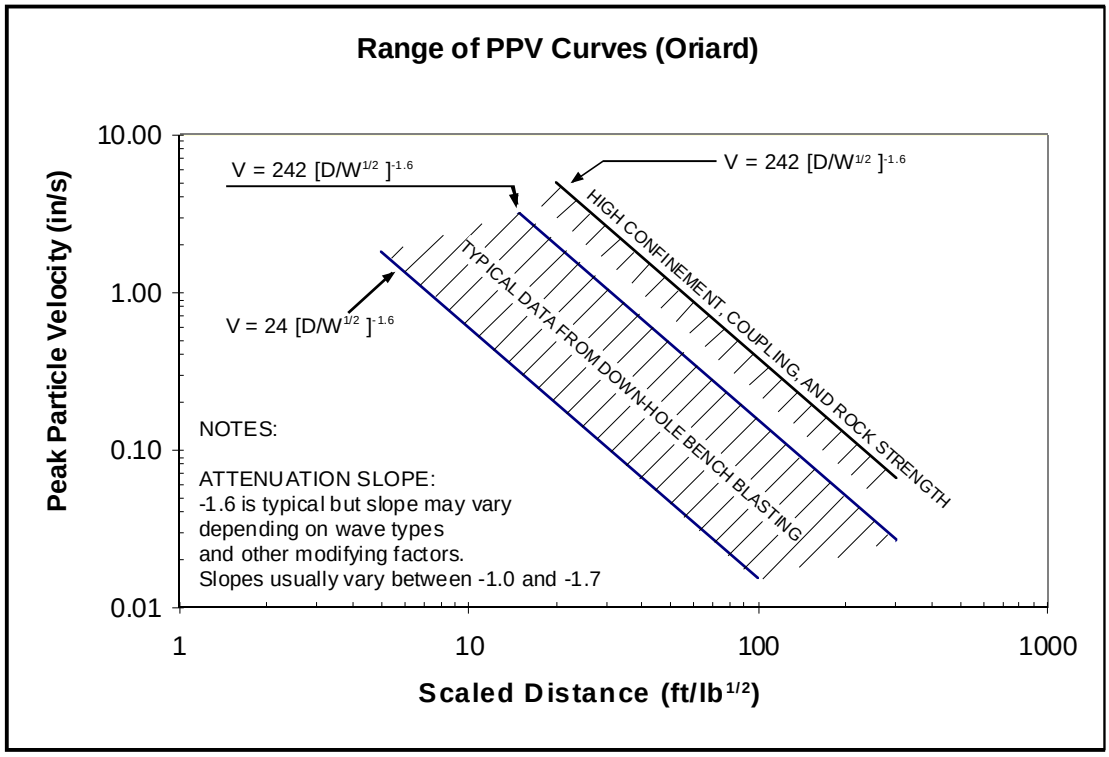


Figure 2.4 – Oriard PPV Curves

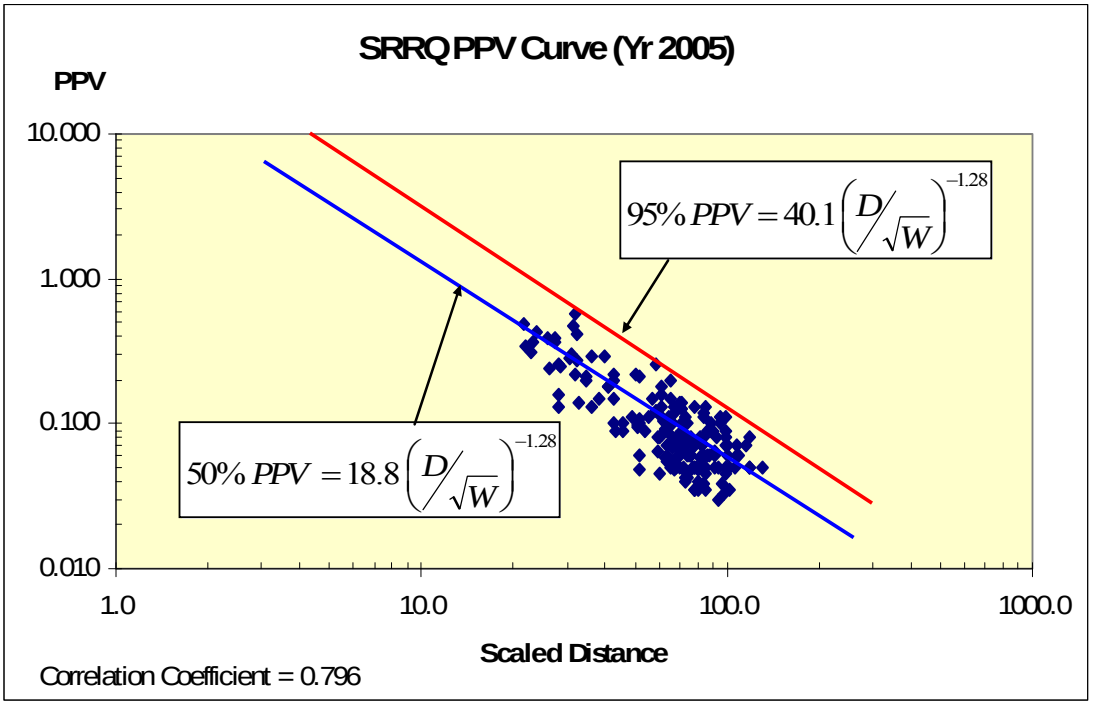
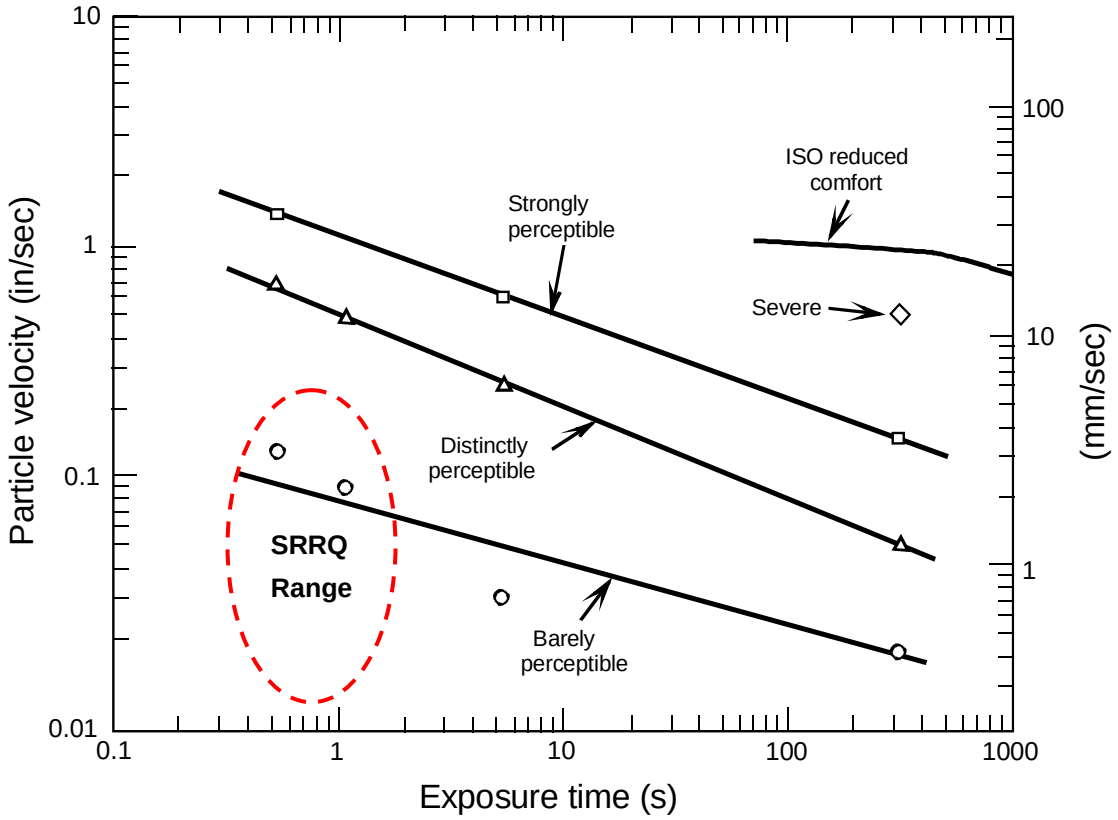


Figure 2.5 -- SRRQ Vibration Data (Vibra-Tech - 2005) and PPV Attenuation Curves

2.4 Human Response to Blast-Induced Vibrations

In addition to concerns about vibration damage, under certain conditions, humans and animals can be startled or annoyed by blast-induced ground vibration. Research has also shown that the human response to transient vibration--like those caused by blasting--varies depending on exposure time and the intensity of the motion. Response curves defining how humans respond to transient vibrations based on these variables are shown in Figure 2.6.



Human response to transient pulses of varying duration after Wiss and Parmalee (1974)

Figure 2.6 – Human Response to Transient Vibration

Based on the experience of the author and other experts including Oriard, as rigorously explained in his definitive text regarding vibrations and environmental forces (1999), when occupants of residential structures hear it or feel vibrations caused by blasting, they often sincerely believe that damage may have occurred. Upon hearing any sound or feeling any motion, some people will look around and they invariably find defects or damages caused by environmental forces if they look closely enough. No house is entirely without such environmental damage, but it might not have been noticed previously. Unfortunately, in cases like the SRRQ blasting where the intensities of ground motions and air-overpressure are well below levels that could cause damage, people often come to the false conclusion that this environmental damage was caused by the vibration they heard or felt regardless of how minuscule the vibration might have been.

Based on historical data indicating that the intensities of peak ground motions near residential properties around SRRQ have approached 0.25 in/s, it is reasonable to conclude that occupants of homes are feeling the vibrations. As shown in Table 2.1, complaints are likely when the intensity of ground motions exceed 0.2 in/s. While motions have reached levels where complaints are likely, they have not reached the 0.39 in/s level that would be disturbing.

Peak Particle Velocity Threshold		Effect
(in/s)	(mm/s)	
23.62	600	New cracks form in rock
11.81	300	Falls of rock in unlined tunnels
7.48	190	Falls of plaster and serious cracking in buildings
5.51	140	Minor new cracks, opening of old cracks
3.94	100	Safe limit for lined tunnels, reinforced concrete
1.97	50	Safe limit for residential buildings
1.18	30	Feels severe
0.39	10	Disturbing to people
0.20	5	Some complaints likely
0.04	1	Vibrations are noticeable
< 0.04	<1	Barely perceptible vibrations

Table 2.1 – Vibration Effects Threshold Values (Hendron and Oriard, 1982)

2.5 Earthquake Shaking Versus Blasting Vibrations

In northern California, an active seismic zone, it would be quite normal for occupants of homes to express concern that vibrations caused by rock blasting might cause damage like that of an earthquake. Blast-induced vibration measurements in ground near residential structures around the SRRQ operation have generally not exceeded 0.25 in/s. The typical frequency of ground motion has been around 45 Hz. While this motion would be perceptible to the occupant, the physical characteristics of the measured motions were very different from those of a typical earthquake. It is important to understand that unlike earthquakes where the ground may physically move several inches, the total amount of temporary ground displacement near homes, caused by SRRQ blasting have been extremely small.

For terms of comparison, the seismic design criteria for dam structures typically specify a 2% chance that a 0.18g earthquake event might occur in a 50-yr period. The resulting PPV caused by an earthquake occurring at a typical frequency of 1 Hz would be **11.0 in/s** [(0.18 x 32.2 x 12) / (2 x 3.14 x 1)]. The particle displacement (vibratory ground movement) would be **1.75 inches**! [11.0 / (2 x 3.14 x 1)]. In this case, assuming typical sinusoidal motion, the maximum measured ground displacement in ground near residential structures caused by SRRQ blasting would be around 0.0009 inches (nine ten thousandths of inch) [0.25 / (2 x 3.14 x 45)]. For perspective, this displacement is about nine times less than the thickness of a human hair (0.008 in).

For purposes of comparison, a scaled comparison of the ground motions created by a typical blast at SRRQ quarry and the Loma Prieta earthquake of 1989 are shown in Figure 2.7.

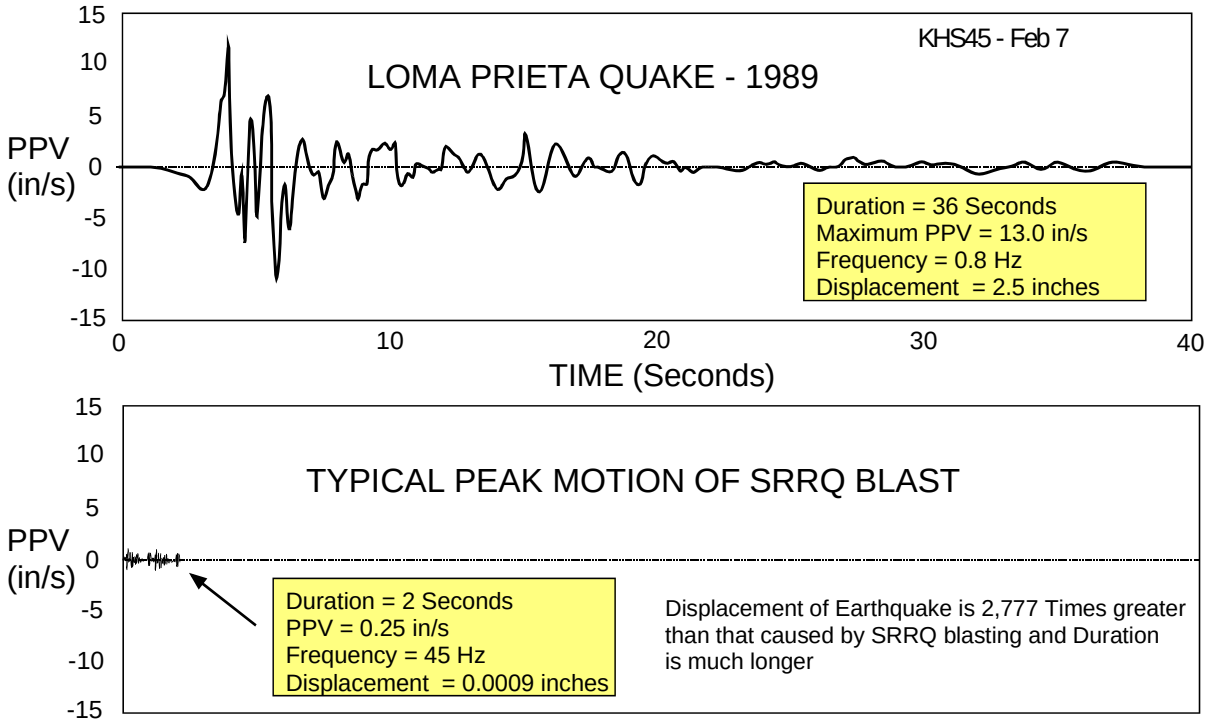


Figure 2.7 – Comparison of Ground Vibration Caused by Earthquakes and SRRQ Blasting

2.6 Effects of Environmental Forces versus Blast Vibration

In order to establish an objective measurement of actual blasting impacts on residential homes, an Autonomous Crack Monitoring (ACM) system was developed by the Infrastructure Technology Institute (ITI). This system has been used to measure and compare the actual dilations of existing cracks caused by blast vibrations and by longer term changes in weather and environmental conditions.

In a specific study for the Franklin County Court (Judge Roger Crittenden), the author contracted Dr. Charles H. Dowding of Northwestern University, the developer of this system, to install crack gauges and other instrumentation that measured movements of existing cracks in various building materials of a home located near an operating limestone quarry where rock blasting occurred about three times a week.

The Autonomous Crack Monitoring project measures total crack width but more importantly, as shown in Figure 2.8, it measures changes in crack width. The crack displacement measured by the sensors may be driven by any combination of the following factors: differential thermal expansion; structural overloading; chemical changes in mortar, bricks, plaster, and stucco; shrinkage and swelling of wood with temperature and humidity changes; Fatigue and aging of wall coverings; and differential foundation settlement.

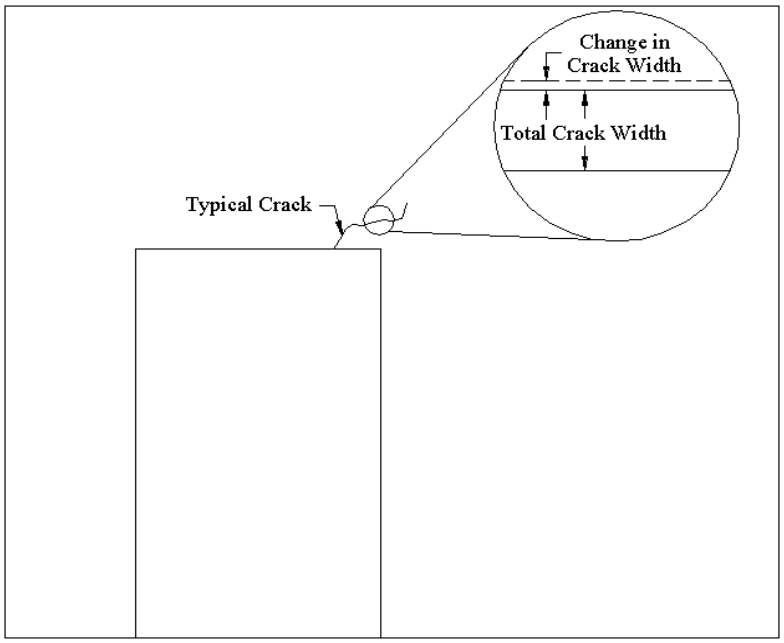


Figure 2.8 – Measurement of Crack Dilation

In Figure 2.9, an ITI technician pounds a wall to demonstrate the dynamic displacement caused in a crack through a brick. The resulting crack dilations are shown in Figure 2.10.

Figure 2.9 – Crack Gauge Installed over a Crack in an Exterior Brick Wall

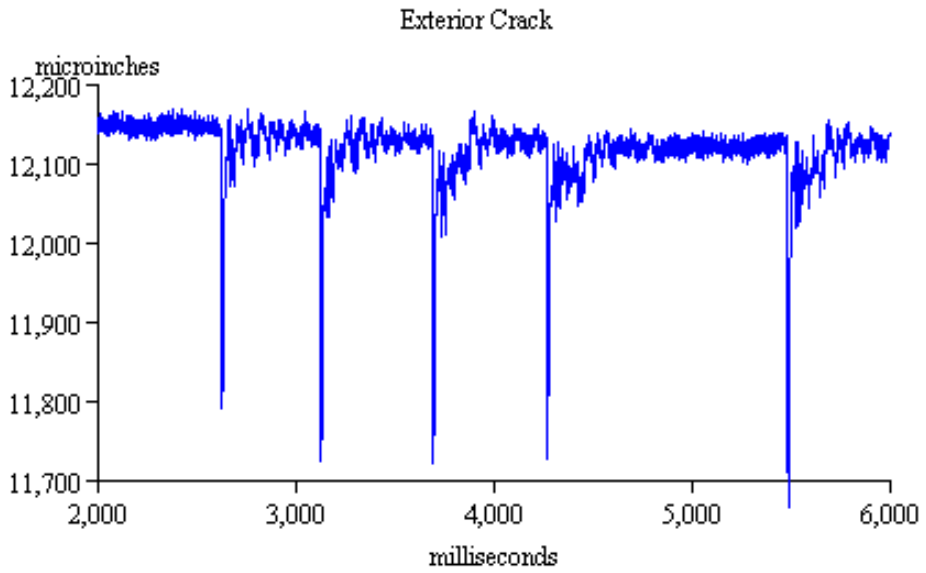


Figure 2.10 – Dynamic Displacement of a Crack in a Brick Caused by Pounding Wall

Three cracks were monitored were monitored in the test home. Gauges were installed on a crack in an outside brick wall, an interior crack in a concrete block wall, and on a drywall crack above a doorway opening. The crack sensor locations are shown in Figure 2.11.

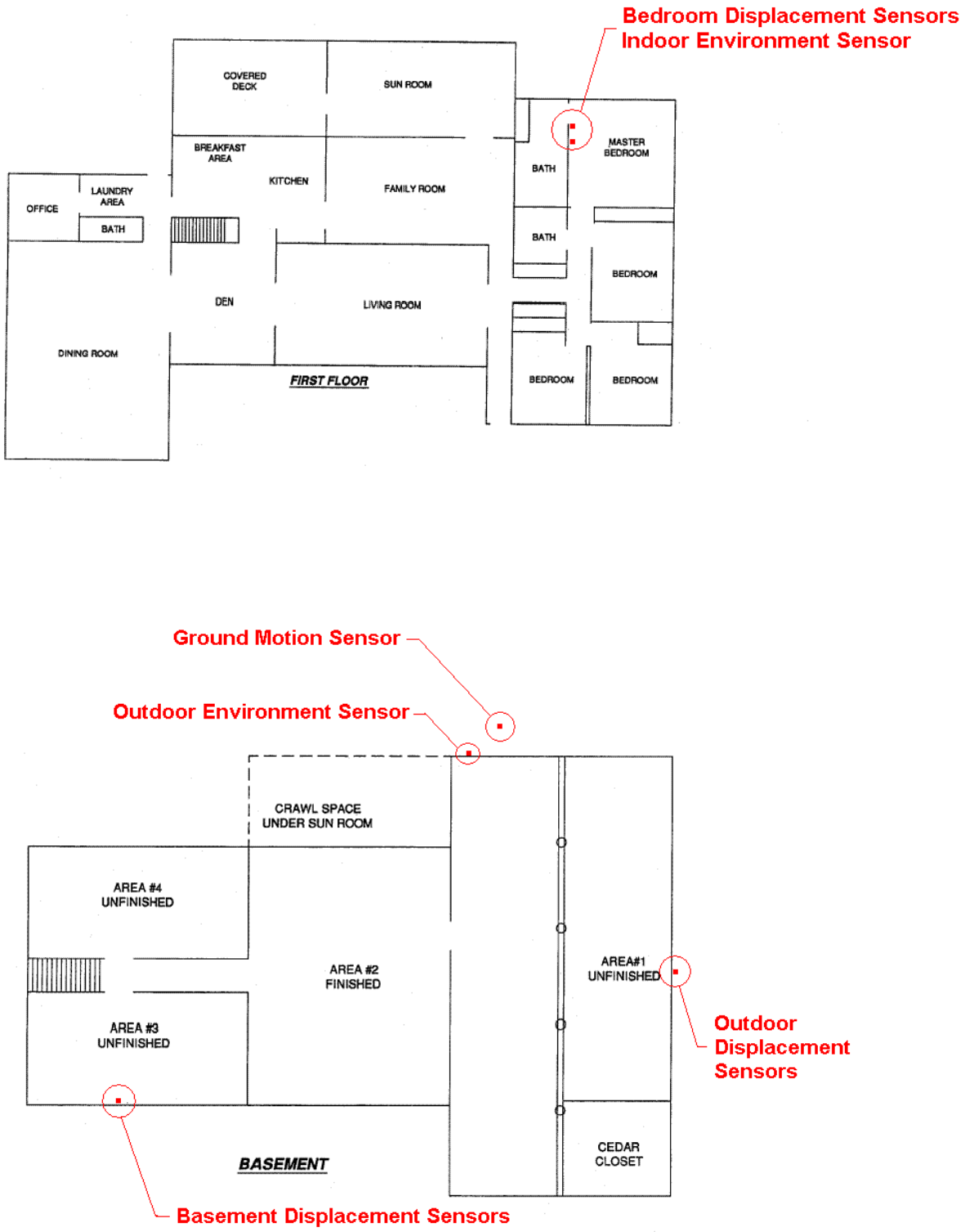


Figure 2.11 – Locations of Crack Monitoring Gauges

This overview includes measurements made from mid January through February 24th, 2005. During that period ground motions and crack responses from 10 blast events were recorded by the system between 18 January and 22 February. The single axis Peak Particle Velocities (PPV's) ranged between 0.04 ips on 22 February and 0.14 ips on January 20th. The ground motions were recorded by a velocity transducer buried in the back yard near the home.

