APPENDIX A
Scoping Report

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LEHIGH PERMANENTE QUARRY RECLAMATION PLAN AMENDMENT

Scoping Report

Santa Clara County
Department of Planning & Development
Planning Office

November 2011

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SCOPING REPORT

Lehigh Permanente Quarry Reclamation Plan Amendment

1. Introduction

This report summarizes the comments received by the Santa Clara County Department of Planning and Development Planning Office during the public scoping period for the Permanente Quarry Reclamation Plan Amendment (RPA, or Project) Environmental Impact Report (EIR). The County is preparing this EIR to consider the environmental impacts that could be caused if the application filed by Lehigh Southwest Cement Company (Lehigh, orApplicant) for the Project were approved.[1] The application for this Project supersedes three previous applications made by the Applicant: the 2007 application to amend and expand the 1985 Reclamation Plan (the "2007 Proposed RPA"), the 2009 application to include the East Materials Storage Area (EMSA) within the approved reclamation boundary (the "EMSA RPA"), and the 2010 application for a comprehensive reclamation plan amendment (the "Comprehensive RPA").

CEQA Guidelines Section 15083 provides that a "Lead Agency may… consult directly with any person… it believes will be concerned with the environmental effects of the project." Scoping is the process of early consultation with affected agencies and the public prior to completion of a Draft EIR. Section 15083(a) states that scoping can be "helpful to agencies in identifying the range of actions, alternatives, mitigation measures, and significant effects to be analyzed in depth in an EIR and in eliminating from detailed study issues found not to be important." Scoping is an effective way to bring together and consider the concerns of affected state, regional, and local agencies, the project proponent, and other interested persons (CEQA Guidelines Section 15083(b)). Scoping is not conducted to resolve differences concerning the merits of a project or to anticipate the ultimate decision on a proposal. Rather, the purpose of scoping is to help ensure that a comprehensive and focused EIR will be prepared that provides a firm basis for the decision-making process.

This report is intended for use by the public to have access to and understand the comments received during the scoping period. It includes written and oral comments received during the scoping period for the Project, as well as comments received during the scoping periods for the three prior applications to amend the existing reclamation plan: the 2007 Proposed RPA, the EMSA RPA, and the Comprehensive RPA. The scoping periods for each project were as follows:

1 The County of Santa Clara Planning Office is the lead agency pursuant to the California Environmental Quality Act (CEQA) for the preparation of an EIR for the Project.

TABLE 1
SCOPING PERIODS INCLUDED IN THIS REPORT

Project Name	Scoping Period Began	Scoping Period Ended
2007 Proposed RPA EIR	May 25, 2007	July 29, 2007
EMSA RPA EIR	April 14, 2010	May 14, 2010
Comprehensive RPA EIR	March 10, 2011	April 10, 2011
Lehigh Permanente Quarry RPA (Project) EIR	August 18, 2011	September 26, 2011

The County will use this report as a tool to ensure the preparation of a comprehensive and focused EIR. Pursuant to CEQA Guidelines Section 15082, all public comments will be considered[2] in the EIR process.

2. Description of the Project

Project Summary

The Project is a proposed amendment to the existing 1985 Reclamation Plan for the Permanente Quarry. The Surface Mining and Reclamation Act (SMARA) requires that surface mining operations, such as the Permanente Quarry, have a lead agency-approved reclamation plan. The Permanente Quarry has been in operation since at least as early as 1903, and in continuous operation since 1939. Existing operations consist of mining of limestone and other materials and processing these materials for use in aggregate rock products and cement. The Project proposes to reclaim all areas at the Permanente Quarry that have been disturbed by surface mining operations since the Surface Mining and Reclamation Act (SMARA) was adopted in 1975. Reclamation activities would begin immediately upon Project approval and continue until 2025 or until reclamation standards are met. The reclamation process would include backfilling the main mining pit (the “North Quarry”) primarily with overburden materials now stored in the West Materials Storage Area (WMSA). Overburden materials now stored in the EMSA would be subject to final grading, contouring, and revegetation.

Project Location

The Project site is located in unincorporated Santa Clara County near the City of Cupertino, about 2 miles west of the intersection of Interstate 280 and State Route 85, at 24001 Stevens Creek Boulevard. The area proposed for reclamation (the “Project Area”) consists of the approximately 1,095-acres of the Applicant’s 3,510-acre ownership that has been disturbed by surface mining operations since SMARA was adopted in 1975.

2 Comments not within the scope of CEQA will not be addressed as part of the CEQA process.

3. Opportunities for Public Comment

Notification

On August 18, 2011, the County published and distributed a Notice of Preparation (NOP) to advise interested local, regional, state, and federal agencies, as well as the public, that an EIR would be prepared for the Project. The NOP presented the description and location of the Project, potential issues to be addressed in the EIR, where to locate supporting documents, and the contact name for additional information regarding the Project. The NOP is provided in Appendix A.

The NOP was sent to a mailing list that included the owners of 60 properties near the Project site; the Governor's Office of Planning and Research; the State Clearinghouse (15 copies); 28 local, state, and federal agencies; Santa Clara County libraries in Cupertino, Los Altos, and Saratoga; and interested parties who had commented on previous NOPs or who had requested information.

The NOP solicited written comments to be received during the 39-day comment period, which ended September 26, 2011, that address potential environmental concerns resulting from implementation of the Project. The public was encouraged to submit comments to the County by either U.S. mail or e-mail. The County also held a public scoping session, i.e., a meeting to solicit oral comments on the NOP. The meeting was held on August 30, 2011, at 7:00 pm at the City of Cupertino Quinlan Center, Cupertino Room, at 10185 North Stelling Road in Cupertino.

Previous NOPs for Related Projects

Prior to the Applicant's submission of the current application for the Project, the County published and distributed an NOP for the 2007 Proposed RPA EIR in May 2007, the EMSA RPA EIR in April 2010, and the Comprehensive RPA EIR in March 2011. These NOPs were mailed to a similar list of interested parties to describe the projects and to solicit comments from agencies, organizations, and the public. A public scoping session for the 2007 Proposed RPA EIR was held at 4:00 pm on July 26, 2007, at the City of Cupertino Community Hall, 10350 Torre Avenue in Cupertino. A public scoping session for the EMSA RPA EIR was held at 6:30 pm on April 28, 2010, also at the Cupertino Community Hall. A public scoping session for the Comprehensive RPA EIR was held at 7:00 pm on March 30, 2011, in the Cupertino Room at the Quinlan Center in Cupertino. The NOP for the Comprehensive RPA EIR is presented in Appendix B, the NOP for the EMSA RPA EIR is presented in Appendix C, and the NOP and Revised NOP for the 2007 Proposed RPA EIR are presented in Appendix D.

4. Summary of Scoping Comments

Written and oral comments were collected throughout each of the scoping periods described above. Several letters were received after the formal comment periods ended. The County accepted these comments, and has considered them in the scoping process. Appendix E contains copies of the submitted written comments and summaries of the oral comments received during the scoping meetings. The comments are arranged by scoping period and numbered chronologically by receipt. The comments received during the scoping period for the Project are numbered beginning with "A," comments from the Comprehensive RPA EIR scoping period begin with "B," comments from the EMSA RPA EIR scoping period begin with "C," and comments from the 2007 Proposed RPA EIR scoping period begin with "D."

Commenting Parties

The following individuals and agencies submitted written and/or verbal comments on the scope of the Project EIR (A), the Comprehensive RPA EIR (B), the EMSA RPA EIR (C), and the 2007 Proposed RPA EIR (D).

TABLE 2
PARTIES SUBMITTING COMMENTS DURING
THE LEHIGH PERMANENTE QUARRY RECLAMATION PLAN AMENDMENT EIR SCOPING PROCESS

Name (Last, First)	Organization	2007 Proposed RPA	EMSA RPA	Compre-hensive RPA	Proposed RPA	Comment Number(s)
(Unreadable), Nick		X				D-20
Abbors, Stephen E.	MROSD			X		B-67
Abhganker, Raj		X				D-51
Acha, Dennis	Breathe California of the Bay Area	X				D-15
Agdassi, Farro		X				D-27, D-193
Alba, Larry		X				D-47
Allen, Tom & Christina		X				D-151
Almon, Bill	Quarry No		X	X	X	A-14, A-23 B-6, B-30, C-5, C-29
Alvarado, Jane	Lehigh		X			C-13
Amistad, Irene		X				D-56
Arledge, John		X				D-103
Arnold, Gary	Caltrans District 4				X	A-17
Arquie, Louis		X				D-122
Baik, Hellen		X				D-37
Baldzikowski, Matt	MROSD	X		X		B-66, B-69, D-7, D-176
Bapat, Shekhar		X				D-36
Bartas, John		X		X	X	A-5, B-16, D-201
Bell, Rowena				X		B-55
Borel, Kristin	Saratoga Public Works	X				D-140, D-172
Bourp, Gail			X			C-22
Bowen, Gail	West Valley Citizens Air Watch (WVCAW)	X				D-50
Bower, Gail		X				D-120, D-204
Bowyer, Dale	California Environmental Protection Agency	X				D-117

Name (Last, First)	Organization	2007 Proposed RPA	EMSA RPA	Compre-hensive RPA	Proposed RPA	Comment Number(s)
Brand, Tim	WVCAW	X	X	X	X	A-8, B-17, B-35, C-8, D-196
Brosseau, Kimberly	County of Santa Clara Parks Department		X	X	X	A-24, B-45, C-28
Brown, George & Alice		X				D-98
Buell, Celia		X				D-178
Buell, Joan		X				D-181
Buenz, John		X		X		B-32, D-67
Buenz, Marilyn		X				D-67
Bunzel, David		X				D-24
Caldwell, Jeffrey		X				D-41, D-150, D-156, D-157
Carboni, Lisa	Caltrans District 4 Local Development – Intergovernmental Review		X	X		B-56, C-30
Carlton, Nadine		X				D-52
Chamberlain, Catherine		X				D-40
Chang, Barry	Cupertino City Council; No Toxic Air		X	X	X	A-13, A-18, B-11, B-33, B-35, B-57, B-73, C-7
Chang, Darwin			X			C-35
Chang, Wayne		X				D-102
Chen, Julia		X				D-182
Chen, Yun Ning				X		B-21
Cherbone, John	Saratoga Public Works	X				D-29, D-173
Chot, Christine			X			C-9
Christensen, Mette				X		B-58
Chu, Lynn		X				D-68, C-223
Clansky, Kathy		X				D-200
Cohen, Eran		X				D-21, D-187
Cohen, Helena		X				D-195
Cook, David	Santa Clara Valley Audubon Society			X		B-2
Cress, William & Kathy		X				D-206
Cushman, Ashley	Breathe California		X			C-4
Dauber, Steve		X				D-38, D-111
Davis, Jim		X				D-53, D-197
Day, Marilyn		X				D-18, D-137
Day, Will		X				D-137
Del Compare, Karen	WVCAW	X	X	X	X	A-2, B-1, B-35, B-54, C-12, D-1,

Name (Last, First)	Organization	2007 Proposed RPA	EMSA RPA	Compre-hensive RPA	Proposed RPA	Comment Number(s)
						D-66, D-77, D-96, D-152, D-183
DeMellopine, Pattie		X				D-100
Dhir, Vandana and Samir		X				D-188
Ding, Ignatius	WVCAW		X			C-10
Dishkit, Ashutosh		X				D-149
Donahue, Linda		X				D-138
Drapper, Paul	Ridge Vineyard		X			C-6
Duran, Hugo & Denise		X				D-213, D-216
Dvorak, Vicki		X				D-155, D-164
Eden, Joyce M.	WVCAW	X	X	X	X	A-16, B-15, B-35, B-36, C-25, D-1, D-198
Elbogen, Rudy		X				D-221
Ennals, John		X				D-34
Ennals, Tessa		X				D-126
Epstein, Thelma		X				D-28
Erlund, Maxine		X				D-222
Fantozzi, Mark				X		B-59
Faust, Lynn		X				D-54, D-107
Fein, Hemi		X				D-32
Feng, Jean		X				D-75
Fisher, Fred		X				D-162
Flores, Margaret		X				D-72
Fowler, Leslie				X		B-26
Frescura, Bert		X				D-114
Fretz, Gregory		X				D-46
Fry, Rhoda		X		X		B-37, B-60, D-154
Geefay, Frank				X		B-10, B-62
Geiger, Janet		X		X		B-38, D-23
Ghosh, Indraneel		X				D-139
Gianettoni, Jill		X				D-169
Gilley, April		X				D-55
Goldberg, Sandra	Deputy Attorney General, California Department of Justice			X		B-61
Grant, Nadine		X				D-91, D-133, D-135
Grinels, Fran				X		B-29

Name (Last, First)	Organization	2007 Proposed RPA	EMSA RPA	Compre-hensive RPA	Proposed RPA	Comment Number(s)
Guldenbrein, Jillian	California Historical Resources Information System, Northwest Information Center				X	A-19
Gupta, Amar		X				D-110
Guske, Garry		X				D-203
Hammond, Martin L.		X				D-2, D-116
Hampton, Alice				X		B-27
Hargreaves, Peter				X		B-63
Harp, Janet		X				D-76
Harriman, Lani		X				D-99
He, Chengjian		X				D-112
Heilmann, Kathy		X				D-35
Helgerson, Cathy		X	X	X	X	A-1, B-5, B-39, C-3, C-34, D-16, D-165
Hertel, Terry		X				D-202
Ho, Patrick Y.		X				D-61, D-64, D-125, D-131
Ho, Vicky		X	X	X		B-64, C-18, C-31, D-62, D-86, D-89, D-144
Howell, Marvin	Lehigh/Hanson		X	X	X	A-7, B-7, C-2
Hultgren, Craig		X				D-219
Hylkema, Carle		X				D-83
Hylkema, Randall		X	X			C-20, D-83
Jacobs, Robert		X				D-71
Jamison, Deborah		X				D-26
Jung, Colin	City of Cupertino Office of Community Development		X		X	A-20, C-24
Kashkooli, Eva		X	X			C-16, D-159
Kashyap, Lola		X				D-97
Kerr, Breene	Town of Los Altos Hills		X			C-26
Kim, Daniel		X				D-19
Kim, Lillian		X				D-143
King, Stacey		X				D-215
Kinner, Emily					X	A-15
Kleinhaus, Shani	Santa Clara Valley Audubon Society		X	X		B-31, C-23
Kolev, Veneta		X				D-44
Kolski, John		X				D-94

Name (Last, First)	Organization	2007 Proposed RPA	EMSA RPA	Compre-hensive RPA	Proposed RPA	Comment Number(s)
Kotes, Jana & Stefan		X				D-175
Kougiouris, Panagiotis		X				D-113
Kroth, Anya				X	X	A-12, B-25
Laccabue, Fred C.		X				D-74
Landzaat, Martin		X				D-167
Lariz, Mondy	Sierra Club Loma Prieta Chapter	X				D-185
Latshaw, Gary	Sierra Club Loma Prieta Chapter			X	X	A-3, B-50
Lee, Dennis		X				D-13
Lee, Dick T.		X				D-63, D-186, D-189
Lee, Ed		X				D-211
Lee, Kenneth		X				D-118
Lee, Simon		X				D-80
Lee, YF		X				D-170
Leyfman, Elena		X				D-163
Lieber, Sally J.	California State Assembly 22nd District	X				D-9
Lin, Adrian		X				D-68, D-223
Lin, Bor-Jen		X				D-65
Lin, Chih-Pong		X				D-68, D-223
Lucas, Libby	California Native Plant Society			X	X	A-11, A-21, B-19, B-41, B-42
Maar, Elise		X				D-3, D-166
MacCubbin, Don		X				D-174
Mahalawat, Sanjeev					X	A-22
Makihara, Naomi				X		B-71
Marks, Rosemary		X				D-210
Martin, Michael	Santa Clara Valley Water District			X	X	A-25, B-49
Mats, Tim	Lehigh/Hanson			X		B-9
Mautino, Nancy				X		B-65
McCarthy, Marylin	WVCAW			X		B-14, B-35, B-43
McKibbin, Robert					X	A-4
Mendias, Linda		X				D-123
Middleton, Stacey		X				D-214, D-217
Mojgani, Mehrad		X				D-14
Monahan, Leah		X				D-160
O'Rorke, Paul		X				D-136
Otto, Jane		X				D-58

Name (Last, First)	Organization	2007 Proposed RPA	EMSA RPA	Compre-hensive RPA	Proposed RPA	Comment Number(s)
Packard, Ron D.	Mayor, Los Altos			X		B-34
Pamukcu, Mehmet				X		B-44
Pann, Jennifer		X				D-127
Pedro, Debbie	Planning Director, Town of Los Altos Hills			X		B-46
Peregrino, Marina		X				D-190
Petition	Cupertino Knolls Homeowner Association	X				D-60
Pflager, Anne E.				X		B-3, B-47
Pflager, Phillip P.				X		B-4, B-47
Phillips, Lee		X				D-79
Phillips, Mike		X				D-43
Piedmont, Diane		X				D-145
Pilas-Treadway, Debbie	Native American Heritage Commission	X				D-5
Pittenger, Tammy		X				D-179
Plasecki, Steve	Cupertino Community Development Department	X				D-11
Plonowski, Artur	No Toxic Air			X		B-12
Pompy, James S.	Office of Mine Reclamation	X				D-6
Power, Bob		X				D-70
Ramanathan, Meera	Active and Determined Hanson Oversight Committee	X				D-30, D-199, D-208
Rao, Arvind				X		B-22
Reynard, Nima		X				D-191
Riola, Gloria		X				D-177
Rittiman, Frank		X		X		B-48, D-33
Rittiman, Joan				X		B-48
Ross, Wanda				X		B-70
Ruiz, Ana	MROSD		X	X		B-68, C-27
Russel, Dave		X				D-31
Rutter, Gillian		X				D-84, D-87
Rynas, Stephanie	Waldorf School of the Peninsula	X				D-4
Sadrzadeh, Ali		X				D-45
Saunders, Jonathan E.				X		B-72

Name (Last, First)	Organization	2007 Proposed RPA	EMSA RPA	Compre-hensive RPA	Proposed RPA	Comment Number(s)
Scheffer, Lynde		X				D-207
Schmidt, Brian A.	Committee for Green Foothills	X				D-124
Scholer, Mary E.		X				D-220
Schuler Ferro, Nathalie	Active and Determined Hanson Oversight Committee	X				D-17, D-59, D-69, D-73, D-78, D-81, D-92, D-93, D-95, D-101, D-142
Scott, Anne		X				D-212
Segal, Maria		X				D-104
Shabel, Jack			X			C-21
Shiah, Winston			X			C-17
Shingai, Randall				X		B-71
Sievert, Susan					X	A-26
Sinks, Rod				X		B-13
Smith, Arthur & Norma		X				D-82
Smyth, Ken	WVCAW		X	X		B-23, B-51, C-15, D-130
Snell, Amy & Addison		X				D-209
Snyder, Celeste & Andy		X				D-194
Solari, Michael		X				D-218
Srinavasan, Neela			X			C-19
Stallman, Jim		X				D-12, D-88
Staub, Don	No Toxic Air			X		B-28
Stevens, Leigh & Tim		X				D-129
Sullivan, Peter		X				D-109
Summit, Ginger					X	A-10
Szabo, Nicholas		X				D-8, D-20
Tadros, Karim		X				D-119
Takara, Kurt		X				D-205
Takemori, Claire		X				D-153
Taylor, Mark		X				D-115
Tenold, Margo		X				D-39
Thai, Muoi		X				D-128
Tholen, Greg		X				D-106
Tolles, Bryant		X				D-146
Tong, Homer	Fremont Union High School District			X		B-24
Tseng, Jocelyn		X				D-161
Tung, Tung Sun				X		B-20
Uruena, Carmen		X				D-90

Name (Last, First)	Organization	2007 Proposed RPA	EMSA RPA	Compre-hensive RPA	Proposed RPA	Comment Number(s)
Van Horne, Steve		X				D-3, D-166
Vandersteen, Robina and Anthony		X				D-10
Vecchiet, Jean		X				D-168
Walgren, James	Los Altos Community Development Department	X				D-134
Wallis, Paula	No Toxic Air			X	X	A-9, B-18, B-52
Walster, G. William and J. Kaye		X				D-85
Wang, Jingyi		X				D-158
Warrington, Janet A.				X		B-72
Wessling, Henrik	Lehigh/Hanson		X	X	X	A-6, B-8, C-1
West, Barbara			X	X		B-53, C-11, C-32, C-33
West, Dennis		X				D-22, D-48
Wheeler, Jim		X				D-121, D-180
Whong, Jason		X				D-108, D-192
Williams, Erika		X				D-49
Winegar, Beverly		X				D-42
Wong, Andy		X				D-105
Wu, Harry		X				D-132, D-141
Yew, Ken		X		X		B-54, D-171
Yu, Jiyu		X				D-147
Yu, Linyun		X				D-148
Zagar, Heather	Lehigh		X			C-14
Zeidman, Bob		X				D-25
Zhang, Ying		X				D-184

Comments Received During the Scoping Process

The comments received during the four scoping periods that are relevant to the Project are summarized below.

Comments Not Within the Scope of CEQA

The following comments are not within the scope of CEQA and will not be analyzed in the EIR:

- Comments regarding the assessment of penalties for legal violations;
- Comments regarding financial liability for reclamation; and

- Comments generally in support of or against the proposed Project.

These comments are noted and will be considered by the County in its evaluation of whether or not to approve the Project.

Comments Not Relevant to Current Project

The comments received during the Comprehensive RPA EIR, EMSA RPA EIR, and 2007 Proposed RPA EIR scoping periods that refer to aspects of these earlier projects that are not part of the current Project are not relevant to this Project or this EIR, and so are not considered further.

5. Consideration of Issues Raised in Scoping Process

A primary purpose of this scoping report is to document the process of soliciting and identifying comments from interested agencies and the public. The scoping process provides the means by which the County can determine those issues that interested participants consider to be the principal areas for study and analysis. Every issue that has been raised during scoping that falls within the scope of CEQA and is relevant to the Project will be addressed in the Draft EIR. Many commenters raised similar concerns. These are summarized by issue area below.

Procedural Concerns

- Concern that evaluating an amendment to the 1985 Reclamation Plan may be piecemealing under CEQA.
- The EIR should analyze operations at peak production levels to determine worst-case scenarios for impacts such as air quality, noise, and traffic.
- Data about environmental impacts used for analysis in the EIR should be collected by an independent, third-party source, not by the Applicant.

Project Description

- If future extraction or overburden placement activities are possible within the RPA area, they should be evaluated in the EIR.
- What are the height restrictions on EMSA and WMSA, and depth restrictions, if any, on the mining pit?
- List and discuss historic violations of SMARA, Clean Water Act, Clean Air Act, and regulations by the Applicant and actions taken by the County and other regulatory agencies in response to these violations.
- The Project location map should delineate the facilities associated with the cement plant.
- The cement plant adjacent to the Project Area should be included in the scope of the RPA and/or EIR.
- Would the reclamation timeline be affected by slower than average sales of mining products that would extend the useful life of the quarry?
- The proposed reclamation timeline is too long.

- Is a Conditional Use Permit required and, if so, what is the nature of this permit?
- Describe the relationship between the current Project and the proposed Comprehensive RPA, EMSA RPA, and 2007 RPA.
- What volume of soils would be needed to fill the quarry pit and are these materials readily available?

Alternatives

- A No Project Alternative must be evaluated.

Aesthetics and Visual Resources

- Materials storage should not obscure views of ridgelines, especially Kaiser-Permanente ridge. The current height of the WMSA violates a County permanent scenic easement meant to protect this view. Would the WMSA remain visible above Permanente Ridge after reclamation is completed? The Project should bring the WMSA into compliance with previous aesthetic requirements.
- Landslides on Project slopes would adversely affect the scenic easement along Permanente Ridge.
- Follow all County General Plan policies for protecting scenic ridgelines.
- The Project site is located within the Santa Clara Valley viewshed and within an area covered by a Design Review overlay under the County Zoning Code.
- The EIR should assess views from Los Altos Hills, Highway 280, Highway 85, Monte Bello and Rancho San Antonio Open Space Preserves, and adjacent public parklands and trails.
- Numerous additional viewing points suggested.
- Due to the large size of the Project site, the EIR should assess impacts on viewsheds from 1 mile to up to 30 miles away.
- Concern that slope terracing and benches are and will remain visible, adversely affecting views of hillsides.
- The Project should include vegetated buffers between Project slopes and adjacent parkland to protect views.
- The EIR should accurately represent grade and color in document graphics when describing visual impacts.
- The EIR should analyze the Project's nighttime lighting effects.

Air Quality

- Concern that air pollutant emissions include diesel emissions, nitrous oxide, sulfur dioxide, dust, and arsenic, mercury, and asbestos.
- Piles of excavated materials should be kept moist to avoid dust emissions.
- Include an updated Health Risk Analysis and should not disregard any data. Justify all assumptions made in preparing HRA and EIR analyses.
- Assess air quality impacts on sensitive receptors in the Project area.
- Concern about acute cancer risk of Project air pollutants.

- Concern that the available background data on air quality effects is not sufficient for analysis.
- Conform to NESHAP and NSPS standards.
- Analyze odor impacts.

Biological Resources

- Heat emissions into Permanente Creek could adversely affect portions of the creek that are designated as Cold Freshwater Habitat.
- Steelhead impacts.
- Concern about effects of selenium bioaccumulation, mercury, and heavy metals discharged into creek on riparian wildlife.
- Analyze effects on California red-legged frog, California tiger salamander, dusky-footed woodrat, and white-tailed kite, red-shouldered hawks, and any threatened or endangered animal species.
- Analyze effects on plants including *Clarkia concinna ssp automixa* and *Piperia michaelii*, which are present at or near the Project site.
- The Project should use native plants for both short-term erosion control and long-term reclamation.
- Analyze effects on existing California red-legged frog mitigation sites in Rancho San Antonio Park.
- Would the Project result in changes to the riparian corridor in Permanente Creek?
- Analyze effects on native oak woodland and habitat for endangered species.
- The EIR should include plant surveys of at least one rainfall-representative year.
- How precisely can backfill measures be implemented to protect creek and wetlands vegetation habitat?
- What is the timeline for implementing test plot sites, and can the public review revegetation protocols and progress?

Cultural Resources

- Analyze effects on cultural and historic resources. The Project site once was occupied by Harry Kaiser, and was a location for WWII weapons manufacture.
- Any building over 45 years old may be of historical value; a qualified professional should conduct a formal evaluation of any such buildings in the Project Area.
- Previous studies have documented the known resources in the Project Area. Discuss consultation procedures in the event of inadvertent discovery of human remains and/or cultural material.
- Coordinate with local tribal governments regarding traditional, cultural, and religious heritage values.

Geology and Soils

- Project-related slopes must be safe. Assess potential for landslides, particularly in northeast corner of the quarry pit.
- Assess stability of fill for supporting post-reclamation vegetation and uses.
- Analyze effects related to the Berrocal Fault adjoining the San Andreas Fault; conduct a geological study of faults and slide risks.
- Shear lines between limestone and greenstone could result in earthquake hazards.
- Under SMARA, reclamation should be done concurrently with disturbance.
- Was the Request for Emergency Grading Authorization (#2002-4) work ever completed?

Greenhouse Gas Emissions

- Analyze greenhouse gas impacts. Applicant should consider using low-carbon fuels for operations to reduce greenhouse gas emissions pursuant to AB 32.

Hazards and Hazardous Materials

- Identify all agencies with regulatory authority over the Project with respect to health and safety hazards and describe Applicant's compliance with and/or violation of applicable permits.
- During analysis, test all soils for asbestos.
- Concern about hazards of selenium and mercury at parks and schools.
- Concern that overburden contains materials hazardous to human health. Concern that high levels of mercury could cause autism.
- Comply with SMARA requirement that restored lands "create no danger to public health or safety."
- Concern that crushed limestone releases arsenic.
- Does the overburden contain petroleum coke and/or radioactive material?
- Rocks falling off trucks could create a physical or traffic hazard.
- How would Applicant ensure safety of storage, handling, transport, and disposal of toxic materials?
- Analyze soils under EMSA and other parts of Project Area for toxin content. If toxins are found, how will the Applicant remedy this?

Hydrology and Water Quality

- Would the Project release toxic metals into County watersheds?
- Analyze the Project's effects with respect to the Section 303(d) listing for Permanente Creek for toxicity and selenium levels.
- Concern that runoff from Project site could contain arsenic and mercury. What would the effects of contaminated runoff be on Stevens Creek, Stevens Creek Reservoir, and groundwater/aquifers/wells?

- Would the Project violate San Francisco Regional Water Quality Control Board water quality standards through unpermitted industrial process water dumping into Stevens Creek? Concern that discharge damages creek and contributes to groundwater contamination and contamination in San Francisco Bay.
- Ensure Project compliance with stormwater and sediment control requirements.
- Concern that grading, contouring, and seeding of slopes for reclamation could result in adverse hydrology and water quality impacts.
- Concern that the existing silt fence is not adequate to prevent sediment discharge into Permanente Creek. The Project should implement stronger sedimentation prevention measures. The EIR should analyze the Project with respect to a sedimentation study for the creek prepared by the USGS in the early 1980s.
- The data used for Permanente Creek is deficient; more appropriate sources and methods suggested.
- The RPA should include restoration of the riparian corridor and continuity of stream flow in Permanente Creek.
- The Project should implement vegetated terraces in the reclamation plan to reduce hydrologic impacts.
- How will the RPA guarantee that seeps and springs be preserved with natural wetlands vegetation?
- How would the Project affect TMDLs for area waterways?
- The EIR should analyze the Project's effects on Ohlone Creek, West Branch Permanente Creek, San Francisco Bay, and all waters that flow into/through regional and local parks.
- The EIR should analyze the Project's effects on the beneficial uses of waters in the Project area.
- Concern that water quality measurements are biased and should be reviewed by an independent third party.
- Concern that background data on water quality effects is not sufficient for analysis.
- Concern about methylmercury contamination in created wetlands after reclamation.
- The Applicant should work with the Santa Clara Valley Water District to provide flood protection facilities in the Project Area.
- Would the Project affect the safety of edible fish in Stevens Creek due to pollutants?
- Discuss past violations of NPDES permit requirements at the Project site and consider substantial, ongoing water quality violations by the Applicant.
- Consider extended vegetated terracing and sediment basins at the north end of the Project Area to protect the aquifer.

Land Use

- The County must ensure that site will eventually be used as Open Space.
- The EIR should analyze the Project's consistency with the Guidelines and Standards for Land Uses near Streams prepared by the Santa Clara Valley Water Resources Protection Collaborative.

Noise and Vibration

- Concern that noise from the quarry operation and reclamation may affect users of adjacent parks and recreational resources.
- The EIR should analyze vibration effects.
- Analyze blasting noise and vibration.
- Analyze truck noise and vibrations, trucks braking at Foothill and Stevens Creek.
- Analyze noise and vibration effects from nighttime blasting, earth moving, and diesel truck trips. The Project should have restrictions on operation and truck travel hours to reduce nighttime noise and vibration impacts.
- Evaluate noise levels from storage areas at the boundary between the quarry and regional open space.
- Concern that if trees were removed, it would remove a noise barrier.

Recreation

- Countywide trail route R1-A, Juan Bautista de Anza trail, is located near the Project site and is important for regional recreational connectivity. The trail route is also within other public lands used for recreation.
- How would recreational use of MROSD lands be affected?
- There is a PG&E trail near the existing materials storage areas.

Transportation and Traffic

- The EIR should specifically list any traffic mitigation fees assessed on the Applicant.
- Required road improvements must be completed prior to issuance of occupancy permit.
- An encroachment permit would be needed for any work inside a State Right of Way.
- Analyze impacts on the State Highway System. The traffic impact analysis should identify impacts on all affected State facilities.
- The Traffic Impact Analysis must include trip generation, distribution, assignment, Average Daily Traffic, morning and evening peak hour volumes, and cumulative traffic volumes.
- Mitigation for traffic impacts should focus on alternatives to State highway use.
- Analyze traffic impacts on Stevens Creek Boulevard and Foothill Expressway.
- Drainage from WMSA has in the past affected MROSD road infrastructure. The Project and/or mitigation should ensure that it would not do so in the future.

Utilities and Service Systems

- Concern that waste materials are not properly recycled or disposed of at Project site.
- Sedimentation from unpermitted discharges may create need for extra maintenance or repairs to the city storm drain system.
- Discuss the Project's water consumption and available or necessary new water supply.

- Describe the state and local water efficiency requirements that would apply to the revegetation component of the Project.

Cumulative Effects

- The EIR should analyze the contributions to cumulative effects of the facilities at the Project site and the adjacent cement plant.
- Analyze the Project's effects on the Permanente Creek Flood Protection Project.

Mitigation Measures

- The EIR should include a detailed and enforceable monitoring plan for mitigation compliance.
- Incorporate surprise inspections into any monitoring program.
- Ensure that the reclaimed site does not contribute to water quality or sedimentation problems in Permanente Creek after the operator leaves.

APPENDIX A

Notice of Preparation for Project EIR

County of Santa Clara
Department of Planning and Development
County Government Center, East Wing
70 West Hedding Street, 7th Floor
San Jose, California 95110

	Administration	Development Services	Fire Marshal	Planning
Phone:	(408) 299-6740	(408) 299-5700	(408) 299-5760	(408) 299-5770
Fax:	(408) 299-6757	(408) 279-8537	(408) 287-9308	(408) 288-9198

NOTICE OF PREPARATION OF AN ENVIRONMENTAL IMPACT REPORT RECLAMATION PLAN AMENDMENT (CONSOLIDATED) FOR PERMANENTE QUARRY (STATE MINE ID# 91-43-004)

County File Number: 2250-13-66-10P(M1)-10EIR(M1)
Property Owner: Hanson Permanente Cement, Incorporated; Mine Operator: Lehigh Cement Company/Heidelberg Cement Group (collectively Lehigh).
Assessors Parcel Numbers: 351-09-023, -013, -020, -025 -022; 351-10-005, -033, -037, -038; and 351-11-001.

As the Lead Agency, the County of Santa Clara (County) will prepare an Environmental Impact Report (EIR) for a proposed amendment to the existing 1985 Reclamation Plan for the Permanente Quarry. The Quarry is operated by Lehigh, and is a limestone and aggregate mining operation located in the western foothills of the County, approximately one half mile west of the City of Cupertino. The proposed application, received July 29, 2011, supersedes both the prior East Materials Storage Area Reclamation Plan Amendment (2009) and Comprehensive Reclamation Plan Amendment (2010) applications. The proposed reclamation area is approximately 811 acres and encompasses all portions of the property that have been disturbed by mining related operations. The application does not propose a new mining area. Please view the complete application materials and general information regarding Lehigh on the County website at: www.sccplanning.org.

The County would like your views regarding the scope and content of the environmental information to be included in the EIR. A Public Scoping Session to solicit comments for the Notice of Preparation will be held in the City of Cupertino on **Tuesday, August 30, 2011, 7:00 PM** at the City of Cupertino Quinlan Center, Cupertino Room, 10185 North Stelling Road, Cupertino, California 95014. In accordance with the California Environmental Quality Act (CEQA), **comments on the Notice of Preparation are due to the County Planning Office by September 26, 2011, 5:00 PM.**

In order to efficiently process comments and inquires, please send emails regarding the NOP or other CEQA related issues to: permanentequarry@pln.sccgov.org, and for general inquires and SMARA related issues, please contact Gary Rudholm at: (408)299-5747 gary.rudholm@pln.sccgov.org. Written comments should be mailed to: **County of Santa Clara Planning Office, Att: Marina Rush, 70 West Hedding, 7th Floor, East Wing, San Jose CA 95110.**

Prepared by:
Marina Rush, Planner III — Marina Rush — 8-18-11

Approved by:
Rob Eastwood, Senior Planner — 8-18-11

INTRODUCTION

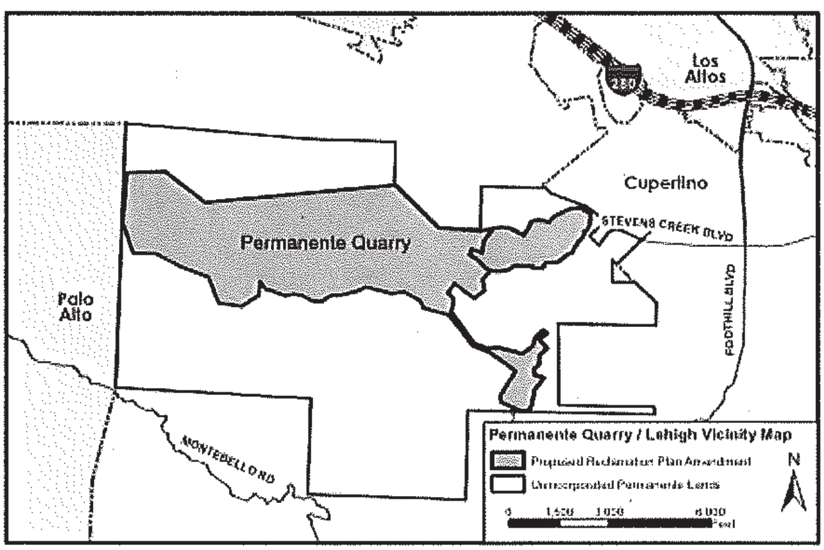
The purpose of an Environmental Impact Report (EIR) is to inform decision-makers and the general public of the environmental effects of a proposed project that an agency may implement or approve. The EIR process is intended to provide information sufficient to (a) evaluate a proposed project and its potential for significant impacts on the environment, (b) to examine methods of reducing adverse impacts; and (c) to consider alternatives to the project.

The EIR for the Comprehensive Reclamation Plan Amendment and Conditional Use Permit will be prepared and processed in accordance with the California Environmental Quality Act (CEQA) of 1970, as amended. In accordance with CEQA, the EIR will include the following:

- A summary of the project
- A project description;
- A description of the existing environmental setting, potential environmental impacts, and mitigation measures;
- Cumulative impacts;
- Alternatives to the proposed project; and
- CEQA required environmental consequences, including (a) any significant environmental effects which cannot be avoided if the project is implemented; (b) any significant irreversible and irretrievable commitments of resources; (c) the growth inducing impacts of the proposed project; and (d) effects found not to be significant.

PROJECT LOCATION

The project is located in the unincorporated area of the western foothills of Santa Clara County, near the City of Cupertino, approximately two miles west of the intersection of Interstate 280 and Highway 85, at 24001 Stevens Creek Boulevard. Quarry access is via Stevens Creek Boulevard and Foothill Expressway, continuing to the terminus of Permanente Road. The proposed reclamation project area encompasses all mining areas, including the East Materials Storage Area, West Materials Storage Area, main mining pit, and rock crushing facility. The cement plant is a separate industrial use authorized under a use permit (No. 173.23), and is not located within the boundary of the existing or proposed reclamation plan area.



PROJECT DESCRIPTION

Lehigh is proposing to amend the existing Permanente Quarry 1985 Reclamation Plan. Mining at the Quarry is subject to the Surface Mining and Reclamation Act, which requires mining operations to have a lead-agency approved reclamation plan. The County of Santa Clara County will serve both as the Lead Agency under SMARA, and also the Lead Agency responsible for administering the environmental review for the proposed Project. Existing operations at the Quarry include mining of limestone and other raw materials, and processing of these materials for use in producing aggregate rock products and in cement manufacturing at the Cement Plant, which is located on an adjoining site. Mining activities have taken place at the Quarry since approximately 1903, and the Quarry and Cement Plant have been in continuous operation since the 1939.

According to the submitted reclamation plan application, mining operations at the quarry will continue for approximately 14 years, and is dependant on market conditions for material. Reclamation of the main mining pit will be accomplished by backfilling with material currently stored in the West Materials Storage Area (WMSA), and will have final elevations between 990 and 1,750 feet mean sea level (msl) with slopes at a maximum 2.5H:1.0V. The WMSA will be reduced to a lower elevation, and during the overburden relocation process, limestone and aggregate may be screened out for processing. Final slope angles in the WMSA will reach a maximum 2.5H:1.0V. The East Material Storage Area (EMSA) will remain as a permanent overburden storage site with slopes at a maximum 2.6H:1.0V. Reclamation consists of grading slopes to final contours, applying growth medium, reseeding and replanting activities, and maintenance and monitoring of all disturbed areas. It is also includes removing and dismantling the rock crusher, surge pile, and rock plant.

The EIR will provide a project-level evaluation of the potential environmental impacts caused by the implementation of project though approval of the proposed Comprehensive Reclamation Plan Amendment. Practical mitigation measures will be developed and presented for all direct, indirect and cumulative impacts that are found to be potentially significant. The following describes the environmental aspects of the project, and how they are potentially affected.

POTENTIAL ENVIRONMENTAL EFFECTS OF THE PROJECT

The EIR will identify the significant environmental effects anticipated to result from implementation of the proposed project. Specific environmental topics addressed will include:

A. Visual Resources

The project site is located in a Zoning District with a Design Review overlay for the Santa Clara Valley Viewshed (d1). Much of the proposed project area is considered visible from the Santa Clara valley floor. The EIR will describe the anticipated changes to the visual environment as a result of the proposed mining and reclamation activities, including ultimate completion of the landscape and final design of the reclamation area, assessing any potentially significant aesthetic impacts. Visual simulations of the project site will be prepared. The County is requesting public feedback regarding suggested viewpoints to be used in the EIR for the visual impact analysis.

B. Biological Resources

Permanente Creek runs adjacent to the project site. The EIR will describe impacts to biological resources that are anticipated to occur as a result of the proposed project, including indirect impacts associated with any identified water quality impacts. Mitigation measures will be identified for significant impacts, as warranted.

C. Cultural Resources

The EIR will present findings of a cultural resources evaluation that will identify and describe how the proposed project would impact cultural resources (both historical and prehistorical). Mitigation measures will be identified for significant impacts, as warranted.

D. Geology & Soils

Geologic and slope stability analysis for the project has been submitted by Lehigh. The EIR will describe geology and soil conditions of the site and potential for the proposed mining and reclamation activities to cause increased slope instability or erosion potential, and include a peer review of the submitted geology reports. Mitigation measures will be identified for significant impacts, as warranted.

E. *Surface Hydrology, Drainage & Water Quality*

Permanente Creek runs adjacent to the project, and is on the State of California 303d list for selenium impairment. The EIR will describe hydrology and storm water quality impacts from the mining and reclamation process, and mitigation measures will be identified for significant impacts, as warranted. The EIR will evaluate the potential for the project to result in impacts to water quality, groundwater, and the hydrograph of Permanente creek.

G. *Public Services*

The EIR will describe the availability of services to serve the project site and identify, at a programmatic level, potential utilities and services impacts from the project. Mitigation measures will be identified for significant impacts, as warranted.

H. *Noise and Vibration*

The EIR will characterize ambient noise conditions in the vicinity of the project site and evaluate noise and vibration impacts from the proposed mining and reclamation activities with the County General Plan and Noise Ordinance standards. Mitigation measures will be identified for significant impacts, as warranted.

I. *Land Use*

Proposed mining activities in the quarry pit and final use, appearance and stability of the reclamation area will be examined to assess whether these activities would conflict with any County General Plan Policies or Zoning Ordinances.

J. *Air Quality*

Impacts of the proposed project on local air quality and sensitive receptors will be evaluated with emphasis on dust generation and emissions related to mining and reclamation activities. Air Quality analysis will include a health hazards risk assessment to nearby sensitive receptors. The EIR will not evaluate emissions related to existing cement plant operations. Mitigation measures will be identified for significant impacts, as warranted.

K. *Greenhouse Gas Emissions*

The EIR will address the potential impact of the project on global climate change. It will include the most recent information regarding the current understanding of the mechanisms behind global climate change, greenhouse gas emissions, current conditions and trends, while also incorporating the Bay Area Air Quality Management District CEQA thresholds for greenhouse gas emissions.

L. *Alternatives*

The EIR will describe a range of reasonable alternatives to the proposed project, including a Reduced Project Alternative and a No Project Alternative.

M. *Growth Inducing Impacts*

The EIR will discuss methods by which the proposed project will directly or indirectly induce economic, population, or housing growth.

N. *Cumulative Impacts*

The EIR will include a Cumulative Impacts section which will address the potential significant or irreversible cumulative impacts of the proposed mining and reclamation activities under the Reclamation Plan Amendment when considered with past, present, and probable future projects producing related or cumulative impacts, or projections contained in applicable land use documents of regional or area-wide conditions contributing to the cumulative impact.

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APPENDIX B

Notice of Preparation for Comprehensive RPA EIR

County of Santa Clara
Department of Planning and Development
Planning Office

County Government Center, East Wing, 7th Floor
70 West Hedding Street, 7th Floor
San Jose, California 95110
(408)299-5770 FAX (408)288-9198
www.sccplanning.org

NOTICE OF PREPARATION OF AN ENVIRONMENTAL IMPACT REPORT COMPREHENSIVE RECLAMATION PLAN AMENDMENT AND CONDITIONAL USE PERMIT FOR PERMANENTE QUARRY (STATE MINE ID# 91-43-004)

Project Owner/Applicant: Hanson Permanente Cement, Inc. (owner) and Lehigh Southwest Cement Company (operator), collectively Lehigh.
County File Number: 2250-13-66-10P-10EIR
Assessors Parcel Numbers: 351-09-011, -013, -020, -021, -022; 351-10-005, -033, -037, -038; 351-11-001, -005, -006, -007, and -012.

As the Lead Agency, the County of Santa Clara (County) will prepare an Environmental Impact Report (EIR) for a Comprehensive Reclamation Plan Amendment, to amend the existing 1985 Reclamation Plan, for expanding the mining area, including a new mining pit. Portions of the expanded reclamation area will also require a Conditional Use Permit. The County would like your views regarding the scope and content of the environmental information to be included in the EIR. Attached are a brief project description, site boundary, and summary of the potential environmental effects. For more information, please visit the County Planning Department Website at: www.sccplanning.org.