A comparison of the ground motion and corresponding dilation of the outside crack in the brick wall resulting from a February-16 blast is shown in Figure 2.12.

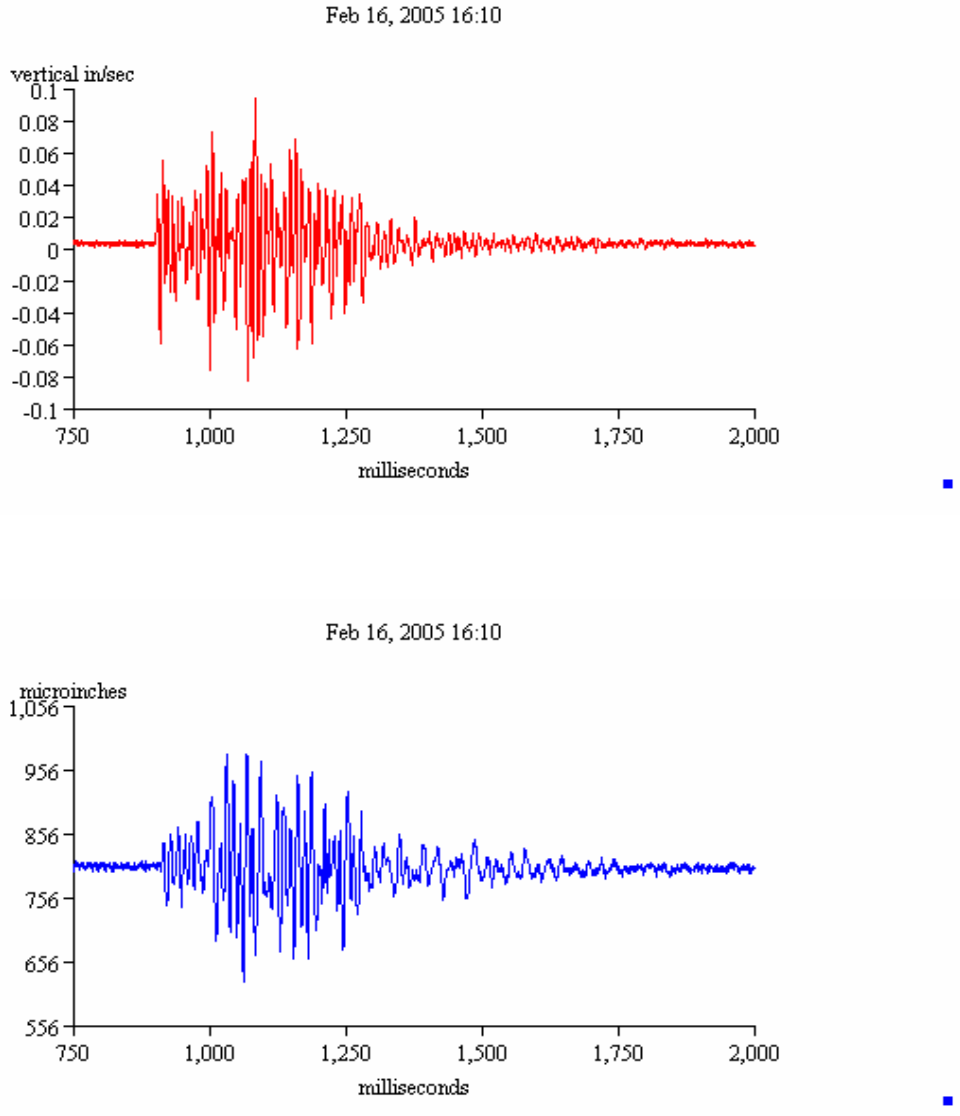


Figure 2.12 – Comparison of Simultaneous Ground Motion and Crack Response

As shown in Figure 2.13 on the following page, where blast-induced movements are superimposed as red bars over the crack movements caused by long term (weather and environmental) crack response, it is very clear that the environmental effects are far greater than are the blast-induced effects to date. For instance, blasting caused a peak dilation of 200 micro inches in the concrete basement crack, whereas temperature and humidity changes caused a 6000 micro inch dilation which is 30 times greater. The relative magnitudes of crack and environmental responses are tabulated in Table 2.2. All changes in crack width are reported for their zero to peak values which are roughly ½ of the peak to peak values.

Short term monitoring such as this will not reveal the much larger effects of longer-term effects such as seasonal changes in ground water table, drought, slope instability, seasonal changes in heating and air conditioning, settling ground, poor drainage, so on and so forth. Therefore the weather/environmental effects observed in this report are unlikely to be the maxima. Data in this report support this caution. Suppose the house would have been instrumented in the beginning of February rather than January. The 6000 micro inch change in crack width would not have been observed. Seasonal weather changes occurring from winter to spring will create even greater dilations in existing cracks. The fact that crack dilations, caused by changing environmental conditions, are as much 30 times higher than those caused by blast vibrations indicates that weather effects are causing far greater levels of stresses in all building materials. If levels of blast-induced energy do not increase substantially above the levels measured in this study, the strain they create in building materials is essentially lost within the much higher strain created by weather effects; thus it is extremely unlikely that blast induced motions similar to those measured in this study could cause any new cracks.

	Comparative Changes in Crack Width micro inches			
Crack Location (Wall Material)	**Outside (Brick wall)**	**Inside Basement (Concrete Block)**	**Inside Bedroom (Dry Wall)**	**notes**
Effect				
Occupant Activity	**400**	**250**	**200**	**light adjacent pounding**
Wind	**50**			
Weather/ Environmental	**(10,000)**	**6000 (750)**	**(750)**	**(daily)**
Blasting maximum	**200**	**200**	**50**	**0.14 ips**

Table 2.2 – Summary of Crack Dilations Caused by Various Forces

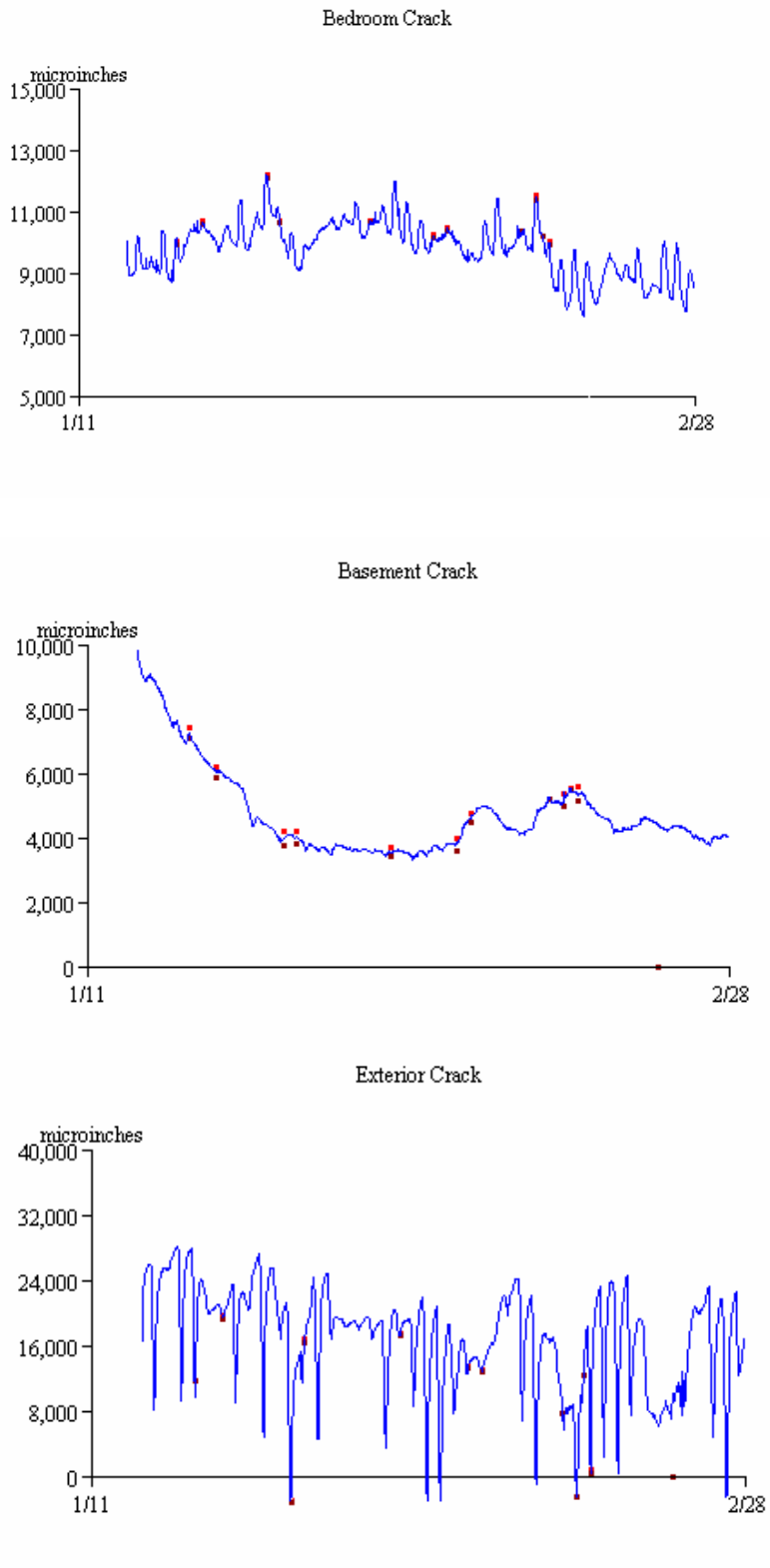


Figure 2.13 – Crack Displacements Caused by Blasting and Temperature/Humidity Changes

Crack monitoring studies similar to the one done in Kentucky have been done in various structures at least ten other locations in varying climates throughout the United States. The results have all been similar to findings documented by Oriard (1999) and Dowding (1996), in which stresses in building materials caused by environmental forces are less than those caused by ground motions with intensities less than 2.0 in/s. If a similar study were done in a home near the SRRQ operation, the author is certain the finding would be the same.

2.7 Practical Vibration Limitation Method for Future SRRQ Blasting

The SRRQ operation has committed to managing blasting to ensure motion measured in ground near residential structures does not exceed 0.5 in/s. From a damage control perspective, this is a very cautious limit. However, as indicated in Table 2.1, complaints typically result when the intensity of ground motion exceeds 0.2 in/s. More importantly, the motion becomes disturbing when intensity reaches 0.39 in/s. To ensure that motions caused by future blasting at the SRRQ operation are not overly disturbing, it would be wise for SRRQ to consider designing future blasts so peak ground motion does not exceed 0.25 in/s. Current blasting has been meeting this limit, and intensities of ground motion caused by all future blasting would likely not exceed 0.25 in/s if SRRQ commits to using a minimum scaled distance of 52.8 to limit charge weight-per-delay.

Based on the SRRQ 95% upper limit PPV formula (Equation 2.2), where the K factor is 40.1 and the slope is -1.28, the limiting scaled distance of 52.8 is determined as shown in the following calculation.

	(PPV -in/s)		(K)		(m)		Minimum Scaled Distance
D_s = (	0.250	/	40.1)	1/ -1.280		=	52.8 ft-lb$^{1/2}$

Note that a minimum scaled distance value is used to determine charge-weight-per-delay based on distance to the nearest residential structure as shown in Equation 2.3.

$$W = \left(D / D_s \right)^2 \qquad \text{Equation 2.3}$$

Where: D = Distance (ft)
W = Maximum Charge-weight-per-delay (lb)
D_s = Scaled Distance (ft/lb$^{1/2}$) = 52.8 recommended for SRRQ

When blasts are closer to homes, charge weights are reduced. For instance if a blast was 2,000 feet from a home, the maximum charge-per-delay would be 1,434 pounds [$(2{,}000 / 52.8)^2$]. If the distance reduces to 1,500 feet the charge drops significantly to 807 pounds [$(1{,}500 / 52.8)^2$].

3.0 BLAST NOISE (AIR-OVERPRESSURE)

The term "Blast noise" is a misleading because the largest component of blast-induced noise occurs at frequencies below the threshold-of-hearing for humans (16 to 20 Hz). Hence, the common industry term for blast-induced noise is "air-overpressure". As its name implies, air-overpressure is a measure of the transient pressure changes. These low-intensity pulsating pressure changes, above and below ambient atmospheric pressure, are manifested in the form of acoustical waves traveling through the air. The speed of sound varies in different materials, depending on the density of the medium. For instance, pressure waves travel at the speed of 4,920 ft/s (1,500 m/s) in water, whereas, in air they travel at only 1,100 ft/s (335 m/s) because air has a lower density.

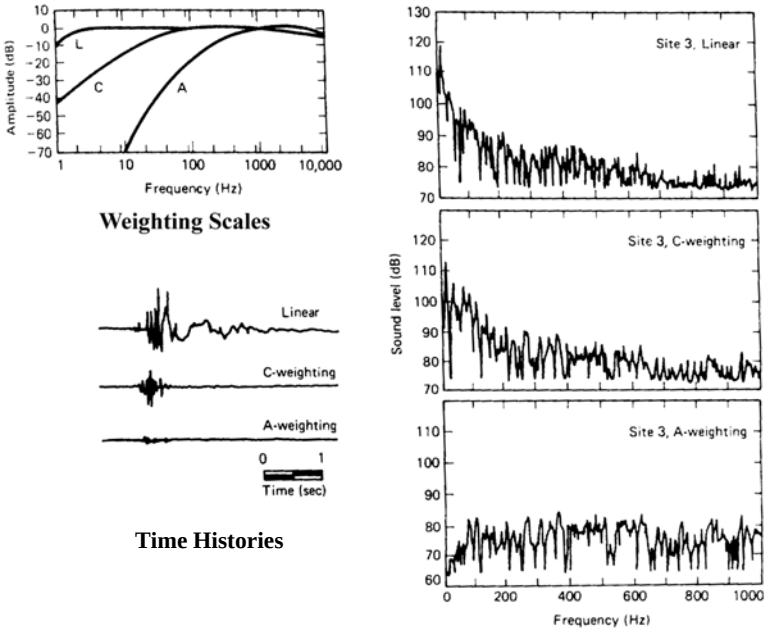
When calculating maximum overpressure values, the absolute value of the greatest pressure change is used — regardless of whether it is a positive or negative change. The frequency of the overpressure (noise) is determined by measuring how many up-and-down pressure changes occur in one second of time. Blast noise occurs at a broad range of frequencies and the highest-energy blast noise usually occurs at frequencies below that of human hearing (<20 Hz).

3.1 Air-Overpressure Measurement Scales

When measurements include low frequency noise (2 Hz and higher) with a flat response, they are called "linear scale" measurements. Air-overpressure measurements are typically expressed in decibels (dB) units and when the scale is linear, the unit designation is "dBL." Regular acoustical noise measurements taken for the purpose of monitoring compliance with local noise ordinances almost always use weighted scales that discriminate against low frequency noise. Thus for a similar noise source, A-weighted and C-weighted scales will usually record significantly lower levels of noise. Differences between decibel scale measurements for individual blasts will vary depending on their unique frequency-intensity spectrums. Since full-range recording of blast-induced noise can only be done with linear (2-Hz response) instruments, it is imperative that all compliance specifications for blast-induced noise be expressed in "Linear" scale decibels (dBL).

In a study by USBM, researchers measured blast-induced noise a common location using A-weighted, C-weighted and Linear Microphones. The comparable measurements taken about 800 feet from a blast, shown in Figure 3.1, show that a linear peak noise of 120 dBL equates to only 112 dBC and 85 dBA.

Note that differences for individual blasts will vary depending on their unique frequency-intensity spectrums. Since full-range recording of blast-induced noise can only be done with linear scale instruments, it is imperative that all compliance specifications be expressed in linear scale (dBL).



After Siskind and Summers, (1974) **Fourier Frequency Spectra**

Figure 3.1 -- Effects of Weighted Filtering on Air-overpressure Records

3.2 Safe Air-Overpressure Limit and Control

The regulatory limit defined by USBM, and used in almost all blasting regulations throughout the United States, for air-overpressure measured with 2-Hz response seismographs is 133-dBL (0.014 psi). Damage to old or poorly glazed windows does not occur until air-overpressure reaches about 150 dBL. More importantly, since the decibel scale is a logarithmic ratio, the actual overpressure at 150 dBL is 0.092 psi, versus 0.013 psi at 133 dBL. Therefore, the actual pressure at the 133 dBL limit, is over seven times (0.0917/0.0129) lower than the threshold damage level at 150 dBL. The relationships between actual overpressure expressed in psi and decibel scale measurements are shown in the following Equations. NOTE: Due to the logarithmic ratios used to decibel values, seemingly small changes in decibel readings can equate to large changes in absolute overpressure (psi).

$$dB = 20\,Log_{10}\left(P/P_o\right) \quad or \quad P = P_o\ 10^{\left(dB/20\right)} \qquad \text{Equation 3.1}$$

Where: dB = decibels, P = overpressure (psi), P_o = Threshold of Human Hearing Pressure (2.9×10^{-9} psi).

At the SRRQ operation, all historical monitoring records indicate that air-overpressures are well below the safe 133-dBL limit. This is not unexpected because most of the mining has occurred in deep benches so air-overpressure waves have been deflected or otherwise shielded by the quarry walls.

In the amended SRRQ mine plan, rock at higher elevations in the Southwest Quadrant will have much more line-of-site exposure to area residences. Because of this exposure, careful blasting design and execution practices must be rigorously applied to ensure that all charges are properly confined and stemmed. In the blast observed by the author on October 10, 2006, all charges 6.75-inch diameter holes were stemmed with 17 to 30 feet of clean crushed stone stemming. As a general rule, very adequate confinement is maintained when the height of stemming equals or exceeds 25-charge-diameters, which in this case would be 169 inches or 14 feet. [25 x 6.75]. Since actual stemming (17 to 30 ft) was greater than 14 feet, the charges were well confined and there was no evidence of premature stemming releases or venting.

In many instances, overpressure waves in air cause secondary window and wall rattling and home owners often mistakenly believe the noise and shaking is caused entirely by ground vibration. At SRRQ, levels of air-overpressure not exceeding 130 dBL have created less strain in walls than a 30-mph wind gust so there is no concern that damage is occurring.

4.0 CONTROL OF ROCK MOVEMENT

The amount of confining rock (burden) between all parts of charges placed in holes drilled near open rock faces is also extremely important. If charges are under-confined excessive rock movement, gas venting and high air-overpressure events can result. As shown in Figure 4.1, rock walls are rarely vertical; they often dip as much as 45% from vertical.

When vertical blast holes are drilled, the burden on front row holes varies from wall bottom to top. Toe burdens are usually greatest and burden decreases steadily towards wall crests. Blasters often position front row collars very close to wall crests to minimize the burden at the bottom of the holes. If extra stemming is not used in front-row holes, excessive rock movement will occur in the crest area. For the blast witnessed by the author on October, 10, 2006, Delon Lopes, the blaster-in-charge, clearly understood this principle and increased stemming accordingly to as much as 30 feet in front-row holes.

Proper charge confinement of all charges can be achieved if blasters carefully inspect all open faces and all bench surfaces before holes are drilled. These inspections should be done from lower benches where the walls are visible and in cases where walls are uneven, it is wise to use laser surveying equipment to determine wall profiles before holes are drilled. This practice should be part of the SRRQ standard operating procedures for any future blasting is done adjacent to any open rock walls with any exposure to neighboring homes.

At the SRRQ operation, similar to stemming confinement, the author recommends that all front row holes be positioned and charged to ensure that no part of any charge has less than 25 charge-diameters of confining burden in rock to the nearest open face. For 6.75 inch diameter charges, the minimum burden distance would be 14 feet. If smaller diameter charges are used, the burden and stemming should be scaled accordingly.

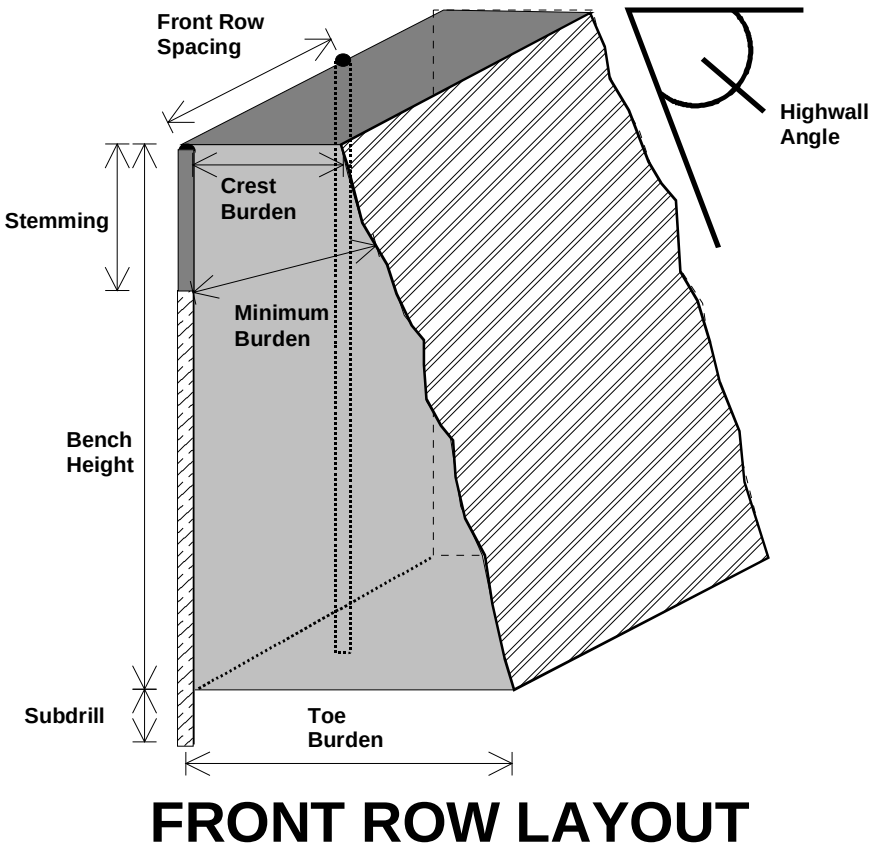


Figure 4.1 – Proper Placement of Charges Near Open Rock Faces.

5.0 GENERAL BLASTING PRACTICES AND RECORD KEEPING

In course of the on-site visit to SRRQ on October 10, 2006, the author observed blast charging, hook-up, and execution practices. During subsequent reviews of historical blast reports and monitoring records filed with the County, the author has audited them for completeness and accuracy. All practices observed in the field were done safely and in full conformance with regulations and industry standards. Blast reports and monitoring records were complete and accurate.

The author understands that SRRQ has retained John Floyd of Blast Dynamics to provide blasting safety, productivity, and risk management services. The results of this training and consultations are evident and the author rarely visits quarry operations where the practices and record keeping are as good as those observed and found at the SRRQ operation.

6.0 FINDINGS AND CONCLUSIONS

Based on all technical evaluations done herein and site observations, the author finds no issues that could prevent safe and environmentally compliant blasting in all areas defined in the amended SRRQ mining plan.

Based on a thorough review of blast reports and monitoring records, and observations of actual blasting work, the author finds that the methods and practices in use at the SRRQ operation meet or exceed best industry practices. In fact, having audited scores of quarry and mining records over the last 20 years, none have been as thorough and complete as those kept at this quarry.

Due to the hardness of the Franciscan sandstone formation and the large production volumes at the SRRQ operation, there are no feasible mechanical or chemical rock-breaking methods that could be applied as an alternative to controlled blasting.