A Public Scoping Session to solicit comments for the Notice of Preparation will be held in the City of Cupertino on **Wednesday, March 30, 2011, 7:00 PM at the City of Cupertino Quinlan Center, Cupertino Room, 10185 North Stelling Road, Cupertino, California 95014.** In accordance with the California Environmental Quality Act (CEQA), comments on the Notice of Preparation are due within 30 days of receipt of this notice. However, an earlier response, if possible, would be appreciated. Please send comments to:

County of Santa Clara
Planning Office, Att: Marina Rush
70 West Hedding , 7th Floor, East Wing
San Jose CA 95110
(408) 299-5770 marina.rush@pln.sccgov.org

Prepared by: Marina Rush, Planner III	Marina Rush	3-10-11
Approved by: Rob Eastwood, Senior Planner	RE	3-10-11
	Signature	**Date**

*** Complete application materials and maps are available on the County website: www.sccplanning.org.**

INTRODUCTION

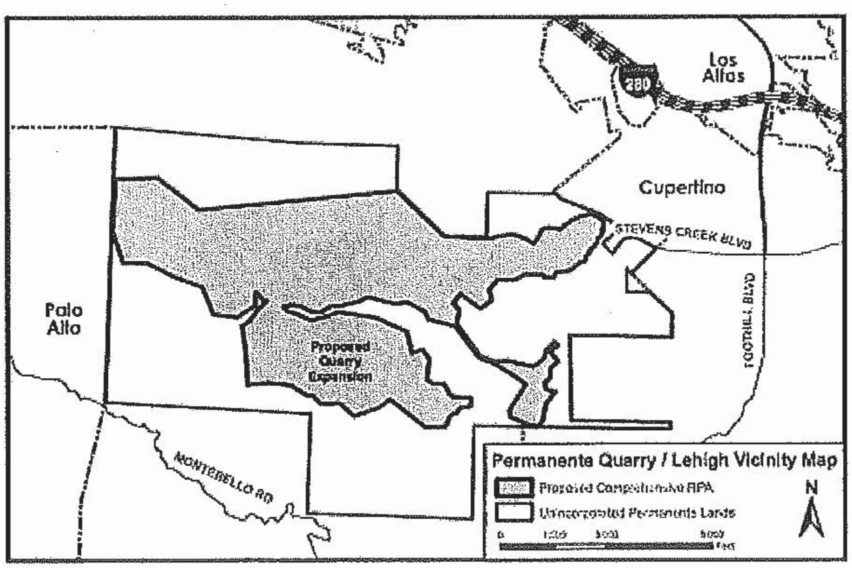
The purpose of an Environmental Impact Report (EIR) is to inform decision-makers and the general public of the environmental effects of a proposed project that an agency may implement or approve. The EIR process is intended to provide information sufficient to (a) evaluate a proposed project and its potential for significant impacts on the environment, (b) to examine methods of reducing adverse impacts; and (c) to consider alternatives to the project.

The EIR for the Comprehensive Reclamation Plan Amendment and Conditional Use Permit will be prepared and processed in accordance with the California Environmental Quality Act (CEQA) of 1970, as amended. In accordance with CEQA, the EIR will include the following:

- A summary of the project
- A project description;
- A description of the existing environmental setting, potential environmental impacts, and mitigation measures;
- Cumulative impacts;
- Alternatives to the proposed project; and
- CEQA required environmental consequences, including (a) any significant environmental effects which cannot be avoided if the project is implemented; (b) any significant irreversible and irretrievable commitments of resources; (c) the growth inducing impacts of the proposed project; and (d) effects found not to be significant.

PROJECT LOCATION

The project is located in the unincorporated area of the western foothills of Santa Clara County, near the City of Cupertino, approximately two miles west of the intersection of Interstate 280 and Highway 85, at 24001 Stevens Creek Boulevard. Quarry access is via Stevens Creek Boulevard and Foothill Expressway, continuing to the terminus of Permanente Road.



PROJECT DESCRIPTION

The existing operations on the Lehigh property include mining limestone and aggregate, rock crushing, and a cement plant. Lehigh is requesting to amend the 1985 Reclamation Plan for Permanente Quarry to include all areas of existing mining disturbance, including the East Materials Storage Area, and an expansion area for a new limestone quarry pit. Lehigh is also requesting authorization of a Use Permit that would allow mining activities on the portions of the project area that are not in a vested (legal nonconforming) mined area. The cement plant is a separate use operating under a use permit (No. 173.23), and is not located within the boundary of the existing or proposed reclamation plan area.

The proposed project area is approximately 1,105 acres, and includes 251 acres for the expansion area and 317 acres to remain undisturbed oak woodland. The proposed new limestone pit is located south of the existing mine pit, across Permanente Creek. The project proposes construction of new bridge over the creek and road system for access to the new mining area. The overburden (mining waste) from the new pit (South Quarry) will be deposited into the existing mining pit (North Quarry) and in a new mining waste storage area located east of the North Quarry pit.

The EIR will provide a project-level evaluation of the potential environmental impacts caused by the implementation of project though approval of the proposed Comprehensive Reclamation Plan Amendment and Conditional Use Permit. Practical mitigation measures will be developed and presented for all direct, indirect and cumulative impacts that are found to be potentially significant. The following describes the environmental aspects of the project, and how they are potentially affected.

POTENTIAL ENVIRONMENTAL EFFECTS OF THE PROJECT

The EIR will identify the significant environmental effects anticipated to result from implementation of the proposed project. Specific environmental topics addressed will include:

A. Visual Resources

The project site is located in a Zoning District with a Design Review overlay for the Santa Clara Valley Viewshed (d1). Much of the proposed project area is considered visible from the Santa Clara valley floor. The EIR will describe the anticipated changes to the visual environment as a result of the proposed mining and reclamation activities, including ultimate completion of the landscape and final design of the reclamation area, assessing any potentially significant aesthetic impacts. Visual simulations of the project site will be prepared. The County is requesting public feedback regarding suggested viewpoints to be used in the EIR for the visual impact analysis.

B. Biological Resources

The proposed expansion area, located south of Permanente Creek, is undisturbed and contains contain dense, mature tree cover of Chaparral/Oak Woodlands, and is potential habitat for several special status wildlife and plant species. Permanente Creek runs through the project site. The EIR will describe impacts to biological resources that are anticipated to occur as a result of the proposed project. Mitigation measures will be identified for significant impacts, as warranted.

C. Cultural Resources

The EIR will present findings of a cultural resources evaluation that will identify and describe how the proposed project would impact cultural resources (both historical and prehistorical). Mitigation measures will be identified for significant impacts, as warranted.

D. Geology & Soils

Geologic and slope stability analysis for the project has been submitted by the owner / operator. The EIR will describe geology and soil conditions of the site and potential for the proposed mining and reclamation activities to cause increased slope instability or erosion potential, and include a peer review of the submitted geology reports. Mitigation measures will be identified for significant impacts, as warranted.

E. Surface Hydrology, Drainage & Water Quality

Permanente Creek runs through the project site, and is on the State of California 303d list for selenium impairment. The EIR will describe hydrology and storm water quality impacts from the mining and reclamation process, and mitigation measures will be identified for significant impacts, as warranted. The EIR will evaluate the potential for the project to result in impacts to water quality, groundwater, and the hydrograph of Permanente creek.

G. *Public Services*

The EIR will describe the availability of services to serve the project site and identify, at a programmatic level, potential utilities and services impacts from the project. Mitigation measures will be identified for significant impacts, as warranted.

H. *Noise and Vibration*

The EIR will characterize ambient noise conditions in the vicinity of the project site and evaluate noise and vibration impacts from the proposed mining and reclamation activities with the County General Plan and Noise Ordinance standards. Mitigation measures will be identified for significant impacts, as warranted.

I. *Land Use*

Proposed mining activities in the new quarry pit and final use, appearance and stability of the reclamation area will be examined to assess whether these activities would conflict with any County General Plan Policies or Zoning Ordinances.

J. *Air Quality*

Impacts of the proposed project on local air quality and sensitive receptors will be evaluated with emphasis on dust generation and emissions related to mining and reclamation activities. Air Quality analysis will include a health hazards risk assessment to nearby sensitive receptors. The EIR will not evaluate emissions related to existing cement plant operations. Mitigation measures will be identified for significant impacts, as warranted.

K. *Greenhouse Gas Emissions*

The EIR will address the potential impact of the project on global climate change. It will include the most recent information regarding the current understanding of the mechanisms behind global climate change, greenhouse gas emissions, current conditions and trends, while also incorporating the Bay Area Air Quality Management District CEQA thresholds for greenhouse gas emissions.

L. *Alternatives*

The EIR will describe a range of reasonable alternatives to the proposed project, including a Reduced Scale Alternative, and No Project Alternative.

M. *Growth Inducing Impacts*

The EIR will discuss methods by which the proposed project will directly or indirectly induce economic, population, or housing growth.

N. *Cumulative Impacts*

The EIR will include a Cumulative Impacts section which will address the potential significant or irreversible cumulative impacts of the proposed mining and reclamation activities under the Use Permit and Comprehensive Reclamation Plan Amendment when considered with past, present, and probable future projects producing related or cumulative impacts, or projections contained in applicable land use documents of regional or area-wide conditions contributing to the cumulative impact.

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APPENDIX C

Notice of Preparation for East Materials Storage Area RPA EIR

County of Santa Clara
Department of Planning and Development
County Government Center, East Wing
70 West Hedding Street, 7th Floor
San Jose, California 95110

	Administration	Development Services	Fire Marshal	Planning
Phone:	(408) 299-6740	(408) 299-5700	(408) 299-5760	(408) 299-5770
Fax:	(408) 299-6757	(408) 279-8537	(408) 287-9308	(408) 288-9198

NOTICE OF PREPARATION OF AN ENVIRONMENTAL IMPACT REPORT FOR THE RECLAMATION PLAN AMENDMENT FOR PERMANENTE QUARRY (STATE MINE ID# 91-43-004) EAST MATERIALS STORAGE AREA

Project Owner/Applicant: Lehigh Hanson, Incorporated
File Number: 2250-13-66-09EIR
Assessors Parcel Number: 351-09-011, -012, -013; 351-10-005, -033, -037, -038; 351-11-001.

As the Lead Agency, the County of Santa Clara (County) will prepare an Environmental Impact Report (EIR) for a proposed amendment to an existing reclamation plan for the Permanente Quarry for the overburden storage area (East Materials Storage Area). The East Materials Storage Area (EMSA) is not encompassed in the existing 1985 Reclamation Plan. The County would like your views regarding the scope and content of the environmental information to be included in the EIR. Attached are a brief project description, site boundary, and summary of the potential environmental effects. For more information, please visit the County Planning Department Website at: www.sccplanning.org.

A Public Scoping Session to solicit comments for the Notice of Preparation will be held in the City of Cupertino on **Wednesday, April 28, 2010, 6:30 PM** at the City of Cupertino Community Hall, Council Chambers, 10350 Torre Avenue, Cupertino, California 95014. In accordance with the California Environmental Quality Act (CEQA), comments on the Notice of Preparation are due within 30 days of receipt of this notice. However, an earlier response, if possible, would be appreciated. Please address your comments to:

County of Santa Clara
Planning Office, Att: Marina Rush
70 West Hedding , 7th Floor, East Wing
San Jose CA 95110
(408) 299-5770 marina.rush@pln.sccgov.org

Prepared by:
Marina Rush ______________________ _________
Approved by:
Rob Eastwood, Senior Planner ______________________ _________
Signature **Date**

INTRODUCTION

The purpose of an Environmental Impact Report (EIR) is to inform decision-makers and the general public of the environmental effects of a proposed project that an agency may implement or approve. The EIR process is intended to provide information sufficient to (a) evaluate a proposed project and its potential for significant impacts on the environment, (b) to examine methods of reducing adverse impacts; and (c) to consider alternatives to the project.

The EIR for the Permanente Quarry Reclamation Plan Amendment for the East Materials Storage Area (EMSA) will be prepared and processed in accordance with the California Environmental Quality Act (CEQA) of 1970, as amended. In accordance with CEQA, the EIR will include the following:

- A summary of the project
- A project description;
- A description of the existing environmental setting, potential environmental impacts, and mitigation measures;
- Cumulative Impacts;
- Alternatives to the proposed project; and
- CEQA required environmental consequences, including (a) any significant environmental effects which cannot be avoided if the project is implemented; (b) any significant irreversible and irretrievable commitments of resources; (c) the growth inducing impacts of the proposed project; and (d) effects found not to be significant.

PROJECT LOCATION

The project site is located in a hillside area in the unincorporated portion of western Santa Clara County, near the City of Cupertino, at 24001 Stevens Creek Boulevard. The Reclamation Plan Amendment area is approximately 89 acres, located on the northeast portion of the Quarry. Quarry access is via Stevens Creek Boulevard and Foothill Expressway, continuing to the terminus of Permanente Road. The Quarry operations are on a portion of approximately 3,600 contiguous acres owned by Lehigh.

PROJECT DESCRIPTION

The Permanente Quarry is a limestone and aggregate mining operation, and operates pursuant to a Reclamation Plan approved by the County in 1985. The proposed project is an amendment to the 1985 Reclamation Plan to include an approximately 89-acre area used for overburden storage, the East Materials Storage Area (EMSA). The EMSA is designed to hold approximately 4,786,000 cubic yards of overburden fill. The material arriving at the EMSA will be keyed into the existing slopes at an overall 2.6:1 (horizontal:vertical). The EMSA will receive material for approximately 6 years, depending on market conditions. This amendment does not involve the mining operations, reclamation in the main mining pit, west materials storage area, nor does it involve operation of the adjacent Lehigh Southwest Cement Plant.

In 1985, the County approved a Reclamation Plan for Permanente Quarry, which did not include the EMSA. In March 2007, Lehigh applied for an amendment to the 1985 Reclamation Plan to include all areas that had been disturbed by mining activities, including a newly proposed mining area (Pit 2). This Reclamation Plan Amendment is currently undergoing additional geological technical studies necessary to process the application. On June 20, 2008, the County issued a Notice of Violation to Lehigh for stockpiling materials in the EMSA, which is outside the 1985 Reclamation Plan limits. Subsequently, the County directed Lehigh to apply for a separate Reclamation Plan Amendment for the EMSA on a more accelerated schedule than could be applied to the 2007 Reclamation Plan Amendment proposal, which will take a larger amount of time to complete. This Reclamation Plan Amendment is being processed separately from the 2007 Reclamation Plan Amendment. However, cumulative effects of the two projects together will be examined in this EIR.

The EIR will provide a project-level evaluation of the potential environmental impacts caused by the implementation of the proposed EMSA Reclamation Plan Amendment. Practical mitigation measures will be developed and presented for all direct, indirect and cumulative impacts that are found to be potentially significant. The following describes the environmental aspects of the project, and how they are potentially affected.

POTENTIAL ENVIRONMENTAL EFFECTS OF THE PROJECT

The EIR will identify the significant environmental effects anticipated to result from implementation of the proposed project. Specific environmental topics addressed will include:

A. Visual Resources

The project site is located in a Zoning District with a Design Review overlay for the Santa Clara Valley Viewshed (d1). Much of the area that would be used for new materials storage is considered visible from the Santa Clara valley floor. The EIR will describe the anticipated changes to the environment as the proposed reclamation activities proceed along with landscape and final design of the reclamation area, assessing any potentially significant aesthetic impacts. Visual simulations of the project site will be prepared.

B. Biological Resources

Portions of the project site contain dense, mature tree cover of Chaparral/Oak Woodlands. Permanente Creek runs near the project site, and includes a riparian corridor along that area. While much of the site is currently disturbed, the EIR will describe impacts to biological resources that are anticipated to occur as a result of the proposed project. Mitigation measures will be identified for significant impacts, as warranted.

C. Cultural Resources

The EIR will present findings of a cultural resources evaluation that will identify and describe how the proposed project would impact cultural resources (both historical and prehistorical). Mitigation measures will be identified for significant impacts, as warranted.

D. *Geology & Soils*

A geologic and slope stability analysis will be performed. The EIR will describe geology and soil conditions of the site and potential for the proposed reclamation activities to cause increased slope instability or erosion potential by the reclamation activities. Mitigation measures will be identified for significant impacts, as warranted.

E. *Surface Hydrology, Drainage & Water Quality*

Permanente Creek runs near the project site, approximately 500 feet to the south. The project site is outside the 100-year floodplain. The EIR will describe hydrology and storm water quality impacts from the reclamation process (increased sediments, erosion, etc). Mitigation measures will be identified for significant impacts, as warranted.

G. *Public Services*

The EIR will describe the availability of services to serve the project site and identify, at a programmatic level, potential utilities and services impacts from the project. Mitigation measures will be identified for significant impacts, as warranted.

H. *Noise*

The EIR will characterize ambient noise conditions in the vicinity of the project site and evaluate noise impacts from the proposed reclamation activities with the County General Plan and Noise Ordinance standards. Mitigation measures will be identified for significant impacts, as warranted.

I. *Land Use*

Final use, appearance and stability of the reclamation area will be examined to assess whether the reclamation area would conflict with any County General Plan Policies or Zoning Ordinances.

J. *Air Quality*

Impacts of the proposed project on local air quality and sensitive receptors will be evaluated, with emphasis on dust generation from reclamation activities and emissions from heavy equipment. Mitigation measures will be identified for significant impacts, as warranted.

K. *Alternatives*

The EIR will describe a range of reasonable alternatives to the proposed project, including a Reduced Scale Alternative, and No Project Alternative.

L. *Growth Inducing Impacts*

The EIR will discuss methods by which the proposed project will directly or indirectly induce economic, population, or housing growth.

M. *Cumulative Impacts*

The EIR will include a Cumulative Impacts section which will address the potential significant or irreversible cumulative impacts of the proposed Reclamation Plan Amendment when considered with past, present, and probable future projects producing related or cumulative impacts, or projections contained in applicable land use documents of regional or area-wide conditions contributing to the cumulative impact. The potential environmental impacts from the proposed mining and reclamation activities included with the Master Reclamation Plan, submitted in March 2007, will be considered and evaluated as part of the cumulative impact analysis.

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APPENDIX D
Notice of Preparation for 2007 Proposed RPA EIR

REVISED NOTICE OF PREPARATION OF AN ENVIRONMENTAL IMPACT REPORT FOR THE HANSON QUARRY RECLAMATION PLAN AMENDMENT

Note: This Notice of Preparation (NOP) has been revised and recirculated to replace the NOP circulated on May 25th, 2007

Project Owner/Applicant: Hanson Permanente Cement Inc
File Number: 2250-13-66-07P-07EA
Assessors Parcel Number(s): 351-09-011, -012, -013; 351-10-005,033,037,038; 351-11-001.

As the Lead Agency, the County of Santa Clara will prepare an Environmental Impact Report (EIR) for the proposed amendment and expansion to an existing reclamation plan, and would like your views regarding the scope and content of the environmental information to be included in the EIR. The EIR may be used by your agency when considering approvals for the project. For more information, please visit the County of Santa Clara Website at: www.sccplanning.org

According to the California Environmental Quality Act (CEQA) the deadline for your response is 30 days after receipt of this notice. However, an earlier response, if possible, would be appreciated. Please identify a contact person and send your response to:

County of Santa Clara Planning Office
Attention: Mark J. Connolly
County Government Center
70 West Hedding St., 7th Floor, East Wing
San Jose CA 95110

Prepared by:
Mark Connolly, Planner III ____________________ _______
Signature **Date**

Approved by:
Rob Eastwood, Senior Planner, AICP ____________________ _______
Signature **Date**

Introduction

The purpose of an Environmental Impact Report (EIR) is to inform decision-makers and the general public of the environmental effects of a proposed project that an agency may implement or approve. The EIR process is intended to provide information sufficient to (a) evaluate a proposed project and it's potential for significant impacts on the environment; (b) to examine methods of reducing adverse (significant) impacts; and (c) to consider alternatives to the project.

The EIR for the proposed project will be prepared and processed in accordance with the California Environmental Quality Act (CEQA) of 1970, as amended. In accordance with the requirements of CEQA, the EIR for the Hanson Quarry Reclamation Plan Amendment will include the following:

- A summary of the project description, impacts and mitigation measures, and alternatives;
- A project description;
- A description of the existing environmental setting, environmental impacts, and proposed mitigation measures;
- Cumulative Impacts;
- Alternatives to the proposed project; and
- CEQA required environmental consequences, including (a) any significant environmental effects which cannot be avoided if the project is implemented; (b) any significant irreversible and irretrievable commitments of resources; (c) the growth-inducing impacts of the proposed project; and (d) effects found not to be significant.

Project Location

The overall project site is located in a hillside area in western Santa Clara County, west of the City of Cupertino, at 24001 Steven Creek Blvd.

Mining on the site dates back to the 1880's, the quarry's present location stems from the 1939 purchase of approximately 1300 acres along Permanente Creek by Hanson's predecessor. The site is currently operating under a Reclamation Plan, which was approved by the County of Santa Clara for 25 years and will expire in March 2010. The 1985 Reclamation Plan included an area of approximately 330 acres, representing the main mining area and some material storage areas. The site also contains a rock plant, and aluminum plant, which along with the cement plant are separately permitted and will not be covered in the proposed reclamation plan amendment.

Project Description

The proposed project entails a Reclamation Plan Amendment that will modify the previous 330-acre area covered by the 1985 Reclamation Plan, to include 917 acres of mining and reclamation activity and extend the termination by 25 years.

The Hanson Permanente Quarry site includes four main areas: the main mining pit, the west material storage area, the east material storage area, and the proposed pit 2. The Reclamation Plan Amendment addresses disturbed areas outside of the 1985 Reclamation Plan limits, and about 30 acres of new mining area in the southeast portion of the site (Pit 2), and the buffer areas. The existing and on-going activities involved are drilling, blasting, extraction of blasted rock, processing to size and sort the raw materials, stockpiling of construction aggregate and excess materials, and the transportation of processed materials from the site to customers.

The EIR will provide a project-level evaluation of the potential environmental impacts caused by the implementation of the proposed Reclamation Plan Amendment. Practical mitigation measures will be developed and presented for all direct, indirect and cumulative impacts that are found to be potentially significant. The following describes the environmental aspects of the project, and how they are potentially affected:

Potential Environmental Effects of the Project

The EIR will identify the significant environmental effects anticipated to result from implementation of the proposed project. The primary environmental topics addressed will include:

A. Visual Resources

The project site is located in a Zoning District with a Design Review overlay for the Santa Clara Valley Viewshed (d1). Portions of the areas proposed for new mining or materials storage are considered visible from the Santa Clara valley floor. The EIR will describe the anticipated changes to the environment as the proposed mining operation proceeds along with landscape and final design of the reclamation area, assessing any potentially significant aesthetic impacts. Visual simulations of the project site will be prepared.

B. Biological Resources

Portions of the project site contain dense, mature tree cover of Chaparral / Oak Woodlands. Also, water features such as springs; ponds, drainage swales, and Permanente Creek present on the site. Permanente Creek runs along the lower portion of the proposed Pit 2, and includes a Riparian Corridor along that area. The creek continues along the southern boundary of the project area, generally running west to east. While much of the site is currently disturbed, the EIR will describe impacts to biological resources that are anticipated to occur as a result of the proposed project. Mitigation measures will be identified for significant impacts, as warranted.

C. Cultural Resources

The EIR will present findings of a cultural resources evaluation that will identify and describe how the proposed project would impact cultural resources (both historical and prehistorical). Mitigation measures will be identified for significant impacts, as warranted.

D. Geology & Soils

A geologic and slope stability analysis will be performed. The EIR will describe geology and soil conditions of the site with respect to the proposed reclamation activities causing increased slope instability or erosion potential by the mining and reclamation activities. Mitigation measures will be identified for significant impacts, as warranted.

E. Groundwater

The EIR will examine the potential effects of the proposed mining and reclamation activities on groundwater and any significant long-term water supply impacts.

F. Surface Hydrology, Drainage & Water Quality

Permanente Creek runs along the site's southerly boundary. The project site is outside the 100-year floodplain. The potential for stream capture from the excavation and reclamation of the pits is not probable. The EIR will describe hydrology and storm water quality impacts from the mining and reclamation process. Mitigation measures will be identified for significant impacts, as warranted.

G. Public Services

The EIR will describe the availability of services to serve the project site and identify, at a programmatic level, potential utilities and services impacts from future development. Mitigation measures will be identified for significant impacts, as warranted.

H. Traffic and Noise

The EIR will characterize existing traffic conditions in the vicinity of the project site and evaluate traffic conditions which will change as a result of the proposed Reclamation Plan Amendment. Mitigation measures will be identified for significant impacts, as warranted.

I. Land Use

Final use, appearance and stability of the expanded mining and reclamation area will be examined to assess whether the reclamation area would conflict with any County General Plan Policy or Zoning Ordinances.

J. Air Quality

Impacts of the proposed project on local air quality and sensitive receptors will be evaluated, with emphasis on dust generation from mining activities and emissions from heavy equipment. Mitigation measures will be identified for significant impacts, as warranted.

K. Alternatives

The EIR will describe a range of reasonable alternatives to the proposed project, including a Reduced Scale Alternative.

L. Growth Inducing Impacts

The EIR will discuss methods by which the proposed project will directly or indirectly induce economic, population, or housing growth.

M. Cumulative Impacts

The EIR will include a Cumulative Impacts section which will address the potential significant or irreversible cumulative impacts of the proposed Reclamation Plan Amendment when considered with past, present, and probable future projects producing related or cumulative impacts, or projections contained in applicable land use documents of regional or area-wide conditions contributing to the cumulative impact.

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APPENDIX E

Written and Oral Comments Received During Scoping Periods

EIR SCOPING MEETING
LEHIGH-HANSON PERMANENTE QUARRY – COMPREHENSIVE RPA
Oral Public Comments
August 31, 2011

#	Speaker Name	Organization	General Comments
A-1	Cathy Helgerson	Resident	Analyze the soil/water beneath the EMSA, concerned w/possible toxins buried beneath the overburden deposits due to prior magnesium/aluminum plant activities. Confirm if the EMSA and WMSA heights exceed maximum allowed. Current dust emissions are too high. Concerned Lehigh will apply for a new mining pit in the future causing significant tree removal. Include cement plant emissions in EIR. Concerned with current storage of and use of petroleum coke. Would like County to analyze all pollution generated from the facility.
A-2	Karen DelCompare	Resident	Concerned with soils/chemicals buried below the EMSA from prior aluminum plant operations. Dust emissions are too high. Concerned that mining is too close to homes, refer to SMARA. EMSA overburden is a current violation; County should not allow the depositing to continue and should not approve the RPA, it rewards bad behavior. Include all past Scoping Comments related to the project. Concerned with operator's history of violations, operator would not comply with requirements. Cement plant should be included in Reclamation Plan Area, refer to past OMR letter on this issue.
A-3	Gary Lazshaw	Resident	Lehigh should provide an escrow account that is adequate, and not have the public pay for the restoration. Concerned with geological failures or other impacts due to a natural disaster, such as earthquake.

			Do not seal contaminants in the ground.
A-4	Robert McKibbin	Resident	County ridgeline scenic easement is located in the mining area, please include protections in the EIR.
A-5	John Bartas	Resident	Analyze cancer and autism rates in community, there are spikes in local area. Quarry has violations, quarry should clean up the violations. Pollutants in creek, specific to mine tailings and selenium. Cement plant needs a single stack, too hard to monitor air emissions from cement plant with multiple stacks.
A-6	Henrik Wesseling	Lehigh	Lehigh is working with scientists and biologists to select best plants for reclamation. Lehigh was awarded for past reclamation achievements at their Redding facility. Lehigh has a valid permit for stormwater and authorized non-stormwater discharges and Quarry is in full compliance with them. Facility is meeting new stringent standards for air emissions.
A-7	Marvin Howell	Lehigh	No new mining areas are proposed in the modified application. The RPA proposes to backfill pit to creek level, fill will come from WMSA. This will address viewshed concerns. EMSA will be built up and will screen views from the west.
A-8	Tim Brand	Resident	Concerned there will be a new mine in the future, and this is piecemealing CEQA. Condition the RPA for no new mine. 20 year timeline is unacceptable, wants quicker reclamation. EIR should show how project complies with Clean Water Act. County should compare current RPA with 1985 Rec Plan estimates of limestone to determine credibility of how much mining can occur in pit. Require quarry to comply with laws.
A-9	Paula Wallis	Resident	Is the new excavation area of the mine in a "vested area." Are there limits to the depth of the mine pit. What happens to bond money posted for reclamation? Can we tie conditions to Rec. Plan? Can we affirm that they will comply with conditions?

A-10	Ginger Summit	Resident	Air quality is being studied by the towns of LA and LAH. Water quality, both surface and groundwater, have impacts to the Bay and drinking water. Debris problems in creek. Concerned Quarry is not disclosing intentions of future new mine pit, segmented review of CEQA.
A-11	Libby Lucas	Resident	Show creek (blue lines) on Reclamation Plan exhibits, including where it goes underground, identify wetlands, and habitat/creek vegetation. California Red Legged frog colony, protect habitat and if possible reroute creek. 1985 USGS evaluation concluded there was exposed limestone sedimentation/ erosion in to the creek of significant levels. This analysis should be should be updated by USGS. Concerned runoff downstream where creek water is detained (det. Basins are located in parks) will have concentrations of chemicals and sediment (San Antonio, Cuesta, Kelley Park). County should coordinate with the SCVWD Permanente Creek project. Get water quality acceptable level because children play in the creek.
A-12	Anya Kroth	Resident	Movie electric car, GM faced bankruptcy and should have kept the car. California should lead the environmental movement.
A-13	Barry Chang	Resident	Concerned with Lehigh about not needing a new mine, appears as a lie. Concerned with lack of reclamation to date, indication of how it will occur in the future. Concerned with Lehigh lying to public. Operation must comply with Federal Clean Water and Clean Air acts, cannot approve project if it is in violation. Must comply first. Concerned with water quality impacts to drinking water.
A-14	Bill Almon	Resident	RPA has internal inconsistencies regarding dates, data in document and attachments. Baseline should be 1985 Reclamation Plan final level and not from the current

			disturbances, should analyze all the changes beyond the 1985 RPA. Reclamation should have started and is a violation of SMARA. The air quality is bad, should have new Health Risk Assessment. Include cement plant in Reclamation Plan area. For example, Title 5 Permit includes rock crushing equipment, conveyor, quarry blasting are included. Include 100k trucks that enter site annually. No baseline in water quality in new plan, but was in old RPA.
A-15	Emily Kinner	Resident/DeAnza Student	Air plume from moving overburden is toxic. Water quality is impacted, due to leaching from tailings. Air quality impacts should be analyzed.
A-16	Joyce Eden	Resident	Two cement plant areas, current and former. Some portions may overlap, but new area should not be vested because it is "new" plant location. If the cement plant is vested in the quarry lands than it should be included in the RPA for its operations. Either not vested due to cement plant or include in RPA. Wants a map in the EIR showing old cement plant boundary and compare to new location. Consider cement plant emissions in cumulative section of EIR. WMSA is old, County should analyze what is in the overburden materials: hazardous and other waste from WWII productions were on the property, and County should request daily ongoing testing of materials. Concerned with over mining of the pit and slope stability. Concerned Lehigh has not been truthful about life of mine, and future mine.

STATE OF CALIFORNIA—BUSINESS, TRANSPORTATION AND HOUSING AGENCY EDMUND G. BROWN, Jr., Governor

DEPARTMENT OF TRANSPORTATION
P.O. BOX 23660
OAKLAND, CA 94623-0660
PHONE (510) 286-5541
FAX (510) 286-5559
TTY 711

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11 AUG 24 AM 9:43

Flex your power!
Be energy efficient!

August 19, 2011

SCL-280-11.45
SCL280357

Ms. Marina Rush
County of Santa Clara
70 West Hedding Street
7th Floor, East Wing
San Jose, CA 95110

Dear Ms. Rush:

Comprehensive Reclamation Plan Amendment and Conditional Use Permit for Permanente Quarry – Modification to Existing May 2010 Permit Application for Mining Reclamation Plan Amendment (Excluding Expansion Area)

Thank you for including the California Department of Transportation (Department) in the environmental review process for the proposed project. We have reviewed the permit application and have the following comments to offer. As stated in your email, dated August 8, 2011, the Department acknowledges this permit application supersedes the prior proposed reclamation plan amendment for which a Notice of Preparation was issued April 20, 2011 (State Clearinghouse number 2010042063).

Traffic Impact Study (TIS)

While the County conducts its traffic studies in accordance with guidelines which conform to the local Congestion Management Program managed by the Santa Clara County Valley Transportation Authority, the Department's thresholds are primarily concerned with potential impacts to the State Highway System. We encourage the County to coordinate preparation of the study with our office to help sharpen the focus of your scope of work and answer any questions you may have. Please see the Department's *Guide for the Preparation of Traffic Impact Studies* at the following website for more information:
http://www.dot.ca.gov/hq/traffops/developserv/operationalsystems/reports/tisguide.pdf.

Specifically, a detailed TIS should identify impacts to all affected state facilities with and without the proposed project. The TIS should include, but not be limited to the following:

1. Information on the project's traffic impacts in terms of trip generation, distribution, and assignment. The assumptions and methodologies used in compiling this information should be addressed.

"Caltrans improves mobility across California"

2. Average Daily Traffic (ADT), AM and PM peak hour volumes on all significantly affected streets and highways, including crossroads and controlling intersections.

3. Schematic illustration of the traffic conditions for: (1) existing, (2) existing plus project, and (3) cumulative for the intersections in the project area.

4. Calculation of cumulative traffic volumes should consider all traffic-generating developments, both existing and future, that would affect the State Highway facilities being evaluated.

5. Mitigation measures should consider highway and non-highway improvements and services. Special attention should be given to the development of alternate solutions to circulation problems that do not rely on increased highway construction.

6. All mitigation measures proposed should be fully discussed, including financing, scheduling, implementation responsibilities, and lead agency monitoring.

7. Impacts to transit systems, pedestrians and bicyclists. Please develop and apply pedestrian bicycling and transit performance or quality of service measures and model pedestrian, bicycle and transit trips that your project will generate so that impacts and mitigation can be quantified. In addition, analyze secondary impacts on pedestrians and bicyclists that may result from any traffic impact mitigation measures. Describe any pedestrian and bicycle mitigation measures and safety countermeasures that would therefore be needed as a means of maintaining and improving access to transit facilities and reducing vehicle trips and traffic impacts on state highways.

We look forward to reviewing the TIS, ***including*** Technical Appendices and the environmental document for this project. Please send two copies to:

Brian Brandert
Office of Transit and Community Planning
Department of Transportation, District 4
P.O. Box 23660
Oakland, CA 94623-0660

Transportation Permit

Project work that requires movement of oversized or excessive load vehicles on State roadways, such as Interstate 280, requires a transportation permit issued by the Department. To apply, a completed transportation permit application with the determined specific route(s) for the shipper to follow from origin to destination must be submitted to the address below.

Office of Transportation Permits
California DOT Headquarters
P.O. Box 942874
Sacramento, CA 94274-0001

Further information is available on the following website:
http://www.dot.ca.gov/hq/traffops/developserv/permits/applications/index.html.

Encroachment Permit

Work that encroaches onto the State right-of-way (ROW) requires an encroachment permit that is issued by the Department. To apply, a completed encroachment permit application, environmental documentation, and five (5) sets of plans clearly indicating State ROW must be submitted to the address below. Traffic-related mitigation measures should be incorporated into the construction plans during the encroachment permit process.

Office of Permits
California DOT, District 4
P.O. Box 23660
Oakland, CA 94623-0660

Further information is available on the following website:
http://www.dot.ca.gov/hq/traffops/developserv/permits.

The Department may provide further comments once the Notice of Preparation for this new reclamation plan amendment application is issued by the State Clearinghouse. Please feel free to contact Brian Brandert at (510) 286-5505, if you have any questions regarding this letter.

Sincerely,

FOR GARY ARNOLD
District Branch Chief
Local Development-Intergovernmental Review

From: Barry Chang <barry.bace@gmail.com>
Date: September 26, 2011 11:53:54 PM PDT
To: Marina Rush <marina.rush@pln.sccgov.org>
Cc: jim.pompy@conservation.ca.gov, stephen.testa@conservation.ca.gov, board-bace@googlegroups.com
Subject: Public Comments on Lehigh/Permanente Quarry Application for Reclamation Amendment/Mining Plan, dated July 2011

From: Barry Chang

To: Marina Rush, Santa Clara County Planning Department,
Santa Clara County Board of Supervisors (SCC BOS)

cc: California Office of Mine and Reclamation, Director
State Mining and Geology Board, Executive Director
Office of the Governor of California
Attorney General of the State of California
Region 9 US Environmental Protection Agency
US Environmental Protection Agency
City Of Cupertino
City of Los Altos
City of Los Altos Hills
California Regional Water Quality Control Board

Subject: Public comments for Lehigh Southwest Cement Plant/ Permanente Quarry
Application for Reclamation Amendment/Mining plan dated: July 2011

Dear Marina,

As I pointed out in your Lehigh/Permanente Quarry EIR scoping meeting, Lehigh/Permanente Quarry has received Notic of Violation from EPA Regioan 9 on March 10, 2010. On page one of its finding, it clearly stated that Lehigh/Permanente Quarry violates Federal Clean Air Act.

On August 24, Sierra Club sent a 60 days notice of intent to sue Lehigh/Permanente Quarry for violation of Federal Clean Water Act.

My understanding is that the current California State Surface Mining and Reclamation Act requires mining operators to be in compliance with Federal Clean Air Act and Clean Water Act before they can get their reclamation plan approval.

Lehigh/Permanente Quarry obviously is not meeting these requirements. You can not approve Lehigh/Permanente Quarry's reclamation plan now. You need to wait until Lehigh/Permanente Quarry complies with Federal Clean Air Act and Clean Water Act.

Thank you.

Barry Chang

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
San Francisco, CA 94105-3901

MAR 10 2010

CERTIFIED MAIL NO. 7003 3110 0006 2000 8625
RETURN RECEIPT REQUESTED

IN REPLY: AIR-5
REFER TO: Docket No. R9-10-02

David Vickers
President
Lehigh Southwest Cement Company
12667 Alcosta Blvd.
Bishop Ranch 15
San Ramon, CA 94583

Dear Mr. Vickers:

Re: Lehigh Southwest Cement Company Notice and Finding of Violation

Dear Mr. Vickers:

Enclosed is a copy of a Notice of Violation and Finding of Violation ("NOV/FOV") issued pursuant to sections 113(a)(1), 113(a)(3) and 167 of the Clean Air Act, 42 U.S.C. §§ 7401-7671q (the "Act"), notifying you that the United States Environmental Protection Agency ("EPA"), Region IX, finds that Lehigh Southwest Cement Company ("Lehigh") has violated certain sections of the Act's Prevention of Significant Deterioration of Air Quality and Title V Operating Permit Program, at its Portland cement plant located in Cupertino, California (the "Facility").

You should be aware that section 113(a)(1), 113(a)(3) and 167 of the Act authorizes EPA to issue an order requiring compliance with the requirements of the Act, issue an administrative penalty order, or commence a civil action seeking an injunction and/or a civil penalty. Furthermore, section 113(c) of the Act provides for criminal penalties in certain cases.

In addition, section 306 of the Act, 42 U.S.C. 7606, the regulations promulgated thereunder (2 C.F.R. Part 180), and Executive Order 11738 provide that facilities to be utilized in federal contracts, grants and loans must be in full compliance with the Act and all regulations promulgated pursuant to it. A violation of the Act may result in the Cupertino Plant being declared ineligible for participation in any federal contract, grant, or loan.

Printed on Recycled Paper

If you wish to discuss the enclosed NOV/FOV, you may request a conference with EPA within ten (10) working days of receipt of this NOV/FOV. The conference will afford Lehigh an opportunity to present information bearing on the finding of violation, the nature of the violations, and any efforts it may have taken or proposes to take to achieve compliance.

If you have any questions pertaining to this NOV/FOV, please contact Charles Aldred of the Air Enforcement Office at (415) 972-3986, or have your attorney contact Ivan Lieben of the Office of Regional Counsel at (415) 972-3914.

Thank you for your cooperation in this matter.

Sincerely,

Deborah Jordan
Director, Air Division

Enclosure

cc w/enc: BAAQMD
CARB

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
San Francisco, CA 94105-3901

MAR 1 0 2010

IN REPLY: AIR-5
REFER TO: Docket No. R9-10-02

Jack Broadbent
Air Pollution Control Officer
Bay Area Air Quality Management District
939 Ellis St.
San Francisco, CA 94109

Dear Mr. Broadbent:

Enclosed for your information is a copy of a Notice of Violation and Finding of Violation ("NOV/FOV") that the United States Environmental Protection Agency ("EPA"), Region IX, issued to the Lehigh Southwest Cement Company ("Lehigh") for violations of the Clean Air Act ("Act") at Lehigh's Portland cement plant in Cupertino, California (the "Facility").

The purpose of the NOV/FOV is to notify Lehigh that EPA finds that it has violated the Prevention of Significant Deterioration and Title V Operating Permit Program requirements of the Act at the Facility. The violations are set forth more specifically in the enclosed NOV/FOV. The NOV/FOV has been issued pursuant to sections 113(a)(1), 113(a)(3) and 167 of the Act, 42 U.S.C. § 7401-7671q.

The Act also provides that after 30 days from the issuance of an NOV, EPA may determine if any action will be taken pursuant to Section 113 of the Act.

If you have any questions concerning this NOV/FOV, please contact Charles Aldred of the Region 9 Air Enforcement Office at (415) 972-3986, or aldred.charles@epa.gov.

Sincerely,

Deborah Jordan
Director, Air Division

Enclosure

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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
San Francisco, CA 94105-3901

MAR 1 0 2010

IN REPLY: AIR-5
REFER TO: Docket No. R9-10-02

Jim Ryden
Enforcement Division Chief
California Air Resources Board
P.O. Box 2815
Sacramento, CA 95812

Dear Mr. Ryden:

Enclosed for your information is a copy of a Notice of Violation and Finding of Violation ("NOV/FOV") that the United States Environmental Protection Agency ("EPA"), Region IX, issued to the Lehigh Southwest Cement Company ("Lehigh") for violations of the Clean Air Act ("Act") at Lehigh's Portland cement plant in Cupertino, California (the "Facility").

The purpose of the NOV/FOV is to notify Lehigh that EPA finds that it has violated the Prevention of Significant Deterioration and Title V Operating Permit Program requirements of the Act at the Facility. The violations are set forth more specifically in the enclosed NOV/FOV. The NOV/FOV has been issued pursuant to sections 113(a)(1), 113(a)(3) and 167 of the Act, 42 U.S.C. § 7401-7671q.

The Act also provides that after 30 days from the issuance of an NOV, EPA may determine if any action will be taken pursuant to Section 113 of the Act.

If you have any questions concerning this NOV/FOV, please contact Charles Aldred of the Region 9 Air Enforcement Office at (415) 972-3986, or aldred.charles@epa.gov.

Sincerely,

Deborah Jordan
Director, Air Division

Enclosure

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UNITED STATES
ENVIRONMENTAL PROTECTION AGENCY
REGION IX

In the Matter of: LEHIGH SOUTHWEST CEMENT COMPANY Proceeding under Section 113(a) of the Clean Air Act, 42 U.S.C. § 9613(a)	Docket No. R9-10-02 NOTICE OF VIOLATION AND FINDING OF VIOLATION

NOTICE OF VIOLATION/FINDING OF VIOLATION

This Notice of Violation and Finding of Violation ("NOV/FOV") is issued to the Lehigh Southwest Cement Company ("Lehigh") for violations of the Clean Air Act ("CAA" or the "Act"), as amended, 42 U.S.C. §§ 7401-7671q, at its Portland cement manufacturing facility located in Cupertino, California (the "Facility"). Lehigh violated the Prevention of Significant Deterioration ("PSD") and Title Operating Permit Program requirements of the Act at the Facility. This NOV/FOV is issued pursuant to Sections 113(a)(1), 113(a)(3) and 167 of the Act. Section 113(a)(1) requires the Administrator of the United States Environment Protection Agency ("EPA") to notify any person she finds in violation of an applicable implementation plan or a permit. The federal PSD regulations also clarify that failure to comply with the PSD provisions renders a source subject to enforcement under Section 113 of the Act. *See* 40 C.F.R. § 52.23. The authority to issue this NOV has been delegated to the Regional Administrator of EPA Region 9 and further re-delegated to the Director of the Air Division in EPA Region 9.

SUMMARY OF VIOLATIONS

The Facility is a Portland cement manufacturing plant comprised of one kiln, and associated equipment used to produce clinker, including a preheater tower, precalciner, clinker cooler, induced draft ("ID") and other fans, cement finish mills, and extensive sections of ductwork.

This NOV/FOV concerns a series of physical modifications made to the Facility from 1996 through 1999. Lehigh subsequently operated the Facility with the modified equipment which resulted in significant net emission increases. As a result, the projects, either individually or in the aggregate, caused an increase in production of cement and an increase in emissions of air pollutants to the atmosphere from the Facility.

The Facility is located in an area that has at all relevant times been classified as attainment for nitrogen dioxide ("NO_2") and sulfur dioxide ("SO_2"). Accordingly, the PSD provisions of Part C, Title I of the Act apply to operations at the Facility for oxides of nitrogen ("NO_x")[1] and SO_2 emissions. EPA has determined that the physical or operational changes identified in this NOV/FOV, either individually or in the aggregate, were major modifications for PSD purposes since the Facility significantly increased both actual and potential emissions of NO_x and SO_2 as a result of the changes. Moreover, Lehigh failed to apply for one or more PSD permits for the modifications covering NO_x and SO_2

NO_2 serves as the regulated pollutant for the NO_2 standard.

emissions. Lehigh's failure to apply for a PSD permit or install and operate additional emissions controls meeting best available control technology ("BACT") covering these pollutants when it constructed and began operating the physical or operational changes was a violation of the PSD requirements of the Act.

Lehigh has also violated the Title V Operating Permit Program requirements of the Act set forth at 42 U.S.C. §§ 7461-7661f, the federal Title V regulations set forth at 40 C.F.R. Part 70, and the approved Bay Area Air Quality Management District ("BAAQMD") Title V program set forth at Regulation 2 Rule 6. BAAQMD has administered an approved Title V Operating Permit Program since November 29, 1994. Lehigh's failure to identify PSD requirements in its application submitted to BAAQMD for a Title V permit, supplement or correct that application to include PSD requirements, or obtain a Title V permit that contains the PSD requirements after the construction and operation of the physical or operational changes are violations of Title V requirements. *See* 42 U.S.C. §§ 7661b(a)-(b) and 7661c(a); 40 C.F.R. §§ 70.5(a)(c); BAAQMD Regulation 2 Rule 6. As a result, Lehigh obtained a deficient Title V permit, i.e., one that did not include all applicable requirements, and therefore is operating the Facility without a valid Title V permit in violation of 42 U.S.C. §§ 7661a, 7661b, and 7661c; 40 C.F.R. §§ 70.1, 70.5 and 70.6; and BAAQMD Regulation 2 Rule 6.

STATUTORY & REGULATORY BACKGROUND

National Ambient Air Quality Standards

1. The Administrator of EPA, pursuant to authority under Section 109 of the Act, 42 U.S.C. § 7409, has promulgated National Ambient Air Quality Standards ("NAAQS") for certain criteria pollutants relevant to this NOV/FOV, including NO_2 and SO_2. *See* 40 C.F.R. §§ 50.4, 50.5, 50.7, 50.8, 50.9, and 50.10.

2. Pursuant to Section 107(d) of the Act, 42 U.S.C. § 7407(d), the Administrator promulgated lists of attainment status designations for each air quality control region ("AQCR") in every state. These lists identify the attainment status of each AQCR for each of the criteria pollutants. The attainment status designations for the California AQCRs are listed at 40 C.F.R. §§ 81.305.

Prevention of Significant Deterioration

3. Section 110 of the Act, 42 U.S.C. § 7410, requires each state to adopt and submit to EPA a plan that provides for the implementation, maintenance and enforcement of primary and secondary NAAQS in the state. Upon approval by EPA, the plan becomes part of the applicable state implementation plan ("SIP") for that state.

4. Section 110(a)(2)(C) of the Act, 42 U.S.C. § 7410(a)(2)(C), requires that each SIP include a PSD permit program as provided in Part C of Title I of the Act, 42 U.S.C. §§ 7470-7491. Part C sets forth requirements for SIPs for attainment areas to ensure maintenance of the NAAQS.

5. On June 19, 1978, pursuant to Sections 160 through 169 of the Act, 42 U.S.C. §§ 7470-7479, EPA promulgated federal PSD regulations at 40 C.F.R. § 52.21. 43 Fed. Reg. 26,402.

6. The federal PSD program was incorporated into all applicable implementation plans nation-wide and contains the applicable PSD program requirements for each plan until EPA approves into an individual SIP a replacement program. See 40 C.F.R. § 52.21(a); 42 U.S.C. § 7410(a)(2)(C).

7. Pursuant to Section 107(d) of the Act, 42 U.S.C. § 7407(d), the Administrator promulgated lists of attainment status designations for each AQCR in every state. These lists identify the attainment status of each AQCR for each of the criteria pollutants. The NO_2 and SO_2 attainment status designations for the California AQCRs are listed at 40 C.F.R. § 81.305.

8. The BAAQMD has primary jurisdiction over major stationary sources of air pollution sources in the San Francisco Bay Area Intrastate AQCR. 40 C.F.R. § 81.21. This jurisdiction includes the Facility.

9. Section 161 of the Act, 42 U.S.C. § 7471, requires that each SIP contains provisions to implement the Act's PSD program for areas of that state which are designated as being in attainment with any NAAQS for a criteria pollutant. The PSD program applies to major new sources of air pollution.

10. The PSD permitting program for the San Francisco Bay Area Intrastate AQCR is the federal PSD program, which is set forth at 40 C.F.R. § 52.21.

11. Subsequent to 1978, the PSD regulations have been periodically revised. As the PSD violations identified in this NOV/FOV first commenced from 1991 through 2003, the 1992 amendments to the PSD regulations contain the applicable provisions pertaining to the alleged violations identified in this NOV/FOV. See 57 Fed. Reg. 32314 (July 21, 1992).

12. 40 C.F.R. § 52.21 (b)(1)(i)(a) (1992) defined a "major stationary source" as any stationary source within one of 28 source categories which emits, or has the potential to emit, 100 tons per year ("tpy") or more of any air pollutant subject to regulation under the Act. Portland cement plants are included among the 28 source categories.

13. The PSD Regulations defined a "major modification" as "any physical change in or change in the method of operation of a major stationary source that would result in a significant net emissions increase of any pollutant subject to regulation under the Act." 40 C.F.R. § 52.21(b)(2)(i) (1992).

14. 40 C.F.R. § 52.21(b)(3)(i) (1992) defined "net emissions increase" as the "amount by which the sum of the following exceeds zero:

a. Any increase in actual emissions from a particular physical change or change in the method of operation at a stationary source; and

b. Any other increases and decreases in actual emissions at the source that are contemporaneous with the particular change and otherwise creditable."

15. 40 C.F.R. § 52.21(b)(21) (1992) defined "actual

emissions" as follows: "In general, actual emissions as of a particular date shall equal the average rate, in tons per year, at which the unit actually emitted the pollutant during a two-year period which precedes the particular date and which is representative of normal source operation." The PSD regulations also provide that "[f]or any emissions unit ... which has not begun normal operations on the particular date, actual emissions shall equal the potential to emit on that date." 40 C.F.R. § 52.21(b)(21)(IV) (1992).

16. 40 C.F.R. § 52.21(b)(4) (1992) defined "potential to emit" as the "maximum capacity of a stationary source to emit a pollutant under its physical or operational design. Any physical or operational limitation on the capacity of the source to emit a pollutant, including the air pollution control equipment and restrictions on hours of operation or on the type or amount of material combusted, stored, or processed, shall be treated as part of its design if the limitation or the effect it would have on emissions is federally enforceable."

17. As such, the PSD regulations utilize an actual-to-potential test to determine whether an emissions increase occurred. Moreover, 40 C.F.R. § 52.21(b)(23)(i) (1992) defined "significant" and states that, in reference to NO_x and SO_2, significant net emissions increase means an increase that would equal or exceed 40 tons or more per year.

18. An applicant for a PSD permit to modify a stationary source is required to submit all information necessary to allow the permitting authority to perform any analysis or make any

determination required in order to issue the appropriate permit. 40 C.F.R. § 52.21(n) (1992).

19. 40 C.F.R. § 52.21(i) (1992) prohibited commencement of actual construction of a major modification to which the PSD requirements apply unless the source had a permit stating that the requirements of 40 C.F.R. §§ 52.21(j)-(r) had been met.

20. The PSD permitting process required, among other things, that for pollutants emitted in significant amounts, the owner or operation of a major source apply BACT to control emissions, 40 C.F.R. § 52.21(j) (1992); model air quality, 40 C.F.R. § 52.21(l) (1992); and perform a detailed impact analysis regarding both the NAAQS and allowable increments, 40 C.F.R. § 52.21(k) (1992).

21. Any owner or operator of a source or modification subject to 40 C.F.R. § 52.21 who commenced construction after the effective date of the PSD regulations without applying for and receiving a PSD permit is subject to appropriate enforcement action by EPA. 40 C.F.R. § 52.21(r)(1) (1992); Sections 113 and 167 of the Act, 42 U.S.C. §§ 7413 and 7477.

Title V Operating Permit Program

22. Title V of the Act, 42 U.S.C. §§ 7661-7661f, establishes an operating permit program for "major sources," including any source required to have a PSD permit. *See* Section 502(a) of the Act, 42 U.S.C. § 7661a(a). Regulations implementing the Title V permit program are set forth in 40

C.F.R. Part 70.

23. Pursuant to Title V, it is unlawful for any person to violate any requirement of a permit issued under Title V or to operate a major source except in compliance with a permit issued by a permitting authority under Title V. Section 502(a) of the Act, 42 U.S.C. § 7661a(a).

24. Under Section 502(d)(1) of the Act, states were required to develop and obtain approval to administer Title V programs. 42 U.S.C. § 7661a(d)(1). EPA granted interim approval of BAAQMD's Title V Operating Permit Program effective July 24, 1995, and final full approval was effective November 30, 2001. See 40 C.F.R. Part 70 Appendix A.

25. Sources subject to Title V and falling under BAAQMD's jurisdiction are required to submit to BAAQMD timely and complete Title V applications that identify, among other things, all "applicable requirements," including PSD requirements. *See* 40 C.F.R. § 70.5(a); BAAQMD Rule 2-6-404 and 2-6-405.

26. Sources subject to Title V and falling under BAAQMD's jurisdiction who have submitted an application are required to supplement or correct the application to include applicable requirements that were not included in the original application. 40 C.F.R. § 70.5(b); BAAQMD Rule 2-6-405.10.

27. Sources subject to Title V and falling under BAAQMD jurisdiction must obtain a Title V permit that: 1) contains such conditions necessary to assure compliance with the applicable

requirements; 2) identifies all applicable requirements the source is subject to; and 3) certifies compliance with all applicable requirements, and 4) where a source is not meeting requirements, contains a plan for coming into compliance. Sections 503 and 504 of the Act, 42 U.S.C. §§ 7661b and 7661c(a); 40 C.F.R. §§ 70.1, 70.5 and 70.6; BAAQMD Rule 2-6-409.

28. Failure of a source subject to Title V to submit a complete application, supplement that application when new requirements become applicable, or to obtain a Title V permit that contains all applicable requirements, such as PSD requirements, are violations of the Act.

FINDINGS OF FACT

29. The Facility is a Portland cement manufacturing facility, which is located at 24001 Stevens Creek Boulevard, Cupertino, Santa Clara County, California.

30. The San Francisco Bay Area Air Basin, which includes Santa Clara County where the Facility is located, was designated as attainment/unclassifiable at all times for NO_2 and SO_2 by operation of law under Sections 107(d)(1)(C) and 186(a) of the Act, 42 U.S.C. §§ 7407(d)(1)(C) and 7486(a). *See* 56 Fed. Reg. 56694 (Nov. 6, 1991); 40 C.F.R. § 81.305.

31. Lehigh is the current owner and operator of the Facility. The Facility was formerly owned by Hanson Permanente Cement and Kaiser Cement Corporation.

32. The Facility includes one kiln, and associated

equipment used to produce clinker, including a preheater tower, precalciner, clinker cooler, induced draft ("ID") and other fans, cement finish mills, and extensive sections of ductwork.

33. The combustion of coal, petroleum coke, and natural gas at the kiln at the Facility produces emissions of NO_x and SO_2, which are released to the atmosphere through a collection of 32 individual mini-stacks exiting from the baghouse.

34. Between 1996 and 1999, Lehigh commenced construction of various physical and/or operational changes at the Facility, and has continued to operate the Facility with these modifications, including, but not limited to, the following:

a. Upgrades to the finish mill; and

b. Various other modifications, upgrades, and operational changes *[Note: The underlying documents identifying these other projects have been claimed by Lehigh as confidential business information, and therefore are not being specifically identified in this NOV/FOV. Regardless, as the NOV/FOV raises allegations relating to all physical or operational changes commencing from 1996 through 1999, these other projects are covered within the scope of the NOV/FOV.]*.

35. Lehigh intended that these physical or operational changes, either individually or in the aggregate, would increase the production capacity of the Facility.

36. These physical or operational changes, either

individually or in the aggregate, resulted in an increase in annual clinker production at the Facility.

Prevention of Significant Deterioration

37. The Title V Permit issued by BAAQMD included, among other conditions, the following annual emissions limits for NO_x and SO_2 emissions from the Kiln at the Facility:

	NO_x	SO_2
Emissions limit (tpy)	5,072	2,106.8

38. As the limits in the Title V Permit for the Facility are federally enforceable, they constitute the Facility's Potential to Emit ("PTE").

39. Based upon a comparison of pre-construction actual emissions to post-construction PTE, the physical or operational changes identified in Paragraph 34, either individually or in the aggregate, resulted in net emissions increases from the Facility of NO_x and SO_2.

40. The net emissions increases of NO_x and SO_2 as a result of the physical or operational changes identified in Paragraph 34, either individually or in the aggregate, constitute a PSD significant net emissions increase since the increases were above 40 tpy for NO_x and SO_2.

41. Each of the physical or operational changes identified in Paragraph 34 constituted, either individually or in the aggregate, a "major modification" to the Facility for PSD purposes, as defined by 40 C.F.R. § 52.21 (b)(2)(i).

42. Lehigh did not apply for a PSD Permit covering NO_x and

SO_2 emissions for any of the physical or operational changes identified in Paragraph 34.

43. Lehigh failed to install and operate BACT-level emission controls for NO_x and SO_2 emissions from the Facility either at the time each of the physical or operational changes identified in Paragraph 34 were commenced or any time since their completion and operation.

Title V Operating Permit Program

44. As alleged in Paragraphs 34 through 43, Lehigh commenced one or more major modifications at its Facility commencing from 1996 through 1999, and the modifications triggered the requirements to obtain a PSD permit, undergo a PSD BACT analysis, and operate in compliance with the PSD permit. Lehigh failed to satisfy these requirements.

45. Lehigh first submitted a Title V application to BAAQMD on June 21, 1996. The final permit was issued by BAAQMD on November 5, 2003.

46. Prior to issuance of the Title V permit, Lehigh failed to supplement and/or correct its Title V permit application to identify all applicable requirements, including PSD requirements for NO_x and SO_2, a plan to come into compliance with those PSD requirements, and an updated certification of compliance that included the PSD requirements.

47. As a result of Lehigh's failure to provide complete information in its application or to supplement and/or correct

Title V Operating Permit Program

51. Notice is also given to Lehigh that it failed to supplement or correct its Title V application submitted to BAAQMD to include PSD requirements or obtain a Title V permit that contained PSD requirements, and therefore is in violation of Title V of the Act.

ENFORCEMENT

52. For any violation of a SIP, such as for PSD violations, Section 113(a)(1) of the Act, 42 U.S.C. § 7413(a)(1), provides that at any time after the expiration of 30 days following the date of the issuance of a notice of violation, the Administrator may, without regard to the period of violation, issue an order requiring compliance with the requirements of the SIP, issue an administrative penalty order, or bring a civil action pursuant to Section 113(b) for injunctive relief and/or civil penalties of not more than $25,000 per day for each violation that occurs on or before January 30, 1997, not more than $27,500 per day for each violation that occurs after January 30, 1997, not more than $32,500 per day for each violation that occurs after March 14, 2004; and not more than $37,500 per day for each violation that occurs after January 12, 2009. 42 U.S.C. § 7413(a)(1); Federal Civil Penalties Inflation Adjustment Act of 1990, Pub. L. 101-410, as amended; 40 C.F.R. Part 19.

53. Sections 113(a)(3) and 167 of the Act, 42 U.S.C. §§ 7413(a)(3) and 7477, provide additional authority for EPA to enforce against violators of the Act.

54. Section 113(c) of the Act, 42 U.S.C. § 7413(c), provides for criminal penalties, imprisonment, or both for persons who knowingly violate any federal regulation or permit requirement. For violations of the SIP, a criminal action can be brought 30 days after the date of issuance of a Notice of Violation.

55. Section 306 of the Act, 42 U.S.C. § 7606, the regulations promulgated thereunder (2 C.F.R. Part 180), and Executive Order 11738 provide that facilities to be utilized in federal contracts, grants and loans must be in full compliance with the Act and all regulations promulgated pursuant to it. A violation of the Act may result in Lehigh and/or the Facility being declared ineligible for participation in any federal contract, grant, or loan.

PENALTY ASSESSMENT CRITERIA

56. Section 113(e)(1) of the Act, 42 U.S.C. § 9613(e)(1), states that the Administrator or the court shall determine the amount of a penalty to be assessed by taking into consideration such factors as justice may require, including the size of the business, the economic impact of the penalty on the business, the violator's full compliance history and good faith efforts to comply, the duration of the violation as established by any credible evidence (including evidence other than the applicable test method), payment by the violator of penalties previously assessed for the same violations, the economic benefit of noncompliance, and the seriousness of the violation.

57. Section 113(e)(2) of the Act, 42 U.S.C. § 9613(e)(2),

allows the Administrator or the court to assess a penalty for each day of violation. This section further provides that for purposes of determining the number of days of violation, where EPA makes a prima facie showing that the conduct or events giving rise to the violation are likely to have continued or recurred past the date of an NOV, the days of violation shall be presumed to include the date of the NOV and each and every day thereafter until the facility establishes that continuous compliance has been achieved, except to the extent that the facility can prove by the preponderance of the evidence that there were intervening days during which no violation occurred or that the violation was not continuing in nature.

OPPORTUNITY FOR CONFERENCE

58. Lehigh may confer with EPA regarding this NOV/FOV if it so requests. A conference would enable Lehigh to present evidence bearing on the finding of violation, on the nature of violation, and on any efforts it may have taken or proposes to take to achieve compliance. If Lehigh seeks such a conference, it may choose to be represented by counsel. If Lehigh wishes to confer with EPA, it must make a request for a conference within 10 working days of receipt of this NOV/FOV. Any request for a conference or other inquiries concerning the NOV/FOV should be made in writing to:

Ivan Lieben
Office of Regional Counsel
U.S. EPA (ORC-2)
75 Hawthorne Street
San Francisco, CA 94105

(415)972-3914

Dated: 3-9-10

Deborah Jordan
Director, Air Division

Reed Zars
Attorney at Law
910 Kearney Street, Laramie, WY 82070
307-745-7979

August 24, 2011

VIA CERTIFIED MAIL: RETURN RECEIPT REQUESTED

Mr. Henrik Wesseling, Plant Manager
Lehigh Southwest Cement Company
Hanson Permanente Cement, Inc.
Permanente Plant
24001 Stevens Creek Boulevard
Cupertino, CA 95014

Dr. Bernd Scheifele, Chairman
HeidelbergCement
Berliner Strasse 6
69120 Heidelberg
Germany

RE: Notice of Intent to Sue for Violations of the Clean Water Act at Lehigh Southwest Cement Company's Permanente Plant in Santa Clara County, California.

Dear Mr. Wesseling and Dr. Scheifele,

We are writing on behalf of Sierra Club to notify you of its intent to file suit against Lehigh Southwest Cement Company, Hanson Permanente Cement, Inc., Lehigh Hanson, Inc., and HeidelbergCement Group ("Lehigh") to enjoin and penalize significant and ongoing violations of the Clean Water Act at your Permanente Quarry and Cement Plant in Santa Clara County, California. Lehigh is liable for the continuous, unpermitted discharge into Permanente Creek of millions of gallons of polluted quarry water, containing elevated levels of selenium and other toxic and conventional pollutants, for at least the last five years. Lehigh is also liable for the continuous, unpermitted discharge of pollutants into Permanente Creek from tons of mine tailings and waste that have been dumped into Permanente Creek. These wastes act similar to coffee grounds, clogging Permanente Creek and continuously discharging a brew of harmful chemicals such as selenium and other toxic and conventional pollutants into its waters.

Both of these types of continuous, unpermitted discharges have caused and/or contributed to significant exceedences of water quality standards for selenium and toxicity in Permanente Creek, have caused and/or contributed to Permanente Creek's state and federal listing as an impaired water body due to the presence of such pollutants, and have substantially diminished the creek's ability to sustain aquatic life including but not limited to steelhead trout and the California red-legged frog, both of which are federally listed as threatened species.

Pollutants illegally discharged by Lehigh into Permanente Creek also enter Santa Clara County's underground drinking water supply as they flow across the unconfined areas of the Santa Clara Subbasin aquifer. The Santa Clara Subbasin aquifer is the primary reservoir of drinking water for San Jose and surrounding cities.

The Clean Water Act at 33 U.S.C. § 1365(a)(1), authorizes citizens to bring suit to enjoin violations of an effluent standard or limitation and to seek civil penalties for such violations. The definition of effluent standard or limitation includes the discharge of pollutants into waters of the United States without a permit. Committee to Save Mokelumne River v. East Bay Utility Dist., 1993 U.S. Dist. LEXIS 8364, 11, n. 7 (E.D. Cal. 1993); aff'd, 13 F.3d 305, 309 (9th Cir. 1993), cert. denied, 115 S. Ct. 198 (1994). Violators of the Act are also subject to an assessment of civil penalties of up to $32,500 per day per violation for all violations occurring through January 12, 2009, and up to $37,500 per day per violation for all violations occurring after January 12, 2009, for each violation, pursuant to Sections 309(d) and 505(a) of the Act. 33 U.S.C. §§ 1319(d), 1365(a) and 40 C.F.R. §§ 19.1 - 19.4.

To the extent required by the Clean Water Act at 33 U.S.C. § 1365(a)(1), we are writing to notify you that Sierra Club intends to file suit in the applicable federal district court anytime 60 days after the postmark date of this letter to enjoin and penalize the violations described below.

I. Background

Kaiser Cement Company opened the main Permanente quarry and original cement plant in 1939. Hanson Corporation purchased the quarry and cement plant from Kaiser in 1986. Lehigh Southwest Cement Company is the operator of the facility. Today Lehigh claims the quarry and plant provide over 50 percent of the concrete used in the Bay Area.

Permanente Creek runs from its headwaters in the Coast Range east through the middle of the quarry property, then north through the cities of Los Altos and Mountain View before draining into the San Francisco Bay.

From http://www.lehighpermanente.com/#/virtual-tour/4537662984.

II. The Violations

A. Unpermitted Quarry Discharges

According to Lehigh's own statements, the company has been discharging without a proper permit, and continues to discharge without a proper permit, pollutants generated by its quarry mining operations directly into Permanente Creek. Permanente Creek is a water of the United States. In particular, Lehigh's quarry mining operations have exposed pollutants to both rain and ground water. As these waters flow over and through Lehigh's disturbed soils and rock, pollutants such as selenium, arsenic, molybdenum, nickel and manganese, residual blasting agent (ANFO), and other toxic elements and compounds, are picked up by the water and are collected at the bottom of the quarry pit. Lehigh then pumps the contaminated pit water on a regular basis from the quarry pit through a pipe into a waste pond (Pond 4) and thence through a pipe into Permanente Creek. Permanente Creek flows into the San Francisco Bay. Lehigh employs no pollution control measures to reduce or eliminate selenium and other toxic substances that are dissolved and suspended in its wastewater. As Lehigh explained to the Regional Water Quality Control Board, San Francisco Bay Region ("Water Board"):

> [T]he quarry dewatering process routes water to Pond 4, where it then discharges to Permanente Creek, almost continuously or regularly depending on the time of year, the volume of storm water and groundwater that collects in the quarry bottom. This regular dewatering process is interrupted only when regular maintenance of the pumping system or other aspects of the storm water management system require maintenance.

Lehigh Response to the Water Board, December 13, 2010, at page 6, attached hereto as **Exhibit A**. A map showing the location of the quarry pit, Pond 4, and the pipe that discharges selenium and other toxic pollutants from the pit and Pond 4 is attached hereto as **Exhibit B.**

According to Lehigh in that same response, "[t]he average *daily flow* into Pond 4 can range from 250,000 to 2,500,000 gallons." **Exhibit A** (emphasis added).

Not only that, Lehigh also admits that the wastewater it has been discharging into Permanente Creek, and that it continues to discharge into Permanente Creek, is contaminated with selenium[1] in concentrations that greatly exceed water quality standards. Again, according to Lehigh:

> The results of the metals analyses indicate that water being collected in the quarry may contain concentrations of selenium that exceed water quality standards, and, when discharged through the quarry dewatering system pursuant to the SWPPP [Storm Water Pollution Prevention Plan], could be contributing to exceedances of the water quality standards for selenium in Permanente Creek.

Exhibit C, Report of Potential Exceedance of Water Quality Standards, Geosyntec Consultants, March 17, 2010, p. 8.

Lehigh's qualification that the water it is discharging into Permanente Creek "could" contain concentrations of selenium above water quality standards is unnecessary. Although not a necessary element to establish liability under the Clean Water Act, Lehigh's own sampling evidence shows that selenium concentrations in its wastewater *are* in excess of water quality standards.

The water quality standards applicable to Permanente Creek are set forth in the 2007 San Francisco Bay Basin Water Quality Control Plan ("Basin Plan") and the California Toxics Rule at 40 C.F.R. §131.38. Both the Basin Plan and the California Toxics Rule establish a chronic total selenium standard of 5.0 micrograms per liter in fresh water. **Exhibit D**. Due to chronically elevated levels of selenium and toxicity immediately downstream from the Permanente facility, EPA recently approve the listing of Permanente Creek as impaired for these pollutants. **Exhibit E**, EPA Approval Letter, November 12, 2010.

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[1] "[S]elenium is a naturally occurring element, common in the environment. It is problematic only in high concentrations, but at certain levels has toxic effects. Selenium impacts the reproductive cycle of many aquatic species, can impair the development and survival of fish, and can even damage gills or other organs of aquatic organisms subjected to prolonged exposure. It can also be toxic to humans, causing kidney and liver damage, and damage to the nervous and circulatory systems." *Ohio Valley Envtl. Coalition, Inc. v. Hobet Mining, LLC,* 723 F. Supp. 2d 886, 900 (S.D. W.Va. 2010).

Water quality testing performed by Lehigh in January of 2010 found that the concentration of dissolved selenium in Pond 4 was 82 micrograms per liter, well over ten times the applicable 5.0 micrograms per liter water quality standard. (Had Lehigh properly analyzed for total selenium rather than just the dissolved component, this value likely would have been higher.) As explained above, Lehigh discharges the contaminated water in Pond 4 directly into Permanente Creek without employing any measures to reduce selenium concentrations. **Exhibit C**, Report of Potential Exceedance, Table 2-1 and Appendix A, page 4 of 16.

Lehigh has an Industrial General Storm Water Permit issued by the Water Board, but that permit, as its name indicates, only applies during specified storm events and not to the on-going, non-storm water discharges from Pond 4 described here. The Water Board emphatically confirmed this fact on February 18, 2011:

> Lehigh repeatedly asserts that the Facility's discharges of quarry bottom water, wash-down water, and dust suppression water are in compliance with the Industrial General Storm Water Permit. The Industrial General Storm Water Permit specifically prohibits all three of these self-admitted discharges from the Lehigh facility. *Lehigh is grossly mistaken in its assertion that the Facility is permitted to discharge these three types of non-storm water flows*.

Exhibit F, Water Board staff review and response to Lehigh's letter of December 13, 2010, in response to our "13267" letter of November 29, 2010, p. 1 (emphasis added).

Because Lehigh pumps the water from its quarry pit into Pond 4 on a continuous or regular basis, and because Pond 4 is the functional equivalent of a full bathtub, the continuous pumping of quarry water contaminated with selenium and other toxic substances inexorably results in the continuous discharge of pollutants through a pipe directly into Permanente Creek. Lehigh has no permit authorizing this continuous discharge. Therefore, Lehigh has violated the Act every day, for each pollutant, for at least the last five years when it has actively pumped and discharged water-borne selenium and other toxic substances from its quarry to Pond 4 and thence to Permanente Creek without a permit.

B. <u>Unpermitted Stream Fill Discharges</u>

According to Lehigh's own reports, Permanente Creek has been used, and continues to be used, as a disposal area for quarry mining wastes. Mine tailings, overburden and other wastes have been dumped, and continue to be dumped into Permanente Creek throughout the stream's path within Lehigh's property. Lehigh's March 11, 2011 "Permanente Creek Long-Term Restoration Plan" documents many of these stream disposal sites. An annotated stream profile diagram, taken from Figure 2-5 in Lehigh's Restoration Plan and attached hereto as **Exhibit G**, shows the location of some of the more notorious mine tailing and overburden waste disposal sites at Lehigh's quarry along the various sections of Permanente Creek.

Mining wastes have been dumped into Permanente Creek by bulldozers, dump trucks and other mining equipment, with the assistance of gravity. The disposal sites in Permanente Creek include, but are not limited to, those shown on **Exhibit G**, attached hereto. The disposal sites continuously discharge, release and otherwise add their toxins into the creek's waters much like coffee grounds in a percolator. As the waters of Permanente Creek flow over and through the mining wastes dumped into the creek, pollutants such as selenium, arsenic, molybdenum, nickel, manganese, residual blasting agent (ANFO), and other toxic elements and compounds, are dissolved into and suspended in the water. These added pollutants flow downstream through Lehigh's property, through public parks and neighborhoods, and finally into San Francisco Bay. The mine tailings and other rock and sediment wastes that physically remain in the creek bed and adjacent wetlands, or that are carried to various downstream locations during higher flow events, are also unpermitted pollutants that exist in the water column, banks and wetlands of Permanente Creek.

According to Lehigh's May 2010 Hydrologic Investigation, appended to its Reclamation Plan Amendment submitted to Santa Clara County on May 21, 2010, the average concentration of dissolved pollutants in Permanente Creek increases significantly as the creek flows through Lehigh's mining wastes. **Exhibit H.** For example, the water in Permanente Creek downstream of most of Lehigh's pollutant discharges at monitoring location SW-2 contains from three to over 100 times the dissolved concentrations of arsenic, selenium, nickel, manganese and molybdenum compared to the water upstream of most of Lehigh's discharges at monitoring location SW-1. See **Exhibit H**, Figure 6.2 (monitoring locations); Table 6.6 (average pollutant values for monitoring locations); and Figures 6.13 and 6.14 (bar charts illustrating significant increase in pollution from SW-1 to SW-2).

Lehigh has no permit authorizing the continuous discharge of dissolved and suspended pollutants from mine wastes dumped into Permanente Creek described above. Lehigh has no permit for the mine wastes that continuously clog the bed, banks and wetlands of Permanente Creek described above. Therefore Lehigh has violated the Act every day at each disposal site for at least the last five years as a result of such unpermitted discharges.

III. Offer to review information.

To the extent you have evidence that shows, contrary to the allegations in this letter, that Lehigh is in full compliance with all applicable requirements we urge you to provide it to us so that we may potentially avoid, or at least limit, litigation on these issues.

IV. Conclusion

Lehigh has been operating, and continues to operate the Permanente facility in violation of the Clean Water Act. We will seek an injunction to end the illegal, unpermitted discharges alleged in this letter, to restore the hydrologic and aquatic integrity of Permanente Creek, and to recover, on behalf of the United States, the maximum civil penalty for Lehigh's Clean Water Act violations for at least the last five years, as allowed by the applicable statute of limitations.

The address of Sierra Club is 85 Second Street, Second Floor, San Francisco, CA 94105. Sierra Club has individual members who have been, and continue to be, injured by the excessive and unlawful discharges from Lehigh's Permanente facility into Permanente Creek described above. Those injuries are fairly traceable to Lehigh's unlawful discharges, and can be redressed, at least in part, through the cessation of such discharges. If you have any questions regarding the allegations in this notice letter, believe any of the foregoing information to be in error, wish to discuss the exchange of information consistent with the suggestion above, or would otherwise like to discuss a settlement of this matter prior to the initiation of litigation, please contact the attorneys below.

Yours sincerely,

REED ZARS

Reed Zars
Attorney at Law
910 Kearney Street
Laramie, WY 82070
307-745-7979

GEORGE HAYS BY RZ

George Hays
Attorney at Law
236 West Portal Avenue, #110
San Francisco, CA 94127
415-566-5414

pc: by certified mail:

Lisa Jackson, Administrator
U.S. Environmental Protection Agency
1200 Pennsylvania Avenue, N.W.
Washington, DC 20460

Dorothy Rice, Executive Director
State Water Resources Control Board
P.O. Box 100
Sacramento, CA 95812-0100

Eric Holder, U.S. Attorney General
U.S. Department of Justice
950 Pennsylvania Avenue, N.W.
Washington, DC 20530-0001

Jared Blumenfeld, Regional Administrator
U.S. EPA – Region 9
75 Hawthorne Street
San Francisco, CA 94105

Bruce Wolfe, Executive Officer
San Francisco Bay
Regional Water Quality Control Board
1515 Clay St., Suite 1400
Oakland, CA 94612

Registered Agent
Lehigh Southwest Cement Company
Corporation Service Company
2730 Gateway Oaks Dr., Suite 100
Sacramento, CA 95833

pc: by regular mail

Santa Clara County Board of Supervisors
70 West Hedding Street
San Jose, CA 95110

Santa Clara Valley Water District
5750 Almaden Expressway
San Jose, CA 95118

Stevens & Permanente Creeks Watershed Council
2353 Venndale Avenue
San Jose, CA 95124

Midpeninsula Regional Open Space District
330 Distel Circle
Los Altos, CA 94022-1404

Department of Conservation
Office of Mine Reclamation
801 K Street, MS 09-06
Sacramento, CA 95814-3529

Exhibits Provided in Enclosed CD

Exhibit A: Lehigh Response to the San Francisco Bay Regional Water Quality Control Board, December 13, 2010, page 6.

Exhibit B: Map showing the location of the quarry pit, Pond 4, and the pipe that discharges selenium and other toxic pollutants from the pit and Pond 4.

Exhibit C: Report of Potential Exceedance of Water Quality Standards, Geosyntec Consultants, March 17, 2010, p. 8.

Exhibit D: 2007 San Francisco Bay Basin Water Quality Control Plan ("Basin Plan") excerpts, and the California Toxics Rule at 40 C.F.R. §131.38.

Exhibit E: EPA approval letter listing Permanente Creek as impaired for selenium and toxicity, November 12, 2010.

Exhibit F: Water Board staff review and response to Lehigh's letter of December 13, 2010, in response to our "13267" letter of November 29, 2010, p. 1.

Exhibit G: Permanente Creek stream profile diagram showing examples of mine waste dump sites that continuously discharge pollutants into the creek.

Exhibit H: Hydrologic Investigation, Attachment F to Lehigh Reclamation Plan Amendment submitted to Santa Clara County on May 21, 2010, excerpts including Figure 6.2, Table 6.6, and Figures 6.13 and 6.14.

MSHA Announces Results of November Impact Inspections
Dec 30, 2010
MSHA recently announced that federal inspectors issued 250 citations, orders, and safeguards during special impact inspections conducted at 12 coal and 10 metal/nonmetal mine operations last month.
These inspections, which began in force during April following the explosion at Upper Big Branch Mine, involve mines that merit increased agency attention and enforcement due to their poor compliance history or particular compliance concerns, including high numbers of violations or closure orders; indications of operator tactics, such as advance notification of inspections that prevent inspectors from observing violations; frequent hazard complaints or hotline calls; plan compliance issues; inadequate workplace examinations; a high number of accidents, injuries or illnesses; fatalities; and adverse conditions such as increased methane liberation, faulty roof conditions and inadequate ventilation.
During November's impact inspections, coal mines were issued 114 citations, 11 orders, and one safeguard. For metal/nonmetal mines, 113 citations and 11 orders were issued. Since April, MSHA has conducted impact inspections at 182 coal and metal/nonmetal mines.
During an inspection conducted during the week of Nov. 15 at Lehigh Permanente Cement Co. Mine in Santa Clara County, Calif., MSHA issued 30 citations and six orders to the company. Five 104(d) orders were issued, including a violation for a supervisor's failure to de-energize electrically powered equipment prior to removing a guard.

Another 104(d) order was issued for unsafe access where inadequately secured steel plates could have fallen on miners or delivery drivers accessing a storage area; this hazard had been reported to mine management two weeks earlier. A 104(b) order was issued for failure-to-abate in a timely manner a fall protection violation, in which miners working at the top of a mill were exposed to an approximately 36-foot drop to the concrete below. Sixty percent of the citations and orders were significant and substantial violations. So far this year, MSHA inspectors have issued 185 citations and 21 orders at this mine.
"MSHA's impact inspection program is helping to reduce the number of mines that consider egregious violation records a cost of doing business," said Joseph A. Main, assistant secretary of labor for mine safety and health. "We will continue using this important enforcement tool to protect the nation's miners."
A spreadsheet containing the entire results of November's impact inspections can be viewed here.

CALIFORNIA HISTORICAL RESOURCES INFORMATION SYSTEM

ALAMEDA, COLUSA, CONTRA COSTA, LAKE, MARIN, MENDOCINO, MONTEREY, NAPA, SAN BENITO, SAN FRANCISCO, SAN MATEO, SANTA CLARA, SANTA CRUZ, SOLANO, SONOMA, YOLO

Northwest Information Center
Sonoma State University
150 Professional Center Drive, Suite E
Rohnert Park, California 94928-3609
Tel: 707.588.8455
Email: leigh.jordan@sonoma.edu
http://www.sonoma.edu/nwic

August 15, 2011

File No.: 11-0143

RECEIVED PLANNING OFFICE 11 AUG 23 AM 8:41

Marina Rush, Project Planner
Santa Clara County
Environmental Resources Agency, Planning Office
County Government Center, East Wing, 7th Floor
70 West Hedding Street
San Jose, CA 95110-1705

re: 2250-13-66-10P M1/ 24001 Stevens Creek Blvd./ Hanson Permanente Cement, Inc.

Ms. Rush,

Records at this office were reviewed to determine if this project could adversely affect cultural resources. **Please note that use of the term cultural resources includes both archaeological sites and historical buildings and/or structures. The review for possible historic-era building/structures, however, was limited to references currently in our office and should not be considered comprehensive.**

Previous Studies:

XX Studies covering approximately 100% of the proposed project area, identified one or more cultural resources *(see below)*.

Study #	Author: Year	Title
S-10471	Holman 1988:	An Archaeological Inspection of the Kaiser Cement Property, Cupertino, Santa Clara County, California.
S-36633	Jensen: 2009	Archaeological Inventory Survey: Proposed Permanente Quarry Project, c. 1, 105 Acres, Santa Clara County, California.
S-38058	Jensen: 2009	Archaeological Inventory Survey, Proposed Permanente Development Project, c. 1, 105 Acres, Santa Clara County, California.

Archaeological and Native American Resources Recommendations:

XX The proposed project area contains or is adjacent to the archaeological site(s):

P-43-001867	Kaiser Permanente Quarry District
P-43-001868	Permanente Creek Road
P-43-001870	Hanson Permanente Quarry Pumphouse (Remains)
P-43-001833	Railroad (adjacent to the project area)

XX Due to the nature of the previous surveys, which studied the project area in its entirety, no study is recommended prior to commencement of proposed project activities. However, the following recommendations noted on page 16-17 in Jenson:2009 should be followed in regards to cultural materials:

1) Consultation in the event of inadvertent discovery of human remains: In the event that human remains are inadvertently encountered during any ground-disturbing activities or at any time subsequently, State law shall be followed, which includes, but is not limited to, immediately contacting the County Coroner's office upon any discovery of human remains.

11 AUG 17 PLANNING OFFICE RECEIVED

2) Consultation in the event of inadvertent discovery of cultural material: The present evaluation and recommendations are based on the findings of an inventory-level surface survey only. There is always the possibility that important unidentified cultural materials could be encountered on or below the surface during the course of future construction or other activities. This possibility is particularly relevant considering the constraints generally to archaeological field survey, and particularly where extensive past disturbance has occurred, as in the present case. In the event of inadvertent discovery of previously unidentified cultural material, archaeological consultation should be sought immediately.

XX We recommend you contact the local Native American tribe(s) regarding traditional, cultural, and religious heritage values. For a complete listing of tribes in the vicinity of the project, please contact the Native American Heritage Commission at 916/653-4082.

Built Environment Recommendations:

XX The 1961 USGS Cupertino 7.5-minute topographic quadrangle indicated approximately 40 buildings and 11 water tower/tanks within the project area. Since the Office of Historic Preservation has determined that any building or structure 45 years or older may be of historical value, if the project area contains such properties, it is recommended that prior to commencement of project activities, a qualified professional familiar with the architecture and history of Santa Clara County conduct a formal CEQA evaluation.

For your reference, a list of qualified professionals in California that meet the Secretary of the Interior's Standards can be found at http://www.chrisinfo.org. If archaeological resources are encountered during the project, work in the immediate vicinity of the finds should be halted until a qualified archaeologist has evaluated the situation. If you have any questions please give us a call (707) 664-0880.

Sincerely,

Jillian Guldenbrein
NWIC Researcher

cc: Lehigh Southwest Cement Company
24001 Stevens Creek Blvd.
Cupertino, CA 95014

CUPERTINO
EST. 1955

OFFICE OF COMMUNITY DEVELOPMENT

CITY HALL
10300 TORRE AVENUE • CUPERTINO, CA 95014-3255
(408) 777-3308 • FAX (408) 777-3333 • planning@cupertino.org

September 26, 2011

County of Santa Clara Planning Office
Attn: Marina Rush
70 West Hedding, 7th Floor, East Wing
San Jose, CA 95110

RE: Written Comments on Notice of Preparation of an Environmental Impact Report for a Reclamation Plan Amendment (Consolidated) for Permanente Quarry, County File No. 2250-13-66-10P(M1)-10EIR(M1)

Dear Ms. Rush:

Thank you for the opportunity to comment on the Notice of Preparation (NOP) for the above captioned project. The City of Cupertino has the following comments for the preparation of the environmental impact report (EIR):

1) The Introduction of the NOP refers to a Conditional Use Permit that will be addressed as part of the EIR preparation. The remainder of the NOP makes no additional mention of the Use Permit, so the City would like to know what is the purpose of the conditional use permit application. The reclamation plan amendment for the same quarry submitted in 2010 also had a companion conditional use permit application that was needed to authorize mineral extraction in new, undisturbed areas.

2) What is the relationship between the 2011 reclamation plan amendment and the other plan amendments submitted in 2009 and 2010? Are the 2009 and 2010 plan amendments still active? Have they been withdrawn? This should be addressed in the context of the project description, as well as, the Cumulative Impacts section of the EIR.

3) Public Services – The revegetation of the reclaimed slopes will require a significant amount of water distributed to lands where there is probably no water supply/distribution utilities. The EIR should discuss the infrastructure necessary to implement the revegetation.

4) Relevant Plans, Policies & Regulations –Various agencies have regulatory oversight over the quarrying operations. In the interest of our residents' health and safety, those agencies and their responsibilities should be identified, including any that deal with hazardous materials, such as mercury. I understand that the applicant is in violation of some permits.

5) Relevant Plans, Policies & Regulations -- Does the state's relatively new water efficiency landscaping law place additional regulations/requirements on the reclamation plan amendment?

6) Air Quality – The air quality analysis should include a health hazards risk assessment for asbestos which occurs naturally in local soils.

If you have any questions, feel free to contact me at colinj@cupertino.org

Sincerely,

Colin Jung

Colin Jung
Senior Planner
City of Cupertino

From: JLucas1099@aol.com
Date: September 26, 2011 12:01:33 PM PDT
To: Permanentequarry@pln.sccgov.org
Cc: gary.rudholm@pln.sccgov.org, marina.rush@pln.sccgov.org
Subject: Lehigh Permanente Quarry Reclamation Plan Notice of Preparation - comment

Marina Rush, Planner III September 26, 2011
County of Santa Clara Planning Office
70 West Hedding Street, East Wing, 7th Floor
San Jose, CA 95110

Dear Gary and Marina,

In regards the Notice of Preparation for Lehigh Permanente Quarry Reclamation Plan please ensure that Santa Clara County requires the Lehigh Permanente Quarry operation to restore the physical channel of Permanente Creek within the quarry, to landscape the full length of the quarry with terraces in a manner to control debris flows and retain sediments within the facility, and to provide wetlands, ponds and management plan for the California Red-Legged Frog colony along a restored Permanente Creek channel within the quarry.

In a quick review of Lehigh Permanente Quarry's initial submittal for reclamation of quarry site concerns are:

~ the 587.8 acres of revegetated areas of oak woodland and hydro seed, pine woodland and hydro seed, and hydroseeded shrub and grasses are planned to be rooted in backfill placed within the bowl of quarry walls? Shouldn't a detailed profile of quarry as to present and planned future conditions be illustrated in the plan so it can be determined what volume of fill is necessary to support oak and pine woodlands, and how this can be accomplished in grading of site in order to guarantee sufficient stability to re-forestation measures and to make sure slippage cannot occur in critical storm events?
~ will plan assure revegetation species and seeds are native to East Fork of Permanente Creek watershed?
~ what will be source of soils used to backfill quarry walls?
~ what is the volume of soils that will be necessary to accomplish this revegetation in Reclamation Plan?
~ what is the timeline for grading and revegetation measures?

~ restoration of Permanente Creek riparian corridor and wetlands needs to be detailed in reclamation plan as to orientation of creek channel and continuity of stream flow through entire project site?
~ how will reclamation plan guarantee that seeps and springs be preserved with natural wetlands vegetation?
~ how precisely can backfill measures be implemented to protect creek and wetlands vegetation habitat?
~ what is timeline for implementing test plot sites and can public review revegetation protocols and progress?

~ the hyrdology of the East Fork of Permanente Creek is deficient in initial submittal in both its source of base data and in its analysis of critical flows from peak storm events. The Santa Clara Valley Water District has historically used rainfall readings from Maryknoll which is the appropriate watershed and this data needs only to be augmented to rainflall readings increases of a higher position in the watershed. Can it be clarified at what elevation the Los Altos Hills readings referenced in plan are located or in what different watershed?
~ it is a serious deficiency in the initial plan that 'averages' of rainfall and streamflow are used to define levels of hydrologic impacts likely to occur to quarrying operations. Please reference SCVWD Report of Flooding and Flood Related Damages in Santa Clara County, February 2-9, 1998. Note Maryknoll rain gage estimates of 1.93 inches in six hours to be at a 75 year return incidence and at 3.90 inches in 24 hours to be at the 55 year return incidence. Permanente Creek levels of flow in a one percent storm event is estimated to be 2800 cfs and in the ten percent event at 1500 cfs. Global warming will increase intensity of these storm events.

~ This Reclamation Plan will incorporate this increased rainfall and creek flow data in restoring the East Fork Permanente Creek channel, in revegetating its quarry slopes and in implementing sufficiently large sediment basins that will incorporate the design capacity to protect downstream communities?

~ In regards the volume of sediment load that can be anticipated from this watershed, please have the quarry reclamation plan reference and incorporate data from USGS Report 89-4130 Effects of Limestone Quarrying and Cement-Plant Operations on Runoff and Sediment Yields in the Upper Permanente Creek Basin, Santa Clara County, California, that was mandated after an accidental release from quarry ponds generated a wave that flooded Blach School, some distance downstream in Los Altos.
~ This report noted that 53,240 tons of sediment were generated in 1986 at Station 11166575 on the East Fork of Permanente Creek, the northerly terminus of quarry operations at that time. Measured runoff at that station that year was from 17.5 inches of rainfall. USGS had monitoring stations throughout the quarry. Has subsequent monitoring of an equivalent nature been conducted in a process of mandated quarry operations? As quarry operations have become more extensive in the past 25 years what is an estimated sediment load generated by the quarry in similar wet years? Will a quarry reclamation plan address these sediment loads?