As explained in the body of this report, owners of property located near the SRRQ operation will inevitably continue to feel ground motions caused by rock blasting. The intensity of ground motions caused by past blasting has not reached levels that could cause damage of any kind. Moreover, when compared to normal environmental forces and motions caused by earthquakes, the effects of blasting are much less.

All homes, even newer homes, contain cracks in drywall caused by thermal effects. Other forms of damage like concrete shrinkage cracks and other deteriorations caused by swelling or collapsing soils are quite common. While the author has not observed condition at home near the SRRQ operation, the presence of these conditions it expected since they are found in virtually all homes.

If needed, to assure neighbors that effects of vibration are much less than normal environmental effects, equipment that can measure and compare the actual impacts of blast-induced vibration and environmental effects on existing cracks could be installed in a residence near the SRRQ operation.

To ensure that all blasting done in the amended SRRQ blasting plan is: 1) done without damage, 2) done with minimal annoyance to neighbors, and 3) monitored in full conformance with industry standards, the author recommends the following specific controls and practices.

7.0 RECOMMENDATIONS

1) Blasts should be designed to maintain a minimum scaled distance of 52.8 $ft/lb^{1/2}$, as defined in Page 18. As already adopted by SRRQ, peak ground motions should never exceed 0.5 in/s in ground adjacent to residential buildings.

2) All charges should be confined with clean crushed stone of height equal to or greater than 25 charge diameters, as defined on Page 21. Air-overpressure measured near residential home should never exceed 133 dBL, as measured with 2-Hz monitoring equipment.

3) All charges should be confined with rock burden equal to or greater than 25 charge diameters, as defined on Page 21.

4) All blast monitoring of ground motion and air-overpressure effects done by either SRRQ personnel or third-party service providers should be done in full conformance to ISEE guidelines provided in Attachment I. Based on printed monitoring record and results, all past monitoring appears to be in conformance.

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ATTACHMENT I

ISEE BLAST MONITORING STANDARDS

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INDUSTRY BLAST MONITORING STANDARDS

The following standards should be applied when measuring blast-induced vibration and air-overpressure (noise). These standards are based on the best practices recommended by The Vibration Section of the International Society of Explosives Engineers – 1999.

Part 1. General Guidelines

1. Operators: Only personnel who have successfully completed a proper training course should operate monitoring equipment.

2. Calibration: The instrument manufacturer should annually calibrate recording units and sensors. Documenting certificates should be kept on file and copies should be provided to appropriate persons upon request.

3. Event Record Keeping: Hard copy reports and electronic file-copies of all event-monitoring records should be maintained for all blasts. Operating notes should be programmed into the instruments, which should be printed monitoring records. These notes at a minimum should include the operator's name, date, time, place and other pertinent data specific to the monitoring location.

4. Trigger Levels: When employing instruments to operate in auto-trigger-mode, trigger levels should be set low enough to record blast effects. If expected levels of blast noise or vibration do not exceed minimum trigger levels, the instrument should be attended by an operator and turned on manually.

5. Documenting Monitor Location: In addition to event reports, an accurate method should be used to determine the monitoring location for later reference. Acceptable methods are 1) plotting numbered locations on scaled maps; 2) defining location with GPS northing, easting and elevation values; and 3) noting the name of the structure and the measured distance (+/- 1 ft) where the seismograph was placed relative to at least two identifiable reference points. Any person should be able to locate and identify the exact monitoring location at a future date.

6. Distance to Blast: The horizontal distance from the seismograph to the blast should be known to at least two significant digits. For example, a blast within 1000 feet would be nearest tens of feet and a blast within 10,000 feet would be measured to the nearest hundreds of feet. Where the vertical-to-horizontal ground slope ratio exceeds 2.5 to1, slant distances or true distance should be used and recorded in the monitoring records.

7. Processing Time: When instruments are used in auto-trigger and continuous-recording mode to record the effects of multiple blasts, the time between successive blasts shall be at least one (1) minute and seismographs shall be set to NOT automatically print out event records. These procedures should ensure that instruments have adequate time to save event data for each blast and reset to monitoring mode before subsequent blasts occur.

8. Memory Management: The instrument operator should know the memory or record capacity of the seismograph and ensure that adequate memory is available to store the event data from the blast(s) planned during that operating day.

9. Waveform Data: Instruments shall be set to save full waveform data for all monitored blast and digitally saved event files shall contain this data for use in further analyses if needed.

10. Instrument Setup Time: Equipment operators should allow ample time for proper setup of the seismograph, transducers and microphones. At least 15 minutes of time should be allotted for each setup location.

11. Securing cables: In order to prevent false triggering caused by wind-blown cables, the operator should secure suspended or freely moving cables from the wind or other extraneous sources.

Part II. Ground Vibration Monitoring

A. Sensor Placement

The sensor should be placed on or in the ground on the side of the structure towards the blast. A structure can be a house, pipeline, telephone pole, etc. Measurements on driveways, walkways, and slabs are to be avoided where possible.

1. Location relative to the structure: The sensor should be placed within 10 feet of the structure or less than 10% of the distance from the blast, whichever is less.

2. Soil density evaluation: The operator should avoid placing velocity transducers in loose or low-density soils. The density of the ground should be greater than or equal to the sensor density.

3. Sensor Level: Transducers should be placed so they are level or nearly level.

4. Sensor Orientation: Sensor blocks should be oriented so the arrow indicating the longitudinal direction is aimed at the blast location.

5. Monitoring when Access to Nearest Structure is not Accessible: Where access to a structure is not available, the transducers should placed at the accessible location closest the structure of concern and in line with the blast.

B. Sensor coupling

1. Sensor Coupling Methods: Based on expected acceleration determined from Chart 1, to avoid decoupling errors, the operator shall use the following methods to couple vibration transducers to the ground or structure.

    a. Less than 0.2 g: No burial or attachment is necessary.

b. Between 0.2 and 1.0 g: Transducer should be attached to the ground with a spike or covered with a sand bag.
c. Greater than 1.0 g: Transducer should be buried, bonded to the ground or structure with stiff clay or putty, or some other method that should achieve firm attachment.

TABLE 1 – Acceleration intensity (g's) based on estimated particle velocities and frequencies

	Maximum Frequency (Hz or cycles-per-second)										
	4	10	15	20	25	30	40	50	100	150	200
PPV (in/s) at Acc. (g) ≥ **0.2**	3.08	1.23	0.82	0.62	0.49	0.41	0.31	0.25	0.12	0.08	0.06
PPV (in/s) at Acc. (g) ≥ **1.0**	15.38	6.15	4.10	3.08	2.46	2.05	1.54	1.23	0.62	0.41	0.31

2. Sensor Burial: When velocity transducers are buried the operator should employ the following methods.

   a. Excavate a hole that is no less than three times the height of the sensor (ANSI S2.47-1990, R1997).
   b. If possible, spike the sensor to the bottom of the hole.
   c. Firmly compact soil around and over the sensor.

3. Attaching Sensors to bedrock or hard Structural Surfaces:

   a. Bolt, clamp or use epoxy or putty to firmly couple the sensor to the hard surface.
   b. The sensor may be attached to the foundation of the structure if it is located within +/- 1-foot of ground level (USBM RI 8969). This should only be used if burial, spiking or and bagging is not practical.

4. Other sensor placement methods: Use other methods as described below if disturbance of the ground is not possible.

   a. Cover transducers with sand bags loosely filled with about 10 pounds of sand. When placed over the sensor the sandbag profile should be as low and wide as possible with a maximum amount of firm contact with the ground.
   b. A combination of both spiking and sandbagging gives even greater assurance that good coupling is obtained.

C. Programming considerations

Site conditions dictate certain actions when programming the seismograph.

1. Ground motion trigger level: The PPV-trigger-level should be programmed low enough to trigger the unit from blast vibrations and high enough to minimize the occurrence of false events. The level should be slightly above the expected background vibrations for the area. A good starting level is 0.05 in/s.

2. Dynamic range and resolution: If PPV is expected to exceed 10 in/s or frequency is expected to exceed 250 Hz, special sensors approved by the Vibration Specialist should be used to measure blast effects. In these cases, the Vibration Specialist should also determine a digital sampling rate that should provide accurate recordings.

3. Recording duration: Set the record time for 2 seconds longer than the blast duration plus 1 second for each 1100 feet from the blast.

Part III Air-overpressure Monitoring
The following procedures should be used as possible when setting up instruments to measure blast-induced noise.

A. Microphone placement
The microphone should be placed along the side of the structure nearest the blast.

1. The microphone should be covered with a windscreen and mounted near the velocity transducers.

2. The preferred microphone height is 3 feet above the ground or within 1.2 inches of the ground. Other heights may be acceptable for practical reasons. (ANSI S12.18-1994, ANSI S12.9-1992/Part2) (USBM RI 8508)

3. If practical, the microphone should not be shielded from the blast by nearby buildings, vehicles or other large barriers. If such shielding cannot be avoided, the horizontal distance between the microphone and shielding object should be greater than the height of the shielding object above the microphone.

4. If placed too close to a structure, the airblast may reflect from the house surface and record higher amplitudes. Structure response noise may also be recorded. Placing the microphone near a corner of the structure can minimize reflection of over-pressure energy. (RI 8508)

B. Programming considerations
Site conditions dictate certain actions when programming the seismograph to record air-overpressure.

1. Trigger level: When only an airblast measurement is desired, the trigger level should be low enough to trigger the unit from the airblast and high enough to minimize the occurrence of false events. The level should be slightly above the expected background noise for the area. A good starting level is 120 dB.
2. Recording duration: When only recording airblast, set the recording time for at least 2 seconds more than the blast duration. When ground vibrations and air-overpressure measurements are desired on the same record, follow the guidelines for ground vibration programming (Part II C.3).

ATTACHMENT II

SRRQ VIBRATION MONITORING DATA YEAR 2005 (Source – Vibra-Tech)

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SRRQ VIBRATION MONITORING DATA SUMMARY YR-2005
*** Source: Independent Monitoring Data from Vibratech**
Page 1 of 4

Date	Distance (ft)	PPV (in/s)	Max-Charge per Delay (lb)	Scaled Distance (ft-lb-0.5)	Frequency (Hz)
1/5/2005	898	0.15	560	37.95	18.5
1/11/2005	1735	0.065	600	70.85	38.5
1/11/2005	1473	0.115	600	60.15	45.5
1/11/2005	792	0.41	600	32.33	17.2
1/11/2005	2112	0.09	600	86.22	31.2
1/11/2005	2059	0.11	600	84.06	33.3
1/11/2005	1426	0.26	600	58.22	20.8
1/14/2005	1003	0.09	480	45.78	15.6
1/14/2005	1531	0.06	480	69.88	12.1
1/17/2005	1511	0.045	630	60.20	38.5
1/17/2005	581	0.36	630	23.15	38.4
1/17/2005	1848	0.1	630	73.63	45.4
1/17/2005	1954	0.07	630	77.85	18.5
1/17/2005	1532	0.13	630	61.04	17.2
1/24/2005	1688	0.035	275	101.80	6.5
1/24/2005	528	0.58	275	31.84	45.4
1/24/2005	1637	0.11	275	98.71	80.7
1/24/2005	1954	0.08	275	117.83	38.4
1/24/2005	1637	0.05	275	98.71	29.4
1/28/2005	1631	0.073	600	66.60	10.9
1/28/2005	581	0.43	600	23.72	31.2
1/28/2005	1737	0.1	600	70.91	71.4
1/28/2005	1954	0.05	600	79.77	35.7
1/28/2005	1584	0.11	600	64.67	20.0
2/2/2005	686	0.29	300	39.61	55.5
2/2/2005	1584	0.06	300	91.45	35.7
2/2/2005	2006	0.07	300	115.82	45.4
2/7/2005	1651	0.058	700	62.42	17.9
2/7/2005	1360	0.108	700	51.42	38.5
2/7/2005	686	0.39	700	25.93	33.3
2/7/2005	2006	0.06	700	75.82	31.2
2/7/2005	1954	0.08	700	73.85	41.6
2/7/2005	1373	0.21	700	51.89	50.0
2/14/2005	739	0.2	300	42.67	62.5
2/14/2005	1478	0.13	300	85.33	50.0
2/14/2005	2059	0.05	300	118.88	38.4
2/22/2005	739	0.48	560	31.23	29.4
2/22/2005	1631	0.08	560	68.92	45.4
2/22/2005	2059	0.06	560	87.01	12.1
2/22/2005	1848	0.07	560	78.09	18.5
3/16/2005	634	0.24	580	26.33	55.5
3/16/2005	1584	0.05	580	65.77	22.7
3/16/2005	2006	0.05	580	83.29	14.2
3/16/2005	1742	0.05	580	72.33	17.2
3/30/2005	739	0.28	580	30.69	22.7
3/30/2005	1684	0.07	580	69.92	50.0

SRRQ VIBRATION MONITORING DATA SUMMARY YR-2005
*** Source: Independent Monitoring Data from Vibratech**
Page 2 of 4

Date	Distance (ft)	PPV (in/s)	Max-Charge per Delay (lb)	Scaled Distance (ft-lb-0.5)	Frequency (Hz)
4/5/2005	898	0.22	440	42.81	9.2
4/5/2005	1624	0.07	440	77.42	11.1
4/8/2005	739	0.36	730	27.35	50.0
4/8/2005	1624	0.08	730	60.11	50.0
4/8/2005	2060	0.06	730	76.24	38.4
4/8/2005	1848	0.08	730	68.40	18.5
4/15/2005	2145	0.038	660	83.51	27.8
4/15/2005	2065	0.04	660	80.36	13.5
4/15/2005	792	0.3	660	30.83	20.0
4/15/2005	1789	0.08	660	69.64	9.8
4/15/2005	2112	0.05	660	82.21	17.2
4/15/2005	1954	0.08	660	76.06	16.6
4/20/2005	1813	0.058	700	68.54	11.9
4/20/2005	1613	0.083	700	60.98	6.0
4/20/2005	581	0.34	700	21.96	13.1
4/20/2005	1842	0.07	700	69.62	7.5
4/20/2005	1954	0.06	700	73.85	11.6
4/20/2005	1684	0.07	700	63.65	14.7
4/29/2005	1694	0.055	700	64.03	15.6
4/29/2005	1347	0.098	700	50.92	50.0
4/29/2005	845	0.22	700	31.94	35.7
4/29/2005	1373	0.06	700	51.89	26.3
5/6/2005	1360	0.048	700	51.42	26.3
5/6/2005	739	0.16	700	27.93	27.7
5/6/2005	1426	0.09	700	53.90	21.7
5/13/2005	1651	0.048	600	67.40	45.5
5/13/2005	1360	0.113	600	55.52	50.0
5/13/2005	792	0.27	600	32.33	19.2
5/13/2005	2059	0.06	600	84.06	11.6
5/13/2005	1401	0.15	600	57.20	41.6
5/20/2005	1824	0.05	540	78.49	18.5
5/20/2005	1588	0.05	540	68.34	10.0
5/20/2005	637	0.39	540	27.41	21.7
5/20/2005	2001	0.06	540	86.11	16.1
5/20/2005	1531	0.1	540	65.88	20.8
6/1/2005	1631	0.043	500	72.94	41.7
6/1/2005	637	0.25	500	28.49	25.0
6/7/2005	792	0.21	530	34.40	31.2
6/7/2005	1690	0.07	530	73.41	13.8
6/7/2005	1954	0.05	530	84.88	20.0
6/21/2005	1003	0.11	420	48.94	25.0
6/21/2005	1690	0.05	420	82.46	29.4
6/28/2005	2345	0.03	620	94.18	6.3
6/28/2005	1015	0.18	620	40.76	12.1
6/28/2005	1629	0.2	620	65.42	12.5
7/1/2005	1772	0.04	590	72.95	55.6

SRRQ VIBRATION MONITORING DATA SUMMARY YR-2005
*** Source: Independent Monitoring Data from Vibratech**
Page 3 of 4

Date	Distance (ft)	PPV (in/s)	Max-Charge per Delay (lb)	Scaled Distance (ft-lb-0.5)	Frequency (Hz)
7/1/2005	792	0.14	590	32.61	17.8
7/1/2005	1901	0.05	590	78.26	11.3
7/1/2005	2165	0.09	590	89.13	17.2
7/1/2005	2006	0.07	590	82.59	33.3
7/8/2005	2159	0.045	480	98.54	6.7
7/8/2005	2100	0.038	480	95.85	7.9
7/8/2005	1752	0.035	480	79.97	11.4
7/8/2005	898	0.18	480	40.99	11.6
7/8/2005	1531	0.14	480	69.88	11.6
7/8/2005	2165	0.09	480	98.82	4.0
7/8/2005	2059	0.05	480	93.98	9.2
7/15/2005	898	0.1	300	51.85	14.2
7/15/2005	2270	0.05	300	131.06	14.2
7/15/2005	2059	0.05	300	118.88	17.2
7/26/2005	1923	0.035	510	85.15	38.5
7/26/2005	634	0.26	510	28.07	23.8
7/26/2005	1584	0.05	510	70.14	10.6
7/26/2005	2006	0.10	510	88.83	3.2
7/26/2005	1742	0.05	510	77.14	29.4
8/5/2005	845	0.08	200	59.75	19.2
8/8/2005	1712	0.045	540	73.67	22.7
8/8/2005	1535	0.053	540	66.06	6.4
8/8/2005	528	0.31	540	22.72	31.2
8/8/2005	1742	0.06	540	74.96	7.6
8/8/2005	1954	0.08	540	84.09	7.0
8/22/2005	1948	0.033	400	97.40	26.3
8/22/2005	1661	0.073	400	83.05	31.3
8/22/2005	854	0.15	400	42.70	14.7
8/22/2005	2112	0.05	400	105.60	20.0
8/22/2005	2165	0.07	400	108.25	7.0
8/22/2005	1637	0.08	400	81.85	35.7
8/26/2005	2125	0.065	550	90.61	33.3
8/26/2005	1999	0.045	550	85.24	5.6
8/26/2005	1916	0.058	550	81.70	45.5
8/26/2005	851	0.29	550	36.29	16.6
8/26/2005	1656	0.14	550	70.61	10.6
8/26/2005	2165	0.08	550	92.32	0.6
8/26/2005	1954	0.06	550	83.32	33.3
9/7/2005	1448	0.05	200	102.39	35.7
9/7/2005	950	0.07	200	67.18	33.3
9/7/2005	1531	0.06	200	108.26	33.3
9/16/2005	2035	0.07	600	83.08	17.9
9/16/2005	1772	0.083	600	72.34	45.5
9/16/2005	2226	0.05	600	90.88	35.7
9/16/2005	845	0.2	600	34.50	20.8
9/16/2005	2059	0.12	600	84.06	38.4

SRRQ VIBRATION MONITORING DATA SUMMARY YR-2005
*** Source: Independent Monitoring Data from Vibratech**
Page 4 of 4

Date	Distance (ft)	PPV (in/s)	Max-Charge per Delay (lb)	Scaled Distance (ft-lb-0.5)	Frequency (Hz)
9/16/2005	2218	0.09	600	90.55	11.3
9/16/2005	1742	0.09	600	71.12	41.6
9/21/2005	1610	0.083	600	65.73	17.9
9/21/2005	1440	0.123	600	58.79	10.6
9/21/2005	1813	0.043	600	74.02	21.7
9/21/2005	528	0.49	600	21.56	23.8
9/21/2005	1801	0.1	600	73.53	15.1
9/21/2005	1908	0.13	600	77.89	12.8
9/21/2005	1640	0.13	600	66.95	16.1
10/7/2005	1824	0.043	600	74.46	14.7
10/7/2005	1588	0.058	600	64.83	3.8
10/7/2005	686	0.13	600	28.01	17.2
10/7/2005	2060	0.06	600	84.10	6.0
10/21/2005	1651	0.048	420	80.56	31.3
10/21/2005	1360	0.068	420	66.36	50.0
10/21/2005	739	0.13	420	36.06	11.1
10/21/2005	2059	0.07	420	100.47	18.5
10/21/2005	1478	0.07	420	72.12	45.4
10/31/2005	1671	0.035	460	77.91	8.6
10/31/2005	1351	0.093	460	62.99	8.6
10/31/2005	898	0.19	460	41.87	11.9
10/31/2005	2112	0.07	460	98.47	11.6
10/31/2005	1426	0.1	460	66.49	18.5
11/8/2005	1246	0.065	440	59.40	38.5
11/8/2005	898	0.1	440	42.81	19.2
11/8/2005	2112	0.06	440	100.69	11.9
11/8/2005	1401	0.12	440	66.79	20.0
11/18/2005	1720	0.035	480	78.51	19.2
11/18/2005	1347	0.103	480	61.48	45.5
11/18/2005	950	0.09	480	43.36	9.8
11/18/2005	2165	0.08	480	98.82	13.5
11/18/2005	1426	0.15	480	65.09	20.0
12/6/2005	1657	0.065	540	71.31	62.5
12/6/2005	1056	0.1	540	45.44	7.9
12/6/2005	2218	0.1	540	95.45	17.8
12/6/2005	1427	0.18	540	61.41	27.7
12/14/2005	634	0.11	75	73.21	38.4
12/16/2005	1642	0.128	540	70.66	55.6
12/16/2005	1179	0.095	540	50.74	45.5
12/16/2005	1162	0.22	540	50.00	10.2
12/16/2005	2534	0.06	540	109.05	11.3
12/16/2005	2218	0.11	540	95.45	38.4
12/16/2005	1425	0.16	540	61.32	62.5

APPENDIX K

Geotechnical and Geological Technical Memorandum

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Date: February 20, 2007

To: Dan Sicular
ESA
225 Bush Street, #1700
San Francisco, CA 94104

From: Paul Seidelman
Seidelman Associates
2427 Cherry Hills Drive
Lafayette, CA 94549

Subject: **Geologic Issues Associated with the Enlargement and Eventual Reclamation of the San Rafael Rock Quarry, Point San Pedro, California**

Dear Mr. Sicular:

The following report was prepared by Seidelman Associates as a subcontractor to ESA for its work on the EIR for the Amended Reclamation Plan for the San Rafael Rock Quarry, with Marin County as its client.

Introduction

This report presents our findings regarding the geologic issues associated with the enlargement of the existing quarry at Point San Pedro, California. It also includes a discussion of the geologic issues anticipated to arise from the reclamation of the site by creating a deep harbor at the location of the fully developed quarry pit.

Our work consisted of a site visit and discussions with the quarry operator. We also reviewed reports prepared by ENGEO, INCORPORATED, dated September 9, 2004 and April 11, 2005. Recent stereo aerial photography for the area was also reviewed.

A detailed description of the proposed project and a description of the site geography of the area can be found in other documents prepared for this environmental evaluation. A

brief description is provided herein. It is assumed the reader is familiar with the proposed project and the site geography.

The present proposal consists of an enlargement of the San Rafael Rock Quarry by deepening the quarry to elevation -350 feet MSL (Mean Sea Level) with a small lake extending to -400 feet MSL. The surface area of the quarry will be enlarged and extended into South Hill. The brow of the quarry will be established at +10 feet above MSL.

Upon completion of the mining operation, it is proposed to flood the quarry pit by opening up a causeway between San Francisco Bay and the quarry. The resulting embayment will serve as a Marina with residential and commercial development of lands in the adjacent area.

Geologic Hazard Identification

Overview

Geologic hazards associated with the mining project are all rooted in the stability of the high cut-slopes generated by the mining activity and the impact of seismic activity on the same high cut-slopes.