~ Downstream in Permanente Creek is a unique element of the Santa Clara Aquifer geology known as the groundwater cascade where water from the foothills percolates rapidly into the deep drinking water aquifers. Will a reclamation plan address impacts that sediment loads and contaminants in Permanente Creek flows, as generated by quarrying operations upstream, have on this unique percolation water resources element?

~ what is the present depth of quarry operations into the Monte Bello Ridge? Will a reclamation plan include the earthquake faults that underly this region of the Monte Bello Ridge? Will a reclamation plan assess all impacts that the depth of excavations in the quarry into this Monte Bello Ridge might effect on neighboring Stevens Creek Reservoir and Dam stability in event of a quake of the magnitude of Loma Prieta earthquake?

~ Please consider extended vegetated terracing and sediment basins at the northerly terminus of quarry operations in a Lehigh Permanente Reclamation Plan as an imperative conservative measure for the health and well being of extensive downstream neighborhoods and of the Santa Clara aquifer water supply.

Thank you for this opportunity to comment on the Notice of Preparation for Lehigh Permanente

Quarry's Reclamation Plan.

Sincerely,

Libby Lucas, Conservation,
CNPS, Santa Clara Valley Chapter
174 Yerba Santa Ave., Los Altos, CA 94022

From: Sanjeev Mahalawat <sanjeevmahalawat@yahoo.com>
Date: August 26, 2011 4:16:57 PM PDT
To: "marina.rush@pln.sccgov.org" <marina.rush@pln.sccgov.org>
Subject: Notice of Preparation of an Environmental Impact Report Reclamation Plan Amendment for Permanente Quarry
Reply-To: Sanjeev Mahalawat <sanjeevmahalawat@yahoo.com>

Hi,

My name is Sanjeev Mahalawat and I live in Cupertino. I'm dierctly affected by the Lehigh cement plant in Cupertino and it's environment and noise pollution. I strongly oppose any approval of Lehigh Cement's new reclamation plan by Santa Clara county supervisor board.

I will be deeply disappointed with the Santa Clara County Supervisors if they go ahead with the approval. Henceforth I request to the Santa Clara County Supervisor Board to listen to the citizens, residents, voters and high tax-payers of Cupertino, Lost Altos and neighboring cities and broader Bay Area and do not approve any new reclamation plan of Lehigh Cement and hold Lehigh liable for the ongoing severe environment pollution.

Thank You,
Sanjeev Mahalawat
Resident of City of Cupertino, Ca

WILLIAM J. ALMON
10570 Blandor Way
Los Altos Hills, CA 94024

September 24, 2011

Marina Rush
County of Santa Clara
70 West Hedding Street
San Jose, CA 95110

Dear Marina,

There are major CEQA issues with this revised Reclamation Plan. CEQA requires an Environmental Impact Report (EIR) when a project has a significant impact on the Environment. According to CEQA the baseline for measuring impact is current, not past conditions, particularly when there has been no prior environmental review. Arguing that the 1985 Reclamation Plan was an environmental review would say that 1985 should be the baseline. However the baseline selected is neither, being a ten year period 2000-2010. This baseline must be changed to current conditions.

In addition the review must cover the total project and cannot separate out selective elements. In this case Lehigh has elected to not include the environmental impact of the Cement Plant and the hourly diesel delivery trucks. In its pleading to the County Superintendents on February 8, 2011 Lehigh argued that the Quarry and Cement Plant were totally integrated and a single operational entity and the Superintendents agreed. The environmental impact of the Cement Plant must be included in the EIR to meet CEQA's cumulative impact definition.

So must be the offsite diesel delivery trucks that according to Lehigh make 100,000 trips per year. Lehigh is meticulous in stating on site truck traffic but it is silent on the offsite traffic required to support the facility. This is justified on the basis these trucks are not owned by Lehigh but from an environmental viewpoint they are only there because of Lehigh. Their impact must be included in the EIR.

However even with that we are still not compliant with CEQA. CEQA states that an EIR cannot be an iterative process conducted piecemeal. It must include the entire project. That is not the case here as the new Quarry Pit has been removed only to accelerate the processing of the Reclamation Plan (Karl Saragusa letter of June 3, 2011). Lehigh was quite clear in 2010 stating that the current Quarry was nearing depletion. They now stand silent hoping for rapid processing of this "streamlined" Reclamation Plan. Consequently this Reclamation Plan must have a binding statement from the parent company, Heidelberg Cement, saying there is no strategic plan in place requiring a new Pit here.

Our continuing comments now follow the order established in your Notice of Preparation.

VISUAL RESOURCES – Kaiser Cement, the original owner, granted a scenic easement (deed dated August 18, 1972) to the County to shield the Quarry from Public view. In addition Condition #8 of the current 1985 Reclamation Plan states that the maximum height of Area A (now designated the West Material Storage Area-WSMA) shall not exceed the top of the ridgeline.

Regretfully Lehigh deliberately violated these restrictions by dumping excessive mine waste there. This will be corrected in the new Plan but not until 2021. It must be corrected immediately as violations of the law are not cured only when convenient to the violator nor are they mitigated in an EIR. We look to the County to enforce the existing scenic deed and restrictions.

Today it is clearly visible (above) as a result of Lehigh deliberately and continuously dumping excessive mine waste there. Lehigh has violated a given property right of the Residents of Santa Clara County while the County Supervisors looked on and directed the Staff to take no effective action. This ridgeline must be restored if the Public is to have any confidence in Lehigh's commitment to be a good neighbor and the Supervisors oath to uphold the law.

Lehigh's disregard for Visual Resources is not a thing of the past but continues today in the Santa Clara County Rancho San Antonio Park where Lehigh has recently dumped mine waste so high as to intrude on Park trails and views. This has been ongoing since 2009 when Lehigh arrogantly but accurately stated in their submitted Reclamation Plan that such dumping will probably be completed prior to any approval.

The purpose of an EIR is to mitigate not just identify environmental impacts. The damage is now irreversible so the request by the County for Public comments on mitigating the impact is disingenuous. The proposed EIR should be expanded to list all irreparable damage that has already occurred, not just the impact on the Park. On the next page is a photo of the view from PG&E trail in Rancho San Antonio Park.

View from PG&E trail in Rancho San Antonio Park

In addition the current Reclamation Plan dated 1985; the one now being amended here, stated that "Planting under the guidance of this Plan is ongoing" The aerial photo below shows that to be totally false.

Lehigh is willing to promise anything but fails to live up to its promises knowing that the County Board of Supervisors will support its inaction. It is unreasonable to expect the Residents to have any confidence in new steps to preserve the visual environment when prior ones are disrespected by their elected officials and Lehigh. The current view from Highway 280 going North of the Quarry can only be labeled "ugly" as viewed from multiple sight lines.

BIOLOGICAL RESOURCES – The entire Biological Resource Assessment (Attachment D) is highly flawed and must be completely redone. It is based on 2-3 year old surveys, studies and field investigations conducted by Lehigh's consultant WRA in 2008-2009. It alerts one to forthcoming documents in 2010 which are obviously now available.

Worse, it is erroneous since Lehigh withheld from WRA the fact that they discharge hundreds of thousands to millions of gallons per day of industrial process water into Permanente Creek as part of normal operations as described in the California Regional Water Quality Control Board Notice of Violation dated February 18, 2011.

Such continuous high flows are not taken into consideration in the WRA study. Instead WRA makes calming statements such as "Portions of the Creek only convey surface water for a few weeks during annual peak rains" on Page 23. Lehigh obviously cannot be trusted.

The preservation of woodland and wildlife is open to question if Lehigh's past actions are taken into account. A good example is the East Material Storage Area. Here is a before and after photo showing the destruction of native oaks and wildlife habitat.

BEFORE:

AFTER:

All this destruction occurred over the past 2 years as Lehigh expanded into the East Material Storage area without an EIR in place following their then unapproved Reclamation Plan dated April 2009 and even currently not yet approved. The damage has been done in direct violation of CEQA. The purpose of an EIR is to limit the environmental impact before it occurs, not to justify it after it happens.

Permanente Creek downstream is a breeding area for the California Red Legged Frog which is listed as a Threatened Species under the Endangered Species Act. It gained international fame in Mark Twain's famous short story *The Celebrated Jumping Frog of Calaveras County*. This Threatened Species is now present in only 10% of its original habitat.

Lehigh has long touted their funded studies by Dr. Mark Jennings, but an independent Biologist must be retained to confirm the dire outcome that is suggested here for the California Red Legged Frog.

CULTURAL RESOURCES -- The Lehigh Quarry and Cement Plant has over 100 years of History in Santa Clara County. Henry Kaiser, an exceptional businessman, at one point lived on the property. During World War II incendiary bombs made of magnesium were produced there. Ownership thereafter changed and with multinational business cycles the Quarry and Cement Plant passed to German ownership.

Regardless of ownership the site was always a source of what we know today to be major pollution. In 2005 it was a top emitter of Mercury, producing 1,284 pounds while claiming 219 pounds. The mine waste, conveniently labeled overburden and strewn over the site, contains toxins that meet Superfund levels. This is the Cultural Resource today.

GEOLOGY & SOILS -- While there is extensive discussion of soil types and factors of safety in the Reclamation Plan there is little confidence provided to the Public that Lehigh will abide by the State Mining and Reclamation Act (SMARA). SMARA is repeatedly quoted with no mention made as to the extensive existing erosion on the site and the high risk of damaging earthquake activity.

Since 1985 there has been no reclamation, but after 26 years we are again promised reclamation starting in 2015. It appears that Reclamation can be continually delayed by simply submitting new amendments to the original Reclamation Plan.

Over the next 20 years there is a reasonable expectation of significant seismic activity. We know that the North side of the current Pit is a slopeless vertical wall as a result of earthquake induced landslides. The Berrocal Fault Line runs through the center of the East Material Storage Area (EMSA) and any landslide there promises to go into Permanente Creek, a Federally Threatened Species Habitat, and onto adjacent private property. However there is little analysis of it.

We are told that “industry standards indicate acceptable performance” by the EMSA in the event of a “design” earthquake which is never quantified or described in detail. We are told “the minimum Factor of Safety is considered acceptable,” while at the same time told there are natural shear lines between the limestone and the greenstone below. Given the recent surprise 9.0 Earthquake in Japan and the 6.0 in Pennsylvania, there must be more analysis and modeling of the EMSA under the latest assumptions or we also will be surprised.

Lehigh has deliberately violated SMARA by expanding beyond its Mining Boundaries. The California Office of Mine Reclamation states that this is a Major SMARA Violation and has given notice that Lehigh will be removed from the list of qualified suppliers to the State of California. This should be front and center in the proposed EIR but there is no mention or even suggestion of it in the documents presented to the Public. Why is this hidden?

The major residue resulting from the Lehigh operation is the extensive mine waste scattered over the site and affectionately called overburden. According to Attachment G of the Reclamation Plan (Table 5) the EMSA overburden contains 2.6mg/kg of Arsenic, well above California Health Screening Levels (CHSL).

The same Table 5 states Mercury to be .11mg/kg, but Lehigh reported 3 times as much (.31mg/kg) in the rigorous sampling done for the Air District and reported December 6, 2010.
In total it appears the overburden is toxic. The assumption in the Reclamation Plan is that it is not. This is a major question.

It is very critical in that the overburden mine waste is scattered everywhere and will even be blended into the top soil covering over 700 acres at a depth of only 3 inches. Below that is the toxic mine waste. In addition it will fill the North Pit and be piled high forever contributing toxins into the watershed. After having been blasted out of the ground and crushed it is now much more porous and hence the leeching estimates in the Reclamation Plan are erroneous.

Consequentially there must be extensive testing of the current overburden in the WMSA and the EMSA to determine its true toxicity level and what must be done to remove it. This is a serious issue which is deliberately swept under the Reclamation Plan rug.

HYDROLOGY, DRAINAGE AND WATER QUALITY -- Lehigh was served a Notice of Violation (NOV) by the San Francisco Regional Water Quality Control Board on February 18, 2011 for discharging huge volumes of Quarry Pit water into Permanente Creek. In the NOV the Water Board noted Lehigh's failure to correct past violations and its non-compliance attitude.

This NOV was based on prior inspections as well as Lehigh responses to the Water Board, particularly the Lehigh response of December 13, 2010. In that response Lehigh stated the volume of water dumped into Permanente Creek ranged from a flow of 250,000 gallons per day to 2,500,000 gallons per day.

This amount of water originating primarily in the Pit bottom overwhelms all natural flows into Permanente Creek yet is not reflected in the Reclamation Plan. Equally significant, the content of the water is quite toxic. According to Lehigh this daily discharge is mandatory to the operation of the Quarry.

It suggests that we have a choice between Permanente Creek or a Quarry. However this is not addressed in the EIR nor are Lehigh's violations listed. Without County regulation, Permanente Creek will be nothing more than a waste water sewer pipe in 20 years.

PUBLIC SERVICES-NOISE ABATEMENT -- The noise emanating from the facility particularly at night is a public nuisance. The repeated booms from the blasting is even louder but of shorter duration. While Lehigh pledges in their Reclamation Plan that there will be no blasting on Sundays and at night, such blasting is ongoing today. There must be fines imposed to limit such activity.

LAND USE -- The assumption is made in the Reclamation Plan that the land will eventually be used as Open Space. This is an appealing use as it requires less reclamation cost for Lehigh while at the same time blending into the local landscape. However how this will be assured is unaddressed. Lehigh states that they reserve the right to mine on the land for other materials and even consider other usages so the Open Space designation is questionable. This designation must be certain, or else stated as only an attractive yearning.

AIR QUALITY -- As previously stated, the omission of the impact of the Cement Plant and offsite Diesel Truck traffic must be corrected. Possibly as a result of such emissions, Santa Clara County currently fails to meet the Clean Air Standard for fine Particulate Matter 2.5 (PM 2.5) and is designated a Nonattainment Area by the EPA.

PM 2.5 poses a very significant health risk as it can be lodged deeply into the developing lungs of young children playing in schoolyards or visiting Rancho San Antonio Park. It comes from combustion activity (cars, diesel trucks, cement kilns etc). As a consequence this Lehigh expansion will add, not reduce, PM 2.5 emissions.

Lehigh states the opposite by using a 10 year baseline and assuming dramatic reductions in wind erosion without explanation. This, plus the absence of a current baseline and the exclusion of 100,000 diesel truck trips, must be corrected and a new Air Quality Technical Analysis issued. In addition similar corrections must be made for all toxins, pollutants and Green House Gases not just PM 2.5.

However the current designation of Santa Clara County as a Nonattainment Area means the EMSA expansion can only be approved if it results in a reduction of PM 2.5 emissions. Any new project increasing PM 2.5 emissions cannot be approved, which is why Lehigh cannot afford to include the diesel trucks and the Cement Plant.

In addition, the EIR must include a current Health Risk Assessment (HRA) from the Bay Area Air Quality Management District. The current HRA is old (2008) and out of date. Since 2008, according to the Air District and Lehigh, Lehigh has discharged over a ton of Mercury on the local residents without any warning or alert. Lisa Jackson, the EPA Administrator, continues to warn that Mercury exposure reduces the intelligence of children, but the County and the Air District remain silent.

Multiple counterfeit HRAs from Lehigh have been displayed for the last 2 years on the County website which has been very misleading to the Public. A new HRA was promised by the County in 2010 and by the Air District on multiple occasions in the past 3 years. Could this be a deliberate delay in HRA issuance until one can be issued showing “All Clear”? Hopefully not, but regardless of the reason for the delay the CEQA process requires a current HRA.

GREENHOUSE GAS EMISSION -- Lehigh is the 2nd largest emitter of Greenhouse Gases in Santa Clara County. Cars represent only 36% of the CO2 emissions here with industry generating 43%. Santa Clara County is unique in this regard. However as SB375 is implemented the County will have to force reduction actions on residents to accommodate Lehigh’s load as Lehigh’s emissions are directly tied to their production.

To stay in production Lehigh must emit CO2 into the atmosphere as well as Methane and Nitrous Oxide. Methane is 21 times and Nitrous Oxide 310 times in impact as the same amount of Carbon Dioxide. In addition to these emissions, Lehigh has a minimum of 100,000 Diesel truck trips per year transporting product to/from the facility.

Each County will be given a target to meet and Santa Clara County will have to make reductions elsewhere to offset the Greenhouse Gas load generated by Lehigh over the next 20 years. According to the California Air Resources Board (CARB) the main focus will be on creating disincentives to drive. These will include new taxes and fees on cars and gasoline plus conges-tion pricing tolls and parking fees. If these fail, CARB suggests even incenting residents to leave.

We cannot shut down power plants, but the County Supervisors can limit expansion of Quarries and companion Cement Plants. The EIR must spell out the Greenhouse Gas emissions projected for the next 20 years due to Lehigh operations and detail the impact on residents. Instead the County is looking for residents to make significant sacrifices to save Lehigh.

ALTERNATIVES -- The obvious alternative to this Quarry expansion is not to do it. Lehigh possesses another quarry, with dramatically lower Mercury content limestone, in Redding, California. That limestone can be shipped here by rail economically and the Cement product shipped out on the empty rail cars eliminating Diesel Truck traffic onsite as well as offsite. Obviously there would still be residual onsite truck traffic to move the mine waste from the WMSA to refill the Pit but there still would be a major improvement in Air & Water Quality plus cost savings to Lehigh.

The cost savings could be significant. Last year Burlington Railroad moved each ton of rail freight 500 miles on a single gallon of diesel fuel, three times more fuel efficient than trucking, and dramatically more friendly to the environment. We need that here. Since there is an existing rail line operational today (shown on the next page) this alternative could be implemented quickly. Finally, if adopted it would singularly resolve the major CEQA issues identified in our opening comments. This alternative must be developed in depth so that it can be evaluated against the base plan and pursued in a deliberate manner if selected. It is not a “straw horse”.

Existing rail line, operational today

GROWTH INDUCING IMPACTS -- We must have Cement but it does not have to be produced locally. Cement is only 10% of the concrete poured today. It can be brought by rail economically and is transported today throughout California. Consequently, rather than increasing growth it would appear that Lehigh will reduce growth by making Santa Clara County less appealing to those concerned about their health and the environment. There must be independent studies done at Lehigh's expense to prove the opposite.

One such study should address the safety of the gas pipe line at the facility. It is unclear as to its usage. As a result of the recent gas line eruption in Cupertino and the San Bruno gas line explosion, the threat to public safety is obvious and increasing. As part of the EIR, there should be testing of the current line under variable load conditions.

The actual usage must be spelled out too. If there are no plans to utilize the line it should be removed to completely eliminate the risk to public safety. It is reasonable to assume that if current natural gas prices continue to fall Lehigh will switch from coal to natural gas to power the Kiln. In that case the line may have to be expanded over its entire length with the cost billed to the residents of Cupertino and the County. If Lehigh elects to preserve this gas line option they must commit now to accept all liabilities.

This also again reveals the inadequacy of any EIR that does not also address the Cement Plant. The ceremonial assumption that the two are separable is questioned by a large continuous flowing gas line under County Permit that is not considered in the EIR.

CUMULATIVE IMPACTS -- There are many cumulative impacts. The combined impact of air borne toxins falling from the sky on the ground and leaching into the water supply is obvious, but unaddressed. The combined impact of a Cement Plant coupled to a Quarry is obvious, but unaddressed. More subtle is the cumulative effect of 69 toxins being breathed simultaneously. That is not addressed here either but must be in the draft EIR.

FINANCIAL ASSURANCE -- This is a category not identified in the NOP, but is critical due to the EIR's dependence on completion of the submitted Reclamation Plan. The 20 year plan is massive in nature requiring the reclamation of over 800 acres of land after 4.7 million tons of limestone have been mined every year. The new EMSA, not in the current Reclamation Plan, already is receiving mine waste which will total 6 million tons. In addition 48 million tons of mine waste resting presently in the WSMA will be removed and re-deposited in the existing Quarry Pit. In total, over 60 million tons of mine waste will be dumped and then hidden by being covered over with 3 inches of topsoil mixed with mine waste overburden to restore the area.

The ownership of the quarry could change many times over before this massive Reclamation is accomplished. To insure that the reclamation is completed SMARA requires the owner to provide financial assurance. However this need be only for the area disturbed in a given year and can be in the form of a Letter of Credit or other guarantee from a 3rd party as was the case with Mortgages in the recent financial collapse. They are only as good as the 3rd party issuer is, not Lehigh.

Currently the Financial assurance required is only $13,438,624 since there is no reclamation underway and the amount of financial assurance is not the final total cost but covers only the cost for areas un-reclaimed to date plus those for the next year. Hence the major costs won't occur until 2015 when the EMSA reclamation starts. We estimate these total costs to be approximately $200,000,000.

This is based on reclamation costs experienced elsewhere for mines. In June of this year the EPA settled with Hecla Mining Company at a cost of $263 million to reclaim their Silver Valley Mine. Last December the EPA settled with Chevron for $500 million to reclaim their Molycorp Mine.

Hopefully this reclamation effort will not reach such heights. But to insure there is an existing owner with the financial capacity to do the reclamation, all Property Deeds for disturbed land must have County Liens placed on them until the Reclamation is completed. This is in addition to the Financial Assurance.

These Liens do not place any additional financial burden on Lehigh. They are similar to the Liens filed in Santa Clara County on residential homes which are removed when the Lien condition is satisfied. They incur no penalties, set no schedules or impede the reclamation process. They only insure that Lehigh or its successor will be there when the heavy reclamation spending starts.

They do not prevent Lehigh from selling the property but spell out to any buyer that they become responsible for the reclamation. They become a silent reminder to Lehigh or its successor that the owner of the land has made a commitment and must honor it.

In summary there are many issues to add to the EIR and many alternatives to consider. Thank you for this opportunity to comment and we hope this submission is taken into consideration in the development of the draft EIR.

Bill Almon

Bill Almon
Acting for the Members of QuarryNo

County of Santa Clara
Parks and Recreation Department
298 Garden Hill Drive
Los Gatos, California 95032-7669
(408) 355-2200 FAX 355-2290
Reservations (408) 355-2201
www.parkhere.org

MEMORANDUM

DATE: September 1, 2011

TO: Marina Rush, Planner
County Planning Office

FROM: Kimberly Brosseau, Park Planner
County Parks Department

SUBJECT: Notice of Preparation of an Environmental Impact Report for the Mining Reclamation Plan Amendment for Permanente Quarry (File No. 2250-13-66-10P (M1) and 10EIR (M1))

The County Parks Department has reviewed the Notice of Preparation (NOP) of an Environmental Impact Report (EIR) for the Permanente Quarry (modification to the existing May 2010 application) for a Mining Reclamation Plan Amendment for issues related to park use, trails, and implementation of the Countywide Trails Master Plan and submits the following comments.

The Trails Element of the Park and Recreation Chapter of the 1995-2010 County General Plan indicates a trail alignment nearby the subject parcel. Per the General Plan, Countywide Trail Route R1-A (*Juan Bautista de Anza NHT*) is located northeast of the project site. The *Santa Clara County Countywide Trails Master Plan Update*, which is an adopted element of the General Plan, designates the countywide trail as a "trail route within other public lands" for hiking, off-road cycling, and equestrian use. This trail route provides an important connection between the City of Cupertino and Rancho San Antonio County Park. The City of Cupertino's Final Stevens Creek Trail Feasibility Study also indicates this trail route as an important connection between Rancho San Antonio County Park and the City of Cupertino.

Visual Resources
The quarry is located adjacent to Rancho San Antonio County Park (Diocese Property). Since the County Parks Department is an adjacent property owner, modifications to the Reclamation Plan should take into account the potential aesthetic/visual impacts of the quarry and mitigation of views from these public parklands and trails.

The project is located in a Zoning District with a Design Review overlay for the Santa Clara Valley Viewshed (d1). It is expected that the applicant will construct as per the submitted plans and comply with design guidelines towards screening the project from public views.

An adequate vegetated buffer between the degraded hillsides and the adjacent County parkland and trails should be incorporated into the Reclamation Plan for the quarry.

Biological Resources
The EIR for the Reclamation Plan Amendment should discuss whether or not the project would have an impact on Permanente Creek and the California red-legged frog (CRLF) and California tiger salamander. The CRLF has mitigation sites on the adjacent Diocese property.

Surface Hydrology, Drainage and Water Quality
The EIR for the Reclamation Plan Amendment should evaluate potential hydrological impacts resulting from any grading, recontouring and seeding of the site. The EIR should also discuss if there are any proposed modifications to the riparian corridor or Permanente Creek. The Reclamation Plan Amendment should also take into account adequate erosion control measures and proposed grading and the potential impacts it may have to the adjacent County parkland and trails.

The Santa Clara Valley Water District (SCVWD) is currently preparing a Final EIR for the Permanente Creek Flood Protection Project, which includes a proposed flood detention basin facility to be constructed, operated and maintained at Rancho San Antonio County Park Diocese Property as the Project's Recommended Alternative. This Permanente Creek Quarry's Reclamation Plan should evaluate future hydrological modifications that may impact the District's Permanente Creek Flood Protection Project for portions of Permanente Creek through Rancho San Antonio County Park.

Noise Impacts
The EIR for the Reclamation Plan Amendment should evaluate any potential noise impacts to the adjacent Rancho San Antonio County Park and impacts that noise from the quarry may have on park users.

Air Quality
The EIR for the Reclamation Plan Amendment should evaluate any potential air quality impacts as a result of the quarry use and associated truck trips generated to and from the quarry on the adjacent Rancho San Antonio County Park and impacts that may have on park users.

The County Parks and Recreation Department appreciates the opportunity to provide comments on the NOP of an EIR for the Permanente Quarry Reclamation Plan Amendment. We look forward to reviewing the EIR once it becomes available. If you have any questions regarding this letter, please contact me at (408) 355-2230 or by email at: Kimberly.Brosseau@prk.sccgov.org.

Sincerely,

Kimberly Brosseau
Park Planner

cc: Jane Mark, Senior Planner
Don Rocha, Natural Resources Management Program Supervisor
Ana Ruiz, Midpeninsula Regional Open Space District

Santa Clara Valley Water District

5750 ALMADEN EXPWY
SAN JOSE, CA 95118-3686
TELEPHONE (408) 265-2600
FACSIMILE (408) 266-0271
www.valleywater.org
AN EQUAL OPPORTUNITY EMPLOYER

File: 2985
Permanente Creek

A-25

September 13, 2011

Ms. Marina Rush
County of Santa Clara
Planning Office
70 West Hedding, 7th Floor, East Wing
San Jose, CA 95110

Subject: Notice of Preparation - Comprehensive Reclamation Plan Amendment and Conditional Use Permit for Permanente Quarry

Dear Ms. Rush:

The Santa Clara Valley Water District is a special district with jurisdiction throughout Santa Clara County. The Water District acts as the county's groundwater management agency, principal water resources manager, flood protection agency and is the steward for its watersheds, streams and creeks, and underground aquifers.

We appreciate the opportunity to comment on the scope for the EIR for the Comprehensive Reclamation Plan Amendment for Permanente Quarry. This letter transmits comments that focus on the areas of interest and expertise of the Water District:

- The Water District is in the design phase for the Permanente Creek Flood Protection Project. The project will address erosion control, maintenance, structural repair, and habitat restoration in the Permanente Creek watershed. The Water District's Board of Directors certified a Final EIR for the project on June 17, 2010. The Draft EIR for the Reclamation Plan Amendment should consider the Water District's project in the consideration of cumulative impacts.

- Under existing conditions, a portion of the quarry lands drain to the quarry pit. The Permanente Creek Flood Protection Project is using this existing condition as a baseline to determine flood levels. As reclamation progresses, these lands may drain to Permanente Creek in the future. This additional runoff to the creek should be studied to determine if it may increase flooding downstream.

- The Draft EIR should analyze discharges to Permanente Creek as the quarry is reclaimed. These discharges may impact water quality, hydrology, and biological resources adjacent to and downstream of the quarry. The Water District is concerned about the long-term impacts to stream maintenance downstream from sediment originating on-site.

- The project should be analyzed to ensure that it is consistent with the Guidelines and Standards for Land Uses Near Streams prepared by the Santa Clara Valley Water Resources Protection Collaborative, which the County was a member of.

- The future reclamation of the site needs to include enforceable provisions with appropriate financial backing to ensure that adequate monitoring and restoration is completed after quarry operations end. Reclamation must ensure that the site does not contribute to water quality or sedimentation problems in Permanente Creek after the operator leaves.

- As part of the Permanente Creek Flood Protection Project, the Water District may consider additional options for providing flood protection in the Permanente Creek Watershed. This could include flood detention facilities in the upper watershed. We encourage the County and the project proponent to work with the Water District in providing flood benefits that are mutually beneficial.

District staff is available to meet and discuss the above areas of concern. Please provide a copy of the Draft EIR to the Water District for review when it becomes available. Please reference District File Number 2985 on further correspondence regarding this project. If you have any questions or need further information, you can reach me at (408) 265-2607, extension 3095.

Sincerely,

for Sue Tippets

Michael Martin
Environmental Planner
Community Projects Review Unit

cc: S. Tippets, C. Elias, S. Hosseini, U. Chatwani, File

2985_54469mm09-13

Date: September 26, 2011
To: County of Santa Clara Office of Planning and Development
70 W. Hedding St., East Wing, 7th Floor San Jose, CA 95110
Attn: Marina Rush
Re: NOP Public Comment for the Lehigh Permanente Quarry RPA EIR

A California Environmental Quality Act (CEQA) review 13-years after the illegal expansion of an open pit mining operation is confirmation of a lead agency's failure to lead. Before the Santa Clara County Board of Supervisors (Board) certifies the Lehigh Permanente Quarry (Lehigh/Quarry) Reclamation Plan Amendment (RPA) Environmental Impact Report (EIR) retroactively, they had better figure out whether or not their constituents are being poisoned by the Quarry's past and present illegal activities.

Illegal demolition: According to a public records request, 10 structures on an adjacent parcel formerly owned by Kaiser Metals Corp. and Kaiser Aluminum and Chemical Co. (Kaiser), were demolished without a Final Inspection; their permit status is "incomplete." **(Exhibit A)**

From left: Kaiser's World War II munitions and chemical factory; after the illegal demolitions, leaching mining waste was dumped 250 feet from the Permanente Creek without pollution control measures. Photo source: Google Earth 1948 and 2004

After dodging CEQA and the Surface Mining and Reclamation Act (SMARA), new owner Hanson Cement began illegally grading and covering up the Kaiser parcel, where hazardous materials had been used and stored since World War II, with tons of mining waste. The Quarry's name and operator were changed to Lehigh; the Kaiser address (23333 Stevens Creek Blvd.) was eliminated, and its hazardous materials legacy misleadingly changed to "the Quarry's historic 70-year old East Materials Storage Area (EMSA)." The simple truth is Lehigh's so-called "historic EMSA" wasn't included in the Quarry's 1985 Reclamation Plan because no mining activities were taking place on that parcel to be reclaimed.

Without an honest environmental review baseline, a potential health emergency will continue to be concealed from the public, and possibly a future housing development. Therefore, the current condition of the "EMSA" is an insufficient CEQA baseline. Fortunately, County regulations, when enforced, require "incomplete" demolition permits to be "renewed," which will ensure that the EIR baseline will not be based on a manipulation.

The County has been reckless in their lack of enforcement of CEQA and SMARA **(Exhibit B)**. Was it really just a coincidence that the County failed to perform their required annual SMARA inspection the exact same year 9 structures were illegal demolished in 1998? A full 2 years and 7 months elapsed before the County resumed inspections in 2000, filing what appears to be a fraudulent report with the State Office of Mine Reclamation (OMR): Building, Structure, Equipment Removal = Not Applicable. Number of Violations = Zero. **(Exhibit C)**

A concerned citizen alerted the County after the illegal hills of mining waste became visible from over a 1.5 miles away, and was completely ignored. But for the citizen's persistence in contacting the OMR (which led to the first SMARA Notice of Violation in 2006) this parcel's hazardous materials legacy would have been completely concealed from the public. As a matter of fact, the Quarry expansion continues on unabated and without financial penalty, courtesy of a backdoor "AGREEMENT" made in 2009 between the County and Lehigh (no public hearing). **(Exhibit D)**

"EMSA" mining waste: A view from Rancho San Antonio Park's PG&E Trail.

This "AGREEMENT" is the epitome of complicit negligence: Immediately adjacent to the mining waste is the Rancho San Antonio County Park and Open Space Preserve, which welcomes upwards of 500,000 visitors annually. In other words, unregulated particulate matter has been blowing into the lungs of unsuspecting hikers, joggers and equestrians for over a decade; the distance from the "EMSA" to the closest public access trail is just 550 ft.

Illegal discharges of pollutants: On August 24, 2011, the Sierra Club issued a Notice of Intent to Sue "Lehigh… for significant and ongoing violations of the Clean Water Act" **(Exhibit E)**: "Due to chronically elevated levels of selenium and toxicity immediately downstream from the Permanente facility, the EPA recently approved the listing of Permanente Creek as impaired for these pollutants… Pollutants illegally discharged by Lehigh into Permanente Creek also enter Santa Clara County's underground drinking water supply as they flow across the unconfined areas of the Santa Clara Subbasin aquifer. **The Santa Clara Subbasin aquifer is the primary reservoir of drinking water for San Jose and surrounding cities**." [Emphasis added]

Photograph 16 – Outfall to Permanente Creek, down-gradient of vault and Pond 17. **Photograph 18 – Close-up view of pollutant-laden discharge to Permanente Creek from Pond 17.**

Pollutant-laden discharges flow from Lehigh into the Permanente Creek. Source: U.S. Environmental Protection Agency (EPA) Inspection Report, Lehigh Southwest Cement Co., February 10, 2011

Lehigh readily admits they discharge water that contains – by their own measure – harmful levels of pollutants into the Permanente Creek, while also claiming to have a "valid permit" to do so. Not surprisingly, the Regional Water Quality Control Board (RWQCB) disagrees:

"Lehigh repeatedly asserts that the Facility's discharges of quarry bottom water, wash-down water, and dust suppression water are in compliance... The Industrial General Storm Water Permit specifically prohibits all three of these self-admitted discharges from the Lehigh facility. Lehigh is grossly mistaken in its assertion that the Facility is permitted to discharge these three types of non-storm water flows."

After the Board's careless disregard for the Quarry's past and present illegal activities, yet another "failure to exercise a sense of concern for future generations" (aka Love Canal) would be unthinkable. As required, the "owner or agent" of the illegal demolitions must be ordered by the County to "renew" their "incomplete" demolition permits. This might ensure a legitimate environmental review baseline, one that could determine whether or not the citizens of Santa Clara County are being poisoned by these unconscionable acts.

Questions

Before the Lehigh RPA EIR is certified, will the County:

1) Order Lehigh to amend their RPA to reflect the hazardous materials legacy of the "EMSA"?

2) Order Lehigh to stop their pollutant-laden discharges into the Permanente Creek?

3) Determine if there are poisonous substances (pollutants) contained in the "EMSA" mining waste?

4) Produce certified proof that the illegally demolished structures, and their hazardous chemical contents, were disposed of properly off-site rather than buried in the West Materials Storage Area (WMSA) under millions of tons of mining waste?

5) Order core sample testing of this entire 3510-acre Quarry to determine whether or not Santa Clara County's primary drinking water aquifer is being poisoned as a consequence of the documented illegal acts that have taken place since the 1985 Reclamation Plan baseline: illegal demolitions, illegal expansion, and illegal pollution discharges?

Prior to the illegal demolitions:

6) Did the owner or agent submit the required certification of filing to the County for the State Water Resources Control Board (SWRCB) Notice of Intent (NOI) to Comply with the Statewide General NPDES Permit for Storm Water Discharges Associated with Construction Activity?

7) Did the owner or agent submit to the County's Building Inspection Office a completed copy of the Bay Area Air Quality Management District's demolition notification form – <u>including a completed Asbestos Survey Report</u>?

8) Did the owner or agent contact PG&E regarding disconnection of utilities, and obtain a plumbing permit clearance signature from the County's Environmental Health Services for septic tank abandonment?

9) For environmental review purposes under the California Environmental Quality Act (CEQA), did the owner or agent obtain the required clearance signature from the County's Planning Office for the Identification of Structures for Potential Historic Significance prior to demolishing this World War II munitions factory and chemical laboratory?

10) Did the owner or agent complete Part II of the Identification of Structures for Potential Historic Significance form as required for structures older than 50 years, and submit photographs of each elevation of the structures?

Sincerely,

Susan Sievert
A resident of Santa Clara County, California

Cc: Lisa P. Jackson, U.S. EPA Administrator

Exhibit A: Public Records Request for Permanente Quarry Demolition Permits, February 10, 2011

Exhibit B: Office of Mine Reclamation 30-day Pending Removal from the AB 3098 List, Reclamation Plan Non-compliance, Permanente Quarry, Mine ID #91-43-0004, July 20, 2011

Exhibit C: Santa Clara County's Annual Surface Mining and Reclamation Act Inspection Report for the Permanente Quarry, covering the years 1998, 1999, 2000

Exhibit D: 2009 "Agreement" between Santa Clara County and Lehigh Southwest Cement Company

Exhibit E: Sierra Club's Notice of Intent to Sue for Violations of the Clean Water Act at Lehigh Southwest Cement Company's Permanente Plant in Santa Clara County, California, August 24, 2011

County of Santa Clara
Department of Planning and Development
County Government Center, East Wing
70 West Hedding Street, 7th Floor
San Jose, California 95110

	Administration	Development Services	Fire Marshal	Planning
Phone:	(408) 299-6740	(408) 299-5700	(408) 299-5760	(408) 299-5770
Fax:	(408) 299-6757	(408) 279-8537	(408) 287-9308	(408) 288-9198

February 10, 2011

RE: **Public records request for demolition permit for:**

Site Address: 0 Stevens Creek Blvd./24001 Stevens Creek Blvd., Cupertino

Assessor Parcel No.: 351-10-005

Present Jurisdiction: County

Bldg. Permit #	Date	Description	Status
19658	06/25/74	Demolish	Incomplete
76991	02/27/98	Demolish Storage Bldg.	Incomplete
76992	02/27/98	Demolish Office Bldg.	Incomplete
76993	02/27/98	Demolish Office Bldg.	Incomplete
76994	02/27/98	Demolish Office Bldg.	Incomplete
76995	02/27/98	Demolish Storage Bldg.	Incomplete
76996	02/27/98	Demolish Storage Bldg.	Incomplete
76997	02/27/98	Demolish Office Bldg.	Incomplete
76998	02/27/98	Demolish Office Bldg.	Incomplete
76999	02/27/98	Demolish Office Bldg.	Incomplete

Respectfully,

Michael L. Harrison

Michael L. Harrison,
Acting Building Official

Attachment

*Please see other side

COMPLETED:	The project has received a final inspection by office.
INCOMPLETE:	The project has not received a final inspection by this office. If the last inspection was made more than six months, ago, the building permit will have to be renewed by the owner or agent.
JURISDICTION:	If the parcel was annexed to a city, information regarding construction will have to be obtained from the noted city.
NO PERMIT:	A building permit has not been issued by this office, for work at this address. In order to legalize construction, the owner or his agent has to apply for a building permit. For more information, please ask for a building permit information handout.
PRIOR TO: 1947	Buildings constructed prior to 1947 were not required to have a permit.

NATURAL RESOURCES AGENCY EDMUND G. BROWN, JR., GOVERNOR

DEPARTMENT OF CONSERVATION

Managing California's Working Lands

OFFICE OF MINE RECLAMATION

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

PHONE 916 / 323-9198 • FAX 916 / 445-6066 • TDD 916 / 324-2555 • WEB SITE conservation.ca.gov

July 20, 2011

Via Email: Scott.Renfrew@LehighHanson.com

Via Certified Mail: 7010 2780 0000 4767 7882

Mr. Scott Renfrew
Designated Agent
Lehigh Southwest Cement Company
24001 Stevens Creek Boulevard
Cupertino, CA 95014

Dear Mr. Renfrew:

30-DAY PENDING REMOVAL FROM THE AB 3098 LIST, RECLAMATION PLAN NON-COMPLIANCE, PERMANENTE QUARRY, MINE ID #91-43-0004

The purpose of this letter is to bring to your attention a matter of AB 3098 list eligibility pursuant to the Surface Mining and Reclamation Act of 1975 (SMARA) Section 2717(b) regarding the Permanente Quarry (Quarry). The Quarry is actively operated by the Lehigh Southwest Cement Company. The County of Santa Clara (County) is the SMARA lead agency for this surface mining operation.

On October 10, 2006, the County issued the Quarry an Order to Comply (OTC)/Notice of Violation (NOV) requiring the operator to prepare an amended reclamation plan and submit it for approval in accordance with a Compliance Schedule. Violations identified in the order included instability of the pit slopes and surface mining operations occurring outside the approved reclamation boundary. Based on that schedule, the Quarry should have come into compliance by December 2007. Subsequently, the schedule was extended for an additional two years to allow for completion of geotechnical investigations.

While still under the October 10, 2006 Order to Comply, the operator expanded operations outside the approved reclamation plan boundary and began dumping materials in the East Materials Storage Area (EMSA). The County issued a NOV on June 20, 2008 to the Quarry operator for the illegal stockpiling material outside the approved reclamation plan boundary.

In a status letter to the State Mining & Geology Board (SMGB), dated June 9, 2011, the County indicated that the CEQA review of the amended reclamation plan is underway.

The current target date for achieving full compliance with SMARA at the Quarry is June 2012. The letter states that this is the earliest date in which the Final Environmental Impact Report (FEIR) is expected to be certified, depending on the volume of public comments received by the County. This "best case" schedule is approximately five years longer than the OTC/NOV allowed for achieving compliance, and well after the original violations were brought to the County's attention.

Public Resources Code (PRC) Section 2770(a) provides that no person shall conduct surface mining operations unless a permit is obtained from, and a reclamation plan and financial assurances for reclamation have been submitted to, and approved by, the lead agency for the operation. Surface mining operations must be conducted in accordance with the approved reclamation plan. Except as provided under PRC Section 2714, any surface mining operations conducted without an approved reclamation plan is a violation of SMARA.

We understand that the County is reviewing two reclamation plans for the Quarry, one for the EMSA, and a more comprehensive reclamation plan. These plans cover two parts of the same operation. However, pursuant to California Code of Regulations (CCR) Section 3502(d) a surface mining operation as defined in PRC Section 2735 and Title 14 CCR Section 3501, shall have no more than one approved reclamation plan applicable to the operation.

Further, CCR Section 3502(g) provides that, should an expansion of an operation into an area not covered by an approved reclamation plan be determined by the lead agency to be a substantial deviation, an amended reclamation plan shall be prepared that ensures adequate reclamation for the surface mining operation. The EMSA should not be treated as a separate reclamation amendment, but included in a single amended reclamation plan which includes all areas disturbed by surface mining operations.

The Department of Conservation's Office of Mine Reclamation (OMR) periodically publishes a list of mining operations that meet the requirements of PRC Section 2717(b). This list is generally referred to as the AB 3098 list, in reference to the 1992 legislation that established it. The Public Contract Code prohibits state agency purchases of mined materials produced by mining operations that are not included on the AB 3098 list. Sections 10295.5 and 20676 of these statutes also prohibit the sale of such materials to local government agencies. The requirements for inclusion on the AB 3098 list include compliance with the financial assurance requirements developed pursuant to PRC Section 2773.1.

This letter serves as official notice that, if the violations noted in the OTC extend beyond 30 days after the date of this notice, the Quarry will be removed from the AB 3098 List. The appropriate steps that the Lehigh Southwest Cement Company must take to resolve this violation is to:

1. Prepare and submit to the lead agency for approval, a reclamation plan amendment that encompasses all the area disturbed by surface mining operations, including those areas conducted outside the approved reclamation plan boundary. The Quarry will not be list eligible until the proposed reclamation plan amendment has been approved by the County.

2. Submit to the lead agency for approval, a revised financial assurance cost estimate (FACE) that includes the cost of reclaiming all the area disturbed by surface mining operations conducted outside the reclamation plan boundary. The Quarry will not be list eligible until the revised financial assurance has been approved by the County.

Proof of the adequacy of the FACE must be submitted to OMR by the lead agency, not by the mine operator. The submission must be in accordance with the SMGB financial assurance guidelines.

Reinstatement to the AB 3098 list requires an approved reclamation plan and financial assurances that cover the affected surface mining operation pursuant to PRC section 10295.5 (a). Prior to reinstatement, the Department will need to verify that the surface mining operations being conducted at the Quarry are covered by an approved reclamation plan and adequate financial assurances.

In summary, the Permanente Quarry, CA Mine ID #91-43-0004, is scheduled to be removed from AB 3098 list 30 days after the date of this notice unless the OTC violations are corrected.

If you have any questions regarding this letter, please contact Bret Koehler at (916) 323-9198.

Sincerely,

Kenneth E. Trott, Manager
Reporting and Compliance Unit

cc: Marvin Howell, Lehigh Southwest Cement Company
Gary Rudholm, County of Santa Clara
Stephen Testa, State Mining & Geology Board

State of California
DEPARTMENT OF CONSERVATION
OFFICE OF MINE RECLAMATION
MRRC-1 Page 2 of 2 (Rev. 04/97)

SURFACE MINING INSPECTION REPORT

VI. Is the operation in compliance with provisions of the approved Reclamation Plan and Mining Permit with respect to:	OK	VN	NI	NA
Wildlife Habitat	✓			
Revegetation	✓			
Agricultural Land				✓
Stream Protection	✓			
Tailings and Mine Waste Management	✓			
Building, Structure, and Equipment Removal				✓
Topsoil Salvage, Maintenance, and Redistribution	✓			
Backfilling, Regrading, Slope Stability, and Recontouring	✓			
Drainage, Diversion Structures, Waterways, and Erosion	✓			
~~Other (list or explain below)~~				

CA Mine ID #: 91-43-0004

Weather Code(s): CR

Duration of Inspection: 2.0 hr.