Similar concerns are associated with the completed reclamation project; however, the standards of acceptable risk are distinctly different for mining operations and residential marina developments. It is widely understood and accepted that mining operations push the limit of slope stability in conjunction with the removal of quarry rock. Safety factors associated with mining frequently approach unity, especially when consideration of earthquake loading is included in the analyses. The level of acceptable risks commonly in use for slopes associated with residential development is far more conservative than mining standards and seldom allows for slope safety factors to drop below 1.5. Thus, the evaluation of slope stability under static and earthquake loading conditions is essentially a different topic and is based on different assumptions and standards.

Slope Stability

In order to evaluate the stability of rock slopes, detailed information concerning the physical characteristics of the rock must be determined. These characteristics include the distribution of rock types and soil thicknesses. They also include the strength characteristics of each rock and soil encountered. Finally, the geologic structure of the rock unit must be determined. This involves mapping discontinuities, such as rock fractures (joints), bedding planes (layering associated with original deposition) and the structures created by the interception of these structural features with each other and with the ground surface.

After collecting sufficient information to define the physical attributes of the rock, the evaluation must concern itself with ground water conditions. Ground water that occupies the pore space of soil and/or rock can create pressures that significantly alter the frictional relationships between adjacent rock and soil elements. The presence of a continuous water table, connected through rock joint fractures, results in pressures that cause rock elements

to exhibit their buoyant weight instead of their actual weight. Friction resistance between rock elements is the product of the rock's weight multiplied by the coefficient of friction. Pore water reduces the weight of the rock by the amount of the water pressure and thus reduces the amount of friction exhibited between adjacent rock elements. Thus, the stability of the slope that is dry and free of a water table may be quite different than the same slope with the presence of a water table.

Earthquake Effects

Finally, in areas such as California, there is a high probability of major earthquakes which result in temporary vertical and horizontal accelerations that can greatly alter the stability of rock and soil formations. In order to evaluate the effects of earthquake activity, one must understand the ground motion generated by earthquake events likely to be present in the vicinity of the site. Thus, the distance to adjacent earthquake faults becomes relevant and the seismic wave train associated with past earthquakes on those faults must be understood.

It should be clear from the foregoing that a great deal of technical information and judgment is essential to the evaluation of rock and soil slope stability. The state of the art generally available for these kinds of studies has improved immensely over the past 30 years. However, the reader should understand that the state of the art is highly dependent on professional judgment and it is not uncommon for new and unexpected fault locations and activity to completely alter the design conditions present at a given site. The Northridge earthquake provides a recent severe example of unexpected seismic activity on a previously unknown fault.

Discussion

The ENGEO report, dated April 11, 2005, carefully documents the data collection procedures and analytic methods employed in the evaluation of quarry rock slope stability. Geologic structural information was obtained from surface field mapping, aerial photo analyses and sub-surface rock corings. Rock strength characteristics were determined from laboratory tests and by comparison to other similar geologic units in the area (Bay Bridge Greywacke Sandstone tests). The report also documents the reasoning employed in selecting parameters essential to the evaluation process. Thus, the report is transparent in its analytic procedures.

In selecting seismic parameters, a mean earthquake magnitude for the site was selected as a magnitude 6.77. Furthermore, a peak ground acceleration of 0.60 was used to obtain a seismic coefficient of 0.14. Based on the consultant's experience, a seismic coefficient of .15 was settled upon for all stability calculations involving the quarry slopes.

We are concerned that these seismic parameters are not representative of an extreme earthquake event and therefore, they may underestimate the seismic effects on the quarry cut-slopes. Implicit in the report's finding is a design earthquake for quarry operations that is similar to the design earthquake for the fully developed and rehabilitated marina/residential development. In our opinion, it would be beneficial to evaluate the slope stability both before and after reclamation of the site, utilizing various seismic values

and indicating the relative probabilities of their occurrence. The term "mean earthquake magnitude" may not provide sufficient understanding of the variation in seismic loading that is possible over a long time period. The site's future exposure to earthquakes during quarry operations appears to be far shorter than its future exposure to earthquakes as a marina/housing development. Thus, a probabilistic analysis of earthquake risk resulting from the two land uses occurring over different time periods, with different standards of "acceptable risk", almost certainly requires different earthquake parameters, or at least a range of earthquake parameters. It would be useful to take the present analyses and determine what magnitude earthquake would be sufficient on the Hayward or San Andreas Fault to cause safety factors of the fully developed quarry to fall to unity.

The concept of acceptable risk has long been defined in California as a locally established standard that falls under the umbrella of State standards. Local communities in the development of their *Seismic Safety* and *Safety Elements* for the general plan are supposed to define within State Building Code guidelines, the level of risk that is acceptable to the community. Traditionally, the acceptable risk has been a function of the activity i.e. schools, hospitals and emergency facilities have the most stringent design criteria and lowest levels of acceptable risk. Quarries and mining operations have generally operated at a substantially higher level of risk. What we are questioning here, is the use of apparently uniform criteria for design earthquakes applied to extremely different land use activities.

In order to evaluate choices and establish acceptable risk levels as a part of the planning process, it would be most useful to develop comparisons between various earthquakes and slope safety factors under dynamic conditions.

Slope safety factors above 1.5, under static conditions, are widely accepted. The principle difficulty in understanding slope stability issues at this site seems to center on the seismic loading and degree of certainty associated with reduced slope safety factors under seismic loading. These issues can be better understood and evaluated in the environmental evaluation process if more than one situation is considered. It would also be of considerable value to develop a discussion as to the reliability of the slope stability calculations presented in the report. For instance, it appears there is an assumption that rock fractures and partings are not clay filled and will remain in a constant state of strength after inundation of the quarry. What is the probability of these assumptions being uniformly true and what are the consequences if exceptions occur in the actual field condition? It appears that a safety factor of 1.5 would allow for nearly all of the variations under static conditions; however, under earthquake loading, with a less than maximum event and a safety factor of 1.1, the question arises as to the uniformity of application in the level of risk to commercial quarry and residential marina operations.

A discussion of normal levels of acceptable risk in residential and commercial developments, as opposed to industrial mining operations and the variability and reliability of slope stability analyses, would allow for a more appropriate assessment of these issues. Additionally, comparing slope stability safety factors for a maximum intensity earthquake (thought to be a 7.0 for the Hayward Rodgers-Creek system), as opposed to a mean

intensity earthquake, would provide additional latitude in establishing the community's definition of acceptable risk.

Earthquake Induced Seiche and Tsunami

Large seismic events induce significant energy into bodies of water similar to the proposed completed quarry harbor. The ENGEO report does not address the potential issues associated with an earthquake on the deep and closed body of water that would become the harbor after reclamation of the quarry. There is no evaluation discussing the magnitude of a seiche event generated by the steep sidewall interaction with the enclosed body of water during a major earthquake event. Normally, tsunami and seiche events are more prevalent in areas exposed to forces generated by normal or reverse faults, as opposed to strike-slip faults. Most of the faulting in the Bay Area is thought to be of a strike-slip nature; however, recent work in San Pablo Bay (Parsons, et al 2003) indicates that transform faults between the Hayward and Rodgers Creek Fault have resulted in normal faulting capable of initiating tsunami and seiche events in the San Pablo Bay basin, immediately adjacent to the project site. Additionally, according to a report issued by the U.S. Geological Survey (Ritter and Dupre 1972), seismic waves 20 feet in height are anticipated at the entrance to San Francisco Bay on a 200 year recurrence interval. A 20 foot wave at the Golden Gate Bridge is expected to decrease by 50% at the Richmond-San Rafael Bridge and therefore, something on the order of a six to seven foot tsunami wave is to be expected at the project site.

There is no discussion of a seismic seiche originating within the marina harbor or within San Francisco Bay. Wave generation programs are available to evaluate seiche events, given the dimensions of the basin and an earthquake event.

Our review of the literature concerning probable seiche events in San Francisco Bay estimates wave heights of three feet or more have occurred from earthquake events (Toppozada et al 1992). A seismic wave originating in a deep small harbor, with steeply dipping boundaries, might produce a substantially higher wave. Additionally, a rock slope failure originating from South Hill or from the sides of the quarry after inundation could initiate significant wave action.

Mitigation of seismic water waves would require vertical and horizontal set-back from the water's edge in an amount sufficient to avoid the impact or run-up of the seismic wave. Increased seismic safety factors for the post-quarry era would provide additional safety against adverse water wave occurrences in the harbor. Marina damage is unavoidable.

Inundation

The selection of elevations for the reclamation of the quarry site should consider a probable rise in sea level amounting to one to three feet by the end of this century. Obviously, the projected rise in sea level will affect the highest tides and seismic wave run-up. Thus, mitigation of all flood hazards will be altered by anticipated sea level rises.

Unconsolidated Fills

The project geotechnical reports identify areas of unconsolidated fill that range in thickness from a few feet to up to nearly 60 feet. The fills are located in areas slated for eventual development as part of the reclamation project in the post-quarry era. The geotechnical reports leave the matter of the unconsolidated fills to future studies more directly associated with rehabilitation after quarry operations are terminated.

Extensive areas of unconsolidated fills are likely to require grading operations to excavate and recompact quarry waste soils. We are not certain as to the total volume of material. However, the amount of work associated with modifying the quarry waste disposal areas presents a notable impact for consideration at this time. More information is required from the developer concerning the volume and location of these deposits. An isopac of fill thicknesses would display the extent of this problem. There is no impact on quarry operations related to unconsolidated quarry waste fill.

Static Quarry Slope Failure

Increasing the slope height of the quarry to a maximum height of 400 feet will increase the potential energy contained in the quarry side walls. Much of the ENGEO reports are focused on rock falls and wedge failures associated with the creation of high steep rock walls in the quarry. The static analyses discussed in the geotechnical reports appear to be complete and reasonable in their coverage of this topic. The report concludes that an acceptable level of risk is achievable if the following mitigation is applied:

- The overall side slope should not exceed a 60 degree inclination as measured from the horizontal.
- Thirty foot wide benches should be constructed at each 90 foot vertical increment. This procedure provides for catchment of rock topples and small wedge failures, while providing the basic quarry geometry as discussed in the prior item.
- The stability of the quarry face can be maximized through the use of blasting techniques that focus blast energy on the shot rock and limit the blast energy applied to the quarry face. This has been successfully used at this quarry for a number of years and is identified as a mitigative measure for future quarry operations.
- Frequent evaluation by a geological engineer or engineering geologist is proposed as part of the standard operating plan for the quarry. Professional evaluation should focus on rock jointing, blast fractures, changes in geologic structure and fracture pore water production. The introduction of rock bolting, drainage improvements and changes in quarry slope angles are standard mitigative measures that can be applied as the quarry develops to mitigate unforeseen conditions.

Quarry operations are inherently dangerous and even with stringent application of best management practices, slope failure risks cannot be reduced to zero.

Seismically Induced Slope Instability

The addition of earthquake forces to the operating quarry will greatly reduce quarry face stability during the event. The present analyses set forth in the ENGEO reports utilize a magnitude 6.77 earthquake. As we discussed previously, it is our opinion that this may

represent the most probable earthquake event but it does not represent a maximum intensity earthquake. The close proximity of the Hayward Fault places the site at a radial distance from the hypocenter that is equivalent to the locations immediately adjacent to the Hayward Fault. The four mile horizontal distance between the surface expression of the Fault and the quarry site provides a significant reduction in ground rupture potential, but little if any reduction in ground shaking should an earthquake occur on the Hayward Fault, immediately adjacent to the site (four miles distant). As was discussed earlier, it would be helpful in considering seismic impacts related to ground shaking to evaluate the maximum intensity earthquake, along with other more probable events. This is particularly true in regards to evaluating the quarry slope stability after inundation and conversion of the land use to residential and commercial development.

We are hopeful that the foregoing discussion of geologic issues will assist in developing a more thorough understanding of the proposed project and its eventual remediation into a harbor facility.

Sincerely,

SEIDELMAN ASSOCIATES

Paul Seidelman
GE 761
CEG 1086

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APPENDIX L

Species List and Planting Methods for Revegetation of Reclaimed Areas

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f. Soil Amendment Maintenance

Maintenance fertilization (which will should begin as soon as planting is complete, following thorough irrigation), may rely on a nitrogen only program of 5 pounds ammonium sulfate (21-0-0) per 1000 square feet with re-fertilization scheduled at 45-60 day intervals. Alternatively, slow release Sulfur Coated Urea (32-0-0) may be applied at an 8-pound rate, with re-fertilization scheduled at 3-month intervals.

g. Revegetation Types and Methods

TYPE I: Temporary Vegetative Erosion Control – Cut and Fill Slopes
Areas slated to be regraded with reclamation:

Due to the high salinity and boron content of the site grading soil, the top 12" of soil will be non-mixed overburden graded onto the areas to be planted. This addition of topsoil will enable erosion control plant material species to establish and prosper.

Botanical Name	Common Name	Quantity
Hordeum brachyantherum "Salt"	Meadow Barley	60% 50 lbs per acre
Vulpia myuros var. Hirsuta	Zorro Fescue	30% 50 lbs per acre
Trifolium hirtum	Rose Clover	10% 20 lbs per acre

TYPE II: Long Term Vegetative Erosion Control – Cut and Fill Slopes
Areas where reclamation has been completed or for areas where reclamation is set for future final land use:

Prior to hydroseeding, due to the high salinity and boron content of the site grading soil, the top 12" of soil will be non-mixed overburden graded onto the areas to be planted. This addition of topsoil will enable erosion control plant material to establish and prosper.

Botanical Name	Common Name	Quantity
Hordeum californicum	California Barley	40% 50 lbs per acre
Vulpia myuros var. Hirsuta	Zorro Fescue	30% 50 lbs per acre
Trifolium hirtum	Rose Clover	10% 20 lbs per acre

TYPE III: Permanent Open Space Revegetation (Hydroseed)
Areas where reclamation and no future land use is expected:

Prior to hydroseeding, final topsoil placement and grading will be performed and completed. This addition of topsoil will provide for the placement of seed for permanent and perennial vegetative erosion control. The top 12" of soil will be non-mixed overburden graded onto the areas to be planted. Areas to be hydroseeded will be graded and prepared with amended soil as discussed in 2B.5. This addition of topsoil will enable erosion control plant material to establish and prosper.

Botanical Name	Common Name	Quantity
Grassland and groundcover:		
Brizia minor	Little Quaking Grass	20% 60 lbs per acre
Vulpia myuros var. Hirsuta	Zorro Fescue	30% 50 lbs per acre
Lupinus nanus	Sky Lupine	10% 15 lbs per acre
Eschscholzia californica	California Poppy	10% 20 lbs per acre
Sysirinchium bellum	Blue Eyed Grass	10% 5 lbs per acre
Achillea millefolium	Common Yarrow	10% 5 lbs per acre
Laya platyglossa	Tidy Tips	10% 5 lbs per acre

TYPE IV: Swale Hydroseed Mix
Areas of new earthen swales utilized for storm water runoff:

Due to the high salinity and boron content of the site grading soil, these areas will be graded and the top 12" of soil will be non-mixed overburden graded onto the areas to be planted. This addition of topsoil will enable erosion control plant material to establish and prosper.

Botanical Name	Common Name	Quantity
Hordeum californicum	California Barley	40% 100 lbs per acre
Deschampsia ceaspitosa	Turfted Hairgrass	60% 40 lbs per acre

TYPE V: Topsoil Stockpile Hydroseed Mix
Soil stockpiles will be seeded to reduce runoff and erosion.

Botanical Name	Common Name	Quantity
Vulpia myuros var. Hirsuta	Zorro Fescue	75% 100 lbs per acre
Trifolium hirtum	Rose Clover	25% 20 lbs per acre

Type V: Hydroseed Mulch and Tackifier

All hydroseeding will require a slurry of seed (as listed above), mulch and tackifier as follows and applied at the following rates:

- Wood fiber mulch will be derived from virgin wood chips in 50 lbs bales without dye
- Wood fiber mulch will be applied at a rate of 1500 lbs per acre
- Soils stabilizer will be Ecology Controls M-Binder applied at a rate of 150 lbs per acre.

TYPE VI: Permanent Open Space Revegetation (Planted)
Includes graded areas that are to be permanently revegetated but require native shrub, tree, and groundcover plantings for habitat enhancement.

Areas will be graded and prepared with amended soil as illustrated in Part 2B.J. Plant materials include:

Botanical Name	Common Name
Native Trees	
Quercus lobata	Valley Oak
Quercus agrifolia	Coast Live Oak
Quercus douglasii	California Blue Oak
Aesculus californica	California Buckeye
Juglans hindsii	California Black Walnut
Arbutus menzesii	Madrone
Garrya elliptica	Silk Tassle Tree
Large Shrubs	
Myrica californica	Pacific Wax Myrtle
Ceanothus thyrisiflorus	Wild California Lilac
Fremontedendron californica	California Glory
Heteromeles arbutufolia	Toyon

Medium Shrubs

Arctostaphylos densiflora	Manzanita
Rhamnus californica	California Coffeeberry
Bacharis piluaris	Coyote Bush
Sambucus canadensis	Blue Elderberry
Symphocarpus albus	Common Snowberry
Mimmulus hybridus	Sticky Monkeyflower

Small Shrubs – Groundcovers

Rubus vitifolius	California Blackberry
Rubus pentalobus	Bramble
Rosa californica	Wild California Rose
Atriplex lentiformis	Quail Bush
Ceanothus griseus horizontalis "Yankee Point"	Wild California Lilac

Planting Methodology and Techniques

Trees, shrubs, and groundcovers will be planted in groups and clusters. Clusters will be no smaller than 2000 square feet and no greater than 4000 square feet per cluster. Plants of the same genus and species will be spaced as listed above. Planting of shrubs and groundcovers will be done in large clusters creating the best possible screen for the adjacent affected properties. Clusters of plantings will contain gaps per every 30 plants of no less that ten feet at maturity and no greater than fifteen feet at maturity. Trees will also be planted in clusters and spaced as listed above in a triangular planting pattern.

All shrub, vine, groundcover, and tree will require a 2' x 2' weed control mat and tree tube to prevent deer browse and weed infestation. Conifers will require tree tubes manufactured specifically to encourage proper conifer growth.

TYPE VII: Permanent Open Space - Planting Screen

Includes graded areas that are to be permanently revegetated but require shrub, tree, and groundcover plantings for visual enhancement and screening.

Areas will be graded and prepared with amended soil as described in Part 2.B.5.

Botanical Name	Common Name
Large Shrubs	
Myrica californica	Pacific Wax Myrtle
Ceanothus thyrisiflorus	Wild California Lilac
Fremontedendron californica	California Glory
Heteromeles arbutufolia	Toyon
Native Conifers	
Calocedrus decurrens	Incense Cedar
Pseudotsuga menziesii	Douglas Fir
Sequoia sempervirens	Coast Redwood
Non-Native Trees	
Alnus cordata	Italian Alder
Pinus pinea	Stone Pine
Quercus suber	Cork Oak

TYPE VIII: Circulation Corridors

Visual enhancement and delineation of areas designated to be major circulation corridors.

Botanical Name	Common Name
Small Shrubs – Groundcovers - Grasses	
Arctostaphylos uva –ursi "Point Reyes"	Bearberry
Rosa californica	Wild California Rose
Ceanothus griseus horizontalis "Yankee Point"	Wild California Lilac
Fesctuca californica "Serpentine Blue"	Blue Oat Grass
Calamagrostis acutiflora "Stricta"	Feather Reed Grass
Festuca amethystine "Superba"	Rainbow Fescue
Muhlenbergia rigens	Deer Grass
Medium Shrubs	
Arctostaphylos densiflora	Manzanita
Rhamnus californica	California Coffeeberry
Bacharis piluaris	Coyote Bush
Sambucus canadensis	Blue Elderberry
Symphocarpus albus	Common Snowberry
Mimmulus hybridus	Sticky Monkey Flower

Native Trees

Quercus lobata	Valley Oak
Strax officinalus californicus	California Storax

Non-Native Trees

Alnus cordata	Italian Alder
Pinus pinea	Stone Pine
Quercus suber	Cork Oak
Platanus acerfolia "Yarwood"	London Plane Tree

h. Mulches

All plant material will receive two inches of virgin recycled wood chips or mulch placed evenly in a area equal no less than four square feet. Mulch may be created by chipping and grinding twigs branches removed from quarried areas and stockpiled for this purpose or imported from offsite.

i. Maintenance

Seeded Cut and Fill Slopes and Open Space

After germination of seeded areas the site will be inspected for coverage of exposed slopes and soil. Hydroseeded areas left unvegetated or of low germination rate (below 70% of seeded area) will be reseeded.

Planted Permanent Open Space

After installation of plant material, the site will be inspected for noxious weeds and to review the viability of deer and varmint browse protection measures installed at the time of planting. Protected growing conditions for plant material will be maintained for a period of one year.

6. RECLAMATION BY DEVELOPMENT

ARP82, as approved, incorporates a concept that was relatively new in 1982 that called for reclamation of large portions of the site through "conversion to Second Uses." Second Uses contained in ARP82 included a harbor and marina and areas of marina commercial, residential, neighborhood commercial and administrative/professional uses.

ARP04 continues to follow that approach, and the Second Uses in ARP04 remain essentially unchanged from what was approved in ARP82.

APPENDIX M

Marin County Sustainability Principles

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MARIN COUNTYWIDE PLAN UPDATE 2001
INTERIM GUIDING PRINCIPLES

Preamble

Meeting the needs of the present without compromising the future is the overarching theme of the Marin Countywide Plan. Marin County government is committed to lead by example, support public participation, and work in community partnerships to improve quality of life and use key indicators to measure progress. To design a sustainable future, we will:

Guiding Principles

1. Link equity, economy, and the environment locally, regionally and globally.

We will improve the vitality of our community, economy, and environment. We will seek innovations that provide multiple benefits to Marin County.

Examples of Community Indicators: Social, economic and environmental indicators listed below; GPI (Genuine Progress Indicator: comprehensive, aggregate measure of general well being and sustainability including economic, social and ecological costs).

2. Use finite and renewable resources efficiently and effectively.

We will reduce consumption and reuse and recycle resources. We will reduce waste by optimizing the full life cycle of products and processes.

Examples of Community Indicators: Per capita waste produced and recycled; per capita use of energy, natural gas, and water; ecological footprint (measures per capita consumption of natural resources).

3. Reduce the release of hazardous materials.

We will make continual progress toward eliminating the release of substances that cause damage to living systems. We will strive to prevent environmentally-caused diseases.

Examples of Community Indicators: Water and air quality; measurements of toxic levels; childhood cancer rates.

4. Steward our natural and agricultural assets.

We will continue to protect open space and wilderness, and enhance habitats and bio-diversity. We will protect and support agricultural lands and activities and provide markets for fresh, locally grown food.

Examples of Community Indicators: Acres of wilderness; acres of protected land; level of fish populations; track special status plants and animals; quantity of topsoil; active farmland by crop; productivity of acreage and crop value of agricultural land; acres of organic farmland.

5. Provide efficient and effective transportation.

We will expand our public transportation systems to better connect jobs, housing, schools, shopping and recreational facilities. We will provide affordable and convenient transportation alternatives that reduce our dependence on single occupancy vehicles, conserve resources, improve air quality and reduce traffic congestion.

Examples of Community Indicators: Vehicle miles traveled; bus and ferry ridership and fares; person miles traveled; community walkability; miles and use of bike paths.

6. Supply housing affordable to the full range of our workforce and community.

We will provide and maintain well designed, energy efficient, diverse housing close to job centers, shopping and transportation links. We will pursue innovative opportunities to finance workforce housing, promote infill development and reuse and redevelop underutilized sites.

Examples of Community Indicators: Jobs-housing balance; Housing affordability; Number of new housing units within walking distance to jobs or transit.

7. Foster businesses that provide a balance of economic, environmental and social benefits.

We will retain, expand and attract a diversity of businesses that meet the needs of our residents and strengthen our economic base. We will partner with local employers to address transportation and housing needs.

Examples of Community Indicators: Taxable sales; retention and attraction of targeted businesses; job growth; unemployment rate; number of businesses with environmental management systems; hospitality revenues.

8. Educate and prepare our workforce and residents.

We will make high quality education, workforce preparation and lifelong learning opportunities available to all sectors of our community. We will help all children succeed in schools, participate in civic affairs, acquire and retain well-paying jobs, and achieve economic independence.

Examples of Community Indicators: Education level of Marin residents; per-pupil expenditures; percentage of eligible voters who voted; high school dropout rate; percent of high school graduates going to college or post secondary training.

9. Cultivate ethnic, cultural and socio-economic diversity.

We will honor our past, celebrate our cultural diversity, and respect human dignity. We will build vibrant communities, enact programs to maintain, share and appreciate our cultural differences and similarities.

Examples of Community Indicators: Racial diversity; diversity of community and corporate leadership; number of hate crimes; number and use of cultural resources such as museums and theaters.

10. Support public health, safety, and social justice.

We will live in healthy, safe communities and provide equal access to amenities and services. We will particularly protect and nurture our children, our elders, and the more vulnerable members of our community.

Examples of Community Indicators: Income statistics; health statistics; Percent of uninsured (medical) population; longevity after retirement; volunteerism; crime rate; percent of philanthropic contributions.

APPENDIX N

Laboratory Reports for Rock and Soil Samples

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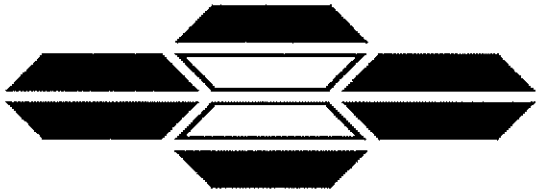


ASBESTOS TEM LABORATORIES, INC.

EPA Interim Method
Polarized Light Microscopy
Analytical Report

Laboratory Job # 299-00510

630 Bancroft Way
Berkeley, CA 94710
(510) 704-8930
FAX (510) 704-8429
www.asbestostemlabs.com

With Branch Offices Located At:
1016 GREG STREET, SPARKS, NV 89431
Ph. (775) 359-3377

Accredited by
U.S. Dept. of Commerce
NVLAP
NVLAP Lab Code: 101891-0
CA DOHS ELAP

ASBESTOS TEM LABORATORIES, INC

Nov-29-07

Ana Venegas
McCampbell Analytical
1534 Willow Pass Road
Pittsburg, CA 94565

RE: LABORATORY JOB # 299-00510
Polarized light microscopy analytical results for 6 bulk sample(s).
Job Site: SR Rock
Job No.: #205145

Enclosed please find the bulk material analytical results for one or more samples submitted for asbestos analysis. The analyses were performed in accordance with EPA Method 600/R-93/116 or 600/M4-82-020 for the determination of asbestos in bulk building materials by polarized light microscopy (PLM). Please note that while PLM analysis is commonly performed on non-friable and fine grained materials such as floor tiles and dust, the EPA method recognizes that PLM is subject to limitations. In these situations, accurate results may only be obtainable through the use of more sophisticated and accurate techniques such as transmission electron microscopy (TEM) or X-ray diffraction (XRD).

Prior to analysis, samples are logged-in and all data pertinent to the sample recorded. The samples are checked for damage or disruption of any chain-of-custody seals. A unique laboratory ID number is assigned to each sample. A hard copy log-in sheet containing all pertinent information concerning the sample is generated. This and all other relevant paper work are kept with the sample throughout the analytical procedures to assure proper analysis.

Each sample is opened in a class 100 HEPA negative air hood. A representative sampling of the material is selected and placed onto a glass microscope slide containing a drop of refractive index oil. The glass slide is placed under a polarizing light microscope where standard mineralogical techniques are used to analyze and quantify the various materials present, including asbestos. The data is then compiled into standard report format and subjected to a thorough quality assurance check before the information is released to the client.

Sincerely Yours,

Lab Manager
ASBESTOS TEM LABORATORIES, INC.

POLARIZED LIGHT MICROSCOPY ANALYTICAL REPORT

EPA Method 600/R-93/116 or 600/M4-82-020

Contact: Ana Venegas

Address: McCampbell Analytical
1534 Willow Pass Road
Pittsburg, CA 94565

Samples Indicated: 6
Reg. Samples Analyzed: 6
Split Layers Analyzed: 0

Job Site / No. SR Rock
#205145

Report No. **065974**
Date Submitted: Nov-27-07
Date Reported: Nov-29-07

SAMPLE ID	ASBESTOS %	ASBESTOS TYPE	OTHER DATA 1) Non-Asbestos Fibers 2) Matrix Materials 3) Date/Time Collected 4) Date Analyzed	DESCRIPTION FIELD / LAB
South Hill-4 Lab ID # 299-00510-001		**None Detected**	1) None Detected 2) 99-100% Clay, Qtz, Opq, Calc, Other m.p. 3) Nov-20-07 15:45 4) Nov-29-07	Soil-Brown/Grey
South Hill-5 Lab ID # 299-00510-002		**None Detected**	1) None Detected 2) 99-100% Clay, Qtz, Opq, Calc, Other m.p. 3) Nov-20-07 15:55 4) Nov-29-07	Soil-Brown/Grey
Bag House-1 Lab ID # 299-00510-003		**None Detected**	1) None Detected 2) 99-100% Clay, Qtz, Opq, Calc, Other m.p. 3) Nov-20-07 16:05 4) Nov-29-07	Soil-Brown/Grey
North Brick-1 Lab ID # 299-00510-004		**None Detected**	1) None Detected 2) 99-100% Clay, Qtz, Opq, Calc, Other m.p. 3) Nov-20-07 16:15 4) Nov-29-07	Soil-Brown/Grey
Heritage Drive Lab ID # 299-00510-005		**None Detected**	1) None Detected 2) 99-100% Clay, Qtz, Opq, Calc, Other m.p. 3) Nov-20-07 17:15 4) Nov-29-07	Soil-Brown/Grey
N. San Pedro Rd Lab ID # 299-00510-006		**None Detected**	1) None Detected 2) 99-100% Clay, Qtz, Opq, Calc, Other m.p. 3) Nov-20-07 17:30 4) Nov-29-07	Soil-Brown/Grey
Lab ID #			1) 2) 3) 4)	
Lab ID #			1) 2) 3) 4)	
Lab ID #			1) 2) 3) 4)	
Lab ID #			1) 2) 3) 4)	

Detection Limit of Method is Estimated to be 1% Asbestos Using a Visual Area Estimation Technique

Lab QC Reviewer R. McBride (signature) **Analyst** Mark Olivares (signature)

ASBESTOS TEM LABORATORIES, INC. **630 Bancroft Way, Berkeley CA 94710** **(510) 704-8930**
www.asbestostemlabs.com *With Offices in Reno, NV (775) 359-3377*

McCampbell Analytical, Inc.
1534 Willow Pass Rd
Pittsburg, CA 94565-1701
Phone: (925) 252-9262
Fax: (925) 252-9269

CHAIN-OF-CUSTODY RECORD

WorkOrder 0711565 **ClientID:** ESA **EDF:** NO

Subcontractor:
Abestos TEM Laboratories
630 Bancroft Way
Berkeley, CA 94710

TEL: (510) 704-8930
FAX: (510) 704-8429
ProjectNo: #205145; SR Rock
Acct #: N/A

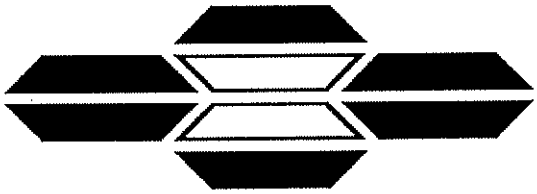
Date Received: 11/21
Date Printed: 11/21

Sample ID	ClientSampID	Matrix	Collection Date	TAT	Requested Tests: Asbestos
0711565-001A	South Hill-4	Solid	11/20/07 3:45:00 PM	standard	1
0711565-002A	South Hill-5	Soil	11/20/07 3:55:00 PM	standard	1
0711565-003A	Bag House-1	Powder	11/20/07 4:05:00 PM	standard	1
0711565-004A	North Brick-1	Soil	11/20/07 4:15:00 PM	standard	1
0711565-005A	Heritage Drive	Soil	11/20/07 5:15:00 PM	standard	1
0711565-006A	N. San Pedro Rd	Soil	11/20/07 5:30:00 PM	standard	1

Comments: **PLEASE USE 'CLIENTSAMPID' AS THE SAMPLE ID AND EMAIL ASAP!**

Please email results to at main@mccampbell.com upon completion.

	Date/Time		Date/Ti
Relinquished by:	11-21-07	Received by:	
Relinquished by:	11/27/07/230	Received by: MR /ATEM	11/27/07



ASBESTOS TEM LABORATORIES, INC.

EPA Interim Method
Polarized Light Microscopy
Analytical Report

Laboratory Job # 299-00517

630 Bancroft Way
Berkeley, CA 94710
(510) 704-8930
FAX (510) 704-8429
www.asbestostemlabs.com

With Branch Offices Located At:
1016 GREG STREET, SPARKS, NV 89431
Ph. (775) 359-3377

Accredited by
U.S. Dept. of Commerce
NVLAP
NVLAP Lab Code: 101891-0
CA DOHS ELAP

ASBESTOS TEM LABORATORIES, INC

Jan-07-08

Maria Venegas
McCampbell Analytical
1534 Willow Pass Road
Pittsburg, CA 94565

RE: LABORATORY JOB # 299-00517
Polarized light microscopy analytical results for 2 bulk sample(s).
Job Site: SR Rock Quarry
Job No.: 209145-007

Enclosed please find the bulk material analytical results for one or more samples submitted for asbestos analysis. The analyses were performed in accordance with EPA Method 600/R-93/116 or 600/M4-82-020 for the determination of asbestos in bulk building materials by polarized light microscopy (PLM). Please note that while PLM analysis is commonly performed on non-friable and fine grained materials such as floor tiles and dust, the EPA method recognizes that PLM is subject to limitations. In these situations, accurate results may only be obtainable through the use of more sophisticated and accurate techniques such as transmission electron microscopy (TEM) or X-ray diffraction (XRD).

Prior to analysis, samples are logged-in and all data pertinent to the sample recorded. The samples are checked for damage or disruption of any chain-of-custody seals. A unique laboratory ID number is assigned to each sample. A hard copy log-in sheet containing all pertinent information concerning the sample is generated. This and all other relevant paper work are kept with the sample throughout the analytical procedures to assure proper analysis.

Each sample is opened in a class 100 HEPA negative air hood. A representative sampling of the material is selected and placed onto a glass microscope slide containing a drop of refractive index oil. The glass slide is placed under a polarizing light microscope where standard mineralogical techniques are used to analyze and quantify the various materials present, including asbestos. The data is then compiled into standard report format and subjected to a thorough quality assurance check before the information is released to the client.

Sincerely Yours,

Lab Manager
ASBESTOS TEM LABORATORIES, INC.

POLARIZED LIGHT MICROSCOPY ANALYTICAL REPORT

EPA Method 600/R-93/116 or 600/M4-82-020

Contact: Maria Venegas

Address: McCampbell Analytical
1534 Willow Pass Road
Pittsburg, CA 94565

Samples Indicated: 2
Reg. Samples Analyzed: 2
Split Layers Analyzed: 0

Job Site / No. SR Rock Quarry
209145-007

Report No. **066504**
Date Submitted: Jan-03-08
Date Reported: Jan-07-08

SAMPLE ID	ASBESTOS %	ASBESTOS TYPE	OTHER DATA: 1) Non-Asbestos Fibers 2) Matrix Materials 3) Date/Time Collected 4) Date Analyzed	DESCRIPTION FIELD / LAB
By-Stockpile-1 Lab ID # 299-00517-001		**None Detected**	1) None Detected 2) 99-100% Clay, Qtz, Opq, Mica, Other m.p. 3) Dec-19-07 9:15am 4) Jan-07-08	Soil Soil-Brown
OB-Floor Lab ID # 299-00517-002		**None Detected**	1) None Detected 2) 99-100% Qtz, Clay, Calc, Opq, Other m.p. 3) Dec-19-07 10:13am 4) Jan-07-08	Sludge Soil-Grey
Lab ID #			1) 2) 3) 4)	
Lab ID #			1) 2) 3) 4)	
Lab ID #			1) 2) 3) 4)	
Lab ID #			1) 2) 3) 4)	
Lab ID #			1) 2) 3) 4)	
Lab ID #			1) 2) 3) 4)	
Lab ID #			1) 2) 3) 4)	
Lab ID #			1) 2) 3) 4)	

Detection Limit of Method is Estimated to be 1% Asbestos Using a Visual Area Estimation Technique

Lab QC Reviewer ____________ **Analyst** ____________

ASBESTOS TEM LABORATORIES, INC. **630 Bancroft Way, Berkeley CA 94710** **(510) 704-8930**
www.asbestostemlabs.com *With Offices in Reno, NV (775) 359-3377*

McCampbell Analytical, Inc.
1534 Willow Pass Rd
Pittsburg, CA 94565-1701
Phone: (925) 252-9262
Fax: (925) 252-9269

CHAIN-OF-CUSTODY RECORD

WorkOrder 0801004 **ClientID:** ESA **EDF:** NO

Subcontractor:
Abestos TEM Laboratories
630 Bancroft Way
Berkeley, CA 94710

TEL: (510) 704-8930
FAX: (510) 704-8429
ProjectNo: #209145-007; SR Rock Quarry
Acct #: N/A

Date Received: 01/02/2008
Date Printed: 01/02/2008

Sample ID	ClientSampID	Matrix	Collection Date	TAT	Requested Tests: Asbestos						
0801004-001A	BySTockpile-1	Soil	12/19/07 9:15:00 AM	5 Day	1						
0801004-002A	DB-Floor	Sludge	12/19/07 10:13:00 AM	5 Day	1						

N-10

Comments: **PLEASE USE 'CLIENTSAMPID' AS THE SAMPLE ID AND EMAIL ASAP!**

Please email results to Maria Venegas at subdata@mccampbell.com upon completion.

	Date/Time		Date/Time
Relinquished by:	01/03/08	**Received by:**	1/3/08
Relinquished by:	1/3/08 1222	**Received by:**	1/3/08 1222

McCampbell Analytical, Inc.
"When Quality Counts"

1534 Willow Pass Road, Pittsburg, CA 94565-1701
Web: www.mccampbell.com E-mail: main@mccampbell.com
Telephone: 877-252-9262 Fax: 925-252-9269

Env. Science Associates 225 Bush Street, Ste. 1700 San Francisco, CA 94104	Client Project ID: #205145; SR Rock	Date Sampled: 11/20/07 Date Received: 11/21/07
	Client Contact: Peter Hudson	Date Reported: 11/28/07
	Client P.O.:	Date Completed: 11/28/07

WorkOrder: 0711565

November 28, 2007

Dear Peter:

Enclosed are:

1). the results of **6** analyzed samples from your **#205145; SR Rock project,**

2). a QC report for the above samples

3). a copy of the chain of custody, and

4). a bill for analytical services.

All analyses were completed satisfactorily and all QC samples were found to be within our control limits. If you have any questions please contact me. McCampbell Analytical Laboratories strives for excellence in quality, service and cost. Thank you for your business and I look forward to working with you again.

Best regards,

Angela Rydelius, Lab Manager

0711565

McCAMPBELL ANALYTICAL, INC.

1534 WILLOW PASS ROAD
PITTSBURG, CA 94565-1701
Website: www.mccampbell.com Email: main@mccampbell.com
Telephone: (877) 252-9262 Fax: (925) 252-9269

CHAIN OF CUSTODY RECORD

TURN AROUND TIME ☐ RUSH ☐ 24 HR ☐ 48 HR ☐ 72 HR ☒ 5 DAY
GeoTracker EDF ☒ PDF ☒ Excel ☒ Write On (DW) ☐
☐ Check if sample is effluent and "J" flag is required

NB

Report To: PETE HUDSON Bill To: ESA
Company: ESA
E-Mail: PHudson@esassoc.com
Tele: (415) 896.5900 Fax: ( )
Project #: 205145 Project Name: SR ROCK
Project Location: SR, Ca.
Sampler Signature: Erica Kalve

SAMPLE ID	LOCATION/ Field Point Name	SAMPLING Date	SAMPLING Time	# Containers	Type Containers	MATRIX Water	MATRIX Soil	MATRIX Air	MATRIX Sludge	MATRIX Other	METHOD PRESERVED ICE	METHOD PRESERVED HCL	METHOD PRESERVED HNO_3	METHOD PRESERVED Other	Analysis Request: BTEX & TPH as Gas (602 / 8021 + 8015) MTBE	TPH as Diesel (8015)	Total Petroleum Oil & Grease (1664 / 5520 E/B&F)	Total Petroleum Hydrocarbons (418.1)	EPA 502.2 / 601 / 8010 / 8021 (HVOCs)	MTBE / BTEX ONLY (EPA 602 / 8021)	EPA 505/ 608 / 8081 (Cl Pesticides)	EPA 608 / 8082 PCB's ONLY; Aroclors / Congeners	EPA 507 / 8141 (NP Pesticides)	EPA 515 / 8151 (Acidic Cl Herbicides)	EPA 524.2 / 624 / 8260 (VOCs)	EPA 525.2 / 625 / 8270 (SVOCs)	EPA 8270 SIM / 8310 (PAHs / PNAs)	CAM 17 Metals (200.7 / 200.8 / 6010 / 6020)	LUFT 5 Metals (200.7 / 200.8 / 6010 / 6020)	Lead (200.7 / 200.8 / 6010 / 6020)	Other: ASBESTOS	Comments
SOUTH HILL-4			1545	1			X																				X			X	
SOUTH HILL-5			1555	1			X																				X			X	
BAG HOUSE -1			1605	1			X																				X			X	
NORTH BRICK-1			1615	1			X																				X			X	
HERITAGE DRIVE			1715	1			X																				X			X	
N. SAN PEDRO RD			1730	1			X																				X			X	

REC'D SEALED & INTACT VIA Fed Ex

Relinquished By:	Date:	Time:	Received By:
Erica Kalve	11/20/07	1550	
Relinquished By:	Date:	Time:	Received By:
Relinquished By:	Date:	Time:	Received By:

ICE/t°_____
GOOD CONDITION_____
HEAD SPACE ABSENT_____
DECHLORINATED IN LAB_____
APPROPRIATE CONTAINERS_____
PRESERVED IN LAB_____

VOAS O&G METALS OTHER
PRESERVATION_____ pH<2

COMMENTS:

Filter Samples for Metals analysis: Yes / No

N-12

McCampbell Analytical, Inc.
1534 Willow Pass Rd
Pittsburg, CA 94565-1701
(925) 252-9262

CHAIN-OF-CUSTODY RECORD

WorkOrder: 0711565 **ClientID: ESA**

☐ EDF ☑ Excel ☐ Fax ☑ Email ☐ HardCopy ☐ ThirdParty

Report to:
Peter Hudson
Env. Science Associates
225 Bush Street, Ste. 1700
San Francisco, CA 94104

Email: phudson@esassoc.com
TEL: (415) 896-5900 FAX: (415) 896-0332
ProjectNo: #205145; SR Rock
PO:

Bill to:
Peter Hudson
Env. Science Associates
225 Bush Street, Ste. 1700
San Francisco, CA 94104

Requested TAT: 5 days

Date Received: **11/21/2007**
Date Printed: **11/21/2007**

Sample ID	ClientSampID	Matrix	Collection Date	Hold	Requested Tests (See legend below)											
					1	2	3	4	5	6	7	8	9	10	11	12
0711565-001	South Hill-4	Solid	11/20/07 3:45:00	☐			A			A						
0711565-002	South Hill-5	Soil	11/20/07 3:55:00	☐		A			A							
0711565-003	Bag House-1	Powder	11/20/07 4:05:00	☐	A			A								
0711565-004	North Brick-1	Soil	11/20/07 4:15:00	☐		A			A							
0711565-005	Heritage Drive	Soil	11/20/07 5:15:00	☐		A			A							
0711565-006	N. San Pedro Rd	Soil	11/20/07 5:30:00	☐		A			A							

N-13

Test Legend:

1	ASBESTOS_Powder	2	ASBESTOS_S	3	ASBESTOS_Solid	4	CAM17MS_Powder	5	CAM17MS_S
6	CAM17MS_Solid	7		8		9		10	
11		12							

Prepared by: Ana Venegas

Comments:

NOTE: Samples are discarded 60 days after results are reported unless other arrangements are made. Hazardous samples will be returned to client or disposed of at client expense.

McCampbell Analytical, Inc.
"When Quality Counts"

1534 Willow Pass Road, Pittsburg, CA 94565-1701
Web: www.mccampbell.com E-mail: main@mccampbell.com
Telephone: 877-252-9262 Fax: 925-252-9269

Sample Receipt Checklist

Client Name: **Env. Science Associates**
Date and Time Received: **11/21/07 1:46:56 PM**

Project Name: **#205145; SR Rock**
Checklist completed and reviewed by: Ana Venegas

WorkOrder N°: **0711565** Matrix Powder/Soil/Solid
Carrier: FedEx

Chain of Custody (COC) Information

Chain of custody present?	Yes ☑	No ☐
Chain of custody signed when relinquished and received?	Yes ☑	No ☐
Chain of custody agrees with sample labels?	Yes ☑	No ☐
Sample IDs noted by Client on COC?	Yes ☑	No ☐
Date and Time of collection noted by Client on COC?	Yes ☑	No ☐
Sampler's name noted on COC?	Yes ☑	No ☐

Sample Receipt Information

Custody seals intact on shipping container/cooler?	Yes ☑	No ☐	NA ☐
Shipping container/cooler in good condition?	Yes ☑	No ☐	
Samples in proper containers/bottles?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	

Sample Preservation and Hold Time (HT) Information

All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature	Cooler Temp:		NA ☑
Water - VOA vials have zero headspace / no bubbles?	Yes ☐	No ☐	No VOA vials submitted ☑
Sample labels checked for correct preservation?	Yes ☑	No ☐	
TTLC Metal - pH acceptable upon receipt (pH<2)?	Yes ☐	No ☐	NA ☑

Client contacted: Date contacted: Contacted by:

Comments:

McCampbell Analytical, Inc.
"When Quality Counts"
1534 Willow Pass Road, Pittsburg, CA 94565-1701
Web: www.mccampbell.com E-mail: main@mccampbell.com
Telephone: 877-252-9262 Fax: 925-252-9269

Env. Science Associates	Client Project ID: #205145; SR Rock	Date Sampled: 11/20/07
		Date Received: 11/21/07
225 Bush Street, Ste. 1700	Client Contact: Peter Hudson	Date Extracted: 11/21/07
San Francisco, CA 94104	Client P.O.:	Date Analyzed 11/21/07

CAM / CCR 17 Metals*

					Reporting Limit for DF =1; ND means not detected above the reporting limit	
Lab ID	0711565-003A					
Client ID	Bag House-1					
Matrix	Powder				Powder	W
Extraction Type	TOTAL				mg/Kg	mg/L

ICP-MS Metals, Concentration*

Analytical Method: 6020A Extraction Method: SW3050B Work Order: 0711565

Dilution Factor	1				1	1
Antimony	ND				0.5	NA
Arsenic	4.7				0.5	NA
Barium	520				5.0	NA
Beryllium	1.1				0.5	NA
Cadmium	ND				0.25	NA
Chromium	16				0.5	NA
Cobalt	12				0.5	NA
Copper	13				0.5	NA
Lead	14				0.5	NA
Mercury	2.1				0.05	NA
Molybdenum	0.85				0.5	NA
Nickel	26				0.5	NA
Selenium	ND				0.5	NA
Silver	ND				0.5	NA
Thallium	ND				0.5	NA
Vanadium	29				0.5	NA
Zinc	58				5.0	NA
%SS:	100					

Comments					

*water samples are reported in µg/L, product/oil/non-aqueous liquid samples and all TCLP / STLC / DISTLC / SPLP extracts are reported in mg/L, soil/sludge/solid/powder samples in mg/kg, wipe samples in µg/wipe, filter samples in µg/filter.

means surrogate diluted out of range; ND means not detected above the reporting limit; N/A means not applicable to this sample or instrument.