Approximate Disturbed Acreage: 200

Status of Operation Code(s): A

Status of Reclamation Code(s): R

VII. Comments/Description of Violation(s) and Corrective Measure(s) Required [NOTE: please indicate if you have attached notice(s) of violation(s) and correction order(s), in lieu of description on this form]:

The previous inspection of the site took place on Nov. 20, 1997. This inspection report is to cover the calendar years of 1998, 1999 and 2000.

VIII. Number of Violations:	Inspector's Signature:	Date Signed:
0	Gary Rudholm	7-27-2000

DISTRIBUTION: White–Operator Green–State (by Lead Agency) Pink–Lead Agency Goldenrod–State (by Operator) Canary–BLM or USFS (if required)

97 90880

AGREEMENT

THIS AGREEMENT is made this 14th day of April, 2009, by and between the County of Santa Clara, a political subdivision of the State of California (hereinafter referred to as the "County") and the undersigned duly authorized representatives of Lehigh Southwest Cement Company and Hanson Permanente Cement, Inc. (hereinafter referred to as "Company") regarding the Permanente Quarry.

RECITALS

A. The Company owns and operates the Permanente Quarry ("Quarry"), which is located within the jurisdiction of the County.

B. In March 1985, the County approved a Reclamation Plan for the Quarry ("Reclamation Plan").

C. In October 2006, the County issued an Order to Comply/Notice of Violation ("2006 Order") pursuant to the Surface Mining and Reclamation Act of 1975 ("SMARA"), Pub. Res. Code § 2710 *et seq.*,to the Quarry owner/operator requiring the processing of an amendment to the Reclamation Plan to encompass mining-related disturbance outside of the approved reclamation plan (except for the cement plant), and set forth a compliance schedule for the amendment. A copy of the 2006 Order is attached as Exhibit A to this Agreement.

D. In May 2008, the County issued a modification to the compliance schedule included in the 2006 Order ("2008 Schedule Modification"). A copy of the 2008 Schedule Modification is attached as Exhibit B to this Agreement. The 2008 Schedule Modification called for the Company to file a reclamation plan amendment by February 2010, with final County action on the amendment to take place in 2011.

E. In June 2008, the County issued a Notice of Violation ("2008 NOV") related to the placement of overburden material in an area known as the East Materials Storage Area ("EMSA"). A copy of the 2008 NOV is attached as Exhibit C to this Agreement. Among other things, the 2008 NOV instructed the Company to cease depositing material in the EMSA.

F. Due to operational needs at the Quarry, the Company desires to continue using the EMSA. The County is amenable to allowing the Company to use the EMSA pending final action on a reclamation plan amendment, provided the Company files and diligently pursues a reclamation plan amendment for the EMSA. Accordingly, the County and the Company agree as follows:

File 2250--09P

AGREEMENT

1. With respect to the Reclamation Plan amendment for the EMSA ("EMSA Amendment"), the parties agree as follows:

A. Not later than April 20, 2009, the Company shall submit to the County an application for the EMSA Amendment. Upon a timely request by Company to meet with County staff prior to April 20, 2009 to discuss the requirements for the application, County representatives will make themselves available for such a meeting.

B. Within thirty (30) days of the Company's submittal, the County shall make a completeness/incompleteness determination specifying in writing the information, if any, needed to make the application complete. The Parties intend to meet during the first week of May to facilitate the County's completeness review.

C. If the County deems the application incomplete, the Company shall respond to the County's incompleteness determination by providing a resubmittal within thirty (30) days after the incompleteness determination.

D. Within thirty (30) days of the Company's resubmittal, the County shall review the Company's resubmittal and determine the completeness/incompleteness of the application.

E. In the event the County still deems the application incomplete, the Company shall be required to continue working in good faith with the County to provide the additional material within thirty (30) day resubmittal/review cycles as outlined above. However, if the County determines that the Company has not produced a complete application by July 20, 2009, the County shall assess, starting as of June 20, 2009, a penalty of $250/day, which daily penalty shall be doubled every thirty days thereafter, until such time as a complete application is submitted to the County and deemed complete by the County. The penalty shall cease when the County deems the application complete.

2. Upon execution of this Agreement, the Company may recommence use of the EMSA as depicted on Exhibits D and E, subject to the stipulations and understandings set forth in this Agreement, pending final action by the County on the EMSA Amendment, and the language in the 2008 NOV instructing the Company to cease depositing material in the EMSA is modified to conform to this Agreement.

3. Nothing in this Agreement shall be interpreted in a manner that indicates that the County will approve the EMSA Amendment or will allow the Company to continue using the EMSA if the EMSA Amendment application is denied or if the Company withdraws the EMSA Amendment application prior to the County taking final action on the application. Nor shall anything in this Agreement be interpreted as a waiver of the County's legal authority, including but not limited to its enforcement authority under SMARA.

4. Due to timing requirements for geotechnical studies, the County agrees to amend and reissue the compliance schedule issued with the 2006 Order and revised pursuant to the 2008 Schedule Modification to extend the date for submission of the Quarry's overall Reclamation Plan amendment application from February 2010 to May 2010.

5. This Agreement is binding on the Company's successors in interest with respect to the Quarry property and operations.

IN WITNESS WHEREOF, the parties have executed this Agreement, in counterpart, on the day and year first hereinabove written.

LEHIGH SOUTHWEST CEMENT COMPANY,

By: ______________________

(SEAL)
ATTEST: ______________________

APPROVED AS TO FORM:

____
Mark D. Harrison
Counsel for Company

COUNTY OF SANTA CLARA,
A political subdivision of the State of California

By: Jody Hall Esser
Jody Hall Esser
Director, Department of Planning & Development

APPROVED AS TO FORM AND LEGALITY:

Lizanne Reynolds
County Counsel

Reed Zars
Attorney at Law
910 Kearney Street, Laramie, WY 82070
307-745-7979

August 24, 2011

VIA CERTIFIED MAIL: RETURN RECEIPT REQUESTED

Mr. Henrik Wesseling, Plant Manager
Lehigh Southwest Cement Company
Hanson Permanente Cement, Inc.
Permanente Plant
24001 Stevens Creek Boulevard
Cupertino, CA 95014

Dr. Bernd Scheifele, Chairman
HeidelbergCement
Berliner Strasse 6
69120 Heidelberg
Germany

RE: Notice of Intent to Sue for Violations of the Clean Water Act at Lehigh Southwest Cement Company's Permanente Plant in Santa Clara County, California.

Dear Mr. Wesseling and Dr. Scheifele,

We are writing on behalf of Sierra Club to notify you of its intent to file suit against Lehigh Southwest Cement Company, Hanson Permanente Cement, Inc., Lehigh Hanson, Inc., and HeidelbergCement Group ("Lehigh") to enjoin and penalize significant and ongoing violations of the Clean Water Act at your Permanente Quarry and Cement Plant in Santa Clara County, California. Lehigh is liable for the continuous, unpermitted discharge into Permanente Creek of millions of gallons of polluted quarry water, containing elevated levels of selenium and other toxic and conventional pollutants, for at least the last five years. Lehigh is also liable for the continuous, unpermitted discharge of pollutants into Permanente Creek from tons of mine tailings and waste that have been dumped into Permanente Creek. These wastes act similar to coffee grounds, clogging Permanente Creek and continuously discharging a brew of harmful chemicals such as selenium and other toxic and conventional pollutants into its waters.

Both of these types of continuous, unpermitted discharges have caused and/or contributed to significant exceedences of water quality standards for selenium and toxicity in Permanente Creek, have caused and/or contributed to Permanente Creek's state and federal listing as an impaired water body due to the presence of such pollutants, and have substantially diminished the creek's ability to sustain aquatic life including but not limited to steelhead trout and the California red-legged frog, both of which are federally listed as threatened species.

Pollutants illegally discharged by Lehigh into Permanente Creek also enter Santa Clara County's underground drinking water supply as they flow across the unconfined areas of the Santa Clara Subbasin aquifer. The Santa Clara Subbasin aquifer is the primary reservoir of drinking water for San Jose and surrounding cities.

The Clean Water Act at 33 U.S.C. § 1365(a)(1), authorizes citizens to bring suit to enjoin violations of an effluent standard or limitation and to seek civil penalties for such violations. The definition of effluent standard or limitation includes the discharge of pollutants into waters of the United States without a permit. Committee to Save Mokelumne River v. East Bay Utility Dist., 1993 U.S. Dist. LEXIS 8364, 11, n. 7 (E.D. Cal. 1993); aff'd, 13 F.3d 305, 309 (9th Cir. 1993), cert. denied, 115 S. Ct. 198 (1994). Violators of the Act are also subject to an assessment of civil penalties of up to $32,500 per day per violation for all violations occurring through January 12, 2009, and up to $37,500 per day per violation for all violations occurring after January 12, 2009, for each violation, pursuant to Sections 309(d) and 505(a) of the Act. 33 U.S.C. §§ 1319(d), 1365(a) and 40 C.F.R. §§ 19.1 - 19.4.

To the extent required by the Clean Water Act at 33 U.S.C. § 1365(a)(1), we are writing to notify you that Sierra Club intends to file suit in the applicable federal district court anytime 60 days after the postmark date of this letter to enjoin and penalize the violations described below.

I. Background

Kaiser Cement Company opened the main Permanente quarry and original cement plant in 1939. Hanson Corporation purchased the quarry and cement plant from Kaiser in 1986. Lehigh Southwest Cement Company is the operator of the facility. Today Lehigh claims the quarry and plant provide over 50 percent of the concrete used in the Bay Area.

Permanente Creek runs from its headwaters in the Coast Range east through the middle of the quarry property, then north through the cities of Los Altos and Mountain View before draining into the San Francisco Bay.

From http://www.lehighpermanente.com/#/virtual-tour/4537662984.

II. The Violations

A. Unpermitted Quarry Discharges

According to Lehigh's own statements, the company has been discharging without a proper permit, and continues to discharge without a proper permit, pollutants generated by its quarry mining operations directly into Permanente Creek. Permanente Creek is a water of the United States. In particular, Lehigh's quarry mining operations have exposed pollutants to both rain and ground water. As these waters flow over and through Lehigh's disturbed soils and rock, pollutants such as selenium, arsenic, molybdenum, nickel and manganese, residual blasting agent (ANFO), and other toxic elements and compounds, are picked up by the water and are collected at the bottom of the quarry pit. Lehigh then pumps the contaminated pit water on a regular basis from the quarry pit through a pipe into a waste pond (Pond 4) and thence through a pipe into Permanente Creek. Permanente Creek flows into the San Francisco Bay. Lehigh employs no pollution control measures to reduce or eliminate selenium and other toxic substances that are dissolved and suspended in its wastewater. As Lehigh explained to the Regional Water Quality Control Board, San Francisco Bay Region ("Water Board"):

> [T]he quarry dewatering process routes water to Pond 4, where it then discharges to Permanente Creek, almost continuously or regularly depending on the time of year, the volume of storm water and groundwater that collects in the quarry bottom. This regular dewatering process is interrupted only when regular maintenance of the pumping system or other aspects of the storm water management system require maintenance.

Lehigh Response to the Water Board, December 13, 2010, at page 6, attached hereto as **Exhibit A**. A map showing the location of the quarry pit, Pond 4, and the pipe that discharges selenium and other toxic pollutants from the pit and Pond 4 is attached hereto as **Exhibit B**.

According to Lehigh in that same response, "[t]he average *daily flow* into Pond 4 can range from 250,000 to 2,500,000 gallons." **Exhibit A** (emphasis added).

Not only that, Lehigh also admits that the wastewater it has been discharging into Permanente Creek, and that it continues to discharge into Permanente Creek, is contaminated with selenium[1] in concentrations that greatly exceed water quality standards. Again, according to Lehigh:

> The results of the metals analyses indicate that water being collected in the quarry may contain concentrations of selenium that exceed water quality standards, and, when discharged through the quarry dewatering system pursuant to the SWPPP [Storm Water Pollution Prevention Plan], could be contributing to exceedances of the water quality standards for selenium in Permanente Creek.

Exhibit C, Report of Potential Exceedance of Water Quality Standards, Geosyntec Consultants, March 17, 2010, p. 8.

Lehigh's qualification that the water it is discharging into Permanente Creek "could" contain concentrations of selenium above water quality standards is unnecessary. Although not a necessary element to establish liability under the Clean Water Act, Lehigh's own sampling evidence shows that selenium concentrations in its wastewater *are* in excess of water quality standards.

The water quality standards applicable to Permanente Creek are set forth in the 2007 San Francisco Bay Basin Water Quality Control Plan ("Basin Plan") and the California Toxics Rule at 40 C.F.R. §131.38. Both the Basin Plan and the California Toxics Rule establish a chronic total selenium standard of 5.0 micrograms per liter in fresh water. **Exhibit D**. Due to chronically elevated levels of selenium and toxicity immediately downstream from the Permanente facility, EPA recently approve the listing of Permanente Creek as impaired for these pollutants. **Exhibit E**, EPA Approval Letter, November 12, 2010.

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[1] "[S]elenium is a naturally occurring element, common in the environment. It is problematic only in high concentrations, but at certain levels has toxic effects. Selenium impacts the reproductive cycle of many aquatic species, can impair the development and survival of fish, and can even damage gills or other organs of aquatic organisms subjected to prolonged exposure. It can also be toxic to humans, causing kidney and liver damage, and damage to the nervous and circulatory systems." *Ohio Valley Envtl. Coalition, Inc. v. Hobet Mining, LLC,* 723 F. Supp. 2d 886, 900 (S.D. W.Va. 2010).

Water quality testing performed by Lehigh in January of 2010 found that the concentration of dissolved selenium in Pond 4 was 82 micrograms per liter, well over ten times the applicable 5.0 micrograms per liter water quality standard. (Had Lehigh properly analyzed for total selenium rather than just the dissolved component, this value likely would have been higher.) As explained above, Lehigh discharges the contaminated water in Pond 4 directly into Permanente Creek without employing any measures to reduce selenium concentrations. **Exhibit C**, Report of Potential Exceedance, Table 2-1 and Appendix A, page 4 of 16.

Lehigh has an Industrial General Storm Water Permit issued by the Water Board, but that permit, as its name indicates, only applies during specified storm events and not to the on-going, non-storm water discharges from Pond 4 described here. The Water Board emphatically confirmed this fact on February 18, 2011:

> Lehigh repeatedly asserts that the Facility's discharges of quarry bottom water, wash-down water, and dust suppression water are in compliance with the Industrial General Storm Water Permit. The Industrial General Storm Water Permit specifically prohibits all three of these self-admitted discharges from the Lehigh facility. *Lehigh is grossly mistaken in its assertion that the Facility is permitted to discharge these three types of non-storm water flows*.

Exhibit F, Water Board staff review and response to Lehigh's letter of December 13, 2010, in response to our "13267" letter of November 29, 2010, p. 1 (emphasis added).

Because Lehigh pumps the water from its quarry pit into Pond 4 on a continuous or regular basis, and because Pond 4 is the functional equivalent of a full bathtub, the continuous pumping of quarry water contaminated with selenium and other toxic substances inexorably results in the continuous discharge of pollutants through a pipe directly into Permanente Creek. Lehigh has no permit authorizing this continuous discharge. Therefore, Lehigh has violated the Act every day, for each pollutant, for at least the last five years when it has actively pumped and discharged water-borne selenium and other toxic substances from its quarry to Pond 4 and thence to Permanente Creek without a permit.

B. <u>Unpermitted Stream Fill Discharges</u>

According to Lehigh's own reports, Permanente Creek has been used, and continues to be used, as a disposal area for quarry mining wastes. Mine tailings, overburden and other wastes have been dumped, and continue to be dumped into Permanente Creek throughout the stream's path within Lehigh's property. Lehigh's March 11, 2011 "Permanente Creek Long-Term Restoration Plan" documents many of these stream disposal sites. An annotated stream profile diagram, taken from Figure 2-5 in Lehigh's Restoration Plan and attached hereto as **Exhibit G**, shows the location of some of the more notorious mine tailing and overburden waste disposal sites at Lehigh's quarry along the various sections of Permanente Creek.

Mining wastes have been dumped into Permanente Creek by bulldozers, dump trucks and other mining equipment, with the assistance of gravity. The disposal sites in Permanente Creek include, but are not limited to, those shown on **Exhibit G**, attached hereto. The disposal sites continuously discharge, release and otherwise add their toxins into the creek's waters much like coffee grounds in a percolator. As the waters of Permanente Creek flow over and through the mining wastes dumped into the creek, pollutants such as selenium, arsenic, molybdenum, nickel, manganese, residual blasting agent (ANFO), and other toxic elements and compounds, are dissolved into and suspended in the water. These added pollutants flow downstream through Lehigh's property, through public parks and neighborhoods, and finally into San Francisco Bay. The mine tailings and other rock and sediment wastes that physically remain in the creek bed and adjacent wetlands, or that are carried to various downstream locations during higher flow events, are also unpermitted pollutants that exist in the water column, banks and wetlands of Permanente Creek.

According to Lehigh's May 2010 Hydrologic Investigation, appended to its Reclamation Plan Amendment submitted to Santa Clara County on May 21, 2010, the average concentration of dissolved pollutants in Permanente Creek increases significantly as the creek flows through Lehigh's mining wastes. **Exhibit H**. For example, the water in Permanente Creek downstream of most of Lehigh's pollutant discharges at monitoring location SW-2 contains from three to over 100 times the dissolved concentrations of arsenic, selenium, nickel, manganese and molybdenum compared to the water upstream of most of Lehigh's discharges at monitoring location SW-1. See **Exhibit H**, Figure 6.2 (monitoring locations); Table 6.6 (average pollutant values for monitoring locations); and Figures 6.13 and 6.14 (bar charts illustrating significant increase in pollution from SW-1 to SW-2).

Lehigh has no permit authorizing the continuous discharge of dissolved and suspended pollutants from mine wastes dumped into Permanente Creek described above. Lehigh has no permit for the mine wastes that continuously clog the bed, banks and wetlands of Permanente Creek described above. Therefore Lehigh has violated the Act every day at each disposal site for at least the last five years as a result of such unpermitted discharges.

III. Offer to review information.

To the extent you have evidence that shows, contrary to the allegations in this letter, that Lehigh is in full compliance with all applicable requirements we urge you to provide it to us so that we may potentially avoid, or at least limit, litigation on these issues.

IV. Conclusion

Lehigh has been operating, and continues to operate the Permanente facility in violation of the Clean Water Act. We will seek an injunction to end the illegal, unpermitted discharges alleged in this letter, to restore the hydrologic and aquatic integrity of Permanente Creek, and to recover, on behalf of the United States, the maximum civil penalty for Lehigh's Clean Water Act violations for at least the last five years, as allowed by the applicable statute of limitations.

The address of Sierra Club is 85 Second Street, Second Floor, San Francisco, CA 94105. Sierra Club has individual members who have been, and continue to be, injured by the excessive and unlawful discharges from Lehigh's Permanente facility into Permanente Creek described above. Those injuries are fairly traceable to Lehigh's unlawful discharges, and can be redressed, at least in part, through the cessation of such discharges. If you have any questions regarding the allegations in this notice letter, believe any of the foregoing information to be in error, wish to discuss the exchange of information consistent with the suggestion above, or would otherwise like to discuss a settlement of this matter prior to the initiation of litigation, please contact the attorneys below.

Yours sincerely,

Reed Zars

Reed Zars
Attorney at Law
910 Kearney Street
Laramie, WY 82070
307-745-7979

George Hays By RZ

George Hays
Attorney at Law
236 West Portal Avenue, #110
San Francisco, CA 94127
415-566-5414

pc: by certified mail:

Lisa Jackson, Administrator
U.S. Environmental Protection Agency
1200 Pennsylvania Avenue, N.W.
Washington, DC 20460

Dorothy Rice, Executive Director
State Water Resources Control Board
P.O. Box 100
Sacramento, CA 95812-0100

Eric Holder, U.S. Attorney General
U.S. Department of Justice
950 Pennsylvania Avenue, N.W.
Washington, DC 20530-0001

Jared Blumenfeld, Regional Administrator
U.S. EPA – Region 9
75 Hawthorne Street
San Francisco, CA 94105

Bruce Wolfe, Executive Officer
San Francisco Bay
Regional Water Quality Control Board
1515 Clay St., Suite 1400
Oakland, CA 94612

Registered Agent
Lehigh Southwest Cement Company
Corporation Service Company
2730 Gateway Oaks Dr., Suite 100
Sacramento, CA 95833

pc: by regular mail

Santa Clara County Board of Supervisors
70 West Hedding Street
San Jose, CA 95110

Santa Clara Valley Water District
5750 Almaden Expressway
San Jose, CA 95118

Stevens & Permanente Creeks Watershed Council
2353 Venndale Avenue
San Jose, CA 95124

Midpeninsula Regional Open Space District
330 Distel Circle
Los Altos, CA 94022-1404

Department of Conservation
Office of Mine Reclamation
801 K Street, MS 09-06
Sacramento, CA 95814-3529

Exhibits Provided in Enclosed CD

Exhibit A: Lehigh Response to the San Francisco Bay Regional Water Quality Control Board, December 13, 2010, page 6.

Exhibit B: Map showing the location of the quarry pit, Pond 4, and the pipe that discharges selenium and other toxic pollutants from the pit and Pond 4.

Exhibit C: Report of Potential Exceedance of Water Quality Standards, Geosyntec Consultants, March 17, 2010, p. 8.

Exhibit D: 2007 San Francisco Bay Basin Water Quality Control Plan ("Basin Plan") excerpts, and the California Toxics Rule at 40 C.F.R. §131.38.

Exhibit E: EPA approval letter listing Permanente Creek as impaired for selenium and toxicity, November 12, 2010.

Exhibit F: Water Board staff review and response to Lehigh's letter of December 13, 2010, in response to our "13267" letter of November 29, 2010, p. 1.

Exhibit G: Permanente Creek stream profile diagram showing examples of mine waste dump sites that continuously discharge pollutants into the creek.

Exhibit H: Hydrologic Investigation, Attachment F to Lehigh Reclamation Plan Amendment submitted to Santa Clara County on May 21, 2010, excerpts including Figure 6.2, Table 6.6, and Figures 6.13 and 6.14.

EIR SCOPING MEETING
LEHIGH-HANSON PERMANENTE QUARRY – COMPREHENSIVE RPA
Public Comments Summary
March 30, 2011

#	Speaker Name	Organization	Comments	
1	Karen Del Compare	Resident	Offsite truck traffic – intersection of Stevens Creek/Foothill Expwy. Noise impacts – trucks, quarry operations Alternative studied should include "no project" and "no new quarry" project Mercury pollution due to limestone rich in mercury. Creek impacts due to bridge. Mine safety, concerned with history of various violations Please see letter from OMR that says cement plant should be part of mine.	B-1
2	David Cook	SCV Audobon Soc	Project description should include description of existing environmental setting and should include description or list of pollutants and list of violations.	B-2
3	Anne Pflager	Resident	Current truck traffic and air quality is not reflective of peak periods. Need to project and analyze future peak volume and production rate increases. Water quality impacts and discharges in to Permanente Creek. Concerned with holding ponds, which discharge in to creek, and mercury levels in water. Visual impacts resulting from new quarry project. Blasting impacts.	B-3
4	Phil Pflager	Resident	Visual impacts concerned with current and future views. Noise impacts. Air quality impacts. Pollution from mine waste (overburden). Water impacts from discharging in to the creek from ponds. If economy comes back and demand for cement increases, impacts from project will be greater. Project for future peak.	B-4
5	Cathy Helgerson	Resident Citizens Against Pollution	Pollution from aluminum plant should be studied, buried materials in soils, site should be a superfund site. No project alternative should include no quarry expansion. Fault lines on site.	B-5

			Concerned with tree removal and vegetation after reclamation is inadequate. Concerned with mercury pollution. Concerned project will pollute wells in vicinity of project.	B-5 cont.
6	Bill Almon	Resident Quarry No	Visual impacts – West Materials Storage Area not planted and should be considered a violation. Biological resources and impacts to wildlife (native plants, kite, CRLF, etc.) Geology – faults and slope instability, mining activity that causes erosion Pit water is dumped into holding ponds that discharge in to Permanente Creek Noise and vibration impacts from quarry activity, especially blasting. Air quality – need to update health risk assessment, and greenhouse gases.	B-6
7	Marvin Howell	Lehigh/Hanson	Comments on history of site and local supplier of cement. Stated once site is reclaimed creek will be restored to historic condition and flows. Quarry production levels are determined by cement plant production.	B-7
8	Henrik Wessling	Lehigh/Hanson	Commented on air quality and mercury, new standards must be achieved by September 2013. Reduction efforts by Lehigh.	B-8
9	Tim Mats	Lehigh/Hanson	Company representative for environmental affairs. Commented on emission reductions, reclamation achievements for Redding plant.	B-9
10	Frank Geefay	Resident	Slope terracing impacts, benches visible. Financial assurances should be available to reclaim site.	B-10
11	Barry Chang	Resident No Toxic Air Councilmember	Violating SMARA and should be taken off AB3098 list. Geological study of fault lines and earthquake, slide. Soil from new quarry will create toxic materials, impacts to environment including Air Quality, Water Quality. Manage toxic materials /mining tailings.	B-11
12	Artur Plonowski	Resident No Toxic Air	Concerned with current health impacts from cement plant and should be considered. Mercury content in materials is high on this site and should be analyzed in health risk analysis.	B-12
13	Rod Sinks	Resident	Vested rights. Asked why the County can accept an application when the	B-13

			Reclamation Plan is out of compliance. West Material Storage Area is not being reclaimed. East Material Storage Area should not be allowed to receive materials since the current Reclamation Plan is out of compliance. Cumulative impacts from mercury, and water quality impacts from project. Alternatives should include - No new quarry project alternative.	B-13 cont.
14	Marylin McCarthy	Resident West Valley Citizens Air Watch	Recommends alternatives to cement for construction. Mining expansion will create new pollution.	B-14
15	Joyce Eden	Resident West Valley Citizens Air Watch	Wants high quality EIR, thorough analysis. Mixing two is confusion, and wants expansion quarry separated from existing out of compliance area for the analysis. Suggests two EIRs. Alternatives should include No New Quarry expansion alternative. Protections should be included for habitat. Visual impacts, protect views. Mercury impacts from quarry operations.	B-15
16	John Bartas	Resident AO-HOC	Lehigh/Hanson has record of violations, should be considered. Have not complied with 1985 requirements. SMARA violations Air quality and dust concerns.	B-16
17	Tim Brand	Resident WVCAW	Concerned with: dust, visual impacts, mercury (see info on EPA and CKD website regarding removal as solid waste) Wants violations listed in EIR. Concerned regarding County oversight.	B-17
18	Paula Wallis	Resident	Alternatives – wants No Quarry included in analysis. What percent of Lehigh cement is actually used in Bay area? There are impacts of cement being imported, how does that compare to impacts of new quarry. Mercury content in overburden should be analyzed. How much limestone is in the expansion area and is it worth it?	B-18
19	Libby Lucas	Resident	Would like to know if anyone and who is monitoring water quality/mercury in Stevens Creek reservoir.	B-19

			Should be air monitoring in San Antonio Park, and downstream of creek. If creek overflows, it goes to school and park fields which leaves mercury at those sites. What is residual fallout of mercury on surrounding habitat areas? Look at cumulative impacts.	B-19 cont.
20	Tung Sun Tung	Resident	Concerned with existing violations and how can expansion be considered because of history. Applicant has not shown success in reclaiming WMSA. No track record. Dust control. Air quality.	B-20
21	Yun Ning Chen	Resident	Health risk should be included. Mercury impacts. Financial impacts due to increased health risks.	B-21
22	Arvind Rao	Resident / Student	Truck traffic is unsafe, rocks coming from trucks. Mercury impacts to students in close proximity. Mercury emission data provided to EPA is erronsly low. Cement plant should be located far away from urban area. Supports reclamation, should find balance.	B-22
23	Ken Smythe	Quarry No	Alternatives should include Lehigh Redding Plant and no quarry expansion. Concerned with mercury emissions. Standards and data from EPA regarding mercury should be included in EIR.	B-23
24	Homer Tong	Fremont Union High School District	Concerned with health risk on students. Health risk analysis should be included. Control mercury on site. Timing of project, include what this means. Full disclosure.	B-24
25	Anya Kroth	Resident	Students at Montebello have high autism rates. Mercury causes autism. Close the cement plant and clean site. Project will impact air, noise, and water. Consider "green" alternatives to cement.	B-25
26	Leslie Fowler	Resident	Odor and air impacts from site. Truck impacts to odor, dust, rocks, trips is too high at 700 per night. ADHD is high in area, is it because of facility operations?	B-26
27	Alice Hampton	Resident	Asphalt was dumped or recycling center at Lehigh. Said they would close site in 1980's, but didn't.	B-27
28	Don Staub	Resident	Dust as far as Foothill/280 comes from site. Trucks should be covered, dust	B-28

		No Toxic Air	and rocks, but they are not. Need to follow rules in place. Foothill and Stevens Creek, dust in area is high.	B-28 cont.
	Written comments only:			
29	Fran Grinels	Resident	Impacts to health risk to residents in area, not concerned with viewshed.	B-29

Figure 3.4-6 Mining and Reclamation Phase 5

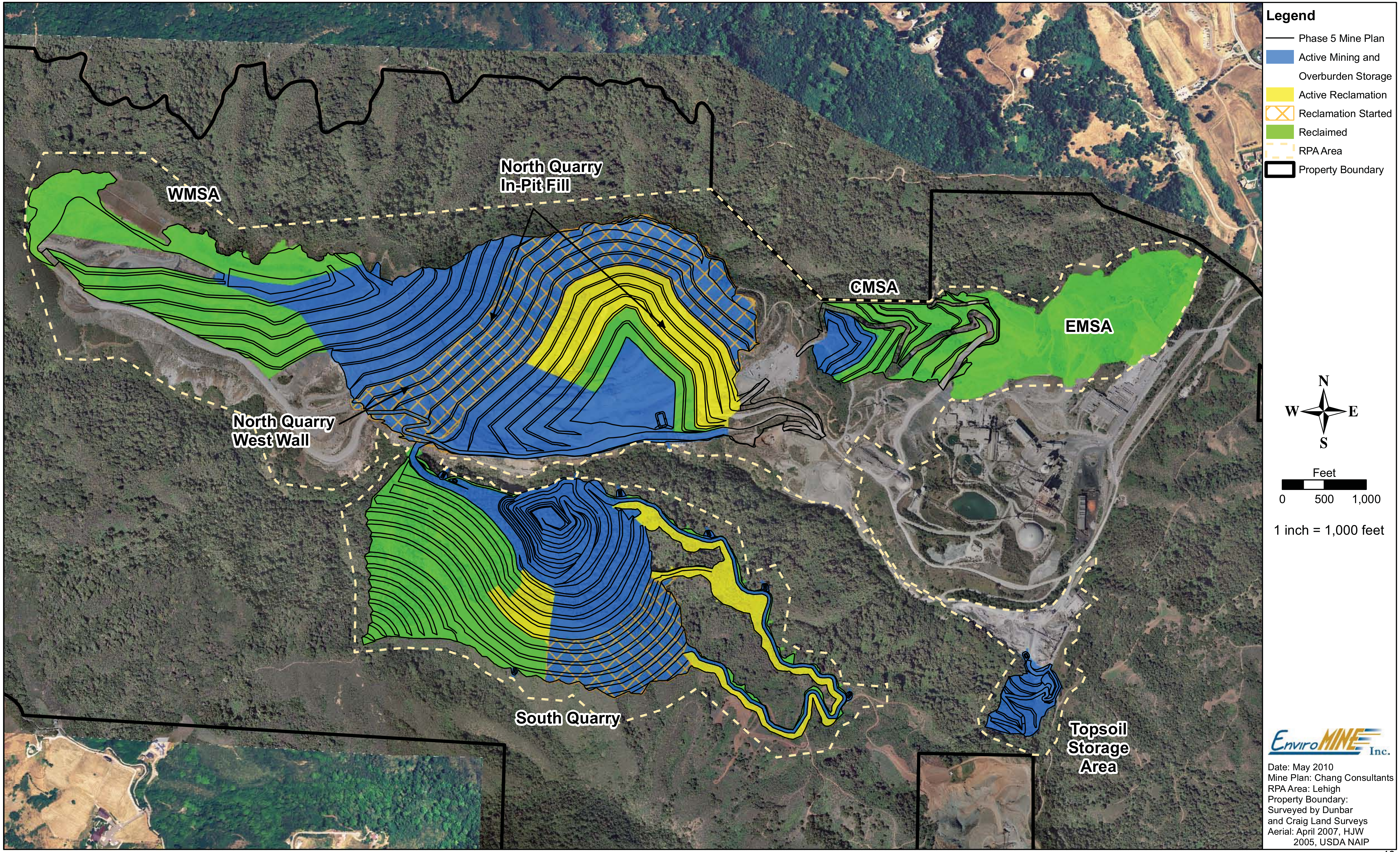
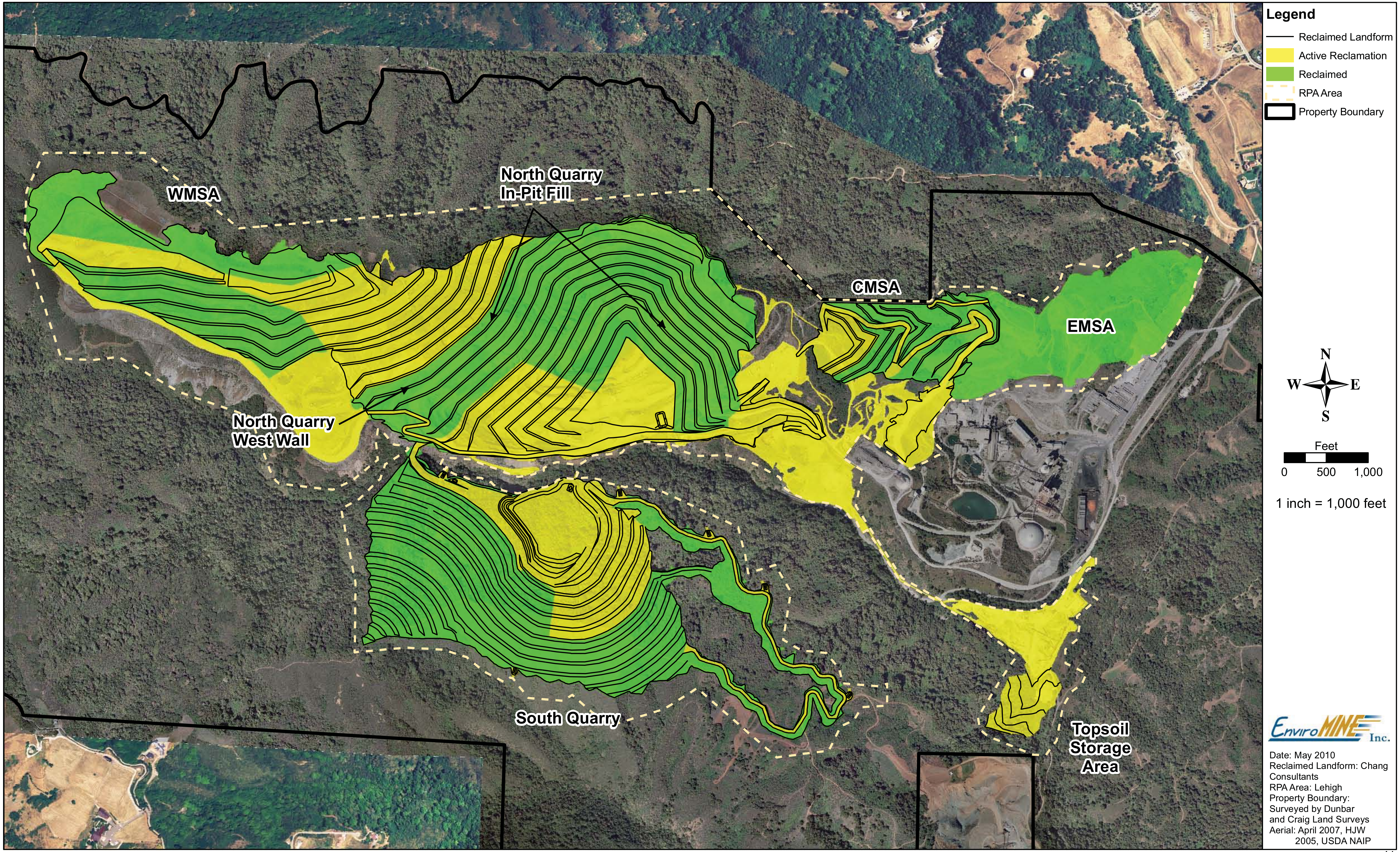


Figure 3.4-7 Final Reclamation



From: "Bill Almon" <balmon@pacbell.net>
Date: April 11, 2011 12:43:28 PM PDT
To: "'Marina Rush'" <marina.rush@pln.sccgov.org>
Subject: Comments on NOP

Marina, Here are our comments due today. Thanks for all you do.
Bill
SCC NOP Comments 4-11-11_with_signature.pdf ¬

WILLIAM J. ALMON

April 11, 2011

Marina Rush
County of Santa Clara
70 West Hedding Street
San Jose, CA 95110

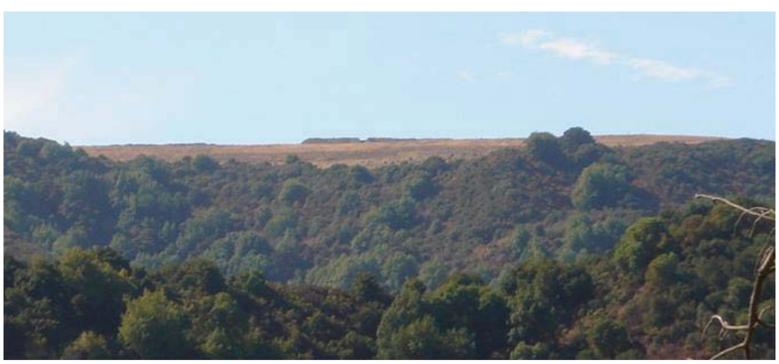
Dear Marina,

QuarryNo hereby responds to the Santa Clara County request for Public comments on the possible environmental issues for the proposed Comprehensive Reclamation Plan Amendment and Conditional Use Permit for Lehigh Permanente Quarry. It should be noted that although we are amending a Reclamation Plan from 1985 there has been no reclamation to date. We repeat there has been no reclamation to date. This is very troubling and brings into question the entire process and regulatory focus.

Our comments below follow in order the Environmental Topics listing in the County Notice of Preparation dated March 10, 2011.

VISUAL RESOURCES – The County solicited comments on public scenic view site lines in addition to those shown in the Reclamation Plan. Our concern goes much farther as this is not a new issue.

Kaiser Cement, the original owner, granted a permanent scenic easement (deed dated August 18, 1972) to the County to shield the Quarry from Public view. In addition Condition #8 of the current 1985 Reclamation Plan states that the maximum height of Area A (now designated the West Material Storage Area) shall not exceed the top of the ridgeline.



Today it is clearly visible as a result of Lehigh deliberately and continuously dumping excessive mine waste there. Lehigh has violated a given property right of the Residents of Santa Clara County while the County Supervisors looked on and directed the Staff to take no effective action.

This ridgeline must be restored if the Public is to have any confidence in Lehigh's commitment to be a good neighbor and the Supervisors oath to uphold the law.

Lehigh's disregard for Visual Resources is not a thing of the past but continues today in the Santa Clara County Rancho San Antonio Park where Lehigh has recently dumped mine waste so high as to intrude on Park trails and views. This has been ongoing since 2009 when Lehigh arrogantly but accurately stated in their submitted Reclamation Plan that such dumping will probably be completed prior to any approval.

The purpose of an EIR is to mitigate not just identify environmental impacts. The damage is now irreversible so the request by the County for Public comments on mitigating the impact is disingenuous. The proposed EIR should be expanded to list all irreparable damage that has already occurred not just the impact on the Park. Here is a photo of the view from the PG&E trail in Rancho San Antonio Park.

In addition the current Reclamation Plan dated 1985; the one now being amended here, stated that "Planting under the guidance of this Plan is ongoing" The aerial photo here shows that to be totally false.

Lehigh is willing to promise anything but fails to live up to its promises knowing that the County Board of Supervisors will support its inaction. It is unreasonable to expect the Residents to have any confidence in new steps to preserve the visual environment when prior ones are disrespected by their elected officials and Lehigh... The current view from Highway 280 going North of the Quarry can only be labeled "ugly" as viewed from multiple sight lines.

BIOLOGICAL RESOURCES – The entire Biological Resource Assessment (Attachment E) is highly flawed and must be completely redone. It is based on 2-3 year old surveys, studies and field investigations conducted by Lehigh's consultant WRA in 2008-2009. It alerts one to forthcoming documents in 2010 which are obviously now available.

Worse it is erroneous since Lehigh withheld from WRA the fact that they discharge hundreds of thousands to millions of gallons per day of industrial process water into Permanente Creek as part of normal operations as described in the California Regional Water Quality Control Board Notice of Violation dated February 18, 2011.

Such continuous high flows are not taken into consideration in the WRA study. Instead WRA makes calming statements such as "Portions of the Creek only convey surface water for a few weeks during annual peak rains" on Page 23. Lehigh obviously cannot be trusted.

The preservation of woodland and wildlife is open to question if Lehigh's past actions are taken into account. A good example is the East Material Storage Area. Here is a before and after photo showing the destruction of native oaks and wildlife habitat.

BEFORE:

AFTER:

All this destruction occurred over the past 2 years as Lehigh expanded into the East Material Storage area without an EIR in place following their then unapproved Reclamation Plan dated April 2009 and even currently not yet approved. The damage has been done in direct violation of CEQA.

Permanente Creek will bisect the area designated by Lehigh for expansion as it will flow directly between the current North Pit and the new South Pit. It will be bridged by a 4 lane road requiring a massive bridge to carry the traffic over it.

The endless lines of trucks bringing limestone out of the Quarry as well other trucks bringing mine waste out to fill the old Pit and the Central Material Storage Area will devastate the surrounding area and certainly Permanente Creek. However nowhere in the submitted Reclamation Plan are there estimates of the bridge traffic. No where is there an analysis of the impact of the traffic on the wildlife there. While the Reclamation Plan addresses Off Site Traffic there is nothing provided for On site traffic. This is a major omission.

We do know that the mine waste trucked over the bridge to the East Material Storage Area alone will total 6.5 million tons. After adding the associated limestone and the Central Storage Area mine waste the amount needed to be trucked over the bridge is staggering. The continuous road dust and rocks falling into Permanent Creek as a result of the bridge traffic has not been identified making the comment "The proposed bridge will span the creek and channel will remain as it currently exists with natural substrate." on page 56 ludicrous.

Permanente Creek downstream is a breeding area for the California Red Legged Frog and the construction of a massive bridge across it sized to carry truck traffic continuously will surely be a final death knell for the "protected" Red Legged Frog living below it. We say protected in quotes as it is obviously not protected here.

The California Red Legged Frog is listed as a Threatened Species under the Endangered Species Act. It gained international fame in Mark Twain's famous short story "The Celebrated Jumping Frog of Calaveras County". They are now present in only 10% of their original habitat.

Lehigh currently has a request in for draining their ponds along the Creek but the Bridge will surely be their final solution for what they regard as the frog problem. Lehigh has long touted their funded studies by Dr. Mark Jennings but an independent Biologist must be retained to confirm the dire outcome that is suggested here for the California Red Legged Frog.

CULTURAL RESOURCES -- The Lehigh Quarry and Cement Plant has over 100 years of History in Santa Clara County. Henry Kaiser, an exceptional businessman, at one point lived on the property. During World War II incendiary bombs made of magnesium were produced there. Ownership thereafter changed and with multinational business cycles the Quarry and Cement Plant passed to German ownership.

Regardless of ownership the site was always a source of what we know to be today major pollution. In 2005 it was a top emitter of Mercury producing 1,284 pound while claiming 219 pounds. The mine waste conveniently labeled overburden strewn over the site contains toxins that meet Superfund levels.

Regretfully it can only become a lasting monument to Man's insensitivity to his environment.

GEOLOGY & SOILS -- While there is extensive discussion of soil types and factors of safety in the Reclamation Plan there is little confidence provided to the Public that Lehigh will abide by the State Mining and Reclamation Act (SMARA). SMARA is repeatedly quoted with no mention made as to the extensive existing erosion on the site and the high risk of damaging earthquake activity.

SMARA does not allow for an acceptable level of erosion. Any erosion is a violation of SMARA. However the County has failed to inspect and force Lehigh to abide. While the Public sees erosion everyday the County sees nothing. Erosion washes away topsoil, it inhibits revegetation and leads to sediment buildup in streams. There must be a firm plan in the EIR with budgeted resources to demonstrate that the County can properly manage the Lehigh Quarry operation per SMARA.

This is particularly critical as the County is now accepting responsibility to regulate a Conditional Use Permit as well as the current Reclamation Plan. Since 1985 there has been no reclamation. After 26 years we are again promised reclamation. There is no Public confidence it will happen now.

The Lehigh plan is to dig a new 1,000 foot deep Pit in a residential neighborhood which is close to the San Andreas Fault line. We know that the North side of the current Pit is a slopeless vertical wall as a result of earthquake induced landslides. The Berrocal Fault Line runs through the center of the East Material Storage Area (EMSA) and any landslide there promises to go into Permanente Creek, a Federally Threatened Species Habitat, and onto adjacent private property.

Over the next 20 years there is a reasonable expectation of significant seismic activity. Golder Associates, Lehigh's consultant, says there are natural shear lines between the limestone and the greenstone below. Further they say that in some places the final slopes for the South Pit may not be sufficient to preclude instability.

Consequently for these stated risks Lehigh must be accountable for any financial losses that their mining disturbance causes. The Public does not want to inherit the financial exposure after Lehigh has left the scene or sold the operation.

A bond will not suffice and consequently the existing Hanson Permanente Cement Title to the property must include a first lien to the County limited up to the full value of the property for proper remuneration. The public does not want to deal with a far away Bond issuer arguing over the wording of the bond covenants.

Lehigh has deliberately violated SMARA by expanding beyond its Mining Boundaries. The California Office of Mine Reclamation states that this is a Major SMARA Violation. This should be front and center in the proposed EIR but there is no mention or even suggestion of that in the documents presented to the Public. Why is this hidden?

The major residue resulting from the Lehigh operation is the extensive mine waste scattered over the site and affectionately called overburden. According to Attachment H of the Reclamation

Plan (Table 5) the EMSA overburden contains 2.6mg/kg of Arsenic, well above California Health Screening Levels (CHSL).

The same Table 5 states Mercury to be .11mg/kg but Lehigh reported 3 times as much (.31mg/kg) in the rigorous sampling done for the Air District and reported December 6, 2010. In total it appears the overburden is toxic. The assumption in the Reclamation Plan is that it is not. This is a major cover up.

It is very critical in that the overburden mine waste is scattered everywhere and will even be blended into the top soil covering over 700 acres at a depth of only 3 inches. Below that is the toxic mine waste. In addition it will fill the North Pit and be piled high forever contributing toxins into the watershed. After having been blasted out of the ground and crushed it is now much more porous and hence the leaching estimates in the Reclamation Plan are erroneous.

Consequentially there must be extensive testing of the current overburden in the WMSA and the EMSA to determine its true toxicity level and what must be done to remove it. This is a serious issue which is swept under the Reclamation Plan rug.

Hydrology, Drainage and Water Quality -- Lehigh was served a Notice of Violation (NOV) by the San Francisco Regional Water Quality Control Board on February 18, 2011 for discharging huge volumes of Quarry Pit water into Permanente Creek. In the NOV the Water Board noted Lehigh's failure to correct past violations and its non-compliance attitude.

This NOV was based on prior inspections as well as Lehigh responses to the Water Board particularly the Lehigh response of December 13, 2010. In that response Lehigh stated the volume of water dumped into Permanente Creek ranged from a flow of 250,000 gallons per day to 2,500,000 gallons per day.

This amount of water originating primarily in the Pit bottom overwhelms all natural flows into Permanente Creek yet is not reflected in the Reclamation Plan. Equally significant the content of the water is quite toxic. According to Lehigh this daily discharge is mandatory to operation of the Quarry.

It suggests that we have to make a trade off between Permanente Creek or a new Quarry for the next 20 years. However this is not addressed in the EIR nor are Lehigh's violations listed.

Without County regulation Permanente Creek will be nothing more than a waste water sewer pipe in 20 years.

The Reclamation Plan focuses only on Hydrology and Water Quality when mining stops. The Conditional Use Permit is not addressed but it will govern 117 acres of the operation. The County must delineate in the EIR the terms of the Conditional Use Permit including controls and penalties that will be imposed to prevent the demise of Permanente Creek.

PUBLIC SERVICES-NOISE ABATEMENT -- The noise emanating from the facility particularly at night is a public nuisance. The repeated booms from the blasting is even louder but of shorter duration. While Lehigh pledges in their reclamation Plan that there will be no blasting on weekends and at night such blasting is ongoing today. There must be daily fines in the Conditional Use Permit if it continues to occur in the future.

LAND USE -- The assumption is made in the Reclamation Plan that the land will eventually be used as Open Space. This is an appealing use as it requires less reclamation cost for Lehigh while at the same time blending into the local landscape. However how this will be assured is unaddressed. Lehigh states that they reserve the right to mine on the land for other materials and even consider other usages so the Open Space designation is questionable. This designation must be certain or else stated as only an attractive yearning.

AIR QUALITY -- The omission of the adjoining Cement Plant impact on Air Quality is not acceptable. The two operate as one integrated operation and hence cannot be separated when it comes to Public Health. This will be part of the cumulative impact of concern.

GREENHOUSE GAS EMISSION -- Lehigh is the 2nd largest emitter of Greenhouse Gases in Santa Clara County. Cars represent only 36% of the CO2 emissions here with industry generating 43%. Santa Clara County is unique in this regard. However as SB375 is implemented the County will have to force reduction actions on residents to accommodate Lehigh's load as Lehigh's emissions are directly tied to their production.

To stay in production Lehigh must emit CO2 into the atmosphere as well as Methane and Nitrous Oxide. Methane is 21 times and Nitrous Oxide 310 times in impact as the same amount of Carbon Dioxide. In addition to these emissions Lehigh has a minimum of 100,000 Diesel truck trips per year transporting product to/from the facility.

Each County will be given a target to meet and Santa Clara County will have to make reductions elsewhere to offset the Greenhouse Gas load generated by Lehigh over the next 20 years. According to the California Air Resources Board (CARB) the main focus will be on creating disincentives to drive. These will include new taxes and fees on cars and gasoline plus congestion pricing tolls and parking fees. If these fail CARB suggests even incenting residents to leave.

We cannot shut down power plants but the County Supervisors can limit expansion of Quarries and companion Cement Plants. The EIR must spell out the Greenhouse Gas emissions projected for the next 20 years due to Lehigh operations and detail the impact on residents. Not granting a

Use Permit for a new Quarry is not a choice shown in the Santa Clara County Climate Action Plan. Instead the County is looking for residents to make significant sacrifices to save Lehigh.

ALTERNATIVES -- The alternative to digging a new Quarry Pit in a residential area is not to do it. Lehigh possesses another Quarry with dramatically lower Mercury content in Redding California. That limestone can be shipped here by rail at the same cost both in greenhouse gas emissions as well as direct transportation costs. An independent analysis must be done and included in the EIR.

GROWTH INDUCING IMPACTS -- We must have Cement but it does not have to be produced locally. Cement is only 10% of the concrete poured today. It can be brought by rail economically and is transported today throughout California. Consequently rather than increasing growth it would appear that Lehigh will reduce growth by making Santa Clara County less appealing to those concerned about their health and the environment. There must be independent studies done at Lehigh's expense to prove the opposite.

CUMULATIVE IMPACTS -- There are many cumulative impacts. The combined impact of air borne toxins falling from the sky onto the ground and leaching into the water supply is obvious but unaddressed. The combined impact of a Cement Plant coupled to a Quarry is obvious but unaddressed. More subtle is the cumulative effect of 69 toxins being breathed simultaneously. That is not addressed here either but must be in the draft EIR.

USE PERMITS -- This is a topic unaddressed in the NOP but of paramount concern. Use permits are key to the County's ability to regulate the Lehigh Quarry. The elements to be regulated must be identified along with how they will be measured and penalties assessed if they are not met. Their absence here is disquieting.

Thank you for this opportunity to comment and we hope this submission is taken into consideration in the development of the draft EIR.

Bill Almon

Bill Almon
Acting for the Members of QuarryNo

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From: Shani Kleinhaus <shani@scvas.org>
Date: April 10, 2011 10:48:39 PM PDT
To: Marina Rush <marina.rush@pln.sccgov.org>
Cc: Bob Power <bob@scvas.org>
Subject: Lehigh Permanente Quarry- scoping comments

Dear Ms. Rush,
Please find attached Santa Clara Valley Audubon Society's scoping comments for the Lehigh Permanente Quarry Project EIR.
Thank you,
Shani Kleinhaus

SCVAS-Lehigh-Scoping-April11.pdf ¬

Shani Kleinhaus
Environmental Advocate
Santa Clara Valley Audubon Society
shani@scvas.org
(650) 868 2114

Santa Clara Valley Audubon Society
Founded 1926

April 10, 2011

Marina Rush, Project Manager,
County of Santa Clara Planning Office

Dear Ms. Rush,

Santa Clara Valley Audubon Society (SCVAS) is pleased to provide Environmental Impact report (EIR) scoping comments for the Lehigh Comprehensive Reclamation Plan Amendment and Conditional Use Permit for Permanente Quarry (State Mine ID #91-43-004), (Project). The Project would expand the mining area, excavate a new mining pit, and approve the currently unauthorized use of existing material storage areas. In addition, the Project would construct new roads in the Permanente Creek watershed, and a new bridge across Permanente Creek. The overburden from the new pit would be deposited in the existing pit and additional storage areas. The Project would allow mining activities in areas that possess no vested mining rights. The Project proposes that the cement plant operates under a separate permit outside the boundary of the proposed reclamation area. **It is not clear from the NOP whether or not the EIR would include environmental impacts from operations of the cement plant or from traffic associated with the quarry and the Cement Plant in the analysis**.

The California Environmental Quality Act (CEQA) requires that Environmental Impact Report analyze all direct environmental impacts - both direct and indirect.

1. Direct or primary effects that are caused by a project and occur at the same time and place.

2. **Indirect or secondary effects that are reasonably foreseeable and caused by a project, but occur at a different time or place**.

Since mining activities provide the materials for the Lehigh Cement Plant. It is reasonable to assume that approval of the project would increase the scope of operations at the Lehigh Cement Plant and would enable the cement plant to continue operating longer into the future. Thus, **indirect impacts must include any and all reasonably foreseeable environmental effects associated with cement production and transportation**.

We ask that the EIR analyze impacts of the Project AND of cement production at the Lehigh Cement Plant, and transportation/traffic associated with the Project and the Cement Plant. Please include in this analysis: Visual/Aesthetic Resources, Biological Resources, Geology and Soils, Mineral Resources, Surface Hydrology, Hazards and Hazardous Materials, Drainage and Water Quality, Public Services/Utilities and Service Systems, Noise and Vibrations, Air Quality, Greenhouse gas emissions, Transportation/Traffic, Recreation, and Public Health.

22221 McClellan Road, Cupertino, CA 95014 Phone: (408) 252-3748 * Fax: (408) 252-2850
email: scvas@scvas.org * www.scvas.org

<u>In addition</u>:

Please discuss all current and historical environmental law violations by the Lehigh Quarry and Cement Plant, including but not limited to the Federal Clean Water Act (CWA), the California Water Code (Water Code), and the Water Quality Control Plan for the San Francisco Bay Basin (Basin Plan) and compliance (or non-compliance) with s current permits, including Order No. 97-03-DWQ (the Industrial Storm Water General Permit), and the Clean Air Act.

Please identify heavy metals and toxic materials that may be released into the Permanente Creek and Stevens Creek Watersheds or into the air as a direct or indirect effect of the Project. Please analyze the impacts of Selenium, Mercury, and other toxic substances released from mining associated activities (including storage of overburden), road and other construction, cement manufacturing processes, and transportation of materials and products.

The EIR should analyze the link between the quarry and the 303(d) listing of Permanente Creek water for toxicity and Selenium by the San Francisco Bay Regional Water Quality Control Board, and explain how the project may impact the development of Total Maximum Daily Loads for the creek.

The Project has the potential to impact two watersheds: Permanente Creek and Stevens Creek (due to the diversion of water from Permanente to Stevens Creek). The EIR should reveal and analyze the potential for toxic compounds, including but not limited to selenium and mercury, to be released into these watersheds as well as potential impacts on Bay ecosystems.

The bioaccumulation of Selenium in aquatic ecosystems and its impact on fish, birds, amphibians and other wildlife must be considered as an ongoing impact, and not limited to storm events.

The levels of Selenium found in Lehigh operation effluents and storm runoff, and consequently in Permanente creek water are of great concern to Santa Clara Valley Audubon Society, and the full environmental impacts of continued and expanded mining and fill operations at the quarry on water quality and on fish, wildlife and riparian ecosystems along Permanente Creek (including both tributaries - Ohlone Creek and West Branch Permanente Creek) and Stevens Creek watersheds and the San Francisco Bay must be properly analyzed in a comprehensive, all inclusive way.

Impacts on federally- threatened Central California Coast Steelhead trout should be evaluated for both Permanente and Stevens Creeks.

Please analyze potential impact on beneficial uses of Permanente Creek and its tributaries Ohlone Creek and West Branch Permanente Creek.

Please analyze a no-project alternative, and include in the analysis import of limestone from sources that are not as rich in Mercury as the material on the Lehigh property.

Please include the SCVWD Permanente Flood Control Project in the Cumulative Impact Analysis. Please evaluate the impacts of selenium and other toxic compounds on the public parks and schools included in the Santa Clara Valley Water District Permanente Creek Flood protection Project.

22221 McClellan Road, Cupertino, CA 95014 Phone: (408) 252-3748 * Fax: (408) 252-2850
email: scvas@scvas.org * www.scvas.org

Monitoring
Given a history of violations of environmental regulations by the Lehigh Quarry and Cement Plant, we ask for a detailed and comprehensive monitoring and enforcement program for all proposed mitigations, reclamation activities, and for air and water pollutants on site and in the Permanente Creek tributaries and watershed. Mercury, Selenium and general toxicity should be monitored for the duration of activities at the Quarry and Cement Plant and through reclamation activities and restoration. We ask that frequent surprise inspections be incorporated into the monitoring program. Lehigh should not be allowed to self-monitor. Instead, the monitoring program should to be paid for by the applicant and implemented by the County and the regulatory agencies. The Leading Agency must show that it has the financial capacity and expertise to provide proper monitoring and enforcement for this project.

Summary
Thank you for the opportunity to provide comments for this project. It is our hope that Santa Clara County withhold permitting of the expansion of the Lehigh Quarry and Cement Plant operations until all of the current violations are clearly corrected, monitoring shows consistent compliance with all environmental regulations, and both air and water agencies permit current and future operations at the Lehigh Quarry and Cement Plant.

Please keep us informed as to the progress of this, and any other, projects on the Lehigh Quarry and Cement Plant property and its vicinity.

Respectfully,

Shani Kleinhaus
Environmental Advocate
Santa Clara Valley Audubon Society
22221 McClellan Rd.
Cupertino, CA 95014
shani@scvas.org

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email: scvas@scvas.org * www.scvas.org

From: "John Buenz" <jbuenz0835@att.net>
Date: March 18, 2011 9:43:57 AM PDT
To: <marina.rush@pln.sccgov.org>
Cc: "Robert George" <rob_w_george@yahoo.com>, "Jim Rehbein" <jarehbein@us.ibm.com>, "Frank Chen" <frankbchen@yahoo.com>
Subject: quarry use permit

Planning Office, County of Santa Clara 03/189/2011
Copies to the Board of Directors of the Meadows of Cupertino HOA:
Robert George, Jim Rehbein, Frank Chen

Thank you for the opportunity to comment on application for this use permit. While I understand that the quarry in question has been in operation for many years, much has changed since the original use permit was granted. Homes now surround the quarry, both above and around. the quarry site. The road in and out of the quarry, Foothill Blvd, is lined with homes through with quarry trucks come and go rendering much traffic,dust and noise. The excavation scar is visible for many miles around the valley (personally, had to work to get a minor grading permit for a parcel on Shannon Rd in the country area around Los Gatos). Most serious is the discharge plume emitted from the plant, straight into homes built above and around the plant.

In the current time of growing concern for the environment, its hard to believe that this use permit for the "expansion of the mining area, including a new mining pit" for the quarry should even be considered. Such expansion was not part of the original scope of the quarry. If we must honor the original agreement, than what obligation does the county have for enlarging this agreement in such changed circumstances? I, and many of my neighbors, do not support this expansion. In fact we activly oppose it.

John Buenz

jbuenz0835@att.net

From: Barry Chang <councilbarry@gmail.com>
Date: April 11, 2011 1:52:23 PM PDT
To: Marina Rush <Marina.Rush@pln.sccgov.org>
Subject: Comments for Lehigh's EXPANSION NEW OPEN PIT MINE

Hi Marina,

It was nice meeting you at your office this morning.

Thank you for the opportunity to comment on the Lehigh Permanente Quarry Reclamation Plan Amendment.

Please add the following for view shed analysis: Lindy Lane, Regnart Road, Regnart Canyon Road, Prospect Road, Rainbow Drive, San Juan Raod, McClellan Road, Homestead Road, Highway 280 (between Foothill Blvd. to Lawrence Expressway), Highway 85 (between Highway 280 and Winchester Blvd., Los Gatios), Avenida Ave., Merriman Road, Bollinger Road, Santa Lucia Lane, Alcalde, Santa Paula Dr., Palm Ave., Terrace Dr., Columbus Ave., In Saratoga, Please include the following street: Saratoga Ave., Saratoga-Sunnyvale Rd. (between Prospect and Big Basin Rd.,), Parker Ranch Road, , Continental Circle, , Star Ridge Ct., Beauchamps Lane, Farr Ranch Road, Crayside Lane, Blue Hills Lane.

Also the noise factors shall include the midnight blast, the earth moving in the night and the old Disel fuels trucks, etc.

The New Expansion quarry is so close to Permanente Creek with steep slope. The soil stability, the potential land slides and the potential collapes of the new open pit mine can alter or destroy the Permanente Creek. The geological study has to be very through and complete. Please DO NOT RUSH. I may have some more comments later. Thanks.

Barry

--
Barry Chang
Cupertino City Council Member
408-688-6398

Office of Mine Reclamation

Kevin Doherty, PG – OMR, Compliance Section

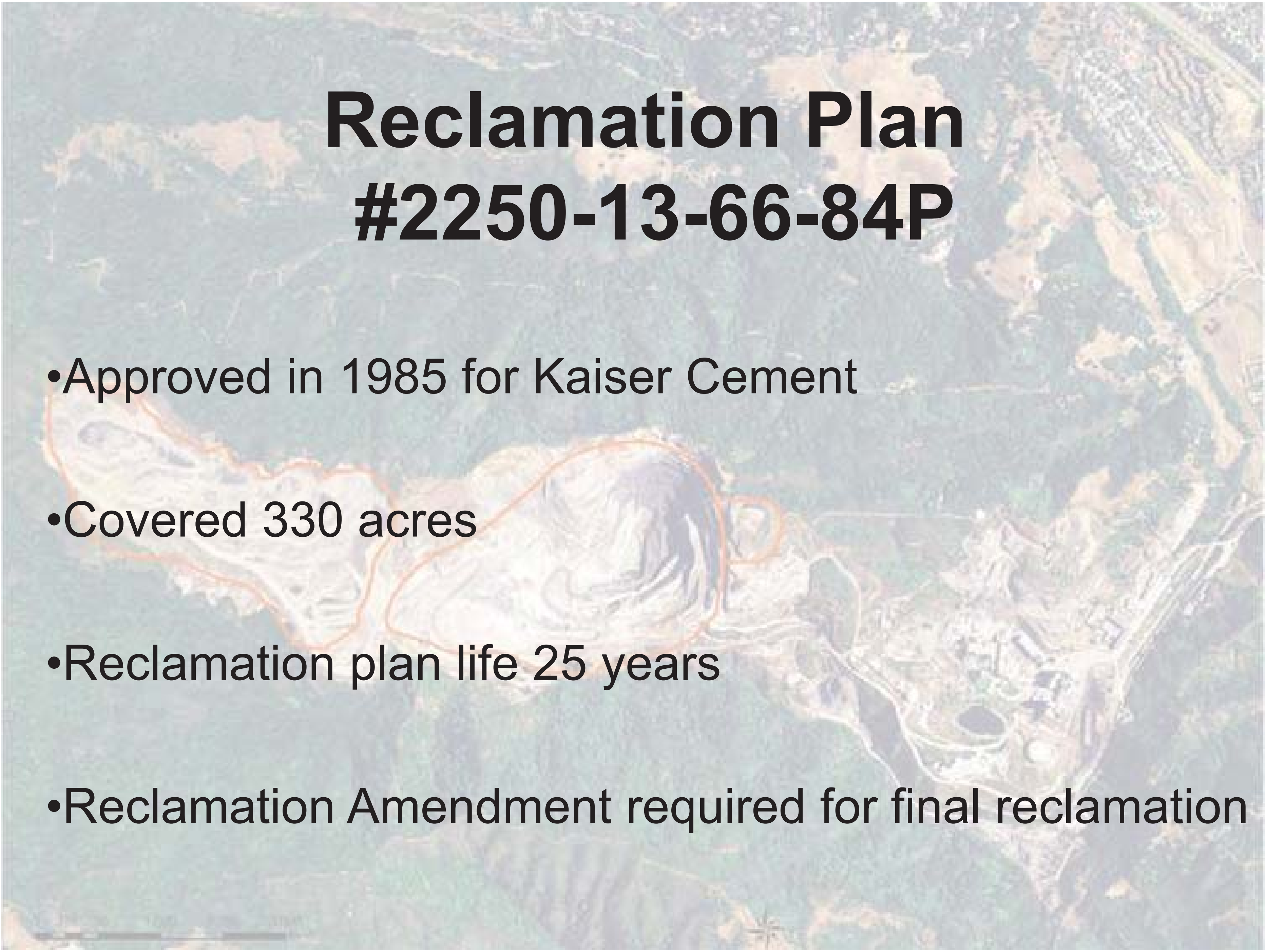
Permanente Quarry

CA Mine ID 91-43-0004

OFFICE OF MINE RECLAMATION

Managing California's Working Lands

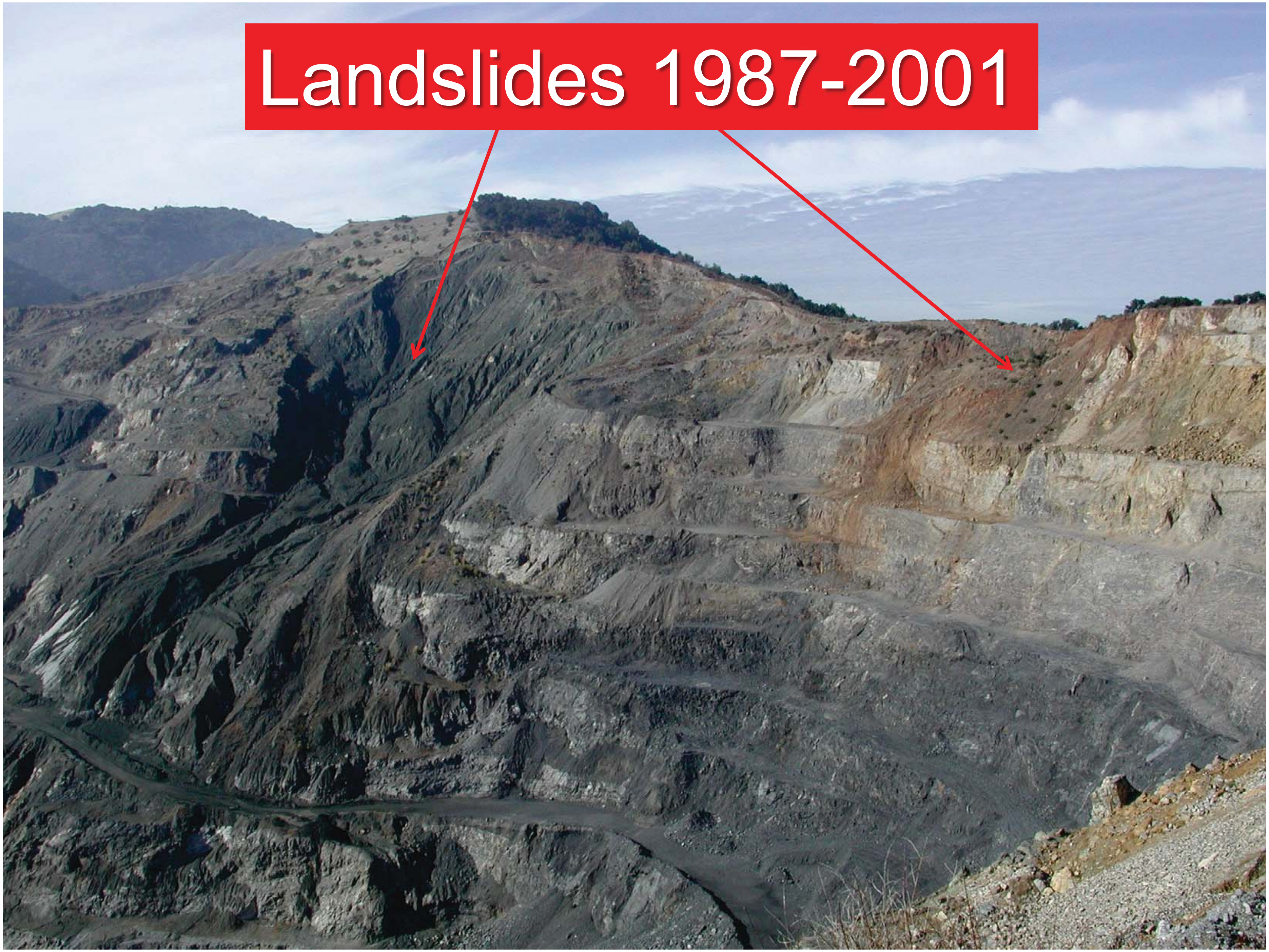
Permanente Quarry
CA Mine ID 91-43-0004
Woodland Acres
- The Highlands
Foothill Expy
Junipero Serra Fwy
280
85
S Mary Ave
Ortega
Cupertino
Stevens Creek Blvd
De Anza
College
Monte Vista
N Stelling Rd
W Valley Fwy
S De Anza Blvd
Deep Cliff
Golf Course
Bubb Rd
Linda
Vista Park
Fremont Older
Open Space
Preserve
S Stelling Rd
Calabazas
North
Stevens Creek
Reservoir
Picchetti Ranch Area
Monte Bello Open
Space Preserve
Prospect Rd
Fremont Older
Regional
©2011 Google - Imagery ©2011 DigitalGlobe, USDA Farm Service Agency, AMBAG, GeoEye, U.S. Geological Survey, Map d



Reclamation Plan #2250-13-66-84P

- Approved in 1985 for Kaiser Cement
- Covered 330 acres
- Reclamation plan life 25 years
- Reclamation Amendment required for final reclamation


Hanson Permanente Quarry
Reclamation Plan
Boundaries


Landslides 1987-2001

Emergency Repair Proposal

- Reviewed by OMR on November 19, 2002
- Slide affected Midpeninsula Regional Open Space District Property
- County decided that a reclamation plan amendment was required

OMR Inspection – 2005/2006

STATE MINING & GEOLOGY BOARD
DEPARTMENT OF CONSERVATION
STATE OF CALIFORNIA

ARNOLD SCHWARZENEGGER
GOVERNOR

Publication Date: April 3, 2006:

RESULTS OF PUBLIC MEETING/HEARING

THE STATE MINING AND GEOLOGY BOARD

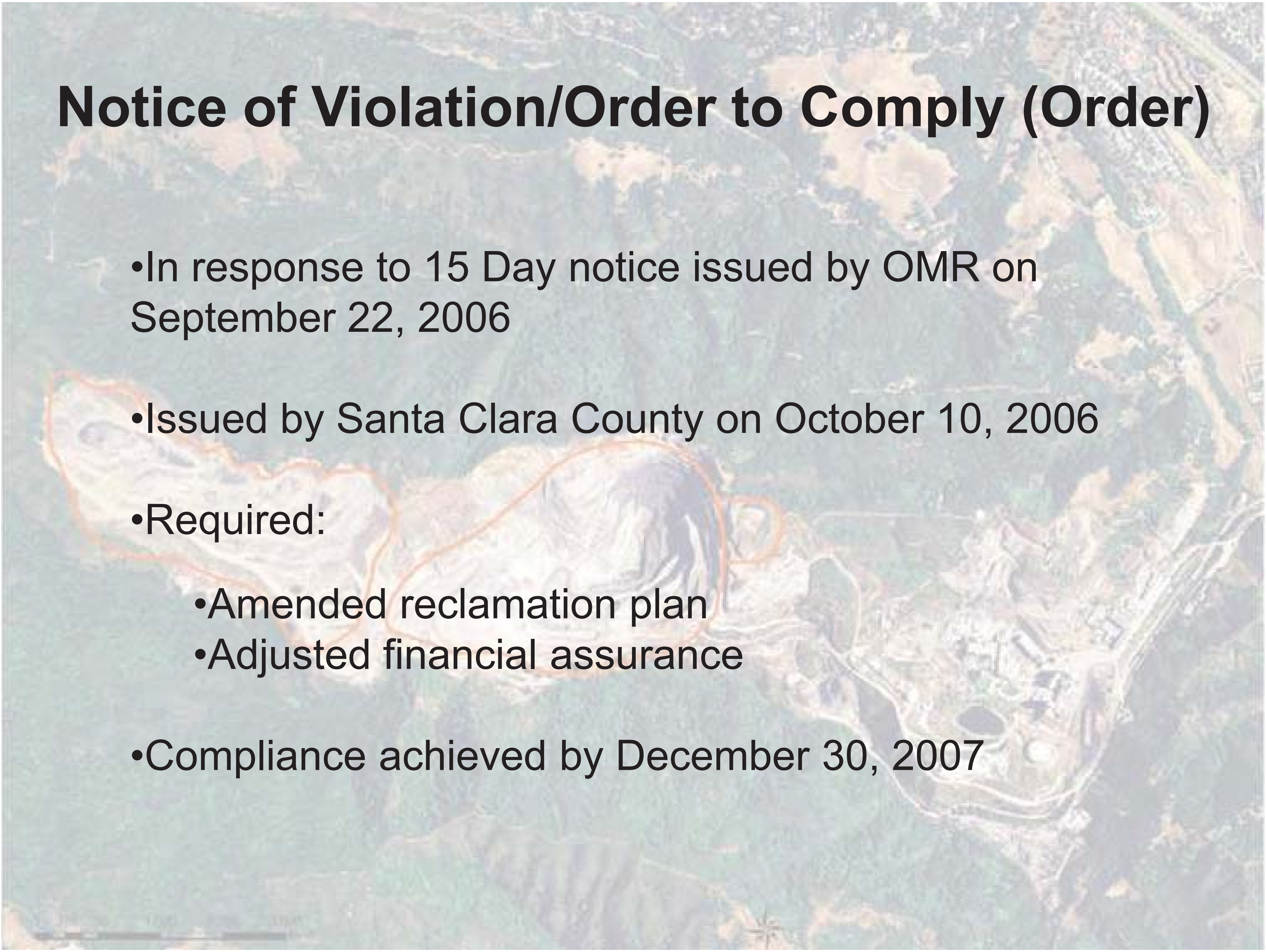
Conducted a Regular Business Meeting on:

Thursday, April 13, 2006

9:00 A.M.

State Capitol
10th & L Streets
Assembly Hearing Room # 126
Sacramento, California

45-Day Notice Issued



Notice of Violation/Order to Comply (Order)

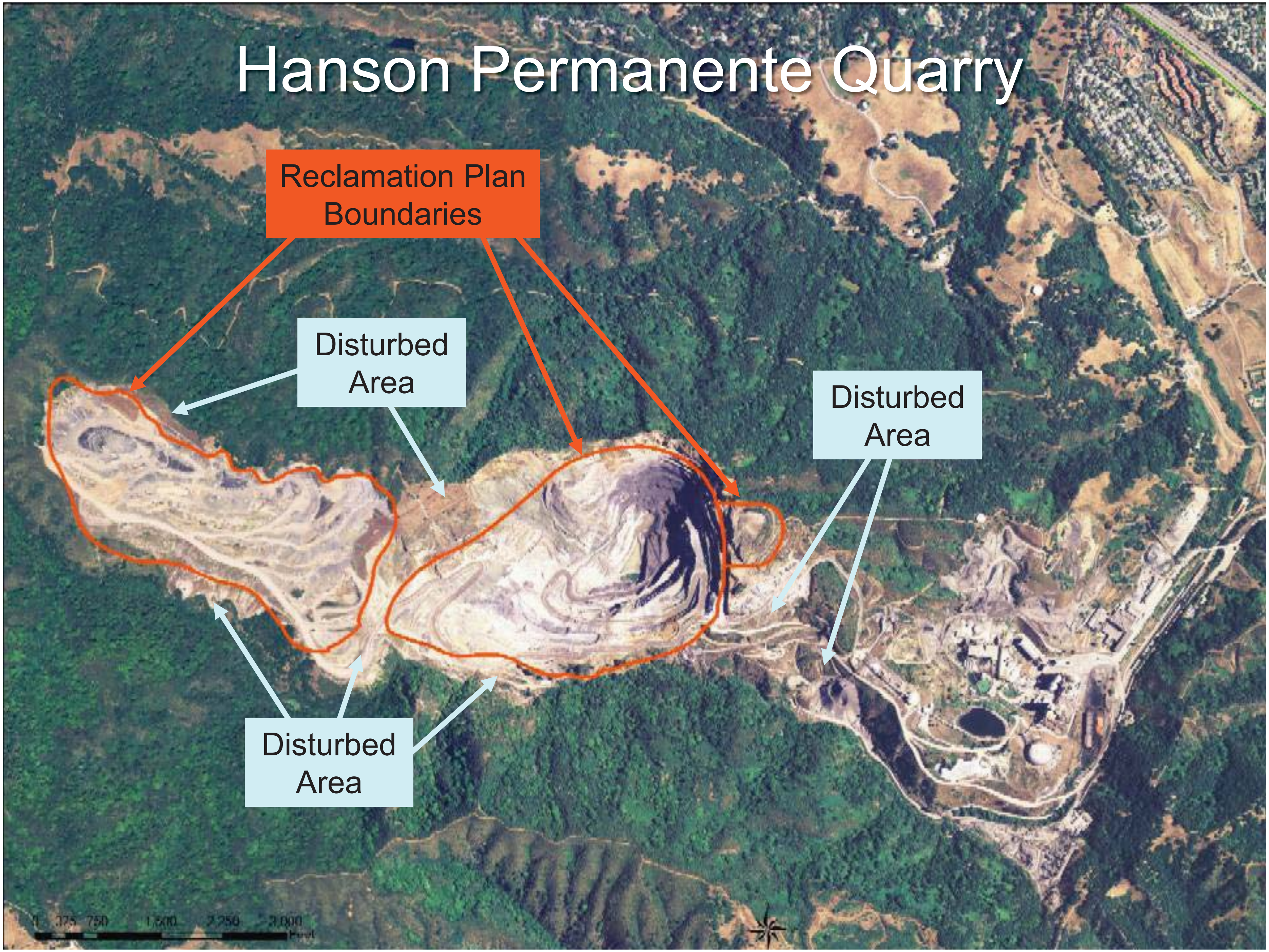
- In response to 15 Day notice issued by OMR on September 22, 2006

- Issued by Santa Clara County on October 10, 2006

- Required:

    - Amended reclamation plan
    - Adjusted financial assurance

- Compliance achieved by December 30, 2007


Hanson Permanente Quarry
Reclamation Plan Boundaries
Disturbed Area
Disturbed Area
Disturbed Area


Crusher Relocation
•Proposed reclamation plan amendment
•Did not resolve outstanding compliance issues
•OMR commented on March 6, 2007
•Amended reclamation plan must addresses all areas disturbed by mining

Amended Reclamation Plan Application

- Submitted to Santa Clara County in January 2007

- Comprehensive geotechnical investigation not included

- OMR's review on May 18, 2007 recommended resubmittal of amended plan with comprehensive geotechnical investigation

Revised 45 Day Notice

•45 Day notice issued on April 13, 2006, was rescinded on September 13, 2007

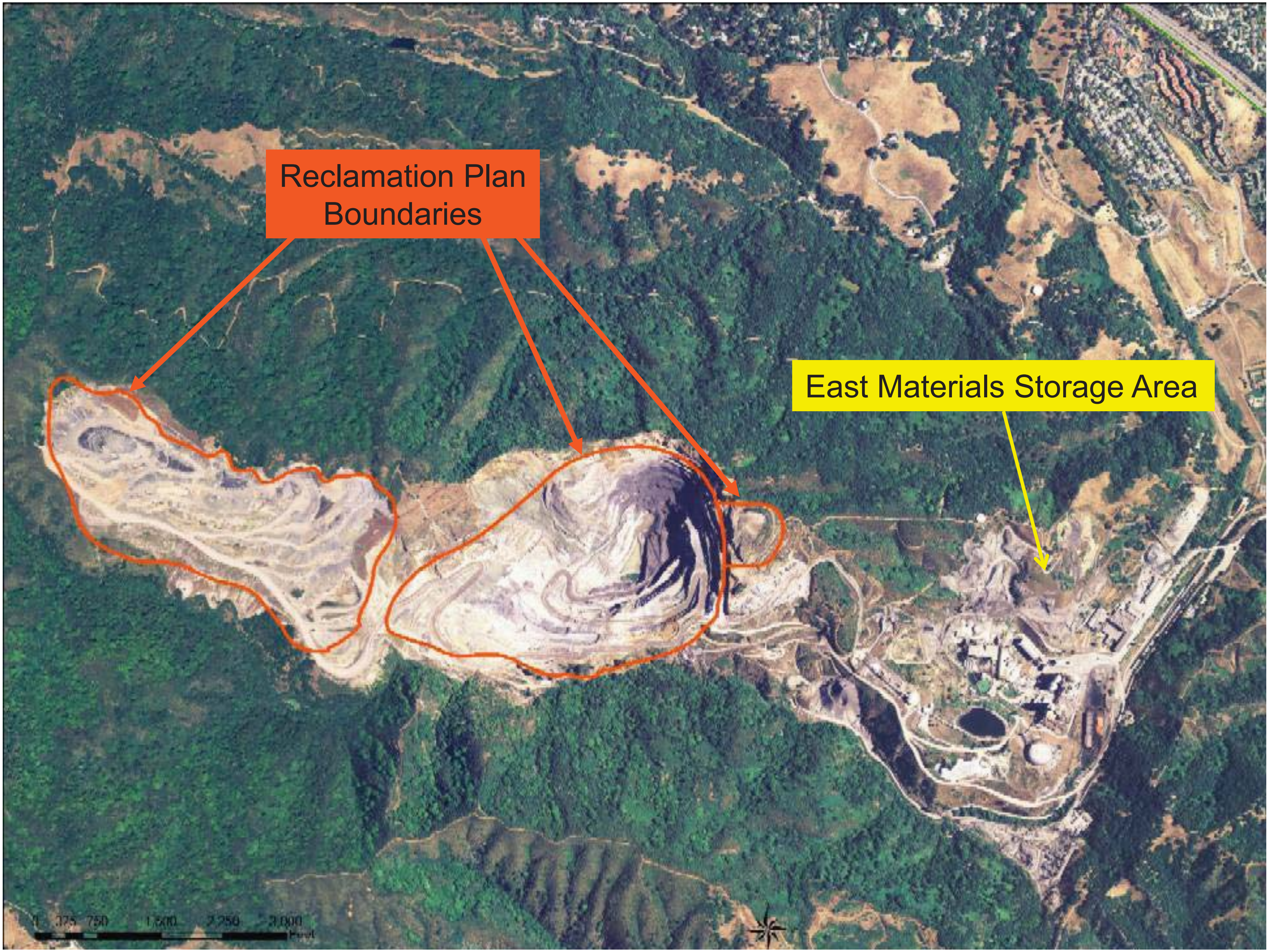
•Revised 45 Day notice – October 2, 2007

•Revised 45 Day notice was rescinded on July 10, 2008

•When the notice was rescinded, the Permanente Quarry had not fully achieved compliance with SMARA

24 month extension

- County letter dated May 21, 2008
- Phased submittal & approval
- Geotechnical evaluation due in December 2009
- Submit revised amendment application February 1, 2010
- Environmental impact report completed in September 2011


Reclamation Plan Boundaries
East Materials Storage Area

East Materials Storage Yard

- County issued Notice of Violation on June 20, 2008
- Separate reclamation plan amendment for EMSA
- Amended reclamation plan must addresses all areas disturbed by mining
- Application submittal date extended to May 2010

Comprehensive Amendment

•Comprehensive amendment was submitted to OMR on May 28, 2010

•Additional material was submitted on August 28, 2010 and October 19, 2010

•OMR sent comments on December 15, 2010

•County is reviewing comments

Compliance

- 523.4 acres are disturbed per County inspection report
- Compliance to be achieved by 2012 per most recent inspection report
- Compliance projection is approximately 5 years longer than allowed by 2006 Order
- Compliance projection is 10 years after violations were brought to County's attention
- Does not qualify to be included on AB3098 List


Questions?

April 8, 2011

VIA CERTIFIED MAIL

County of Santa Clara
Planning Office
70 West Hedding, 7th Floor, East Wing
San Jose, CA 95110
Attn: Marina Rush

Re: Comments on EIR Scoping for the Lehigh Southwest Cement Company's Pending Comprehensive Reclamation Plan Amendment and Conditional Use Permit for Permanente Quarry (County File No. 2250-13-66-10P-10EIR; State Mine ID No. 91-43-004)

Dear Ms. Rush:

It is my understanding that the County of Santa Clara (the "County") will prepare an Environmental Impact Report ("EIR") for both (1) a Comprehensive Reclamation Plan Amendment application and (2) a Conditional Use Permit application, which have been (or will be) filed by the Lehigh Southwest Cement Company in connection with its operations at the Permanente Quarry (the "Quarry"). At the March 8, 2011 City Council meeting for the City of Los Altos, California (the "City"), the City Council directed me, as the Mayor, to submit the following comments for review by the County in connection with its anticipated scoping of the environmental information to be included in the proposed EIR for the Quarry.

I. Air Quality Concerns.

The City is concerned about the Quarry's air emissions and the potential detrimental effects of such emissions on both the City's residents and the City's surrounding environment. Consequently, the proposed EIR for the Quarry should address the effect of the Quarry's air emissions and the City's concerns. The City's specific concerns include, but are not limited to the following:

1. In a March 1, 2011 meeting between myself and the Bay Area Air Quality Management District (the "District") regarding the pending United States Environmental Protection Agency Title V permit renewal application for the Quarry, the District indicated that a sampling station to test the Quarry's air emissions was set up in September of 2010 and was sited in Cupertino's Monte Vista Park, the Quarry's estimated location of the greatest impact of its air emissions. The District further indicated that testing at the sampling station for a full year is needed to account for seasonal variations. In line with this requirement, the City is concerned that until a full year of testing has been completed at the Monte Vista Park sampling station (i.e. until September of 2011), there will be insufficient data about the Quarry's emissions from which to thoroughly prepare and certify an EIR for the Quarry's pending applications with the County. Accordingly, the

City requests that the proposed EIR for the Quarry include a review and analysis of a full year of emissions data from the Monte Vista Park sampling station (i.e. through September of 2011).

2. At the March 1, 2011 meeting with the District, the District also indicated that it does not have the funding to create (or even cost share) in a second sampling station within the City's territorial limits. The existence of only one air emissions sampling station in the geographic region surrounding the Quarry, and specifically the absence of an additional air emissions sampling station in the Los Altos area, is rather concerning to the City. Thus, the City requests that the proposed EIR for the Quarry include a review and analysis of a full year of emissions data from at least one additional sampling station which is located within the City's territorial limits. If necessary, the City is willing to work with the County on both obtaining funding to set up this second sampling station and in identifying test configurations and selecting the specific site for its location.

3. During the above-mentioned March 1, 2011 meeting, the District also informed me that the Quarry's estimated emissions increased significantly in the past few years, primarily due to a change in the estimation method. Previously, estimates were based only on measurements of smoke stack emissions. To be more conservative, the District now requires measurements to be based on the Quarry's "material balance" of air emissions (i.e. the total amount of materials that go into the process must therefore also be considered to go out of the Quarry's smoke stacks). The City is now concerned that the Quarry's estimated (and actual) emissions will increase yet again, due to the fact that the Quarry has indicated in its recent comprehensive reclamation plan application to the County that it is seeking to add an expansion area to the Quarry's operations with a new mine pit. A new mine pit and expanded operations at the Quarry suggest that the Quarry's estimated (and actual) emissions will increase. Thus, the City requests that the proposed EIR for the Quarry evaluate the anticipated effects of the additional air emissions which will result from such expanded operations at the Quarry.

4. Lastly, the City is concerned as to the accuracy of the air emissions data for the Quarry which the County will rely upon in preparing the proposed EIR. To the extent that an independent, third party review of the air emissions data for the Quarry has not yet been conducted by the appropriate experts, the City respectfully requests that the County order such a review to take place as an integral part of the preparation of the proposed EIR for the Quarry.

II. Water Quality Concerns.

The City is concerned about the Quarry's recent unpermitted water discharges into Permanente Creek and the potential detrimental effects of such discharges on both the City's residents and the City's surrounding environment. Consequently, the proposed EIR for the Quarry should address the effect of the Quarry's water discharges and the City's concerns. The City's specific concerns include, but are not limited to the following:

1. In a March 1, 2011 meeting between myself and the San Francisco Bay Regional Water Quality Control Board (the "Board") regarding its evaluation of the Quarry's unpermitted water discharges and its anticipated review of the Quarry's proposed NPDES permit application to cover such discharges, the Board indicated that it is concerned that the Quarry's currently unpermitted water discharges result in damage to Permanente Creek, damage to animal species, ground water contamination, and damage to the bay, and the Board is also concerned that such

discharges may result in contamination of the lower levels of ground water, which is pumped for subsequent treatment and human use. The Board also noted that water turbidity and sediments in the stream may kill fish species and endanger the protected red legged frog habitat. The City is also concerned about these consequences of the Quarry's water discharges. Accordingly, the City requests that the proposed EIR for the Quarry thoroughly evaluate the nature and extent of these consequences and any resulting harms which they may cause.

2. In my March 1, 2011 meeting with the Board, the Board commented that the Quarry's current water discharges could have several negative impacts on the City, including: (1) extra maintenance or repairs of storm drain lines and (2) requiring the Board to periodically remove sediment from the Permanente Creek bed, all of which adds to the cost of water in the City. The City is concerned about these additional impacts, and accordingly, the City also requests that the proposed EIR for the Quarry thoroughly evaluate the nature and extent of these impacts on the City. To the extent possible, the City requests that the County impose any and all applicable mitigation measures upon the Quarry to both redress any past impacts of the Quarry's unpermitted water discharges into Permanente Creek on the City and address any and all future impacts of such discharges on the City.

3. The City is additionally concerned that the above-mentioned environmental impacts of the Quarry's unpermitted water discharges into Permanente Creek will multiply and intensify, due to the increased operations associated with the Quarry's new mine pit. A new mine pit and expanded operations at the Quarry suggest that the Quarry's water discharges into Permanente Creek will increase. Consequently, the City requests that the proposed EIR for the Quarry evaluate the anticipated effects of the additional water discharges which will result from such expanded operations at the Quarry.

4. Lastly, the City is concerned as to the accuracy of the water quality measurements which the County will rely upon in preparing the proposed EIR for the Quarry. To the extent that an independent, third party review of the water quality measurements for the Quarry has not yet been conducted by the appropriate experts, the City respectfully requests that the County order such a review to take place as an integral part of the preparation of the proposed EIR for the Quarry.