TOTAL = acid digestion.

WET = Waste Extraction Test (STLC).

DI WET = Waste Extraction Test using de-ionized water.

i) aqueous sample containing greater than ~1 vol. % sediment; for DISSOLVED metals, this sample has been preserved prior to filtration; for TOTAL^ metals, a representative sediment-water mixture was digested; j) reporting limit raised due to insufficient sample amount; k) reporting limit raised due to matrix interference; m) estimated value due to low/high surrrogate recovery, caused by matrix interference; n) results are reported on a dry weight basis; p) see attached narrative.

DHS ELAP Certification N° 1644

Angela Rydelius, Lab Manager

McCampbell Analytical, Inc.
"When Quality Counts"
1534 Willow Pass Road, Pittsburg, CA 94565-1701
Web: www.mccampbell.com E-mail: main@mccampbell.com
Telephone: 877-252-9262 Fax: 925-252-9269

Env. Science Associates	Client Project ID: #205145; SR Rock	Date Sampled: 11/20/07
		Date Received: 11/21/07
225 Bush Street, Ste. 1700	Client Contact: Peter Hudson	Date Extracted: 11/21/07
San Francisco, CA 94104	Client P.O.:	Date Analyzed 11/21/07-11/26/07

CAM / CCR 17 Metals*

Lab ID	0711565-001A	0711565-002A	0711565-004A	0711565-005A	Reporting Limit for DF =1; ND means not detected above the reporting limit	
Client ID	South Hill-4	South Hill-5	North Brick-1	Heritage Drive		
Matrix	S	S	S	S	S	W
Extraction Type	TOTAL	TOTAL	TOTAL	TOTAL	mg/Kg	mg/L

ICP-MS Metals, Concentration*

Analytical Method: 6020A Extraction Method: SW3050B/SW3050B Work Order: 0711565

Dilution Factor	1	1	1	1	1	1
Antimony	0.67	ND	ND	ND	0.5	NA
Arsenic	6.8	2.5	4.1	4.1	0.5	NA
Barium	360	140	700	120	5.0	NA
Beryllium	1.2	0.80	0.83	0.65	0.5	NA
Cadmium	ND	ND	ND	ND	0.25	NA
Chromium	9.2	9.3	11	15	0.5	NA
Cobalt	22	4.9	7.1	4.2	0.5	NA
Copper	12	7.4	11	11	0.5	NA
Lead	24	9.0	10	9.3	0.5	NA
Mercury	4.2	0.085	3.4	0.13	0.05	NA
Molybdenum	0.72	0.87	0.64	ND	0.5	NA
Nickel	27	11	18	14	0.5	NA
Selenium	0.60	ND	ND	ND	0.5	NA
Silver	ND	ND	ND	ND	0.5	NA
Thallium	ND	ND	ND	ND	0.5	NA
Vanadium	26	19	21	27	0.5	NA
Zinc	60	30	47	29	5.0	NA
%SS:	99	98	97	99		

Comments					

*water samples are reported in µg/L, product/oil/non-aqueous liquid samples and all TCLP / STLC / DISTLC / SPLP extracts are reported in mg/L, soil/sludge/solid samples in mg/kg, wipe samples in µg/wipe, filter samples in µg/filter.

means surrogate diluted out of range; ND means not detected above the reporting limit; N/A means not applicable to this sample or instrument.

TOTAL = acid digestion.

WET = Waste Extraction Test (STLC).

DI WET = Waste Extraction Test using de-ionized water.

i) aqueous sample containing greater than ~1 vol. % sediment; for DISSOLVED metals, this sample has been preserved prior to filtration; for TOTAL^ metals, a representative sediment-water mixture was digested; j) reporting limit raised due to insufficient sample amount; k) reporting limit raised due to matrix interference; m) estimated value due to low/high surrrogate recovery, caused by matrix interference; n) results are reported on a dry weight basis; p) see attached narrative; J) "J-Flag" - estimated value detected between the RL & MDL.

DHS ELAP Certification N° 1644

Angela Rydelius, Lab Manager

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Telephone: 877-252-9262 Fax: 925-252-9269

Env. Science Associates	Client Project ID: #205145; SR Rock	Date Sampled: 11/20/07
		Date Received: 11/21/07
225 Bush Street, Ste. 1700	Client Contact: Peter Hudson	Date Extracted: 11/21/07
San Francisco, CA 94104	Client P.O.:	Date Analyzed 11/21/07-11/26/07

CAM / CCR 17 Metals*

					Reporting Limit for DF =1; ND means not detected above the reporting limit	
Lab ID	0711565-006A					
Client ID	N. San Pedro Rd					
Matrix	S				S	W
Extraction Type	TOTAL				mg/Kg	mg/L

ICP-MS Metals, Concentration*

Analytical Method: 6020A Extraction Method: SW3050B/SW3050B Work Order: 0711565

Dilution Factor	1				1	1
Antimony	ND				0.5	NA
Arsenic	4.3				0.5	NA
Barium	120				5.0	NA
Beryllium	0.51				0.5	NA
Cadmium	ND				0.25	NA
Chromium	9.4				0.5	NA
Cobalt	3.4				0.5	NA
Copper	16				0.5	NA
Lead	9.7				0.5	NA
Mercury	0.27				0.05	NA
Molybdenum	ND				0.5	NA
Nickel	11				0.5	NA
Selenium	ND				0.5	NA
Silver	ND				0.5	NA
Thallium	ND				0.5	NA
Vanadium	16				0.5	NA
Zinc	33				5.0	NA
%SS:	98					

Comments					

*water samples are reported in µg/L, product/oil/non-aqueous liquid samples and all TCLP / STLC / DISTLC / SPLP extracts are reported in mg/L, soil/sludge/solid samples in mg/kg, wipe samples in µg/wipe, filter samples in µg/filter.

means surrogate diluted out of range; ND means not detected above the reporting limit; N/A means not applicable to this sample or instrument.

TOTAL = acid digestion.

WET = Waste Extraction Test (STLC).

DI WET = Waste Extraction Test using de-ionized water.

i) aqueous sample containing greater than ~1 vol. % sediment; for DISSOLVED metals, this sample has been preserved prior to filtration; for TOTAL^ metals, a representative sediment-water mixture was digested; j) reporting limit raised due to insufficient sample amount; k) reporting limit raised due to matrix interference; m) estimated value due to low/high surrrogate recovery, caused by matrix interference; n) results are reported on a dry weight basis; p) see attached narrative; J) "J-Flag" - estimated value detected between the RL & MDL.

DHS ELAP Certification N° 1644

Angela Rydelius, Lab Manager

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QC SUMMARY REPORT FOR 6020A

W.O. Sample Matrix: Powder/Soil/Solid QC Matrix: Soil WorkOrder 0711565

EPA Method 6020A **Extraction SW3050B** **BatchID: 32036** **Spiked Sample ID 0711547-005A**

Analyte	Sample	Spiked	MS	MSD	MS-MSD	Spiked	LCS	LCSD	LCS-LCSD	Acceptance Criteria (%)			
	mg/Kg	mg/Kg	% Rec.	% Rec.	% RPD	mg/Kg	% Rec.	% Rec.	% RPD	MS / MSD	RPD	LCS/LCSD	RPD
Antimony	ND	50	122	117	4.60	10	94.7	93.6	1.18	70 - 130	20	80 - 120	20
Arsenic	4.8	50	123	115	6.54	10	90.3	94.4	4.40	70 - 130	20	80 - 120	20
Barium	210	500	133, F1	125	4.55	100	94.8	94.2	0.720	70 - 130	20	80 - 120	20
Beryllium	0.65	50	97.5	94	3.59	10	88.8	89.7	1.08	70 - 130	20	80 - 120	20
Cadmium	ND	50	121	116	4.23	10	98.1	96.5	1.65	70 - 130	20	80 - 120	20
Chromium	62	50	128	114	5.54	10	88.8	90.2	1.55	70 - 130	20	80 - 120	20
Cobalt	16	50	115	107	5.63	10	97.4	98.1	0.665	70 - 130	20	80 - 120	20
Copper	45	50	134, F1	121	5.81	10	90.4	89.9	0.532	70 - 130	20	80 - 120	20
Lead	8.8	50	123	117	4.53	10	90.4	90.3	0.0885	70 - 130	20	80 - 120	20
Mercury	ND	1.25	109	105	3.27	0.25	95.4	91.6	3.89	70 - 130	20	80 - 120	20
Molybdenum	0.88	50	118	113	3.86	10	90.9	89.3	1.73	70 - 130	20	80 - 120	20
Nickel	53	50	138, F1	125	5.41	10	90.9	91.7	0.876	70 - 130	20	80 - 120	20
Selenium	ND	50	119	112	5.69	10	94.8	98.2	3.55	70 - 130	20	80 - 120	20
Silver	ND	50	119	115	3.99	10	94	93.3	0.747	70 - 130	20	80 - 120	20
Thallium	ND	50	122	116	4.73	10	92.1	91.3	0.850	70 - 130	20	80 - 120	20
Vanadium	75	50	136, F1	120	5.69	10	90.1	91.4	1.45	70 - 130	20	80 - 120	20
Zinc	71	500	120	114	4.96	100	96.3	96.3	0	70 - 130	20	80 - 120	20
%SS:	105	250	125	119	5.24	250	94	93	0.812	70 - 130	20	70 - 130	20

All target compounds in the Method Blank of this extraction batch were ND less than the method RL with the following exceptions:
NONE

F1 = MS / MSD outside of acceptance criteria. LCS - LCSD validate prep batch.

BATCH 32036 SUMMARY

Sample ID	Date Sampled	Date Extracted	Date Analyzed	Sample ID	Date Sampled	Date Extracted	Date Analyzed
0711565-001A	11/20/07 3:45 PM	11/21/07	11/21/07 7:58 PM	0711565-001A	11/20/07 3:45 PM	11/21/07	11/26/07 3:19 PM
0711565-002A	11/20/07 3:55 PM	11/21/07	11/21/07 8:05 PM	0711565-002A	11/20/07 3:55 PM	11/21/07	11/26/07 3:50 PM
0711565-003A	11/20/07 4:05 PM	11/21/07	11/21/07 8:13 PM	0711565-004A	11/20/07 4:15 PM	11/21/07	11/21/07 8:20 PM
0711565-004A	11/20/07 4:15 PM	11/21/07	11/26/07 3:56 PM	0711565-005A	11/20/07 5:15 PM	11/21/07	11/21/07 8:28 PM
0711565-005A	11/20/07 5:15 PM	11/21/07	11/26/07 4:02 PM	0711565-006A	11/20/07 5:30 PM	11/21/07	11/21/07 8:35 PM

MS = Matrix Spike; MSD = Matrix Spike Duplicate; LCS = Laboratory Control Sample; LCSD = Laboratory Control Sample Duplicate; RPD = Relative Percent Deviation.

% Recovery = 100 * (MS-Sample) / (Amount Spiked); RPD = 100 * (MS - MSD) / ((MS + MSD) / 2).

MS / MSD spike recoveries and / or %RPD may fall outside of laboratory acceptance criteria due to one or more of the following reasons: a) the sample is inhomogenous AND contains significant concentrations of analyte relative to the amount spiked, or b) the spiked sample's matrix interferes with the spike recovery.

N/A = not applicable to this method.

NR = analyte concentration in sample exceeds spike amount for soil matrix or exceeds 2x spike amount for water matrix or sample diluted due to high matrix or analyte

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Env. Science Associates 225 Bush Street, Ste. 1700 San Francisco, CA 94104	Client Project ID: #209145-007; SR Rock Quarry	Date Sampled: 12/19/07
		Date Received: 01/02/08
	Client Contact: Erica Kalve	Date Reported: 01/06/08
	Client P.O.:	Date Completed: 01/06/08

WorkOrder: 0801004

January 06, 2008

Dear Erica:

Enclosed within are:

1) The results of the **2** analyzed samples from your project: **#209145-007; SR Rock Quarry,**
2) A QC report for the above samples,
3) A copy of the chain of custody, and
4) An invoice for analytical services.

All analyses were completed satisfactorily and all QC samples were found to be within our control limits.

If you have any questions or concerns, please feel free to give me a call. Thank you for choosing

McCampbell Analytical Laboratories for your analytical needs.

Best regards,

Angela Rydelius
Laboratory Manager
McCampbell Analytical, Inc.

0801004

McCAMPBELL ANALYTICAL, INC.

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PITTSBURG, CA 94565-1701
Website: www.mccampbell.com Email: main@mccampbell.com
Telephone: (877) 252-9262 Fax: (925) 252-9269

CHAIN OF CUSTODY RECORD

TURN AROUND TIME ☐ RUSH ☐ 24 HR ☐ 48 HR ☐ 72 HR ☐ 5 DAY

GeoTracker EDF ☐ PDF ☐ Excel ☐ Write On (DW) ☐

☐ Check if sample is effluent and "J" flag is required

Report To: ERICA KALVE Bill To: ESA c/o Erica Kalve

Company: ESA

E-Mail:

Tele: (915) 962 8483 Fax: (415) 896 0332

Project #: 209145-007 Project Name: SR Rock Quarry

Project Location: San Rafael, California

Sampler Signature: Erica Kalve

SAMPLE ID	LOCATION/ Field Point Name	SAMPLING Date	SAMPLING Time	# Containers	Type Containers	MATRIX Water	MATRIX Soil	MATRIX Air	MATRIX Sludge	MATRIX Other	METHOD PRESERVED ICE	METHOD PRESERVED HCL	METHOD PRESERVED HNO_3	METHOD PRESERVED Other	Analysis Request: BTEX & TPH as Gas (602 / 8021 / 8015) / MTBE	TPH as Diesel (8015)	Total Petroleum Oil & Grease (1664 / 5520 E/B&F)	Total Petroleum Hydrocarbons (418.1)	EPA 502.2 / 601 / 8010 / 8021 (HVOCs)	MTBE / BTEX ONLY (EPA 602 / 8021)	EPA 505/ 608 / 8081 (Cl Pesticides)	EPA 608 / 8082 PCB's ONLY; Aroclors / Congeners	EPA 507 / 8141 (NP Pesticides)	EPA 515 / 8151 (Acidic Cl Herbicides)	EPA 524.2 / 624 / 8260 (VOCs)	EPA 525.2 / 625 / 8270 (SVOCs)	EPA 8270 SIM / 8310 (PAHs / PNAs)	CAM 17 Metals (200.7 / 200.8 / 6010 / 6020)	LUFT 5 Metals (200.7 / 200.8 / 6010 / 6020)	Lead (200.7 / 200.8 / 6010 / 6020)	Other: Asbestos	Comments
BY - STOCKPICE-1		12/19/07	0915	1			X																				X				X	
QB - FLOOR		12/19/07	1013	1			X																				X				X	

Relinquished By:	Date:	Time:	Received By:
Erica Kalve	12/31/07	1400	
Relinquished By:	Date: 1/2/08	Time: 1202	Received By: Mona V
Relinquished By:	Date:	Time:	Received By:

ICE/t° 14.C COMMENTS:

GOOD CONDITION ✓

HEAD SPACE ABSENT ✓ REC'D SEALED & INTACT VIA FedEx

DECHLORINATED IN LAB ✓

APPROPRIATE CONTAINERS ✓

PRESERVED IN LAB

	VOAS	O&G	METALS	OTHER
PRESERVATION			pH<2	

N-20

McCampbell Analytical, Inc.
1534 Willow Pass Rd
Pittsburg, CA 94565-1701
(925) 252-9262

CHAIN-OF-CUSTODY RECORD

WorkOrder: 0801004 **ClientID: ESA**

☐ EDF ☐ Excel ☐ Fax ☑ Email ☐ HardCopy ☐ ThirdParty

Report to:
Erica Kalve
Env. Science Associates
225 Bush Street, Ste. 1700
San Francisco, CA 94104
Email: ekalve@esassoc.com
TEL: (415) 962-8483 FAX: (415) 896-0332
ProjectNo: #209145-007; SR Rock Quarry
PO:

Bill to:
Peter Hudson
Env. Science Associates
225 Bush Street, Ste. 1700
San Francisco, CA 94104

Requested TAT: 5 days
Date Received: **01/02/2008**
Date Printed: **01/02/2008**

Sample ID	ClientSampID	Matrix	Collection Date	Hold	Requested Tests (See legend below)											
					1	2	3	4	5	6	7	8	9	10	11	12
0801004-001	By-Stockpile-1	Soil	12/19/07 9:15:00	☐	A	A										
0801004-002	OB-Floor	Sludge	12/19/07 10:13:00	☐	A		A									

N-21

Test Legend:

1	ASBESTOS_S	2	CAM17MS_S	3	CAM17MS_Sludge	4		5	
6		7		8		9		10	
11		12							

Prepared by: Maria Venegas

Comments:

NOTE: Samples are discarded 60 days after results are reported unless other arrangements are made. Hazardous samples will be returned to client or disposed of at client expense.

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Telephone: 877-252-9262 Fax: 925-252-9269

Sample Receipt Checklist

Client Name: **Env. Science Associates**
Date and Time Received: **01/02/08 12:26:07 PM**

Project Name: **#209145-007; SR Rock Quarry**
Checklist completed and reviewed by: Maria Venegas

WorkOrder N°: **0801004** Matrix Sludge/Soil
Carrier: FedEx

Chain of Custody (COC) Information

Chain of custody present?	Yes ☑	No ☐
Chain of custody signed when relinquished and received?	Yes ☑	No ☐
Chain of custody agrees with sample labels?	Yes ☑	No ☐
Sample IDs noted by Client on COC?	Yes ☑	No ☐
Date and Time of collection noted by Client on COC?	Yes ☑	No ☐
Sampler's name noted on COC?	Yes ☑	No ☐

Sample Receipt Information

Custody seals intact on shipping container/cooler?	Yes ☐	No ☐	NA ☑
Shipping container/cooler in good condition?	Yes ☑	No ☐	
Samples in proper containers/bottles?	Yes ☑	No ☐	
Sample containers intact?	Yes ☑	No ☐	
Sufficient sample volume for indicated test?	Yes ☑	No ☐	

Sample Preservation and Hold Time (HT) Information

All samples received within holding time?	Yes ☑	No ☐	
Container/Temp Blank temperature	Cooler Temp: 14.6°C		NA ☐
Water - VOA vials have zero headspace / no bubbles?	Yes ☐	No ☐	No VOA vials submitted ☑
Sample labels checked for correct preservation?	Yes ☑	No ☐	
TTLC Metal - pH acceptable upon receipt (pH<2)?	Yes ☐	No ☐	NA ☑

Client contacted: Date contacted: Contacted by:

Comments:

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Telephone: 877-252-9262 Fax: 925-252-9269

Env. Science Associates	Client Project ID: #209145-007; SR Rock Quarry	Date Sampled: 12/19/07
		Date Received: 01/02/08
225 Bush Street, Ste. 1700	Client Contact: Erica Kalve	Date Extracted: 01/02/08
San Francisco, CA 94104	Client P.O.:	Date Analyzed: 01/03/08

CAM / CCR 17 Metals*

Lab ID	0801004-001A	0801004-002A			Reporting Limit for DF =1; ND means not detected above the reporting limit	
Client ID	By-Stockpile-1	QB-Floor				
Matrix	S	SLUDGE			S/SLUDGE	W
Extraction Type	TOTAL	TOTAL			mg/Kg	mg/L

ICP-MS Metals, Concentration*

Analytical Method: 6020A Extraction Method: SW3050B/SW3050B Work Order: 0801004

Dilution Factor	1	1			1	1
Antimony	1.1	ND			0.5	NA
Arsenic	16	2.8			0.5	NA
Barium	410	390			5.0	NA
Beryllium	0.59	0.62			0.5	NA
Cadmium	ND	ND			0.25	NA
Chromium	56	12			0.5	NA
Cobalt	14	5.3			0.5	NA
Copper	42	8.1			0.5	NA
Lead	19	7.7			0.5	NA
Mercury	0.17	1.9			0.05	NA
Molybdenum	0.90	2.5			0.5	NA
Nickel	67	14			0.5	NA
Selenium	ND	ND			0.5	NA
Silver	ND	ND			0.5	NA
Thallium	ND	ND			0.5	NA
Vanadium	73	14			0.5	NA
Zinc	68	38			5.0	NA
%SS:	105	98				

Comments					

*water samples are reported in µg/L, product/oil/non-aqueous liquid samples and all TCLP / STLC / DISTLC / SPLP extracts are reported in mg/L, soil/sludge/solid samples in mg/kg, wipe samples in µg/wipe, filter samples in µg/filter.

means surrogate diluted out of range; ND means not detected above the reporting limit; N/A means not applicable to this sample or instrument.

TOTAL = acid digestion.

WET = Waste Extraction Test (STLC).

DI WET = Waste Extraction Test using de-ionized water.

i) aqueous sample containing greater than ~1 vol. % sediment; for DISSOLVED metals, this sample has been preserved prior to filtration; for TOTAL^ metals, a representative sediment-water mixture was digested; j) reporting limit raised due to insufficient sample amount; J) analyte detected below quantitation limits; k) reporting limit raised due to matrix interference; m) estimated value due to low/high surrrogate recovery, caused by matrix interference; n) results are reported on a dry weight basis; p) see attached narrative.

DHS ELAP Certification N° 1644

Angela Rydelius, Lab Manager

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QC SUMMARY REPORT FOR 6020A

W.O. Sample Matrix: Soil/Sludge QC Matrix: Soil WorkOrder: 0801004

EPA Method 6020A **Extraction SW3050B** **BatchID: 32852** **Spiked Sample ID 0712854-021A**

Analyte	Sample	Spiked	MS	MSD	MS-MSD	Spiked	LCS	LCSD	LCS-LCSD	Acceptance Criteria (%)			
	mg/Kg	mg/Kg	% Rec.	% Rec.	% RPD	mg/Kg	% Rec.	% Rec.	% RPD	MS / MSD	RPD	LCS/LCSD	RPD
Antimony	0.57	50	114	119	4.01	10	96.8	97.6	0.792	70 - 130	20	80 - 120	20
Arsenic	2.5	50	109	125	13.1	10	99.2	98.5	0.789	70 - 130	20	80 - 120	20
Barium	78	500	112	123	7.88	100	97.9	97.2	0.677	70 - 130	20	80 - 120	20
Beryllium	ND	50	110	115	4.36	10	104	105	1.15	70 - 130	20	80 - 120	20
Cadmium	0.65	50	110	119	8.15	10	100	99.2	1.34	70 - 130	20	80 - 120	20
Chromium	23	50	101	119	11.4	10	98.6	99.1	0.476	70 - 130	20	80 - 120	20
Cobalt	5.2	50	106	114	6.45	10	99.2	99.1	0.141	70 - 130	20	80 - 120	20
Copper	12	50	106	121	11.2	10	101	101	0	70 - 130	20	80 - 120	20
Lead	4.0	50	108	117	7.54	10	96.3	97.2	0.889	70 - 130	20	80 - 120	20
Mercury	ND	1.25	96.2	104	7.41	0.25	108	106	1.80	70 - 130	20	80 - 120	20
Molybdenum	0.54	50	105	117	10.3	10	113	116	2.45	70 - 130	20	80 - 120	20
Nickel	42	50	105	126	10.7	10	101	101	0	70 - 130	20	80 - 120	20
Selenium	ND	50	101	110	8.24	10	88.2	90.9	2.99	70 - 130	20	80 - 120	20
Silver	ND	50	110	119	7.44	10	99.6	99.2	0.402	70 - 130	20	80 - 120	20
Thallium	ND	50	108	117	7.66	10	97	98.2	1.18	70 - 130	20	80 - 120	20
Vanadium	21	50	103	120	11.1	10	99.1	98.9	0.152	70 - 130	20	80 - 120	20
Zinc	33	500	112	122	7.75	100	104	104	0	70 - 130	20	80 - 120	20
%SS:	104	250	105	117	10.7	250	95	95	0	70 - 130	20	70 - 130	20

All target compounds in the Method Blank of this extraction batch were ND less than the method RL with the following exceptions:
NONE

BATCH 32852 SUMMARY

Sample ID	Date Sampled	Date Extracted	Date Analyzed	Sample ID	Date Sampled	Date Extracted	Date Analyzed
0801004-001A	12/19/07 9:15 AM	01/02/08	01/03/08 9:22 PM	0801004-002A	2/19/07 10:13 AM	01/02/08	01/03/08 9:30 PM

MS = Matrix Spike; MSD = Matrix Spike Duplicate; LCS = Laboratory Control Sample; LCSD = Laboratory Control Sample Duplicate; RPD = Relative Percent Deviation.

% Recovery = 100 * (MS-Sample) / (Amount Spiked); RPD = 100 * (MS - MSD) / ((MS + MSD) / 2).

MS / MSD spike recoveries and / or %RPD may fall outside of laboratory acceptance criteria due to one or more of the following reasons: a) the sample is inhomogenous AND contains significant concentrations of analyte relative to the amount spiked, or b) the spiked sample's matrix interferes with the spike recovery.

N/A = not applicable to this method.

NR = analyte concentration in sample exceeds spike amount for soil matrix or exceeds 2x spike amount for water matrix or sample diluted due to high matrix or analyte

DHS ELAP Certification N° 1644

QA/QC Officer

TECHNOLOGY OF MATERIALS

21090 Cielo Vista Way
Wildomar, CA 92595

Sam Iyengar Ph.D.
Technical Director

Mr. Pete Hudson
ESA
225 Bush Street
San Francisco, CA 94104

November 27, 2007

Dear Pete:
Enclosed please find a report on the XRD of several samples. Please call me if you have any questions or concerns.

Sincerely,

Sam Iyengar

Phone: (951) 471-8194 **www.xraydiffrac.com** **Fax: (951) 471-8193**

X-ray Diffraction of Several Rock and Dust Samples

Introduction:

Thirteen samples were received at the laboratory for analysis. It was requested that the sample be analyzed by X-ray powder diffraction (XRD). It was analyzed by XRD to determine the presence of crystalline silica content. This report summarizes the findings

Materials and Method:

The following samples were analyzed: They are from

San Rafael Rock Quarry
San Rafael, CA

South Hill-1	**Bag House-1**
South Hill-2	**Bag House-2**
South Hill-3	**North Brick-1**
South Hill-4	**Secondary Stockpile**
South Hill-5	**Gutter-1**
South Hill-6	**Heritage Drive**
N.San Pedro Rd.	

X-ray Diffraction (XRD):

The samples were crushed to pass through 325 mesh sieve (~44 microns). They were then packed in a holder. Analysis was carried out on a Phillips Diffractometer at 30 Kv and 20 ma using Cu K-alpha radiation and a scintillation detector. They were scanned from 5 to 50 degrees two-theta. The resulting patterns collected on a computer were matched with the reference standards for various inorganic minerals stored in the JCPDS database. Semi-quantitative estimation of mineral components was carried out from the peak intensities.

Crystalline Silica Content:

Since the several polymorphs of crystalline silica (quartz, cristobalite and tridymite) all have the same chemical composition (SiO2), X-ray diffraction methods were necessary to differentiate and quantify these forms. X-ray diffraction (XRD) is a crystal structure analysis method using the atomic arrays within the crystals as a three dimensional diffraction grating to diffract a monochromatic beam of x-rays. The angles at which the beam is diffracted are used to calculate the interplanar atomic spacings (d-spacings) giving information about how the atoms are arranged within the crystalline compounds. Even if materials are chemically similar, they can be

differentiated by their crystallographic structures. These patterns (and their d-spacings) are compared to over 65000 data entries in the International Powder Diffraction File (PDF) data base.

Results and Discussion:

XRD patterns along with stick patterns for reference **quartz (SiO_2)** and **Na-Ca feldspar** from the Powder Diffraction File (PDF) database are shown in Figure 1. They do contain fair amounts of **crystalline silica** as **α-quartz (Table 1).** *There are no discernible amounts of crystalline cristobalite or trydimite.*

XRD analysis also revealed the presence of minerals such as **mica/illite** and **feldspar.** Approximate amounts (+/- 5 %) are shown in the attached Table.

Overall Mineralogy:

In whole (bulk) sediment, **samples** contain dominant amounts of quartz followed by feldspars (both K and Na/Ca feldspars). They also have some calcite. There are clay minerals – smectite/chlorite, mica/illte and kaolinite present in various amounts

The following comments describe some of the minerals that are present in this rock sample.

Quartz is usually the major constituent of most rocks and sediments, and is one of the common crystalline forms of silicon dioxide (SiO_2). This is a fairly *hard and non-reactive mineral.* **Cristobalite** and **Tridymite** are other forms of SiO_2.

Feldspar is a group name for a large number of aluminum silicate minerals of variable composition. The general formula is **X** $Al(Al,Si)Si_2O_8$, where **X** may be Na, K, Ca or Ba. The most common mineral names mentioned from this group include K-feldspars (orthoclase, adularia, microcline) and plagioclase (Na-Ca) feldspars (albite, anorthite). These minerals *are softer than quartz and slightly reactive.*

Clays: The clays are fine-grained (< 0.002 or 0.005 mm) hydrous aluminum silicate phyllosilicate minerals with a layered structure. They consist of sheets of SiO_2 tetrahedra linked to sheets of Al or Mg octohedra forming a layer. When the ratio of silica tetrahedra to Al or Mg octohedra is 1 : 1, it forms **kaolin** group of minerals; when the ratio is 2 : 1, one octohedra sandwiched between two sheets of silica tetrahedra, it forms **mica** (mica/illite), **smectite**, **vermiculite** or **chlorite**, The space between layers is called interlayer space. **Montmorillonite or Bentonite (Smectite group of minerals)** is an expandable *clay mineral* with Ca, Mg, Na, etc. in the interlayer region. These ions are surrounded by water molecules.

They expand upon intercalation with water or organic compounds such as ethylene glycol and glycerol. They have large surface area and are highly reactive. *Bentonite is widely used as a drilling mud*. Mica/Illite is a non-expandable mineral (with K ion in the interlayer space holding the layers together) and is slightly reactive. **Vermiculite** is a non-expandable mineral with Mg ions (with water) or islands of partially developed hydroxy-Al polymers in the inter-layer region. They also have a large surface area and are highly reactive. **Chlorite** is a non-expandable mineral with a fully developed brucite ($Mg(OH)_2$) in-between the layers preventing any separation. They are moderately reactive.

Table 1: Mineralogical Composition of Whole (bulk) Rock (wt. %)

Sample ID	Chlorite/ Smectite	Mica/ Illite	Kaolinite	Quartz	K-feldspar & Na/Ca Feldspar	Calcite
South Hill-1	~5	~15	~5	~50	~20	~5
South Hill-2	~5	~15	~5	~45	~20	~10
South Hill-3	~5	~15	~5	~45	~25	~5
South Hill-4	~3	~10	~5	~55	~15	~2
South Hill-5	~3	~10	~5	~55	~15	~2
South Hill-6	~3	~5	~5	~50	~20	~7
North Brick-1	~5	~10	~3	~55	~20	~7
N.San Pedro Rd	~10	~15	~5	~40	~30	<1
Bag House-1	~5	~10	~5	~50	~30	<1
Bag House-2	~5	~15	~5	~55	~20	<1
Secondary Stockpile	~5	~10	~5	~60	~20	<1
Gutter-1	~5	~15	~5	~50	~20	~5
Heritage Drive	~2	~15	~5	~50	~25	~3

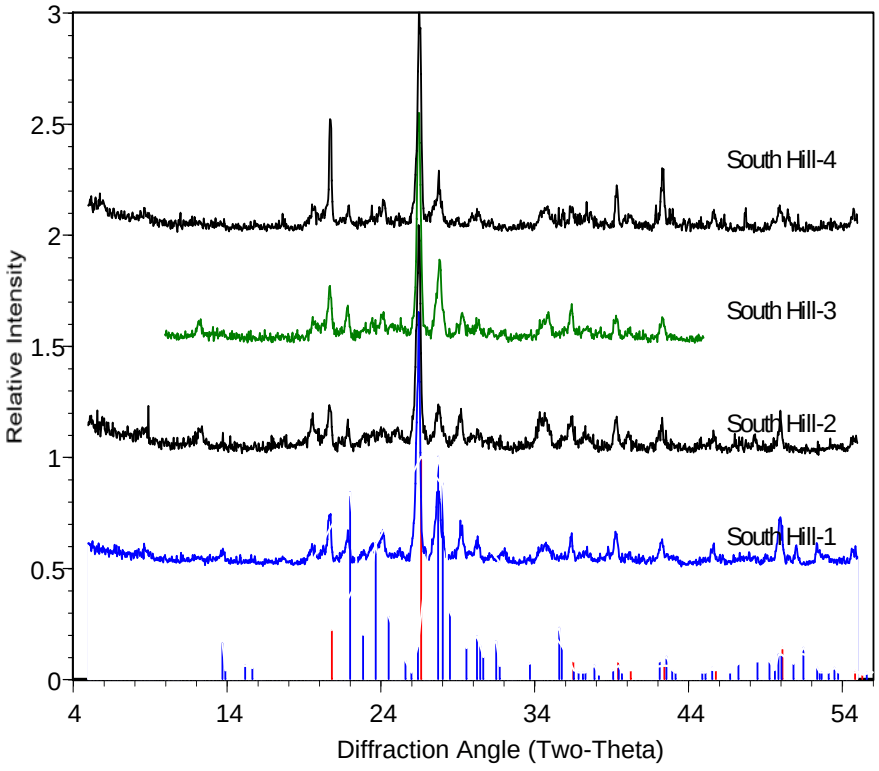

Figure 1: XRD patterns for powder samples with stick patterns for quartz (red) and feldspar(blue)

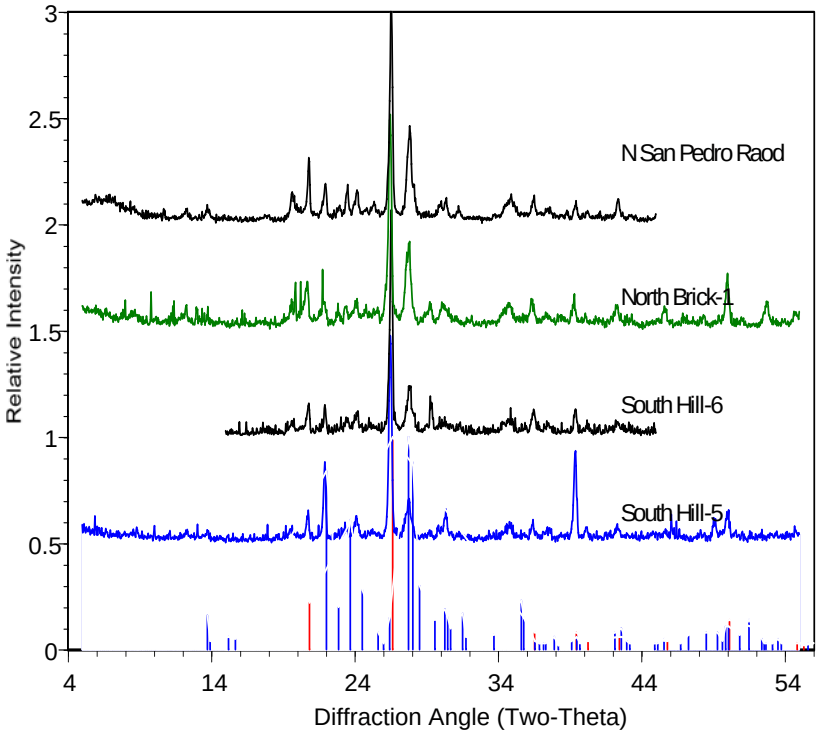

Figure 2: XRD patterns for powder samples with stick patterns for quartz (red) and feldspar(blue)

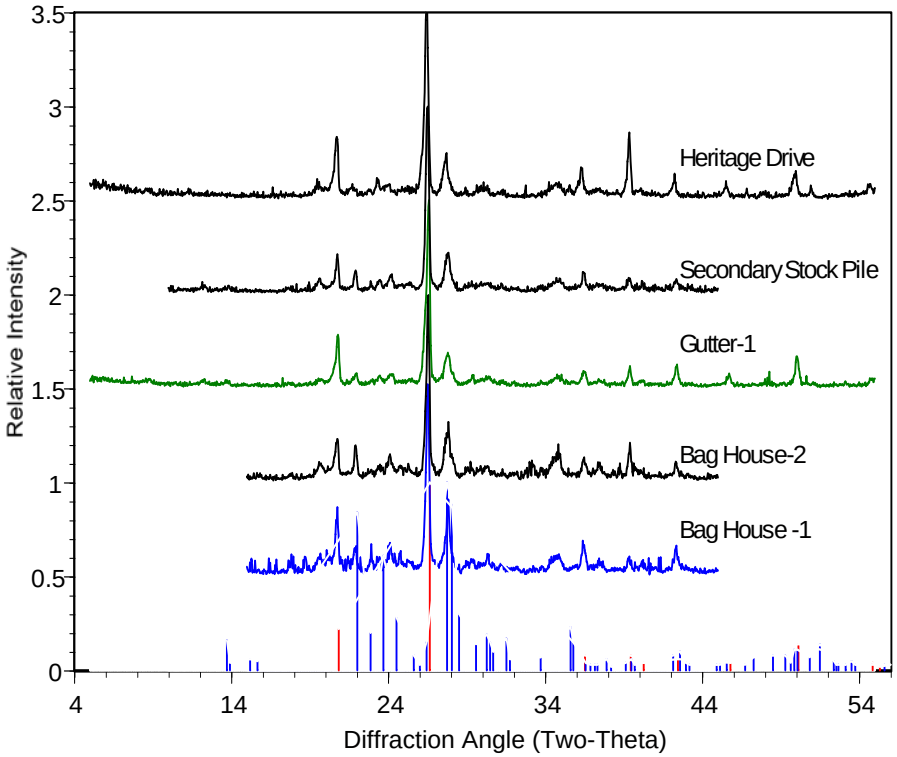

Figure 3: XRD patterns for powder samples with stick patterns for quartz (red) and feldspar(blue)

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TECHNOLOGY OF MATERIALS

21090 Cielo Vista Way
Wildomar, CA 92595

Sam Iyengar Ph.D.
Technical Director

Mr. Erica Kalve
ESA
225 Bush Street
San Francisco, CA 94104

January 15, 2008

Dear Erica:
Enclosed please find a report on the XRD of several samples. Please call me if you have any questions or concerns.

Sincerely,

Sam Iyengar

Phone: (951) 471-8194 **www.xraydiffrac.com** **Fax: (951) 471-8193**

X-ray Diffraction of Several Rock and Dust Samples

Introduction:

Six samples were received at the laboratory for analysis. It was requested that the sample be analyzed by X-ray powder diffraction (XRD). It was analyzed by XRD to determine the presence of crystalline silica content. This report summarizes the findings

Materials and Method:

The following samples were analyzed: They are from San Rafael Rock Quarry, San Rafael, CA

Quarry Bowl-1
Quarry Bowl-2
QB-Floor
BY-Stockpile-1
BY-Stockpile-2A
BY-Stockpile-2B

X-ray Diffraction (XRD):

The samples were crushed to pass through 325 mesh sieve (~44 microns). They were then packed in a holder. Analysis was carried out on a Phillips Diffractometer at 30 Kv and 20 ma using Cu K-alpha radiation and a scintillation detector. They were scanned from 5 to 50 degrees two-theta. The resulting patterns collected on a computer were matched with the reference standards for various inorganic minerals stored in the JCPDS database. Semi-quantitative estimation of mineral components was carried out from the peak intensities.

Crystalline Silica Content:

Since the several polymorphs of crystalline silica (quartz, cristobalite and tridymite) all have the same chemical composition (SiO2), X-ray diffraction methods were necessary to differentiate and quantify these forms. X-ray diffraction (XRD) is a crystal structure analysis method using the atomic arrays within the crystals as a three dimensional diffraction grating to diffract a monochromatic beam of x-rays. The angles at which the beam is diffracted are used to calculate the interplanar atomic spacings (d-spacings) giving information about how the atoms are arranged within the crystalline compounds. Even if materials are chemically similar, they can be differentiated by their crystallographic structures. These patterns (and their d-spacings) are compared to over 65000 data entries in the International Powder Diffraction File (PDF) data base.

Results and Discussion:

XRD patterns along with stick patterns for reference **quartz (SiO_2)**, **calcite (CaCO3)** and **Na-Ca feldspar** from the Powder Diffraction File (PDF) database are shown in Figure 1.

Overall Mineralogy:

They do contain fair amounts of **crystalline silica** as **α-quartz (Table 1).** *There are no discernible amounts of crystalline cristobalite or trydimite.*

In whole (bulk) soil, **samples** contain dominant amounts of quartz followed by feldspars (both K and Na/Ca feldspars). They also have some calcite. There are clay minerals – smectite/chlorite, mica/illte and kaolinite -- present in various amounts. Approximate amounts (+/- 10 %) are shown in the attached Table.

The following comments describe some of the minerals that are present in these powder samples...

Quartz is usually the major constituent of most rocks and sediments, and is one of the common crystalline forms of silicon dioxide (SiO_2). This is a fairly *hard and non-reactive mineral.* **Cristobalite** and **Tridymite** are other forms of SiO_2.

Feldspar is a group name for a large number of aluminum silicate minerals of variable composition. The general formula is **X** $Al(Al,Si)Si_2O_8$, where **X** may be Na, K, Ca or Ba. The most common mineral names mentioned from this group include K-feldspars (orthoclase, adularia, microcline) and plagioclase (Na-Ca) feldspars (albite, anorthite). These minerals *are softer than quartz and slightly reactive.*

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with Mg ions (with water) or islands of partially developed hydroxy-Al polymers in the inter-layer region. They also have a large surface area and are highly reactive. **Chlorite** is a non-expandable mineral with a fully developed brucite ($Mg(OH)_2$) in-between the layers preventing any separation. They are moderately reactive.

Table 1: Mineralogical Composition of Whole (bulk) Rock (wt. %)

Sample ID	Chlorite/ Smectite	Mica/ Illite	Kaolinite	Quartz	K-feldspar & Na/Ca Feldspar	Calcite
Quarry Bowl-1	~5	~10	~10	~50	~20	~5
Quarry Bowl-2	~5	~10	~10	~40	~25	~10
QB-Floor	~5	~10	~10	~50	~20	~5
BY-Stockpile -1	~10	~5	~10	~60	~15	<1
BY-Stockpile -2A	~5	~5	~5	~65	~20	<1
BY-Stockpile -2B	~15	~5	~5	~65	~10	<1

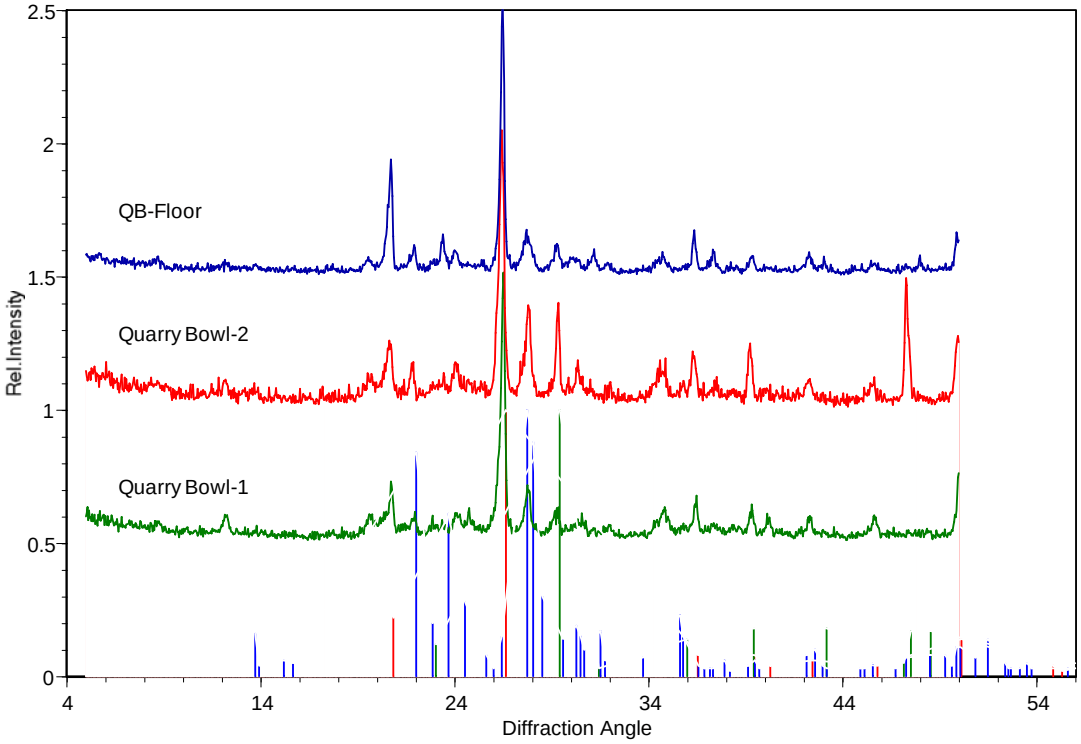

Figure 1: XRD pattern for powder samples with stick patterns for quartz (red), Calcite (green) and feldspar (blue)

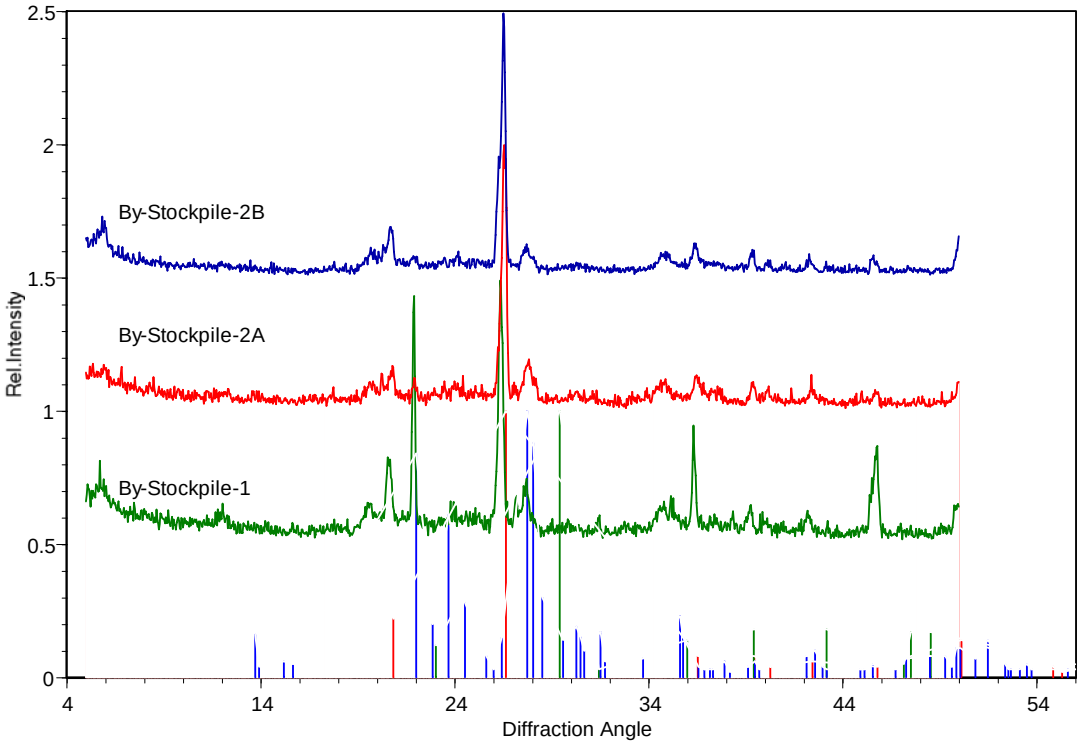

Figure 2: XRD pattern for powder samples with stick patterns for quartz (red), Calcite (green) and feldspar (blue)

APPENDIX O
Best Practices Analysis of Quarry Operations

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SUSAN L. ADAMS, Ph.D., R.N.
SUPERVISOR
FIRST DISTRICT
COUNTY OF MARIN

MARIN COUNTY CIVIC CENTER
3501 CIVIC CENTER DRIVE, STE. 329
SAN RAFAEL, CA 94903
PHONE: 499-7331
FAX: 499-3645
E-MAIL: sadams@co.marin.ca.us

August 16, 2007

To:
Denise Lucy
Bonnie Marmor
David Crutcher
Aimi Dutra
Eric Steger
Tim Haddad

From: Susannah Clark

Re: Best Practices Analysis of Quarry Operations

Forwarded herewith is an analysis conducted by the Office of Supervisor Susan Adams, looking at best practices of quarry operations in Marin and Sonoma Counties that have similarity to SRRQ in terms of proximity to settled communities. We also looked at San Bernardino County because we were advised they have extensive mining operations in that county and significant oversight by their county agencies in terms of environmental monitoring; however, the quarries we studied were more rural in nature, not within populated neighborhoods.