The City appreciates your time and attention to the foregoing comments. Please keep the City informed of all developments relating to the County's scoping and preparation of the proposed EIR for the Quarry, and please do not hesitate to contact me should you have any questions in regard to the City's comments.

Very truly yours,

RON D. PACKARD
Mayor of Los Altos

cc: Los Altos City Council
Gary Waldek, Los Altos Hills Town Council

From: Joyce M Eden <comment@sonic.net>
Date: April 11, 2011 2:28:02 PM PDT
To: Marina Rush <marina.rush@pln.sccgov.org>
Cc: Stephen Testa <Stephen.Testa@conservation.ca.gov>, derek.chernow@conservation.ca.gov, Jim Pompy <Jim.Pompy@conservation.ca.gov>, Barry Chang <councilbarry@gmail.com>
Subject: Revised: Scoping comments on Lehigh dEIR reclamation & new pit proposal, WVCAW & No Toxic Air, April 11, 2011

West Valley Citizens Air Watch
Cupertino, CA 95014

comment@sonic.net
408 973 1085

April 11, 2011

County of Santa Clara
Planning Office, Att: Marina Rush
70 West Hedding, 7th Floor, East Wing
San Jose CA 95110

marina.rush@pln.sccgov.org

cc: Executive Director, State Mining and Geology Board; Acting Director, California Department of Conservation; Chief, Office of Mine and Reclamation

Marina Rush, Planner, Santa Clara County:

Re: Revised Scoping Comments for West Valley Citizens Air Watch and No Toxic Air for an Environmental Impact Report on a Comprehensive Reclamation Plan Amendment and Conditional Use Permit for Permanente Quarry (State Mine ID# 91-43-004)

Please use this revised version.

CEMENT PLANT LOCATIONS AND REQUIREMENT FOR CONDITIONAL USE PERMIT FOR MINING OPERATIONS IN THOSE AREAS

1) Since the site boundary, as shown on the map on page 2 of the Notice of Preparation of an Environmental Impact Report Comprehensive Reclamation Plan Amendment and Conditional Use Permit for Permanente Quarry (State Mine ID# 91-43-004), dated March 10, 2011, does not include the location of the current cement plant and kiln as a part of the reclamation plan, the parcel which includes the location of the former cement plant and kiln requires a Use Permit and is not Vested. Lehigh Southwest Cement Company (operator), collectively Lehigh, and Santa Clara County (SCC) cannot have it both ways. Either the current and former cement plant and kiln locations are separate operations from mining and do not require a reclamation plan, as per the scoping announcement map, or the former cement plant and kiln location does not require a reclamation plan, but does require a Use Permit to be used for mining operations.

The location of the former cement plant and kiln is therefore NOT vested and requires a Use Permit to change to a mining operation location. (see comments by Lehigh and OMR, 2007)

In our Vested Rights written comments, January, 2011, WVCAW asked that the location of the former cement plant and kiln be delineated by the SCC Geologist as a part of the Vested Rights report. That was not done. However, now delineation of the location of the former cement plant and kiln, including a location map, needs to be part of the Draft EIR so the public can understand and review its location in relationship to the reclamation plan and to the proposed Central Materials Storage Area and the East Materials Storage Area, as well as any confluence with the location of the current cement plant operation and kiln locations and any other areas of the Lehigh property.

TWO SEPARATE DRAFT EIRS ARE NECESSARY
2) As WVCAW has stated in public and written comments to SCC from the time a new pit and an amended reclamation plan were proposed by SCC in 2007, **the necessity of an adequate, State Mining And Reclamation Act (SMARA) compliant, reclamation plan for the disturbed areas of the Lehigh property needs to be presented as a <u>separate plan from a proposal for a new open pit mine and its own reclamation plan</u> for that proposed new open pit mine and mining areas.**

Of course an amended and adequate and State Mining And Reclamation Act (SMARA) compliant reclamation plan is needed for the areas of the Lehigh property already disturbed and destroyed by mining operations. The public cannot clearly understand and therefore cannot adequately comment on a reclamation plan for the currently disturbed areas that is mixed in with an entirely new proposal for a new open pit mine and new mining storage, overburden and other new mining operation areas.

We are talking here of hundreds of acres of already disturbed land, including a 200+ acre open pit mine, at least a hundred acres of an overburden area, West Materials Storage Area (WMSA), many other old and current mining areas, crusher areas, storage areas of various kinds and dimensions and locations, materials transportation methods within the operation, loading areas for receiving and transporting materials into and out of the operation, mixing areas, various domes, etc.

ADEQUATE TIME NEEDED FOR SCC PLANNING STAFF TO DEVELOP THIS/THESE COMPLICATED Draft Environmental Impact Report(s) (dEIR)
3) We commend the SCC Planning Staff for their high quality professional, thorough, clear and well documented Vested Rights report on Lehigh.
As the dEIR or dEIRs are being developed, we want assurance that the staff will be given adequate time to develop the dEIRs for these highly complicated, large ranging and potentially hugely impactful projects on Santa Clara County and be given adequate time to put out a high quality professional, thorough, clear and well documented dEIR for the public to review.

REQUIREMENT FOR A TRUE NO PROJECT ALTERNATIVE

4) A true No Project Alternative needs to be presented to the public as a part of the Draft EIR. This true No Project Alternative needs to present NO NEW QUARRY and NO NEW MINING AREAS, all the environmental implications (benefits) of that compared to a new 200+ acre quarry with additional hundreds of acres of new storage areas and mining disturbances. A true No Project Alternative of no new mine, would be an actual mitigation to a proposed destructive project/mine: e.g. preservation rather than blasting a 200+ acre dead zone in a nearly undisturbed habitat, no new bridge over Permanente Creek carrying mining materials, no additional run off and degradation of Permanente Creek and by direct implication San Francisco Bay, as the Creek runs to the Bay, no disturbance of red legged frog habitat, no new disturbance to the existing oak woodland areas, no new disturbance to the Bay Laurel habitat, no new disturbance to the chaparrel habitat, no new degradations of the views of the Santa Clara Mountains, no new aesthetically degrading and disturbing artificially flattened hill or mountain tops, etc.

One hundred years ago mining was begun when the population of Santa Clara County was only around 60,000 people and this was a rural area. The current population of Santa Clara County is now approximately 1.7 million residents. The County of Santa Clara is a densely populated suburban/urban area. The setting has greatly changed. It was one thing to begin a mine 100 years ago, it is another to begin a new mine now in this highly populated area. It is no longer appropriate. That is clear.

ALTERNATIVE for dEIR
5) Since Lehigh has two other cement plants and quarries in California, one in Redding and one in Southern California, neither of which has high levels of mercury in their lime stone such as the Santa Clara County location, a viable Alternative to present to the public in the dEIR is moving their operations from the high mercury limestone location in Santa Clara County, to their Redding and/or Southern California plant(s). This is a logical alternative which needs to be examined in the dEIR.

ADDITIONAL ALTERNATIVE for dEIR
6) At the top of the California PRC reduction/recycling hierarchy is reducing the amount of new materials needing to be manufactured. New cement contains huge amounts of embodied energy, due to the high amount of fossil and other fuels needed to bake the limestone to a high heat -- approximately 2700 degrees F. The Lehigh Southwest kiln uses 20 TONS

of fossil fuel per HOUR. The Lehigh Southwest kiln cranks out huge amounts of dangerous and toxic pollutants in addition to the aforementioned high levels of mercury due to the local mercury laden limestone. The amount of cement needing to be produced in California can and should be reduced by utilization of alternative materials where possible. For now, bridges continue to need to utilize high specification cement (in the form of concrete). However, there are many other uses of cement which can and by following the PRC reduction hierarchy can be replaced with materials less harmful to the environment.

For example, using Rubberized Asphalt Concrete Roads (RAC), such as was used to repave Foothill Expressway in Santa Clara County and on Highway 880 (located partially in Santa Clara County), reduces the amount of concrete needed for the road bed by around 1/2 (see CIWMB). Santa Clara County can require the use of RAC in all its two lane roads, thus significantly reducing the amount of cement needed to be utilized in the County. This will be in compliance with CA PRC which sets the reduction/recycling hierarchy for the State.

Cement is a material containing high embodied energy. The mining and manufacturing of cement is a producer par excellance of toxins, pollutants and green house gases (GHG). It is estimated that cement kilns produce a significant percentage of GHG in California and worldwide (see NYT articles). For every 1 million metric tons of clinker produced to make cement, approximately 1 million metric tons of CO2 are put into the atmosphere.

NO ASSUMPTION THAT MITIGATION MEASURES WILL BE SUCCESSFUL

7) The assumption should be that mitigation measures will probably or undoubtedly fail. That is the usual actural outcome of, "mitigation" in the real world, despite all the stacks of paper in EIRs to the contrary. And in this case, even many of the basics of SMARA and of the County's rules and regulations are not followed, on top of poor to failing monitoring of the operation, so what confidence could the public have in any proposed, "mitigation" measures. Especially any "mitigation" measure that would be in the EIR in order to facilite the project of either the new proposed open pit mine, new mining bridge over Permanente Creek, new storage areas. And in the case of a "reclamation" plan, any proposals in the dEIR for a final "use" being facilitated by the "reclamation" plan has already little to no

credibility due to the record of poor compliance and inadequate monitoring and rarely if ever any consequences for SMARA violations. Certainly we have not seen mining operations being halted due to any of the many violations. The pile in the EMSA stays in place and grows.

In 2007, we saw how well the "replanting" worked. A few scrawny struggling sticks masquerading as revegetation. Really, its a sad joke, except that is all that we can realistically expect, protestations to the contrary of how well it would work this time. Oh sure.

And what of the financial assurance (FACE) requirements? Inadequate. When the company is done mining, what motivation will there be to follow through? What motivation will the county have to follow through? Nothing in the recent record gives any confidence. In fact, just the opposite.

As it is, we have to look at artificially flattened hill tops every time we drive in our neighborhoods. Does the county really think we would accept more of that in our neighborhoods?

The additional dust from the operations and the storage areas, as they would be closer to our neighborhoods are disturbing to us. We have numerous organic gardeners in our neighborhoods, how do you think we feel about that dust falling on our organic plants and soil that we so carefully tend? We are concerned and disturbed about the dust and now we face additional dust with toxic elements and compounds in it due to the proximity of the storage areas to many of our neighborhoods. This is a significant impact on us, our children, our schools, on our homes, our quality of live, our food and our values.

We have been asking for years for a State Certified Geologist to identify areas of the current open pit mine for rocks to test, to collect samples him or herself and bring them him or herself to a State Certified lab to be tested for potential asbestos or asbestos like particules. We know from County documents that the pit contains serpentine or serpentanite soils. This soil tends to contain asbestos or asbestos like particules. This soil has never been tested in this manner and the results released to the public. We ask for this for the current quarry, for all the areas of current disturbance, for the EMSA area for the CMSA and for the proposed South Pit area including the area proposed to be mined beneath the surface. We ask for the results (the actual data dump) to be released to the public and to be published in the dEIR.

CUMULATIVE IMPACTS
8)
A. Cumulative impacts needs to consider the absolute dead zone of hundreds of acres created by the current open pit mine, the multiple storage areas, the WMSA. Just look at the google view of the mining operations and the plant and kiln. Nothing but dirt, dirt, dirt. NOT soil. All the habitat wiped out completely. The current pit will NOT be filled in by mining a new pit and dumping its "overburden" there. Limestone would be used in the kiln to make cement. Aggregate would be mined and sent off for construction projects of various kinds and to make concrete. And we were told by a company official in 2007, that when the company runs out of good limestone, they would start mining back into the WMSA for useable materials. Obviously, if that would be done in the WMSA, it would also be done with the "overburden" materials which might be deposited in the current pit. There is no "reclamation". This "reclamation" plan would be a bad joke on the residents, and eventually Santa Clara County and all of us taxpayers. who will pay in the end for whatever is able to be "reclaimed" at some unspecificied time in the future. The company will take their profits and -- bye-bye. So before yet another 50 year mining operation scarring and destroying hundreds of acres of our beautiful Santa Cruz Mountains and habitat and watershed, consider all this in any potential action alternative. The action will be destruction. Little if any "reclamation" will any of us or the next generation probably see. We'll be witness to more of the hills being destroyed.

B. Do we really want more paving of paradise? More runnoff into the Creeks and into the Bay. More pollution in our groundwater, which is also our drinking water? Less red shouldered hawks? Less red legged frogs? Less tiger salamanders? Less legacy for our children and grandchildren? Do we have a responsibility to answer to them now? Why is it ok to continue to pollute and destroy at this late date? Is that what we choose? No it is not!

C. The mercury is now sequestered in the limestone in the ground. Once it is mined, it is no longer sequestered. Lehigh's plan to inject some of mercury into the finished cement product puts do-it-yourselfers and the working poor at great risk for exposure to mercury laden dust. The cement bags will then need disclosure of mercury content. The ultimate destination of the mercury removed from the pit must be evaluated considering both the immediate concrete structures which will temporarily contain the mercury and how this concrete will be recycled or broken down in the future. Mercury is widely recognized as a potent neurotoxin in tiny amounts. Mercuy is an element and once released from the limestone, remains in the land, water and air. Mercury in the atmosphere and in bodies of water is accumulating locally and world wide. Once it is no longer sequestered it adds to the earth's toxic burden of mercury and affects the health of humans and other animals.

D. In our local area we have been subjected to the deposition of the released mercury from the cement kiln for 70 years. Any additional mercury is a significant cumulative impact.

E. The same goes for many of the heavy metals and other pollutants that have been released into the air, water and soils from both the mining operations and the cement kiln emissions and operations. Many of these are persistent. Some locally, some region wide, some world wide. The contribution of this operation, including the cement plant and kiln, needs to be considered in cumulative impacts, but from the already existing impacts and from impacts from the proposed new mine and mining operations projects.

F. Increased dust from blasting the new mine, from setting up the new mining processes and building the proposed bridge over Permanente Creek, could only result in increased dust falling into the Creek from all the initial and then ongoing disturbances, bringing with it new sedimentation and pollutants into the Creek and Bay.

G. The dust from the mine, the mining operations have been accumulating for one hundred years. The the small particulates, toxins and other pollutants from the kiln have been accumulating since 1939. All this existing pollution and degradation are cumulative impacts which need to be disclosed and considered. A new mine and mining operations would increase this toxic dump on us all on top of the already polluted air, water and soil. The new mine will be closer to other areas. The storage areas will be and the EMSA is much, much closer to our homes and neighborhoods and schools.

H. There are highly sensitive receptors (what a way to characterize children and elderly and ill people) close to the Lehigh operations. Stevens Creek Elementary School, Monarch Christian Day School, Lincoln Elementary School, West Valley Elementary School, Monte Vista Park, Kennedy Junior HIgh, Cupertino Junior High, Monte Vista High, Homestead High, Sunnyvale Retirement Center, The Forum (assisted living), Pleasant View Convalescent Home.

I. It is highly documented that human beings are already carrying a dangerous body burden of toxins that impact their health. It would be unacceptible to increase this by opening a new mine and storage areas and thus also continuing the toxic and deleterious emissions from the cement kiln.

9) The Notice of Preparation (NOP) states, the proposed project area is approximately 1,105 acres, and includes 251 acres for the expansion area and 317 acres to remain undisturbed oak woodland." This statement does not fully disclose the area of disturbance. It appears to include little more than the proposed south quarry but not the new and currently expanding storage and mining operations areas. And how does the county or Lehigh decide that 317 acres will remain undisturbed.

The Lehigh operation has already irreparably destroyed a portion of the Mid Penninsula Regional Open Space District Land, through encroaching upon it with mining operations. Many of our members hike and enjoy the wildlife and native plants and view of and within the Mid Penninsula Regional Open Space District. This is a rare treasure that is located in Santa Clara County. We take destruction of its lands seriously. There are very few open spaces that are preserved, such as Mid Penn. We hold them dear and precious.

The areas of identified limestone go east of the south quarry. Perhaps that is the reason for the road that is in the plan which cuts east. The previous proposal for the "Pit 2" was east of the proposed South Quarry. So we can guess that that area east of the proposed South Quarry willl be next on the blasting block.

10) In addition, adding a new mine and storage areas with increased visibility would detrimentally harm property values of the neighboring communities. This is a significant impact.

NOISE and VIBRATION

11) The mining operations go on day and night. The trucks are allowed to travel day and night. Neighbors complaints about noise and vibrations from the current mining operations, blasting and diesel trucks go on and on with no help or relief from SCC. These noises and vibrations occur day and night. Neighbors state that it is so unbearable to be woken up in the middle of the night on a regular basis.

The proposed new storage areas, EMSA and CMSA, are significantly and much, much closer to Cupertino and other neighborhoods. We can unfortunately project that this would bring significantly more disturbing noise and vibration into our neighborhoods both day and night.

What about the proposed new bridge over Permanente Creek and the truck noise? The noise from the trucks going over the Creek would probably be amplified by being over water. Would mining trucks be moving over the bridge? Taking into consideration their size and the size of their tires alone, this could potentially be an additional significant increase in even more noise and vibrations issue. Will be bridge be concrete? Steel? How will that affect the noise and vibration? We are guessing it will be amplified even more. We cringe considering this additional impact on the quality of our lives and the stress levels. Stress is a major factor in illness.

The proposed new mine and bridge would be closer to homes on Montebello road, bringing more disturbing noise and vibration to that residential area.

The location of the hills and mountains in relationship to the mining operations, the blasting, the mining trucks, the bridge, the diesel trucks could also create more noise and vibration from reverberations off of their surfaces.

12) VISUAL RESOURCES

A. There will be many roads, streets and homes that will have a very nice view of the destruction -- mine and mining operations. The proposed pit would be visible to many more homes, roads and businesses. The dEIR must show line of site maps from every area, street and home that will be able to view the proposed open pit mine and the proposed storage areas and any other areas of disturbance. Three dimensional maps must show clearly to the public these areas so the public can determine from what viewpoints they will be able to see the areas of disturbance. And for each stage. Since the areas of disturbance now look tan, the maps should show the areas as they will appear, not some mythical green.

B. Some of the nearby areas we have already identified from which the proposed South Quarry and/or EMSA and/or CMSA would be visible are Hyannisport and Bubb road intersection, Stelling and Stevens Creek Blvd. intersection, Stevens Creek Blvd. in front of the Post Office, from Voss Avenue near Monte Vista Park, from Stevens Creek Blvd. just East of Janice Ave, from Alpine Road in Cupertino, from both sides of the Road and from homes looking towards the location of the proposed new mine, storage areas, as well as from Cristo Rey Drive which is practically on top of the new proposed mine.

C. We are asking for clear disclosure in the dEIR of all the roads, streets, homes, businesses and areas that would be able to see the new proposed mine, new storage areas or other new mining operations. This should be done in concentric circles, for example from 1 mile away, 2 miles, 3 miles, 4 miles 5 miles, 10, 20, and 30 miles away. This new proposed project would affect the aesthetic and visual experience of the entire South Bay Area and be a major unmitigatable degradation and scarring of our beautiful visual resources.

D. There are also areas not as nearby which would be negatively impacted by seeing the hills and slopes of the Santa Cruz Mountains denuded and/or destroyed by the proposed new mine, new storage areas and other new mining operations. For example, many areas -- homes, businesses, streets -- in the City of Sunnyvale which look towards the hills, slopes and mountains, such as have a line of sight past the parking lots of Homestead High School.

E. As people drive Highway 85 and Highway 280 going towards or seeing in the direction of the Santa Cruz Mountains where the new mine, or storage areas or other new mining operations would be, they would be able to see new and disturbing large scars and degradations of the hills, slopes and mountains. West Virginia anyone?

F. The application gives an incorrect description of the South Quarry -- that is, the proposed open pit mine -- as, "South Quarry Road." It gives an incorrect impression that an open pit mine which is scraped clear of any vegetation, is merely a "road" that cuts through woodland or green areas. The South Quarry open pit mine would be a clear cut dead zone, actually worse than a clear cut, as a pit would be blasted deep into the earth. The dEIR needs to be clear both descriptively and visually about this. It is tan, not green. It is dirt not living soil. It is a dead zone.

G. (Also see the discussion following in 14) regarding visual impacts).

13) GEOLOGY & SOILS and SURFACE HYDROLOGY, DRAINAGE & WATER QUALITY

Three dimensional geologic and hydrologic image maps need to be developed and disclosed to the public and included in the Draft EIR of the areas proposed for a South Quarry, for the CMSA, EMSA and all other proposed areas of new and continuing disturbance as well as for the entire reclamation plan area. These maps need to be generated and disclosed to the public for each "stage" of the proposed mining and reclamation plan.

Would the selenium impact the water quality, groundwater, hydrograph of Permanente Creek. What about the mining wastes and their other components such as the high level of mercury? The mercury is now sequestered in the limestone. Once it is mined, it is no longer sequestered. The overburden storage in the WMSA, in the EMSA, and the CMSA?

EARTHQUAKE FAULTS

14)Three dimensional geologic image maps need to be developed and disclosed to the public in the Draft EIR showing all the known and suspected earthquake faults in the proposed pit and new mining areas as well as in the rest of the reclamation plan. In addition Three dimensional geologic image maps need to be developed and disclosed to the public in the Draft EIR showing all the known and suspected earthquake faults located in a five mile vicinity of the proposed pit and new mining areas as well as in the rest of the reclamation plan.

How would the geology and the earthquake faults known and suspected interact with a new mine, with the old mine and its unstable slopes, with the near-by Stevens Creek Quarry and with the Stevens Creek Reservoir.

NO NEW DISTURBANCES, NO NEW MINE
15) The public can rightfully ask why Lehigh should be granted the opportunity to ask for a new mine and mining operation areas in light of the numerous violations of their recent and current operation. Before any new consideration takes place, the old and current violations need to be rectified. And the public has the right to be concerned at the failure of the county to adequately monitor the Lehigh operations and their failure to adequately require rectification of violations. The County allows Lehigh to continue many of its violations and says it will use this EIR process as a way to mitigate the violations; eg, in the case of the storage pile in the EMSA, the county not only continues to allow the pile to remain where it is without a reclamation plan in place, but it allows Lehigh to continue to enlarge the pile.

This pile is highly visible from many locations in Cupertino. This pile is highly visible from the Rancho San Antonia/County Park trail that begins at the Horse Parking Lot. Many of our members hike this trail. It was disturbing to see the initiation of this blight on our enjoyment of the Park. It is even more disturbing to see its continued growth and blight. Many people hike and run the trail to de-stress. Yet this pile is causing stress. Stress is well know to be a major factor in initiation of and exasperation of disease. It is known that stress negatively impacts the immune system(s). This pile was found by a member of WVCAW who reported it to SCC. It took numerous phone calls to get the County to come out and investigate and to determine whether or not the pile was in an area with a reclamation plan in place. It was NOT.

A. It is our understanding that a California Environmental Quality Act (CEQA) document, such as this EIR process, should take a fresh look at an issue or plan or project. It should not be a rubber stamp of a predetermined decision by an agency or decision makers, such as the SCC BOS in this case, of acceptance of a permittee's application for a new project (in this case a new huge open pit mine and storage areas). We fear that this could be the case in this situation -- the default of the County Supervisors even before the EIR review being approval of a new mine, and just get through the annoying, time consuming public process. We want this to be a real process, in compliance with CEQA. We are doing our part.

B. What confidence should the public have in either Lehigh or SCC BOS? Why would a new huge, 200+ acre mine plus hundreds of acres of new storage areas be acceptable in 2011 in our hills and neighborhoods with it's creation of hundreds of acres of new dead zone, with all its attendant nuisances, visual degradations, impacts on the current population of 1.7 million residents, it's further impacts on the health of residents and worldwide, with alternatives as explained in part above, etc?

C. The public needs disclosure of Lehigh violations in order to evaluate their application for a new open pit mine and additional mining and storage areas.

D. The dEIR should list and describe the numerous violations and failures to comply with SMARA that were identified by the SMGB in 2006 and idenify the ones that are still outstanding.

E. The dEIR should list and describe the numerous violations and failures to comply with other county rules and regulations and the action, if any, that the county took.

F. Disclose if and when the county took no action and for which violations. Disclose fines levied or no fines levied for which specific violations.

G. The EPA's NOV to Lehigh regarding significant emissions of NOx and SO2 over a decade should be disclosed for the public to evaluate in this context.

H. The Water District's NOVs to Lehigh regarding violations of their water permit should also be disclosed for the public to evaluate in this context.

I. In addition, we bring to your attention what appears to be yet another SMARA violation of a failure to have a reclamation plan in place before mining operations take place on the Lehigh property.

Our item number 14) in our comments to BAAQMD regarding the Lehigh Title V permit renewal on March 25, 2011, comments as follows:

In addition, we are disturbed to read about and object to , "S-607 the stockpile area #2 (1", 1/4" aggregates and slag) at the entrance's gate is new." The operation continues to be accommodated by the BAAQMD to add additional pollution. We were told last year by BAAQMD that the operation does not use, "steel slag". What is this slag being used for? Is it steel slag? If so, that was the source of this slag? What are its components? Does it contain hexavalent chromium? Is it being used in the kiln? This concerns us greatly. (page 129 Statement of Basis)

. . .
Also, the Statement of Basis page 126 states that S-607 Storage Piles Area #2 contains aggregate.
This is a quarry product, not part of the cement plant. This storage should not be permitted in this area.There is no map of this area, as such the borders are not defined and can move into other areas as we have seen many times before. . . . **Does any regulation mean anything in reality?**

Also, petroleum coke is being stored and there is potential runoff containing these pollutants.
Storage areas are mentioned, but not where and what, 3.9 acres.

http://www.baaqmd.gov/Divisions/Engineering/Title-V-Permit-Programs/Title-V-Permits/Santa-Clara/A0017/Lehigh-Southwest-Cement-Company.aspx

The point here for SCC is that BAAQMD refers to a "new" stockpile area, "at the entrance gate". Is there are reclamation plan for this new stockpile area? We want to hear from SCC on this.

We want to know from SCC where are these 3.9 acres where petroleum coke is being stored? We ask for a map of this area and its location. Is there a reclamation plan for this area?

Lehigh's continuing violations of SMARA, failure to have a reclamation plan in place while performing certain mining operations, and now what appears to be one or more new mining operation areas without a reclamation plan in place violation (stock pile storage areas) again calls for their immediate deletion from the AB 3098 list and calls into question their application for a new open pit mine and new storage and mining operation areas and SCC's ability to adequately monitor their operations.

Please investigate the S-607 stockpile area #2, as referred to by the BAAQMD as per above, and the 3.9 acres of storage areas.

Please inform us of your investigation into this new additional potential violation(s).

J. In addition, while many members of the public read the SCC staff's clear, extensive and well documented vested rights report, it was hard to glean from the discussion by the County Supervisors that any of them actually read the staff report, due to their questions and discussion. From their questions, they did not even appear to have the basic underlying understanding of the difference between vested rights and a Use Permit -- basic to understanding of vested rights. Yet they voted that night on vested rights. Shockingly they even over road their own, in place, zoning code!

How can the public have confidence in the SCC BOS reading and evaluation of the EIR(s) and Conditional Use Permits regarding their vote on the final EIR and Conditional Use Permits?

No new mine.

Thank you,

Joyce M Eden, Karen Del Compare, Tim Brand and Marylin McCarthy for West Valley Citizens Air Watch

Barry Chang, President, No Toxic Air and Board of Directors No Toxic Air on behalf of No Toxic Air

From: Joyce M Eden <comment@sonic.net>
Subject: **Fwd: Revised: Scoping comments on Lehigh dEIR reclamation & new pit proposal, WVCAW & No Toxic Air, April 11, 2011**
Date: April 13, 2011 5:40:44 PM PDT
To: Marina Rush <marina.rush@pln.sccgov.org>
Cc: Ken Yew <ken_yew@yahoo.com>, Barry Chang <councilbarry@gmail.com>

Marina Rush:

Errata: Please see number 15) I. below for page reference correction, corrected in red and a correction from "are" to "a" also indicated in red.

Please confirm that you received these corrections by email.

Thank You,

Joyce M Eden

Begin forwarded message:

> **From:** Joyce M Eden <comment@sonic.net>
> **Date:** April 11, 2011 2:28:02 PM PDT
> **To:** Marina Rush <marina.rush@pln.sccgov.org>
> **Cc:** Stephen Testa <Stephen.Testa@conservation.ca.gov>, derek.chernow@conservation.ca.gov, Jim Pompy <Jim.Pompy@conservation.ca.gov>, Barry Chang <councilbarry@gmail.com>
> **Subject:** **Revised: Scoping comments on Lehigh dEIR reclamation & new pit proposal, WVCAW & No Toxic Air, April 11, 2011**

Lehigh property.

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> In addition, we are disturbed to read about and object to , "S-607 the stockpile area #2 (1", 1/4" aggregates and slag) at the entrance's gate is new." The operation continues to be accommodated by the BAAQMD to add additional pollution. We were told last year by BAAQMD that the operation does not use, "steel slag". What is this slag being used for? Is it steel slag? If so, that was the source of this slag? What are its components? Does it contain hexavalent chromium? Is it being used in the kiln? This concerns us greatly. (page 129 Statement of Basis)

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The point here for SCC is that BAAQMD refers to a "new" stockpile area, "at the entrance gate". Is there ~~are~~ a reclamation plan for this new stockpile area? We want to hear from SCC on this.

From: "Rhoda Fry " <fryhouse@earthlink.net>
Date: April 11, 2011 12:38:04 PM PDT
To: <marina.rush@pln.sccgov.org>
Subject: comments for EIR - Lehigh Hanson

Dear Marina –

Comments for EIR - Lehigh Hanson

I wish they'd just clean up their act before asking to do new things and start keeping some bare minimum promises.

They've been out of compliance with SMARA for 10 years and should have been denied participation in lucrative government contracts. How did the county allow this to happen?

I don't even understand why they'd bother to do an EIR anyway because it looks like they'd do whatever they want anyway.

The new HRA – Health Risk Assessment has come out and it is all very bad news. The agencies have been lying to us for years about the relative safety of this plant. I am so upset that I was not able to make an INFORMED DECISION as to where I should live because the data was just plain wrong.

All the NOVs should be taken into account as well. The recent water issues are horrific. Well, I suppose with an EIR, you don't have to do better than you've done in the past, so perhaps it is to their advantage that they've been an egregious violator. But that does us no good.

I'd be happy to pay more for cement than to deal with the short and long-term health and environmental problems caused by the cement plant and quarry and rock operations.

At a minimum, they should burn natural gas.

I am worried that if they cut down trees, that we will lose what little buffer that we have for noise, dust, etc…

Any time you start looking into the details on this plant you see problems. What will be done to keep them compliant? We can't wait for years and years and years for nothing to happen. I know so many parents with kids who have learning disabilities and it is heartbreaking – or with allergies that are compounded by PM10. What are they going to do about the water pollution? We cannot allow this operation to continue in this manner.

It seems that the county is looking at short term revenue – however, with the HRA listing acute exposure for CANCER, that will for sure affect home values and health costs, and the cancer victims and their families to contribute to the economic engine in the Bay Area.

I realized the deadline is today and just don't have the time to put my brain on this. I know that many others care about this issue deeply and are also strapped for time. I hope the county wakes up and starts taking care of the citizens, for once.

Regards,

Rhoda Fry
Cupertino

From: Janet Geiger <janet@foxcove.com>
Date: April 11, 2011 2:51:46 PM PDT
To: Marina Rush <marina.rush@pln.sccgov.org>
Subject: NOP Lehigh

Hi Marina,

Although it sounds like you are preparing a comprehensive EIR for the proposed new quarry for Lehigh, I would like to reiterate my concerns with the following:

1) Destruction of the foothill viewshed protected by the General Plan and Zoning Ordinance that will forever affect the identity of Cupertino in a bad way. Where is Cupertino? It will be that place between Saratoga and Los Altos beside the open pit mine easily seen from everywhere.

2) Property values will be decreased by this notorious eyesore and obvious pollution generator

3) Noise issues especially at night

4) Dust and noise issues associated with blasting and excavation

5) Light pollution at night

6) Possible destruction of unique limestone cave formations evident on Stevens Creek Road

7) Pollution of Permanente Creek with toxic run-off and deliberate pumping

8) Polluted air especially with particulates and mercury, Nox and Sox and other poisons

9) They may endanger unique species of plants and animals or destroy anthropologic artifacts associated with that kind of limestone as well. There are some endangered species downstream on Permanente Creek I read about in some of me research I don't have time to flag today.

Please do not hesitate to contact me if I may be of further assistance on these issues.

Thank you,

Janet Geiger

From: Cathy Helgerson <sharpset1@aol.com>
Date: April 4, 2011 11:06:52 AM PDT
To: marina.rush@pln.sccgov.org
Subject: Lehigh Southwest Cement & Quarry

Hi,

My comments for the EIR

1) Site should be setup as a Supper Fund site and the EPA Super Fund Region 9 folks have decided to do a Preliminary Assessment
Due to my submitted Petition this is very good news.

2) There has not been a working Reclamation plan in effect in 10 years and I do not think this will every happen growing trees, grass and
shrubs in the location of the WMSA and the EMSA is impossible because you would have to put in sprinklers to keep the plants from
dying. The water that would be washed into our water shed is a big problem and I am sure there is no way to stop the pollution. Once
the Limestone is mined and disturbed the Mercury is released and it is washed into the Permanente Creek and the Stevens Creek
Creek and in turn released into our water shed and aquifer where it is pulled up from the wells in the community. These wells are
being used by the Water Companies and the Santa Clara Water District and we are drinking this water. There are many pollutants
in our water and Vanadium is one of them which is not

regulated by the EPA this pollutant is now at 7.0 ppb as stated by California Water Company. The Santa Clara Water District plays down the pollution levels in our water and they are allowing the Mercury in the Steven Creek Reservoir to be sustained doing absolutely nothing about cleaning up the Rerservoir. People are fishing in the Reservoir and taking the fish home to have their families eat the fish on their dinner table that is polluted with high levels of Mercury Pollution and no one seems to care.

3) The displacement of the ecosystem animals wildlife and water wildlife of all kinds would be devastating there is no way to save them except to close the Lehigh Southwest Cement and Quarry and the Steven Creek Quarry down once and for all and turn it into a Super Fund Site for clean up. I would also like to see the land turned into a Park and Historical site for the Limestone and the beauty of the trees and land for generations to come. The Limestone can never be replaced once it is mined and turned into cement there will never be more. We must stop this destruction before it is to late for many lives are at stake.

4) The destruction of 10,000 trees some of them 100 years old in order to put this new mine in would be a major catastrophe there is no way they would ever be replaced. The trees have thrived due to the limestone rock under them holding on to this rock for security and protection. The water from the rain is stored in the ground and rock and the roots thrive on this storing of water which will be destroyed for ever.

5) The Limestone dates back to the Jurassic period when the land was under water and it holds many fossils of all kinds this can never be replaced and once it is mined it will be lost for ever. This site should be a major Historical Site and it should not be destroyed there is no Limestone like this any place else in the country. Leaving the Linestone in the ground will keep the Mercury from escaping and harming the public this must be done to protect us all.

6) The Lehigh Southwest Cement and Quarry and the Steven Creek Quarry are right in the middle of 3 fault lines and it is suspected that the next major earth quake will be caused by mining the next 215 acres of the new mine at Lehigh. I would even go as far as to say the mining of the first pit decades ago was responsible for the last major earth quake in San Francisco. I also believe that the mining that has taken place since then is responsible for the other earth quakes that have taken place over the years. This new pit is not acceptable and the pollution and danger to the areas animals and human life alike needs to be considered.

7) Pollution and Dust the Cement Plant and the Quarries need to be shut down due to the ongoing pollution they are causing to the public. There have been many Notice of Violations against Lehigh and I suspect if anyone took the time the same violations would be found at the Stevens Creek Quarry as well and I suspect this will happen in the future. The pollution can not be stopped because there is no real enforcement conducted and the public

demands that there is.

8) There is Selenium dust and pollution all over the Quarries and the Cement plant and the Water Board has yet to enforce original Notice of Violation and the additional letter that was sent out for the pollution from the Quarry water that is being released into the Permanente Creek and the public would like to know why. The ceast and desist order submitted to Lehigh from the State Water Board does not seem to make an impression on them so who will do the enforcement?

9) The EMSA and the WMSA is a violation and the overburden is polluted with who knows what I have asked SCC to test the soil continuously in the overburden and also to test the soil under the piles due to the pollution and nothing has been done. The fact is that there was factories that manufactured and processed aluminum this site was never cleaned up and it has been allowed to pollute the Permanente Creek, Stevens Creek Creek, Steven Creek Reservoir, the Water Shed and Aquifer below the ground. There needs to a Super Fund set up to clean up the pollution so as to not endanger the public and further.

10) The Santa Clara County can and could be held responsible for this ongoing allowance of pollution from the Lehigh Southwest Cement and Quarry that would also include the Stevens Creek Quarry to the extent that they would have to also pay for this clean up. There can be even more serious consequences to anyone that is responsible for these crimes against the citizens and there should

be.

SCC has over looked their own staff report for the vested rights at Lehigh and the Board stated that farm land us is the same as mine land use that is ridiculous.

11) The Cement plant processes should not be looked at separately but included especially because it is causing pollution all over the Quarry Site and the Cement Plant Site. This pollution is spread all over the Silicone Valley and there is dust and pollution every where. The Mercury released is at devastating levels and Lehigh has not proved they have reduced the amount 25% I for one have not seen a lab report or any real proof that they have redused it at all. The fact that the EPA is imposing new rules on them is not enough it could take years for the EPA to work out the law suites that have been imposed against them we can not wait. The public is in danger now and has been there needs to be an end to this continued pollution. The cumulative effect of pollution in our bodies and the chemical cocktails effect due to the combining of all of the pollution is killing us the cancer rate is now one out of two people that has cancer.

12) The Lehigh Southwest Cement Plant has been drying the Petrolium Coke at the facility with the NOX and the SO2 emissions from the Kiln in order to burn it and that is what I suspect has been keeping the levels down. There are two pipes releasing Pentrolium

Coke emissions and this is combined with the NOX and SO2 emissions and there is no monitor on the pipes. The levels of NOX and

SO2 from the Kiln has a monitor on it and the levels have been below the high max levels set by the BAAQMD and I have always

wondered how that could be and now I know. The levels were low because they were funneling the NOX and SO2 gases over to the

Petrolium coke piles which has no monitors and we the public have been over exposed to these emissions. I wrote the EPA Region

9 and the EPA Federal Dept. in Washinton, DC nothing has been done about this so far. The EPA Region 9 sent my paperwork to

BAAQMD and I have not heard from them either. What Lehigh has done is totally illegal and against the law they are corrupt and this

matter should be investigated but I have yet to hear from anyone. If you are wondering how I found out about the two piles

well I can tell you it was from the BAAQMD's investigator he told me what was coming out of the two pipes and the rest is evident.

He also suggested that if I felt the two pipes should be monitored that I should put it in the Title V Permit comments so that they

could put monitors on the pipes. I think that is real funny I am sure that is the last thing that Lehigh or the BAAQMD wants to do

because if they really wanted to they would have done it by now. I feel that this is a major cover up and I wanted the EPA to get up

to Lehigh and catch them doing this crime but who knows now what is going on.

13) The trucks from the Quarry and the Cement plant are totalled

to 70,000 truck trips per year I think this amount is very conservitive.

We must also consider the truck trips from the Stevens Creek Quarry as well back and forth causing noise and dust pollution all over our roads.This dust is spreading all over the community especially into the homes of the people that live very close to the Stevens Creek Rd. and the Foot Hill expressway it is absolutely devistating and this must stop. The noise coming from the trucks and the cement plant and quarry is a nusinance this must stop. The danger from the rocks being thrown from the wheels of the trucks onto pedestrians is life threating. The rocks are also breaking car windows which could cause care accidents and this of course should stop.

14) Every city in the valley should be involved with this matter and they should be working to look out for the population that lives in their community which is in terrible danger.

15) We can not concer ourselves with a few jobs of the people that work in these facilities or drive the truck that hall the cement around what should be looked at is the benifit of the majority of individuals that are being polluted to death. The workers are also at risk and so they maybe more concerned about their jobs when they should be more concerned about their health and their families health.

Sometimes society needs to protect those that are to blind to see what is really going on.

16) The EIR should include anything that would make a difference to the report and that includes the Health Risk Assement that is so
poorly done there needs to be a truly real report done. This would have to include all of the pollutants gases, metals and chemicals
that would harm the public in any way and the levels should be subject to a real investagation.

17) Santa Clara County should do their own air, water and soil tests not depending on Lehigh or the Steven Creek Quarry to do their
own tests that can be flawed or tampered with in any way lets not let the fox watch the chicknen coop. The self policing of these
companies has caused many problems and yet we have them do their own testing this should not be allowed.

18) The new mine will cause more dust and more pollution we the public will not be able to live in our homes any longer. The law suites
that Lehigh and the Stevens Creek Quarry will have to be subjected to will cause them bankrupsy. This pollution will be worse than
any major catastorphy. The 10,000 trees that have been some what of a buffer will be gone and the dust will fly and cumulate on
ground wash into the water ways and sufficate us to death this paints a very devistating picture and it should. We can not let this
happen it is a crime a sin a distruction of humanity and we as citizens have a right to life, liberty and the persute of happiness so
how can anyone let this continue.

I stated that I will not stop my endevers no matter how long it takes I will persiver and never give up the fight so I hope you will look at
all of the issues and make amends the Lehigh Southwest Cement and Quarry and the Stevens Creek Quarry must be closed down once
and for all. The lands must become a major Super Fund site and the cleanup must begin immediately in order to protect the public from any further polluiton and contamination.

Please do the right thing and help us let me know via e-mail if you have received this e-mail message. I would also like to know when the
comments will be printed on the web for my review.
Thanks

Cathy Helgerson

From: Vicky Ho <vickyyueho@yahoo.com>
Date: March 30, 2011 9:18:34 PM PDT
To: Marina Rush <marina.rush@pln.sccgov.org>
Subject: Re: Lehigh Permanente Quarry- comment

Thank you for your notice.
I am submitting my comment in writing.
I heard the Lehigh plant manager once admited that the mercury level of the rocks at
Lehigh here is very high, much higher than the quarry that they had in their plant in
Germany, where they managed to control the mercury emission to a very low level.
In other words, the rocks here is naturally not suitable for the process, because of its high content of mercury. So why are we letting them open another pit, knowing already that the rocks here is not suitable ? Too much mercury is not good for the health of people, and
according to their past record, they will only hide and lie their way through as many
violations as they can get away with.
In addition, they are polluting our creeks and do not want to admit it.
Vicky Ho
22600 Alpine Drive, Cupertino, CA

--- On **Fri, 3/11/11, Marina Rush *<marina.rush@pln.sccgov.org>*** wrote:

From: Marina Rush <marina.rush@pln.sccgov.org>
Subject: Lehigh Permanente Quarry- Public Meeting Notice
To: "Marina Rush" <marina.rush@pln.sccgov.org>
Cc: "Rob Eastwood" <Rob.Eastwood@pln.sccgov.org>, "Gary Rudholm" <Gary.Rudholm@pln.sccgov.org>, "mike.lopez@pln.sccgov.org Lopez" <mike.lopez@pln.sccgov.org>, "Jody Hall Esser" <Jody.HallEsser@pln.sccgov.org>, "Lizanne Reynolds" <Lizanne.Reynolds@cco.sccgov.org>
Date: Friday, March 11, 2011, 8:21 AM

Good morning,

There will be a public meeting/scoping session regarding the Notice of Preparation (NOP) of an Environmental Impact Report (EIR) for the proposed

Comprehensive Reclamation Plan Amendment and Conditional Use Permit for Lehigh/Permanente Quarry. Lehigh has applied to amend the current reclamation plan, and includes an expansion area with a new mine pit.

The purpose of the meeting is to obtain comments from the public on possible environmental issues related to the proposal. County staff and our consultant will provide a short presentation on the project proposal and open the meeting to public comments. You may submit your comments either verbally or in writing. **The public comment period for this NOP will close on April 11, 2011, 5:00 PM.** Following the NOP comment period, the County will begin work on the environmental studies and analysis for the EIR. We anticipate the public Draft EIR will be available Fall 2011.

NOP Public Scoping Meeting:
Wednesday, March 30, 2011, 7:00-9:00 PM
City of Cupertino, Quinlan Center (Cupertino Room)
10185 N. Stelling Road, Cupertino, CA 95014

Attached to this email is a summarized project description and list of environmental topics that will be addressed in the EIR. The complete project proposal can be viewed on the County's website at: www.sccplanning.org. If you cannot view the attachment or have questions, please contact me at (408)299-5784.

Best Regards,

Marina Rush

Marina Rush, Planner III
County of Santa Clara Planning Office
70 West Hedding Street, East Wing, 7th Floor
San Jose, CA 95110
email: Marina.Rush@pln.sccgov.org

Phone: (408) 299-5784
Fax: (408) 288-9198

From: JLucas1099@aol.com
Date: March 16, 2011 9:59:58 AM PDT
To: marina.rush@pln.sccgov.org
Subject: Lehigh Quarry air/water monitoring

Marina,

Have not received a notification from you as yet in regards NOP meeting on Lehigh Quarry Reclamation Plan in Cupertino at end of month. As per our last week's phone conversation, I would appreceiate particulars.

In checking with Air Board was informed of air monitoring gage for mercury deposition in Monte Vista Park in Cupertino, which is in Stevens Creek watershed but have been unable to ascertain who is monitoring amount of mercury deposition from Lehigh Quarry in Stevens Creek Reservoir. Can you advise on this?

Then, San Francisco Water Quality Control Board reports monitoring pollutant runoff into Permanente Creek within Lehigh Quarry operations but say they are not to test below quarry as Permanente Creek runs through neighborhoods. Also they are not checking for mercury deposition within Permanente Creek watershed and in Santa Clara County's Ranch San Antonio parklands.

Is the Santa Clara County Planning Department's consultants conducting such tests for mercury deposition? This would appear to be an important element of environmental assessment for the reclamation plan and not to have such data would make it deficient to a serious degree. Was any such gaging of mercury deposition conducted by the previous reclamation plan consultant in 2008?

Am sorry to bring up these concerns at this time, in what is probably a busy week for you, but better now than in a NOP public hearing. I was surprised that the Santa Clara Valley Water District was not monitoring mercury deposition in the Stevens Creek Reservoir but they said that they had not been requested to do so.