Enclosures:
Best Practices SRRQ, Nicasio, Stevens Creek, Lexington, 7 pages
Best Practices Book 2 Sonoma County Ordinance, Mark West, Blue Rock, Canyon Rock, Stony Point, 9 pages
Best Practices San Bernardino County, 6 pages

	A	B	C	D	E	F
1	**Practice**	**SRRQ**	**Mitigation Measures Proposed in EIS (if nothing, then already in practice**	**Nicasio-**sparsely settled area	**Stevens Creek/Cupertino-**near settled area	**Lexington Quarry Los Gatos-**near settled area
2	**Hours of operation**	Interim operating condition 4 states: Gates open at 7am for contractors, public and non-employee traffic.	limit quarry operations to max level of annual production as of 1982	General operating hours include the extraction, stocking, loading, off hauling and sale of materials. General hours: 8am-5pm, gates open at 7am M-F.	Plant operations are allowed to start up at 6:30am and close 5pm weekdays. Gates open 6am and close at 5pm. First trucks loaded 7am. Allowed to run plant, load and crush 39 work evenings a year (5pm-8pm)	Trucks Stacking and Loading 6:30am-5pm on Hwy. 17; until 4:30 for loading on site; Excavation 8am-5pm; Yard Maintenance 6am-6pm
3	**Weekends and holidays**	Maintenance and barge operations on weekends.		no	Crushing permitted 15 Saturdays a year.	no weekends or holidays unless permit given by county; can't start before 6:30 am

	A	B	C	D	E	F
1	**Practice**	**SRRQ**	**Mitigation Measures Proposed in EIS (if nothing, then already in practice**	**Nicasio-**sparsely settled area	**Stevens Creek/Cupertino-**near settled area	**Lexington Quarry Los Gatos-**near settled area
4	**Barge operations**	The interim operating Condition 3 states, "Barges shall not be loaded or operated between the hours of 10pm to 7am This condition shall be suspended during an officially declared emergency as defined in the Court's amended Order with regard to emergencies."; two barge trips per day		not applicable	Not applicable	n/a
5	**Limitations on maintenance**	Interim operating condition 2D states: 15 Saturdays per year between 7am and 5pm; EIS allows M-F from 7am-5pm		All equipment shall be turned off outside approved operationg hours	Permitted until 10:00pm weekdays	6am-6pm weekdays
6	**Limitations on crushing**	Condition 2A,B,C states: December-April, 7:00am to 5pm weekdays and May-November, 7am-10pm weekdays; operation may continue until 10pm 30 days/year during Dec-Apr period		9am to 4pm weekdays. Regulation of type of crusher and location.		during normal hours of operation

	A	B	C	D	E	F
1	**Practice**	**SRRQ**	**Mitigation Measures Proposed in EIS (if nothing, then already in practice**	**Nicasio**-sparsely settled area	**Stevens Creek/Cupertino**-near settled area	**Lexington Quarry Los Gatos**-near settled area
7	**Blasting notification**	Interim operating condition 9 states: 36 hour advance notice to local residents and county.		Quarry operator shall provide special notification to property owners w/I 500 feet of details of location and amount of explosives prior to blasting.	no blasting.	no blasting allowed
8	**Blasting limitations by hour and days**	Interim operating condition 8 states: 11:30am to 1:30pm weekdays		9am to 4pm weekdays up to 3 days per year.	not applicable	n/a
9	**Vibration**	beyond quarry property shall be limited to max peak velocity of .5 inches/second				n/a
10	**Air Quality including operations in windy conditions**	Interim operating condition 10 states: Excavation, grading, hauling and/or unloading soil and rock, except within the quarry bowl shall be suspended when instantaneous wind gusts exceed 25mph as measured at the top of the bowl.			No air monitoring required.	

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	A	B	C	D	E	F
1	**Practice**	**SRRQ**	**Mitigation Measures Proposed in EIS (if nothing, then already in practice**	**Nicasio-**sparsely settled area	**Stevens Creek/Cupertino-**near settled area	**Lexington Quarry Los Gatos-**near settled area
11	**Noise Impacts and Mitigation measures**	Interim operating condition 5 states: "Noise measured at property line shall be limited to 60dBA day/night Ldn and 70 dBA intermittent. Best management practice to reduce noise shall be implemented for maintenance operations in compliance with state and Federal laws."		Max day/hourly average sound level shall not exceed 56 dBA at nearest property line of nearest receptor. Max intermittent sound level shall not exceed 67 dBA	No noise mitigation measures required; noise cannot exceed 55dB b/w 7am-10pm and 45dB all other hours	No back-up beepers-use strobelights
12	**Covered trucks**	No tarping required.		Trucks shall be covered or wet down prior to entering Nicasio Valley Rd.	No tarping required.	not required
13	**Number of truck trips**	Limited to 250 truck trips daily w/ max load capacity of 25 tons; can have 8 haul trucks, 7 loaders, 3 excavators, and one bulldozer and rockdrill; SRRQ has implemented use of 20/80 biofuel/gas blend	proposed mitigation measure wouldn't increase GHG emissions above 1990 levels	600 truck trips per month w/ max of 25 in any one day.	Permit allows up to 2600 truck trips daily, which they have never reached. 700-800 trucks in is the norm.	302

O-7

	A	B	C	D	E	F
1	**Practice**	**SRRQ**	**Mitigation Measures Proposed in EIS (if nothing, then already in practice**	**Nicasio-**sparsely settled area	**Stevens Creek/Cupertino-**near settled area	**Lexington Quarry Los Gatos-**near settled area
14	**Departure metering**	Interim operating condition 6 states: Over the highway trucks shall be metered at 2 minute intervals during peak periods; no convoying - keep 500 ft b/w each vehicle		500 foot spacing	None.	none
15	**Dust abatement**	interim operating conditions 10,11,12 and 13: Excavation, grading, hauling and/or unloading soil and rock except w/l the quarry bowl shall be suspended when instantaneous wind gusts exceed 25 pmh as the top of the bowl. All trucks leaving Quarry shall be washed down and Quarry shall maintain dust abatement devices and keep current and comply with all permits required by BAAQMD. Quarry shall sweep NSP not more than twice per day.	apply water to unpaved surfaces once every 3 hours on dry days; to parking areas, unpaved surfaces, active quarry faces, active stockpiles twice daily; on rainy days apply to reduce visible emissions; use chemical palliative to reduce dust emissions from vehicle travel surfaces; limit traffic speeds on unpaved roads to 15 mph	Trucks leaving the property shall not track dirt or material. Water applied shall be the min required to control dust.	No washdown required of trucks leaving quarry. Street Vacuum operates 8 hours a day. Foam dust suppression system used at crusher. Access roads paved, oiled, watered, or chemically treated; sprinkling of stockpiles; scrubbing of truck wheels before leaving site	wet process for crushing and piling; roads paved w/ oil and screenings, or better, paved w/ minimum 22 ft. buffer b/w road and office; areas closer than 100 ft. to loading point must be sprinkled w/ water; must spray stockpiles w/ water; do majority of excavation after rainy periods

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	A	B	C	D	E	F
1	**Practice**	**SRRQ**	**Mitigation Measures Proposed in EIS (if nothing, then already in practice**	**Nicasio**-sparsely settled area	**Stevens Creek/Cupertino**-near settled area	**Lexington Quarry Los Gatos**-near settled area
16	**Noise abatement**	See Noise impacts above.		Operator shall implement best management practices to reduce noise and vibration.		trucks cannot exceed 25 mph to reduce noise; trucks outfitted w/ mufflers
17	**Road impact fees**	Interim operating condition 7 states: SRRQ shall pay in kind a road impact fee of $100,000 value, in materials, annually to be used to mitigate impacts to NSP in both the City and County.				
18	**Annual review of permits**	Quarry shall provide a topo map and report annually. Quarry shall pay for computerized truck counting system and provide access to information to the County which the County will post on its website.		Annual site visit and compliance review for seven years at which time operator must apply for Use Permit Renewal. Operator shall maintain permits from the state Air Resources Board for operation of portable equip.	yes/biannually	yes/quarterly

	A	B	C	D	E	F
1	**Practice**	**SRRQ**	**Mitigation Measures Proposed in EIS (if nothing, then already in practice**	**Nicasio**-sparsely settled area	**Stevens Creek/Cupertino**-near settled area	**Lexington Quarry Los Gatos**-near settled area
19	**Waste Water and Storm Water Pollution Prevention Plan**				yes, make sure no runoff gets into local streams; no recommendations as to how to prevent runoff	yes. Groundwater is greatest concern of neighbors who are all on septic systems and wells.
20	**Truck Driver Education/ Monitoring**	Quarry provides information to truckers regarding routes to be used. Information on bio-diesel conversion grants.		Trucker management plan distributed to all truckers.	Truck patrol at gate to watch for gravel dropping and speed.	
21	**Hazardous Material Control**				Quarry has non silica bearing rock	
22	**Other**					Very active opposition group-Los Gatos Hillside Preservation League. Holds bi-monthly meetings with County planning staff
23	**Contact for information**	Court Documents		Documents	Off the record: Mark McKenna, Environmental Safety Manager for Quarry. 408-253-2512	Santa Clara County Planner Rob Eastwood 408-299-5792

	A	B	C	D	E	F
1	**Practice**	**Sonoma County Mining Ordinance**	**Mark West Calistoga**-near settled area	**Blue Rock Forestville**-near settled area	**Canyon Rock Forestville**-near settled area	**Stony Point/Sonoma/Integrated Waste Division**
2	**Hours of operation**	Unless otherwise provided by conditions of the permit, the permit granted hereunder shall authorize operations of mining, processing, and related activities as follows: (1) Monday through Friday: 6 am through 10pm; (2) Saturday: 6 am until 4:30 pm Instream operations conducted on Saturdays are limited to processing outside the ordinary high water mark; (3) Sundays and national holidays: no mining or processing unless authorized as a condition of the permit; (4) Exceptions to these time limitations may be authorized by the director upon written request of the operator in conjunction with special	7am-4:30pm	7am-4:30pm	6am-10pm	7am-4pm M-Sat; cannot drive trucks 7am-8:30am through congested intersection M-F;

	A	B	C	D	E	F
1	**Practice**	**Sonoma County Mining Ordinance**	**Mark West Calistoga**-near settled area	**Blue Rock Forestville**-near settled area	**Canyon Rock Forestville**-near settled area	**Stony Point/Sonoma/Integrated Waste Division**
3	**Weekends and holidays**		Saturdays 8am-noon	limited to 10 Saturdays 7am-noon under Good Neighbor Agreement	Saturdays 7am-6pm	Sat: 7am-4pm; no Sundays and federal holidays
4	**Barge operations**		n/a	n/a	n/a	n/a
5	**Limitations on maintenance**		not specified	not specified	can do maintenance in off hours	not specified
6	**Limitations on crushing**		during normal hours of operation	during normal hours of operation	during normal hours of operation	during normal hours of operation
7	**Blasting notification**		none required	Some neighbors requested and receive notification		blasting cannot occur unless Central Disposal Site Manager notifies all affected personel; blasting only after site properly searched for methane concentrations above 0.5%
8	**Blasting limitations by hour and days**		Weekdays during regular hours of operation	Once or twice a week. Common sense: Weekdays during late morning or early afternoon.		limited to 4:30pm-5:30pm when public not present
9	**Vibration**			Seismic reports on blasting for certain neighbors		

	A	B	C	D	E	F
1	**Practice**	**Sonoma County Mining Ordinance**	**Mark West Calistoga**-near settled area	**Blue Rock Forestville**-near settled area	**Canyon Rock Forestville**-near settled area	**Stony Point/Sonoma/Integrated Waste Division**
10	**Air Quality including operations in windy conditions**	shall be conducted in accordance with applicable air pollution control standards as amended over time: (1) Mining facilities having stationary sources of aggregate materials extraction, and/or processing shall comply with all applicable federal, state, and local requirements governing the review, permitting and emission of air quality contaminants. Where applicable such compliance shall include, but not be limited to, Federal New Source Review (NSR), New Source Performance Standards (NSPS), State Air Toxics Control Measures (ACTMs) and any other such local reviews and permit requirements as determined necessary by either Northern Sonoma County Air Pollution		If wind is higher than a certain level, cease operations.		

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11	**Noise Impacts and Mitigation measures**		Newer equipment	Newer equipment rubberized tracks on conveyor.	Hard to measure if based on decibel level. Better to control hours of operation and shielding and orientation.	
12	**Covered trucks**		not required	requested but not required		
13	**Number of truck trips**		not specified	not specified	no, but annual production limit	
14	**Departure metering**		none	none	none	

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		quarry operations shall be granted for a period not to exceed twenty (20) years, at the end of which time it shall expire; provided, however, that any such permit shall, upon written request to the county filed prior to its expiration, be reissued for periods not to exceed twenty (20) years if the permittee can establish to the satisfaction of the planning commission, or on appeal to the board of supervisors, that the use has not been conducted in a manner that is: (1) Detrimental to the environment beyond impacts anticipated at the time of permit approval; or (2) In violation of permit conditions. An application for reissuance shall be processed in the manner				
18	**Annual review of permits**	provided in Section 26A-07-010.	yes to state agencies.	yes/quarterly	yes/quarterly	

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19	**Waste Water and Storm Water Pollution Prevention Plan**	Stormwater Runoff, Flood Control and Water Quality. All operations shall manage earthwork and processing activities in such a manner as to minimize: ponding or accumulation of storm water not necessary for silt control, alterations to the natural drainage system, and siltation of adjacent or downstream watercourses.(1) All operations shall incorporate the "best management practices" into the storm water pollution prevention plan required by the RWQCB.	yes. Porter Creek	yes. Green Valley Creek		

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1	**Practice**	**Sonoma County Mining Ordinance**	**Mark West Calistoga-**near settled area	**Blue Rock Forestville-**near settled area	**Canyon Rock Forestville-**near settled area	**Stony Point/Sonoma/Integrated Waste Division**
20	**Truck Driver Education/ Monitoring**	All operators shall be required to develop a truck driver education program which includes posting details on preferred haul routes and informing drivers of procedures established to reduce public conflicts. Operators will also be required to monitor driver compliance and respond to complaints about gravel trucks.		yes, re traffic patterns around Forestville.		
21	**Hazardous Material Control**					
22	**Other**			Just received permanent operating conditions permit in '06 following extensive EIR re plans to expand. **Good Neighbor Agreement**	Just received permanent operating conditions permit in '06 following extensive EIR re plans to expand.	

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1	**Practice**	**Sonoma County Mining Ordinance**	**Mark West Calistoga**-near settled area	**Blue Rock Forestville**-near settled area	**Canyon Rock Forestville**-near settled area	**Stony Point/Sonoma/Integrated Waste Division**
23	**Limits on production**	County ordinance		Annual production limit 400,000 cu. Yds/700,000 tons-to be phased in over 9 years	Annual production limit	
24	**Contact for information**		BoDean Co. Chuck 707-573-9733 and Bill Williams 707-576-8205	BoDean Co. Bill Williams 707-576-8205	Sonoma County Planner Amy Wingfield 707-565-7389	

	A	B	C	D	E
1	**Practice**	**Black Angel Mine-** Desert area 15 miles from Barstow. Not in settled area.	**Best Rock Quarry-**Desert area near Hinkley and Barstow. Not in settled area.	**Lytle Creek-** within settled communities near Rialto and Devore	**Fort Cady Quarry-**rural
2	**Hours of operation**		7am-7pm M-F	Excavations, processing, and reclamation restricted to the hours of 7:00 a.m. until 7:00 p.m. for any operations conducted within 500 feet of any residential dwelling unit	24 hours/day
3	**Weekends and holidays**	none allowed	7am-12noon Saturday; no operations Sunday	no restrictions	yes
4	**Reclamation Recommendations**			In all areas where natural vegetation occurs, the top six inches of soil materials shall be stripped for use on reclaimed areas. Where possible, topsoil materials	see Lytle Creek
5	**Barge operations**	n/a	n/a	n/a	n/a
6	**Limitations on maintenance**	none	none	none	none
7	**Limitations on crushing**		none	none	none
8	**Blasting notification**		none	demolition of structures shall have a vector inspection prior to the issuance of any permits pertaining to demolition or destruction of any such premises	n/a: mine for alluvial materials; no blasting needed
9	**Blasting limitations by hour and days**	can only blast during daylight	no blasting on weekends; no blasting on windy days	can only blast during daylight	n/a
10	**Vibration**		n/a		n/a

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11	**Air Quality including operations in windy conditions**	(A) meeting more stringent emission standards; (B)retrofitting existing engines with particulate traps; (C) use of low sulfur fuel (already required); and (D) use of alternative fuels or equipments as they become available and feasible for use.	traffic speed reduced to 25mph; cease operations when winds exceed 20mph; A) meeting more stringent emission standards; (B)retrofitting existing engines with particulate traps; (C) use of low sulfur fuel (already required); and (D) use of alternative fuels or equipments as they become available and feasible for use.		Mining shall not occur during periods of strong wind (sustained winds greater than 30 miles per hour). All open storage piles susceptible to wind erosion shall be watered daily or shall be installed with temporary coverings to control PM10 emissions, and be limited in height to 35 feet. Traffic speeds on all unpaved haul and access roads shall be restricted to 15 m.p.h. (1) meeting more stringent emission standards; (2) retrofitting existing engines

	A	B	C	D	E
12	**Noise Impacts and Mitigation measures**		see noise abatement		Noise source specific barriers/enclosures shall be installed and maintained around the drum drives, and baghouse air compressor as required to meet the County noise standards. Standard, manufactured silencers shall be placed and maintained on the baghouse air compressor, burner blower exhaust, baghouse exhaust fan, and baghouse exhaust stack as required to meet the County noise standards. Additional soundproofing in the roof and walls deemed reasonable and feasible by County Staff for those residential units fronting or siding on Fort Cady Road only. Sound rated triple pane windows. Sound rated or solid core doors.
13	**Covered trucks**		none required		not required unless excessive dust complaints from residents; compulsory if violate Rule 402 from ATMD (if dust visible from more than 100 ft. or if visibly encroaching upon property line)

	A	B	C	D	E
14	**Number of truck trips**		100 per day		
15	**Departure metering**		none		
16	**Dust abatement**	may use up to 4,800 gallons of water per day derived from site for dust abatement; All loaded trucks leaving the site shall be properly trimmed with a 6-inch freeboard height and/or covered and sprayed with water so as to minimize dust and prevent spillage onto a public roadway	all roadways must be watered; All loaded trucks leaving from the site shall be properly timed with a 6-inch freeboard height and/or covered and sprayed with water so as to minimize dust and prevent spillage onto a public roadway; water all mineral stockpiles	regular wet sweeping on paved driveways and adjacent public streets and/or applying biodegradable dust-binding agents on unpaved roads; All loaded aggregate trucks leaving the site shall be properly trimmed with a 6-inch freeboard height and covered or sprayed with water so as to minimize dust and prevent spillage onto a public roadway	All roads and driveways shall use MDAQMD-approved dust suppressants. Mining areas shall be kept wetted while being used. Disturbed surfaces that are subject to fugitive dust emissions will be watered at least twice per day to stabilize the surface and/or use dust suppressants to reduce fugitive dust. All loaded aggregate trucks leaving the site shall be properly trimmed with a 6-inch freeboard height and covered and sprayed with water so as to minimize dust and prevent spillage onto a public roadway
17	**Noise abatement**		Jake brakes shall not be used in residential areas	no mandatory measures, but cannot exceed 65 decibel average during 24 hours; average is weighted; penalized 5 dec for all noise b/w 7-10pm b/c less background noise; penalized 10 dec for all noise b/w 7-10pm	~~Jake brakes and horns shall~~ not be used along any haul route and daylight headlights shall be required at all times.; no mandatory measures, but cannot exceed 65 decibel average during 24 hours; average is weighted; penalized 5 dec for all

	A	B	C	D	E
18	**Road impact fees**			The applicant shall pay a fee of $1,250 to Department of Fish and Game, pursuant to California State Assembly Bill 3158	The applicant shall pay a fee of $1,800 to Department of Fish and Game, pursuant to California State Assembly Bill 3158
19	**Annual review of permits**	yes, annually		yes, annual monitoring of practices	yes, annual monitoring of practices
20	**Waste Water and Storm Water Pollution Prevention Plan**		may include, but not limited to, drainage ditches, sediment containment basins, and localized control and maintenance measures to intercept and control disturbed area drainage; apply water daily or use a soil stabilizer during earthmoving and on material stockpiles to prevent visible dust emissions from leaving property boundaries;	Operations shall not be conducted within 20 feet of groundwater. No operations shall be conducted in standing water.	
21	**Truck Driver Education/ Monitoring**			The applicant shall install Company identification signs on all company owned and contracted haulage trucks used on public roads	The applicant shall install Company identification signs on all company owned and contracted haulage trucks used on public roads
22	**Hazardous Material Control**				
23	**Other**				

	A	B	C	D	E
24	**Contact for information**	George Kenline, Senior Associate Planner; Phone No: (909) 387-4105 Fax No: (909) 387-3223; E-mail: gkenline@lusd.sbcounty.gov	George Kenline; Senior Associate Planner; Phone No: (909) 387-4105 Fax No: (909) 387-3223; E-mail: gkenline@lusd.sbcounty.gov	George Kenline; Senior Associate Planner; Phone No: (909) 387-4105 Fax No: (909) 387-3223; E-mail: gkenline@lusd.sbcounty.gov	George Kenline; Senior Associate Planner; Phone No: (909) 387-4105 Fax No: (909) 387-3223; E-mail: gkenline@lusd.sbcounty.gov
25	**Existing Documents in Our Possession Relating to Specific Quarries**	Updates on Conditions of Approval; need actual Conditions of Approval	Conditions of Approval and graphic of site	Conditions of Approval filed under SRRQ Best Practice Folder	Conditions of Approval filed under SRRQ Best Practice Folder