Any direction you can give me in regards
researching regulatory review of these concerns is appreciated.

Libby Lucas, Conservation, CNPS

From: JLucas1099@aol.com
Date: April 9, 2011 3:50:50 PM PDT
To: marina.rush@pln.sccgov.org
Subject: Permanente Quarry NOP EIR Comprehens Reclam Plan Amend. & Conditional Use Permit

County of Santa Clara Planning
Office April 9, 2011
70 West Hedding, 7th Floor, East Wing
San Jose, CA 95110

Attention: Marina Rush, Planner III

RE: Notice of Preparation of an Environmental Impact Report Comprehensive Reclamation Plan Amendment and Conditional Use Permit for Permanente Quarry (State Mine ID# 91-43-004)

Dear Marina Rush,

In regards your Santa Clara County Notice of Preparation for the Permanente Quarry EIR for a reclamation plan and expansion into 200 acres south of present operations, there are sufficient critical concerns with implementation of the reclamation plan for past and present quarrying activities that need to be addressed. Don't these need to be finalized with the quarry's existing reclamation plan to comply with state reclamation law? Considerable revegetation of disposal sites was mandated and implementation of the success of this program should be assessed. Permanente Creek sediment loads and water quality are undergoing regulatory review at this time and illegal and non-compliant discharges to the creek need to be resolved.

It would seem that the EIR to study the proposal for quarry expansion to 200 acres to south, in what appears to be another hydrologic unit, must mandate a separate reclamation plan and EIR to adequately address all environmental concerns impacting the Stevens Creek Reservoir and watershed? Is this new 200 acre site actually in the Permanente Creek watershed or the Stevens Creek watershed? Can quarrying activity be managed in such a manner as to lower the ridge line between watersheds gradually so that drainage will continue to flow to Permanente Creek? Where will ridge underflow drainage go? A field trip to this Monte Bello Ridge area would be helpful.

There are two plant species of special concern that may be anticipated to be found at this elevation of Monte Bello Ridge, Clarkia concinna ssp automixa and Piperia michaelii. Surveying for these plants would best be handled in the present month of April and the Santa Clara Valley Chapter of California Native Plant Society would welcome the opportunity to have one or two of their botanists review the quarry reclamation sites. The EIR should include plant surveys of duration of at least one, hopefully, rainfall-representative year and inclusive of all seasons, as some plants are challenging to identify when dormant.

The general vegetation on the 200 acres that presently buffer Stevens Creek Reservoir is said to consist of a mix of broadleaf hardwoods like oaks, bays, and madrones with shrubs such as manzanita, ceanothus, chamise and mountain mahogany, but the opportunity to get an overview of this terrain would be appreciated.

After the flooding of Blach School in the winter of 1981-2 when a Permanente quarry sediment basin weir failed, a mitigation study was contracted for with USGS that should be referenced in some detail as it gaged the high levels of sediment that comes out of this Permanente watershed, especially in peak storm events.

The study is "U.S. Geological Survey Water-Resources

Investigation Report 89-4130 Effects of Limestone Quarrying and Cement-Plant Operations on Runoff and Sediment Yields in Upper Permanente Creek Basin, Santa Clara County, California, Prepared in cooperation with the Santa Clara Valley Water District, 1989."

On page 41 this report notes that the Permanente Creek East Fork yielded on February 14, 1986, 1560 tons of sediment per square mile, followed by 2,430 tons, 598 tons, 2,095 tons, 1,873 tons, 2,520 tons and 387 tons in the rest of the week, resulting in a total of 11,463 tons of sediment per square mile for the week. In that same week the West Fork of Permanente Creek yielded 83.58 tons of sediment per square mile.

In consideration of the exceptional level of sediment yield of the East Fork of Permanente Creek it might be a valid mitigation measure to implement vegetated terraces within and downstream of quarry into the present on-going reclamation plan. The capacity of Permanente Creek as it runs through residential neighborhoods downstream is historically constrained and when such high sediment loads overwhelm and plug the channel, overbank flows will inundate residences, schools and El Camino Hospital. Retention measures are needed.

Another avoidance of impact alternative might be to assess routing upper Upper Permanente Creek flows around quarry activities. This is a very iffy consideration but a recommended forestry hydrologist consultant with the experience to professionally analyze such an option would be Dave Rosgen who conducted Northern California creek geomorphology classes for the Guadalupe Coyote Resource Conservation District.

As the quarry is reported to have been overexcavated it now must of necessity pump quarry bottom water into Permanente Creek which seemingly continually assures degraded water quality conditions in the creek. Permanente Creek runs through or adjacent to six parks, two regional, one City of Los Altos, and three of the City of Mountain View, while stormwater in lowest reaches flows into Coast Casey retention basin and is pumped into Palo Alto Baylands. Children often have environmental stream study in the parks and sensitive wildlife species need protected habitat in upper watershed and baylands so water quality is a critical factor.

It seems evident that optimum pollutant control is best handled at the source, high in watershed, and that vegetation native to the watershed be used for swales and terraces at every possible opportunity. Substantial stands of trees should be retained for air quality buffers as air flow is modeled to assess impact to reservoirs.

In a brief review of background data that has been generated to date to assess this quarry's impacts on air and water quality of region, scientific data collection did not appear to be of sufficient duration or consistancy to provide the proposed EIR with appropriate critical parameters. I will cite a couple of instances.

The SFEI Atmospheric Environment 44 (2010) 1263-1273 abstract related to Lehigh Hanson Permanente Cement Plant emissions, "Evidence for short-range transport of atmospheric mercury to a rural, inland site" uses Calero Reservoir as the rural sampling site, which air data might be seriously impacted by its proximity to Metcalf Power Plant. Evidently the study wanted to distance this sampling site from other significant Hg emission sources, five refineries located 75 km north of the cement plant in San Francisco Bay Area's air basin, but it isn't clear that Calero Reservoir's sampling site isn't in Coyote Valley's air basin? Does this sampling site's proximity to the Metcalf Power Plant make it an inappropriate rural comparison?

The SFEI Atmospheric Environment 44 (2010) 1255-1262 abstract of "Wet deposition of mercury within the vicinity of a cement plant before and during cement plant maintenance", does record one peak reading of 700 Hgr deposition during the week of February 21 through 28, 2008 in Stevens Creek Santa Clara County Park, in dense vegetation, but was only one of two weeks monitored. Anther peak deposition reading was made at Permanente Cement plant of 1100 Hgr wet deposition, January 24 through 31, but the storm of a few weeks earlier was so severe it only recorded one peak day of 470 Hgr before the gage was incapacitated. That week's reading might have shown an exceptional spike in mercury deposition in Permanente Creek.

These readings do not seem to be of sufficient duration to provide representative mercury deposition levels for the cement plant. Also, mercury deposition levels could have been monitored in Santa Clara County Rancho San Antonio Park which would have provided comparative levels of mercury deposition closer to quarry and in landscape of meadow grass and Permanente Creek wetlands. It was also inconvenient that a Los Altos wind monitoring gage was disfunctional and that La Honda facility (to north?) had to be used for air flow modeling.

In regards water quality monitoring the Regional Water Quality Control Board did a fish sampling for mercury in Stevens Creek Reservoir a number of years ago and perhaps that could be repeated every two years? The most recent violation in "Lehigh's substantial and ongoing non-storm water discharges are unpermitted and prohibited by the Industrial Storm Water General Permit" and "Muddy water flowing into Permanente Creek from the Facility; Sedimentation ponds and sediment traps overwhelmed with sediment in the middle of what was a normal-to-low rainfall year; and Over-reliance on sediment management practices and insufficient use of erosion control.." needs to be addressed in the existing ongoing Reclamation Plan rather than projected or recycled into the new proposed and expanded reclamation plan and conditional use permit. Is this possible?

It is of particular importance that Santa Clara County's Planning Department address all mercury related impacts that quarrying activity at Permanente is having in the Permanente Creek watershed, and in parks and in neighborhoods downstream. The potential for methylmercury contamination to evolve in the created wetlands of Santa Clara Valley Water District's flood control detention basins in Rancho San Antonio (base for a colony of red-legged frogs which also reside in Permanente Creek wetlands in and above the quarry) in Cuesta Park and in McKelvey Park for Permanente Creek sediment flows is an almost guaranteed scenario.

Mercury is a toxic legacy issue that will cost taxpayers millions of dollars to address, not just in watersheds and parks but ultimately in San Francisco Bay. Spikes of mercury that USGS recorded in Guadalupe River stream gages in the 1980's from Almaden Mines tailings may be replicated in Permanente Creek's sediment laden stormflows from the highly erodible and quarried watershed? Please ensure that the EIR has a realistic timeline for obtaining critical scientific base data necessary in mandating a credible reclamation plan and for serious evaluation of the conditional use permit for this quarry and its proposed 200-acre expansion.

Thank you for the opportunity to comment on this Notice of Preparation for the Permanente Quarry EIR.

Sincerely,

Libby Lucas, Conservation SCV CNPS

From: Marylin McCarthy <m4@earthlink.net>
Date: April 4, 2011 11:12:35 PM PDT
To: marina.rush@pln.sccgov.org
Subject: EIR comments regarding Lehigh reclamation
Reply-To: Marylin McCarthy <m4@earthlink.net>

April 4, 2011

Hello Marina,

Thank you for the opportunity to make public comments regarding the Lehigh Reclamation Plan currently under consideration.

Over the past few decades, the Santa Clara County Board of Supervisors and the City of Cupertino have allowed an increasing amount of housing to be built near the Permanente/Lehigh plant.

One can almost "forgive" those who built the plant who due to lack of understanding of toxins and air pollution were not able to recognize how detrimental to public health the emissions and dust were coming from the plant operations.

Yet there can be no mistake now with our current level of air quality testing technology and global studies of fossil fuel burning emissions that the tons of particulates and mercury coming from the Lehigh cement plant and quarry are not good for anyone except Lehigh.

With new EPA guidelines soon to be implemented, those that govern and serve to protect the residents of Santa Clara County can no longer turn a blind eye to what is happening up in the hills.

It is time to protect the residents of this County and the cities, which surround the Lehigh operation.

The EIR will need to document the residents exposure to mercury, it's health impact and any long-term effects. Over 1.6 million people live in Santa Clara County and all are to be protected by the actions of the SCC Planning Board and Board of Supervisors. Since the Board of Supervisor has chosen to put business first, it is now up to the Planning Department to protect us.

With so many people now living near the plant, it seems the only logical recommendation is not to allow any new operations on the Lehigh site that will generate any form of pollution.

Lehigh may lose a small amount of profit if they are not allowed to go forward with the new South quarry, yet the residents of Santa Clara County will gain a better quality of life with less exposure to pollution that no dollar amount could ever compensate.

Sincerely,
Marylin McCarthy

From: "Matt" <mpamukcu@comcast.net>
Date: March 16, 2011 8:35:25 AM PDT
To: <marina.rush@pln.sccgov.org>
Cc: <mpamukcu@comcast.net>
Subject: Comments regarding "Notice of Preparation of an Environmental Impact... (State Mine ID No.91-43-004)
Reply-To: <mpamukcu@comcast.net>

Dear Ms. Rush,

I understand Lehigh cement plant has changed its fuel from coal to petroleum coke. Further, the plant has multiple short-stacks rather than the traditional long-stacks.

Recent scientific literature and various studies have clearly shown that the emissions from coal-burning produce significantly high levels of hexavalent chromium. Further, flyash produced as the waste material has many deadly toxins and various pollutants. I have studied the existing documents and have not found one scientifically-sound and well-thought study to assess environmental damage to plants, animals and people, especially to children. Evidence developing in the scientific literature points out to harmful emissions from coal-burning plants as one of the potential triggers that may cause onset and progression of many childhood diseases, including asthma, allergies and autism. The silicon valley is one of the regions in the US where autism, for example, is among the highest in the nation.

Although reliably measuring speciated compounds of elemental toxins (such as hexavalent chromium, methylmercury, inorganic mercury, etc.) have been a challenge, today there are proven and reliable analytical measurement tools and methods that can measure many of these toxins with unprecedented levels of accuracy. RCRA EPA Method 6800, codified in 2008, is the gold standard in these types of measurements. Using Method 6800, it is possible to identify sources of specific toxins and prove what is anthropogenic and what is not. I encourage you to explore the possibility of a retrospective study of the perimeter around the Lehigh plant that might have been affected by Lehigh’s prior use of coal and the impact of emissions of petroleum coke.

The current fuel, petroleum coke, contains less harmful toxins than coal and therefore harmful emissions might be lower but emissions might still pose health risks. There are many types of petroleum coke. I recommend requiring the company to disclose what type of petroleum coke it is using, so it can be analyzed for its isotopic signature. Once the isotopic signature of the fuel material is known, it would be relatively simple to monitor the environmental impact of the plant’s current operation because it will be possible to accurately measure and tell whether a particular speciated toxin in the environment is produced by the plant. THIS TYPE OF ANALYSIS is now possible using the RCRA EPA Method 6800 and an analytical tool called Inductively Coupled Plasma Mass Spectrometer.

I have not been able to find a document that provides the rationale behind the utility of multiple short-stacks in the plant, rather than the traditional long-stacks. It is clear to me that multiple short-stacks only heighten the health risks to the workers of the plant and the local habitants within a shorter diameter of the plant.

I can provide scientific evidence on new, advanced metrology mentioned above and additional information about EPA Method 6800.

Regards,

Mehmet Pamukcu

From: "Brosseau, Kimberly" <Kimberly.Brosseau@PRK.SCCGOV.ORG>
Date: March 23, 2011 3:33:15 PM PDT
To: "Marina Rush" <Marina.Rush@pln.sccgov.org>
Cc: "Mark, Jane" <Jane.Mark@PRK.SCCGOV.ORG>, "Rocha, Don" <Don.Rocha@PRK.SCCGOV.ORG>
Subject: File No 2250-13-66-01EIR - Lehigh Quarry

March 23, 2011

Hi Marina,

Attached please find a copy of the Parks Department comment letter regarding the Notice of Preparation of an EIR for the Reclamation Plan Amendment for the Lehigh Quarry. Please let me know if you have any questions. A hard copy will follow.

Thanks,
Kim

Kimberly Brosseau Park Planner III Santa Clara County Parks & Recreation Department 298 Garden Hill Drive Los Gatos, CA 95032 (408) 355-2230
kimberly.brosseau@prk.sccgov.org

CommentLtr_NOPforEIR_PermanenteQuarry_3_23_11.pdf ¬

County of Santa Clara
Parks and Recreation Department

298 Garden Hill Drive
Los Gatos, California 95032-7669
(408) 355-2200 FAX 355-2290
Reservations (408) 355-2201
www.parkhere.org

MEMORANDUM

DATE: March 23, 2011

TO: Marina Rush, Planner
County Planning Office

FROM: Kimberly Brosseau, Park Planner
County Parks Department

SUBJECT: Notice of Preparation of an Environmental Impact Report for the Reclamation Plan Amendment and Conditional Use Permit for Permanente Quarry (File No. 2250-13-66-10EIR)

The County Parks Department has reviewed the Notice of Preparation (NOP) of an Environmental Impact Report (EIR) for the Permanente Quarry Reclamation Plan Amendment and Conditional Use Permit for issues related to park use, trails, and implementation of the Countywide Trails Master Plan and submits the following comments.

The Trails Element of the Park and Recreation Chapter of the 1995-2010 County General Plan indicates a trail alignment nearby the subject parcel. Per the General Plan, Countywide Trail Route R1-A (*Juan Bautista de Anza NHT*) is located northeast of the project site. The *Santa Clara County Countywide Trails Master Plan Update*, which is an adopted element of the General Plan, designates the countywide trail as a "trail route within other public lands" for hiking, off-road cycling, and equestrian use. This trail route provides an important connection between the City of Cupertino and Rancho San Antonio County Park. The City of Cupertino's approved Final Stevens Creek Trail Feasibility Study also indicates this trail route as an important connection between Rancho San Antonio County Park and the City of Cupertino.

Visual Resources
The quarry is located adjacent to Rancho San Antonio County Park (Diocese Property). Since the County Parks Department is an adjacent property owner, modifications to the Reclamation Plan should take into account the potential aesthetic/visual impacts of the quarry and mitigation of views from these public parklands and trails.

The project is located in a Zoning District with a Design Review overlay for the Santa Clara Valley Viewshed (d1). It is expected that the applicant will construct as per the submitted plans and comply with design guidelines towards screening the project from public views.

An adequate vegetated buffer between the degraded hillsides and the adjacent County parkland and trails should be incorporated into the Reclamation Plan for the quarry.

Biological Resources
The EIR for the Reclamation Plan Amendment should discuss whether or not the project would have an impact on Permanente Creek and endangered species such as the California red-legged frog (CRLF) and California tiger salamander. The CRLF currently exist in mitigation sites on the adjacent Diocese property.

Surface Hydrology, Drainage and Water Quality
The EIR for the Reclamation Plan Amendment should evaluate potential hydrological impacts resulting from any grading, recontouring and seeding of the site. The EIR should also discuss if there are any proposed modifications to the riparian corridor or Permanente Creek. The Reclamation Plan Amendment should also take into account adequate erosion control measures and proposed grading and the potential impacts it may have to the adjacent County parkland and trails.

The Santa Clara Valley Water District (SCVWD) certified a Final EIR for the Permanente Creek Flood Protection Project in November 2010, which includes a proposed flood detention basin facility to be constructed, operated and maintained at Rancho San Antonio County Park Diocese Property as the Project's Recommended Alternative. This Permanente Creek Quarry's Reclamation Plan should evaluate future hydrological modifications that may impact the District's Permanente Creek Flood Protection Project for portions of Permanente Creek through Rancho San Antonio County Park.

Noise Impacts
The EIR for the Reclamation Plan Amendment should evaluate any potential noise impacts to the adjacent Rancho San Antonio County Park and impacts that noise from the quarry may have on park users.

Air Quality
The EIR for the Reclamation Plan Amendment should evaluate any potential air quality impacts as a result of the quarry operations and associated truck trips generated to and from the quarry on the adjacent Rancho San Antonio County Park and impacts that may occur on park users.

The County Parks and Recreation Department appreciates the opportunity to provide comments on the NOP of an EIR for the Permanente Quarry Reclamation Plan Amendment and Conditional Use Permit. We look forward to reviewing the EIR once it becomes available. If you have any questions regarding this letter, please contact me at (408) 355-2230 or by email at: Kimberly.Brosseau@prk.sccgov.org.

Sincerely,

Kimberly Brosseau
Park Planner

cc: Jane Mark, Senior Planner
Don Rocha, Natural Resources Management Program Supervisor

From: "Debbie Pedro" <dpedro@losaltoshills.ca.gov>
Date: April 11, 2011 8:46:58 AM PDT
To: "Marina Rush" <marina.rush@pln.sccgov.org>
Subject: RE: Lehigh Permanente Quarry- Public Comment

Hi Marina,

For the Lehigh Permanente Quarry EIR, can you please include a "view point location" in Los Altos Hills for modeling for aesthetics? I would suggest a location at or near Bill Almon's residence at 10570 Blandor Way. Residents living in the southeastern part of Los Altos Hills have a direct view of the quarry, specifically the WMSA.

If you have any questions or need further clarification, please feel free to call me at 650-947-2517. Thank you.

Debbie

Debbie Pedro, AICP, LEED AP
Planning Director
Town of Los Altos Hills
Phone: (650) 947-2517
dpedro@losaltoshills.ca.gov

From: Marina Rush [mailto:marina.rush@pln.sccgov.org] **Sent:** Friday, March 11, 2011 8:21 AM **To:** Marina Rush **Cc:** Rob Eastwood; Gary Rudholm; mike.lopez@pln.sccgov.org Lopez; Jody Hall Esser; Lizanne Reynolds **Subject:** Lehigh Permanente Quarry- Public Meeting Notice

Good morning,

There will be a public meeting/scoping session regarding the Notice of Preparation (NOP) of an Environmental Impact Report (EIR) for the proposed Comprehensive Reclamation Plan Amendment and Conditional Use Permit for Lehigh/Permanente Quarry. Lehigh has applied to amend the current reclamation plan, and includes an expansion area with a new mine pit.

The purpose of the meeting is to obtain comments from the public on possible environmental issues related to the proposal. County staff and our consultant will provide a short presentation on the project proposal and open the meeting to public comments. You may submit your comments either verbally or in writing. **The public comment period for this NOP will close on April 11, 2011, 5:00 PM.** Following the NOP comment period, the County will begin work on the environmental studies and analysis for the EIR. We anticipate the public Draft EIR will be available Fall 2011.

NOP Public Scoping Meeting:
Wednesday, March 30, 2011, 7:00-9:00 PM
City of Cupertino, Quinlan Center (Cupertino Room)
10185 N. Stelling Road, Cupertino, CA 95014

Attached to this email is a summarized project description and list of environmental topics that will be addressed in the EIR. The complete project proposal can be viewed on the County's website at: www.sccplanning.org. If you cannot view the attachment or have questions, please contact me at (408)299-5784.

Phillip P. Pflager
Anne E. Pflager

County of Santa Clara Planning Office
Attn: Marina Rush
70 West Hedding, 7th Floor East Wing
San Jose, CA 95110

RE: Notice of Preparation of an Environmental Impact Report Comprehensive Reclamation Plan Amendment and Conditional Use Permit for Permnanente Quarry (State Mine ID# 91-43-004)

Dear Ms. Rush;
When the Environmental Impact Report is prepared we would like the County of Santa Clara to consider and investigate the following points:

1. The visual impact of the open pit mining operation has grown over the years. When we moved to Cupertino in the sixties the operation was not easily seen. Today the mountain removal operation is clearly visible and will be more so if the new 200 acre pit is approved.

2. Permanente Creek flows to the bay. It is important to define what is flowing from the mining operation into the creek. It is important to test the creek water above and below the mining operation to determine the level of contaminants added by the mining operation.

3. Currently the noise from the plant is minimal but when the economy improves and the new 200 acre open pit mine is in operation it is reasonable to expect an increase in noise level. We live roughly one mile from the operation and are presently disturbed by noise from the operation on nights we leave our windows open to cool the house. In the past the noise has been worse and we expect with the expanded operation it will be worse in the future.

4. We would like the mining operation to conform to current standards, not standards that were in place sixty to one-hundred years ago. Please evaluate the counties ability to enforce current standards on the operation.

Yours truly,

Phillip P. Pflager Anne E Pflager

Phillip P. Pflager
Anne E. Pflager

From: "Frank Rittiman" <its4u@comcast.net>
Date: March 15, 2011 11:12:08 AM PDT
To: <tbui@baaqmd.gov>
Cc: <marina.rush@pln.sccgov.org>
Subject: Permanente Quarry

Hi Thu and Marina;

We have lived VERY CLOSE
to the quarry for 36 years.

The air quality (dust pollution)has been a major issue for us, for that whole time period. The ongoing aggravation (noise, dust, traffic) from the quarry trucks, and associated CHP activity to control them never ends.

I had a representative of the air resources board visit, based on my requests in the past, to complain about this. No resolution. He even suggested that I couldn't count the visual dust plume from Stevens Creek Blvd., especially when the sun is behind the quarry (too obvious). Even worse on weekends, when Permanante Cement seems to make things even worse.
Our air quality (dust)inside the house is very bad, let alone outside. Cars need to be washed nearly every other day-we gave up….

I have attended a couple of meetings at Cupertino City Hall, in the past. Everyone seemed to have the same issues, but after all this time, nothing has improved. In fact, it has gotten worse…..

I scanned the FAQ. Etc. Lots of discussion. Our conclusion… Follow the money…. Tax dollars trump environmental concerns.

Now it seems it's REALLY going to get WORSE….Hard to believe.

I can't tell from the map, exactly how much closer and worse this is going to become.

Is it worth our time to attend the 3/30/2011 Meeting, or is it hopeless?…

Sincerely
Frank & Joan Rittiman   lts4u@comcast.net

Santa Clara Valley Water District

5750 ALMADEN EXPWY
SAN JOSE, CA 95118-3686
TELEPHONE (408) 265-2600
FACSIMILE (408) 266-0271
www.valleywater.org
AN EQUAL OPPORTUNITY EMPLOYER

B-49

File: 2985
Permanente Creek

April 1, 2011

Ms. Marina Rush
County of Santa Clara
Planning Office
70 West Hedding, 7th Floor, East Wing
San Jose, CA 95110

Subject: Notice of Preparation - Comprehensive Reclamation Plan Amendment and Conditional Use Permit for Permanente Quarry

Dear Ms. Rush:

The Santa Clara Valley Water District is a special district with jurisdiction throughout Santa Clara County. The Water District acts as the county's groundwater management agency, principal water resources manager, flood protection agency and is the steward for its watersheds, streams and creeks, and underground aquifers.

We appreciate the opportunity to comment on the scope for the EIR for the Comprehensive Reclamation Plan Amendment and Conditional Use Permit for Permanente Quarry. This letter transmits comments that focus on the areas of interest and expertise of the Water District:

- The Draft EIR should analyze discharges to Permanente Creek from quarry operations. These discharges may impact water quality, hydrology and flood potential, and biological resources adjacent to and downstream of the quarry. The Water District is concerned about the long-term impacts to stream maintenance downstream from sediment originating on-site.

- The project should be analyzed to ensure that it is consistent with the Guidelines and Standards for Land Uses Near Streams prepared by the Santa Clara Valley Water Resources Protection Collaborative, which the County was a member of.

- The future reclamation of the site needs to include enforceable provisions with appropriate financial backing to ensure that adequate monitoring and restoration is completed after quarry operations end. Reclamation must ensure that the site does not contribute to water quality or sedimentation problems in Permanente Creek after the operator leaves.

- The Water District is in the design phase for the Permanente Creek Flood Protection Project. The project will address erosion control, maintenance, structural repair, and habitat restoration in the Permanente Creek watershed. The Water District's Board of

Directors certified a Final EIR for the project on June 17, 2010. The Draft EIR for the Reclamation Plan Amendment should consider the Water District's project in the consideration of cumulative impacts.

- As part of the Permanente Creek Flood Protection Project, the Water District may consider additional options for providing flood protection in the Permanente Creek Watershed. This could include flood detention facilities in the upper watershed. We encourage the County and the project proponent to work with the Water District in providing flood benefits that are mutually beneficial.

District staff is available to meet and discuss the above areas of concern. Please provide a copy of the Draft EIR to the Water District for review when it becomes available. Please reference District File Number 2985 on further correspondence regarding this project.
If you have any questions or need further information, you can reach me at (408) 265-2607, extension 3095.

Sincerely,

Michael Martin
Environmental Planner
Community Projects Review Unit

cc: S. Tippets, C. Elias, S. Hosseini, U. Chatwani, File

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Loma Prieta Chapter
◆San Mateo ◆ Santa Clara ◆San Benito Counties

County of Santa Clara
Planning Office, Attn: Marina Rush
County Government Center, 7th Floor
70 West Hedding Street, 7th Floor
San Jose, California, 95110

April 7, 2011

Re: Comments on Scoping of the EIR for the Comprehensive Reclamation Plan Amendment and Conditional Use Permit for Permanente Quarry (State Mine ID # 91-43-004)

Dear Ms. Rush:

Writing on behalf of the Sierra Club's Loma Prieta Chapter's Air Quality Committee we wish to provide the following comments:

1. The method of supervision of Lehigh's operation must be a subject of the EIR. The subsequent items simply reflect our desire that Lehigh operate and maintain the facility in accordance with the existing environmental regulations. However, there is considerable local sentiment that the history of the current management is to delay conforming to the prevailing regulations. Since the pollution emitted depends on a wide variety of operational parameters, it is essential that Lehigh conduct themselves in a manner consistent with an acute sensitivity to the health of the community.
2. Air Quality. Lehigh's emissions should conform to the current NESHAP and NSPS standards (see Federal Register September 9, 2010). Since the Portland Cement Association (PCA) has filed a lawsuit challenging the U.S. Environmental Protection Agency's decision to cut toxic air pollution from cement kilns, and these regulations are critical to the safety of the population of the South Bay, we believe Lehigh must commit unequivocally to conform to the specific regulations as they stand today. Lehigh must continue to conform even if the regulations are diluted by either time delays or emission-level criteria.
3. Health Risk Assessment. Lehigh must be responsive to a professionally conducted Health Risk Assessment (HRA). The HRA mentioned in the recent permit renewal was, in our opinion, inadequate. In particular, a sensitivity analysis to the various input parameters for the air dispersal codes should be performed No data should be summarily disregarded, as was done in the December 6, 2010 letter to Mr. Scott Lutz of BAAQMD (see Table 1 entries for 3/26 and 3/27/2009). Additionally, and very importantly, the HRA prepared on November 2008 by the BAAQMD used an unsubstantiated analytic technique of presuming one-seventh of the chromium emitted was in the poisonous form of chromium

VI. Any future assumptions must be thoroughly justified. In the absence of a detailed, quantitative understanding, all chromium emitted should be assumed to be chromium VI.

4. Greenhouse Gas Emissions. In evaluating alternative fuels, the complete production cycle of the fuels must be considered. Biofuels, in particular, are often not genuinely effective reducers of greenhouse gases. The Sierra Club is resolutely opposed to the combustive use of coal products generally and we are awestruck that such usage is contemplated in what is otherwise considered to be an environmentally aware community of political and regulatory entities. From the information available to us, it appears that natural gas would be the least harmful fuel and therefore should be seriously examined in the EIR. Train transportation should also be evaluated relative to truck transportation, as train transportation is more efficient.
5. Air Quality Impacts to Water Quality. The facility is located next to the Stevens Creek Reservoir so that potentially air pollution could precipitate out of the exhaust gases and fall into the lake. The EIR should thoroughly examine for this possibility as well as for direct material intrusion into the reservoir.

Thank you for the opportunity to contribute to the EIR process at this early stage. Although the cement products produced by this facility are of value to the community, we believe it is essential that those products be produced in a fashion that does not cumulatively degrade our community health, nor leave it in public doubt.

Sincerely,

Gary Latshaw

Gary Latshaw, Ph.D.
Chairman of the Air Quality Committee
Loma Prieta Chapter of the Sierra Club
Contact: glatshaw@gmail.com; 408-499-3006

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From: Ken Smyth <kend_smyth@yahoo.com>
Date: April 8, 2011 12:07:13 AM PDT
To: marina.rush@pln.sccgov.org
Subject: Lehigh EIR Input

Hi Marina,

Thank you for the opportunity to speak at the recent public meeting in Cupertino regarding the Lehigh EIR for their request to expand their quarry operations. I am opposed to the Lehigh expansion and I'm writing you to submit my input on why and I'm submitting the enclosed presentation.

I feel the Santa Clara Board of Supervisors is naive about the dangerous toxicity of mercury and have included the following video about how mercury, a neurotoxin, that causes brain neuron degeneration, especially in humans and animals with developing fetuses, http://movies.commons.ucalgary.ca/mercury/

I have included this link in my presentation and wanted to make sure it was included in my submission.

Also enclosed is the University of Texas Medical Center (San Antonio) study that was conducted over several years confirming that the rate of autism increases relative to the proximity to cement kilns, quarries, and power plants.

Thank you for the opportunity to submit input on this important matter. Contact me for questions you may have. Enjoy the weekend.

Regards,

Ken Smyth
Cupertino Resident

SCC EIR Input_UT Mercury Std Deviations_Cupertino Schools.pdf ¬Palmer_UT_et al_Proximity to Point Sources_proofs.pdf ¬

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Proximity to point sources of environmental mercury release as a predictor of autism prevalence

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Abstract

The objective of this study was to determine if proximity to sources of mercury pollution in 1998 were related to autism prevalence in 2002. Autism count data from the Texas Educational Agency and environmental mercury release data from the Environmental Protection Agency were used. We found that for every 1000 pounds of industrial release, there was a corresponding 2.6% increase in autism rates ($p<.05$) and a 3.7% increase associated with power plant emissions($P<.05$). Distances to these sources were independent predictors after adjustment for relevant covariates. For every 10 miles from industrial or power plant sources, there was an associated decreased autism Incident Risk of 2.0% and 1.4%, respectively ($p<.05$). While design limitations preclude interpretation of individual risk, further investigations of environmental risks to child development issues are warranted.

Keywords: Mercury; Autism; Environment; Distance; Industry

Introduction

Mercury is a heavy metal found naturally in trace amounts in the earth's atmosphere in differing forms—as elemental vapor, reactive gaseous compounds, or particulate matter. Studies show that background levels of environmental mercury deposition have steadily increased several fold since the pre-industrial era (Schuster et al., 2002), with the largest source of potentially adverse exposures coming primarily from coal-fired utility plants (33%), municipal/medical waste incinerators (29%) and commercial/industrial boilers (18%)—estimated to be responsible for 158 tons of environmental mercury released per year in the US (Environmental Protection Agency, Report to Congress, 1997). Other sources include hazardous waste sites, cement factories, and chlorine production plants. According to the Agency for Toxic Substances and Disease Registry (ATSDR), next to arsenic and lead, mercury is the third most frequently found toxic substance in waste facilities in the United States (ATSDR, 2001).

Mercury is now widespread in the environment (EPA, 1997; ATSDR, 2001). The long-range atmospheric transport of mercury (Ebinghaus et al., 2001), and its conversion to organic forms through bio-accumulation in the aquatic food chain has been known for some time (MacGregor, 1975; Mahaffey, 1999). Notwithstanding, there are emerging concerns over the potential adverse effects of ambient levels of environmental mercury during early childhood development. There is sufficient evidence that children and other developing organisms are particularly susceptible to the adverse neurological effects of mercury (Landrigan and Garg, 2002; Grandjean et al., 1995; Ramirez et al., 2003; Rice and Barone, 2000).

Evidence from animal studies suggests that neonates lack the ability to efficiently excrete both methylmercury (Rowland et al, 1983) and inorganic mercury (Thomas and Smith, 1979), and that there is a higher lactational transfer of inorganic mercury than methylmercury (Sundberg et al., 1991a, b). Correspondingly, it has been shown that infants exposed via milk from mothers who were

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accidentally poisoned by methylmercury-contaminated bread in Iraq accumulated higher mercury concentrations in their blood than did their mothers (Amin-Zaki et al., 1988) and the Faroe Island studies show that hair mercury concentrations in infants increased with the duration of the nursing period (Grandjean et al., 1994). It has also been shown that maternal dental amalgams have been linked to higher body burdens in infants (Oskarsson et al., 1996).

A 10-year longitudinal cohort monitoring study in Finland demonstrated that median hair total mercury concentrations increased in individuals who lived 2 km from a mercury polluting power plant compared to unexposed reference groups living further away (Kurttio et al., 1998). A study performed in China demonstrated that higher mercury concentrations are present in soil sediments and rice fields that are in close proximity to mercury emitting industrial plants and mining operations compared to areas that are more distant (Wang et al., 2003). A variety of similar investigations involving human, plant, and animal studies performed in different global locations consistently demonstrate that mercury concentrations are inversely associated with distance to the environmental source (Ordonez et al., 2003; Fernandez et al., 2000; Hardaway et al., 2002; Navarro et al., 1993; Kalac et al., 1991; Moore and Sutherland, 1981).

A 2000 report by the National Academy of Sciences' National Research Council estimates that approximately 60,000 children per year may be born in the US with neurological problems due to in utero exposure to methylmercury (NAS, 2000). The neurotoxicity of low-level mercury exposure has only recently been documented (NAS, 2000; EPA, 1997) and little is known about persistent low-dose ambient exposures coming from environmental sources or its influence on childhood developmental disorders such as autism—a condition affecting impairments in social, communicative, and behavior development typically present before age 3 years manifested by abnormalities in cognitive functioning, learning, attention, and sensory processing (Yeargin-Allsopp et al., 2003; CDC, 2007).

One hypothesis, which has been advanced to explain the recently observed increases in autism in the US and Europe, is that biological damage from neurotoxic substances such as mercury may play a causal role (Bernard et al., 2002). Holmes et al. (2003) found that mercury levels in the hair of autistic children were significantly lower than non-autistic controls indicating, according to the authors, that autistic children retain mercury in their body due to impairments in detoxification pathways. After the administration of a heavy metal chelating agent, Bradstreet et al. (2003) demonstrated that autistic children, relative to controls excreted more mercury in urine than non-autistic controls. Two recent studies have shown that body burden of mercury, as indicated by increased levels of urinary porphyrins specific to mercury exposure, are significantly higher in autistic children than in non-autistic children (Nataf et al., 2006; Geier and Geier, 2006).

While the association between autism and thimerisol (a mercury-based preservative formerly used in the childhood vaccination schedule during the 1990s) has not been scientifically established (Freed et al., 2002; Schechter and Grether, 2008), two studies have demonstrated an association with environmental sources of mercury and autism. Windham et al. (2006) demonstrated that ambient air mercury was associated with elevated autism risk in a case–control study in California, and Palmer et al. (2006) demonstrated that environmental mercury pollution was associated with point prevalence estimates of autism using EPA reported mercury release data from 254 counties in Texas. A major limitation to this study was that the cross-sectional design precluded any causal inferences. In addition, exposure was inferred from total pounds of environmentally released mercury aggregated at the county level at a specific point in time. Using distance to potential exposure sources may be a more reasonable proxy for exposure than one defined by total amount contained within artificial county boundaries. Given the literature on the relevance of proximity to the source of mercury and body burden, we suspect that distance to the source of mercury exposure may actually explain, at least in part, the association between increased autism rates and environmental mercury pollution found in both the Palmer et al. (2006) and Windham et al. (2006) studies.

The objective of the current study is to determine if proximity to major sources of mercury pollution is related to autism prevalence rates.

Methods

Data source and sample

Data for environmentally released mercury were obtained from the *United State Environmental Protection Agency Toxics Release Inventory* (TRI) (USEPA-TRI, 2006). TRI collects information about chemical releases and waste management reported by major industrial facilities in the US. The TRI database was established by Section 313 of the Emergency Planning and Community Right-To-Know Act of 1986 (EPCRA). Under EPCRA, industrial facilities in specific sectors are required to report their environmental releases and waste management practices annually to the EPA. Facilities covered by this act must disclose their releases to air, water, and land of approximately 650 toxic chemicals, as well as the quantities of chemicals they recycle, treat, burn, or otherwise dispose of on-site and off-site. The current analysis used the 1998 county pollution report that industrial facilities provided to TRI. Data for environmentally released mercury by coal-fired power plants were obtained from TRI and from the Texas Commission for Environmental Quality. In all, 39 coal-fired power plants and 56 industrial facilities in Texas were used in the analysis.

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Measure of distance from mercury sources

The address location of coal-fired power plants and industrial facilities were entered into Arc-view V 9.0 Geographic Information Systems software along with polygonal shapes or boundaries of the school districts of Texas. GIS was then used to assign the *XY* location coordinates (latitude and longitude) of each plant and facility as well as to locate the centroid or *XY* geographical center of each school district. The amount of mercury emitted by each plant and by each facility was weighted on the *XY* coordinate of each plant's and facility's location. Using SPSS version 14 software, the distances between the *XY* coordinate of each source of emission and the *XY* coordinate of each school district centroid were calculated. As a result, each school district received a distance-in-miles measurement calculated separately for power plants and industrial facilities.

School district data

Administrative data from the Texas Education Agency (TEA) were analyzed. In compliance with the Texas Education Code, the Public Education Information Management System (PEIMS) contains data necessary for the legislature and the TEA to perform their legally authorized functions in overseeing public education. The database consists of student demographic, personnel, financial, and organizational information. Data descriptions are available at the TEA website http://www.tea.state.tx.us/data.html. Autism counts per school district were obtained by special request from the TEA. Data were from 1040 school districts in 254 counties in Texas. Diagnoses of autistic disorder are abstracted from the school records and are made by qualified special education psychologists employed by the TEA or from psychologists or medical doctors outside the TEA system. While diagnoses were not standardized, there is considerable evidence that diagnoses of autistic disorder are made with good reliability and specificity in the field (Eisenmajer et al., 1996; Hill et al., 2001; Mahoney et al., 1998). Autism prevalence rates from 2002 were used as the outcome and 1997 rates were used as a covariate in multivariate regression models.

We have identified the key covariates from prior work Q9 (Palmer et al., 2005, 2006), which were used in this study to adjust for potential confounding. *Urbanicity* and *School District Resources* have been demonstrated to be important covariates as they relate to greater identification of autism spectrum disorders. We also include a measure of ethnicity (percent white in school district).

Urbanicity

Eight separate demographically defined school district regions were used in the analysis as defined by the TEA: major urban districts and other central cities (1) major suburban districts and other central city suburbs (2) non-metropolitan and rural school districts (5).

In the current analysis, dummy variables were included in the analysis coding urban (dummy variable 1, and suburban (dummy variable2), contrasted with non-metro and rural districts which were the referent group. Details and specific definitions of urbanicity categories can be obtained at the TEA website http://www.tea.state.tx.us/data.html.

Racial composition was accounted for by the proportion of White children enrolled in schools within each district.

Total number of students reflects all enrolled students in the districts 2002 school year and was used as the denominator in calculating autism rates.

District population wealth was calculated as the district's total taxable property value in 1998 as determined by the Comptroller's Property Tax Division (CPTD), divided by the total number of students in the district in 1998. Property value was determined by the CPTD as part of its annual study, which attempts to present uniformly appraised property valuations statewide. The CPTD value is calculated by applying ratios created from uniform independent appraisals to the district's assessed valuations.

Statistical methods

District autism data in 2002 were treated as event counts and used as the outcome in a Poisson regression model predicted by pounds of environmental mercury release 1998, distance to sources of the release, and the relevant covariates. Total number of students enrolled in each district for 2002 defined the rates for each district. An over dispersion correction was applied due to the mean and variance not being equal. Due to the hierarchical structure of the data (e.g. districts nested within counties), the Poisson model was fit using MlWin multilevel modeling software (Rasbash et al., 1999) to obtain unbiased standard Q10 errors. Polynomials were added to the model to determine if a non-linear association was present between pounds of mercury, distance and autism rates. Regression coefficients of the models are reported as incident rate ratios by exponentiating the Poisson model coefficients.

Modeling strategy

Pounds of mercury release were first entered into the model followed by polynomial functions to access non-linear associations with autism rates. Next, *distance* was entered into the model to determine if it decreased the effect of *pounds*. Finally all covariates were entered: baseline *autism rates in 1997*, *urbanicity*, *racial composition*, *proportion of economically disadvantaged students,* and *district population wealth.* Note that mercury release data from 1998 are used to predict autism rates in 2002; it is plausible to postulate that releases during 1998 would have exposure potential for a cohort who was in utero in 1997. If an effect was present, this would be reflected in the 2002 school district records—the age (5 years old) this cohort would be entering the system.

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Results

Table 1 shows the descriptive statistics of the study variables. Note that there is considerable variation in each variable. Table 2 shows the Poisson regression coefficients and the corresponding Incident Risk Ratio (IRR) for the models exploring the linear and non-linear association between 1998 mercury release from industrial sources, distance, and 2002 autism rates. Model 1a shows that environmentally released mercury in 1998 is significantly associated with autism rates in 2002. We multiplied the coefficient by 1000 to reflect increases in autism rates per 1000 pounds. The coefficient yields an IRR of 1.026, indicating that for every 1000 pounds of release in 1998, there is a corresponding 2.6% increase in 2002 autism rates. In model 1b, the squared term for pounds was entered into the model. Note that the linear coefficient is no longer significant and the polynomial term is. This indicates that the association between industrial sources of mercury release is non-linear—e.g. for every 1000 pounds there is an associated 1.1% accelerated risk. Adding distance to the equation in model 1c shows that for every 10 miles away from the source there is a decreased autism Incident Risk of 1.4%. Adding non-linear terms for distance (distance squared and the square root of distance) (not depicted) was not significant and therefore not utilized

Table 1
Descriptive statistics of study variables

	Mean or percent	Standard deviation	Range
Predictor variables			
Total number pounds of mercury per year for power plants	1225 lb	946	8–2516
Total number pounds of mercury per year for industrial facilities	1526 lb	1909	3–6685
Minimum distance to industrial facilities	39.7 miles	29.3	0.34–170.4
Minimum distance to power plants	71.7 miles	53.2	0.74–305.8
Relevant demographic covariates			
Value of taxable property	$265,148	$328,631	0–$3,481,369
Percent urban	4%	–	–
Percent suburban	15%	–	–
Percent White	61.5%	–	0–100%
Proportion autism 1997 (rate per 1000)	0.85	2.1	0–26.3
Outcome variable			
Proportion autism 2002 (rate per 1000)	2.0	3.2	0–39.5

Table 2
Q1 2002 Autism rates as a function of industrial release of mercury

Model 1: 2002 autism rates as function of 1998 pounds of mercury emission from industrial sources	Amount of Hg (per 1000 lb)	Amount of Hg (per 1000 lb)^2	Distance to industrial sources per 10 miles	1997 autism rates	District Wealth (per $100,000)	Urban vs. rural	Suburban vs. rural	Percent White
Model 1a								
Q2 Regression coefficient (standard error)	**.026(.010)***	–	–	–	–	–	–	–
Incident Risk Ratio	**1.026**	–	–	–	–	–	–	–
Model 1b								
Regression coefficient (standard error)	−.007 (.014)^{ns}	**.018(.006)****	–	–	–	–	–	–
Incident Risk Ratio	–	**1.018**	–	–	–	–	–	–
Model 1c								
Regression coefficient (standard error)	.021 (.015)^{ns}	**.02(.006)****	**−.014 (.006)***	–	–	–	–	–
Incident Risk Ratio	–	**1.020**	**0.986**	–	–	–	–	–
Model 1d								
Regression coefficient (standard error)	.003 (.011)^{ns}	**.018 (.005)****	**−.02 (.008)***	**.16 (.01)*****	**.047 (.01)****	**.29 (.04)*****	**.33 (.04)*****	**.004 (.001)****
Incident Risk Ratio	–	**1.018**	**.980**	**1.170**	**1.048**	**1.33**	**1.39**	**1.004**

Note: Second column reflects the amount of mercury squared, the non-linear polynomial term.
*$p<.05$.
**$p<.01$.
***$p<.001$.

Table 3
2002 Autism rates as a function of power plant release of mercury

Model 2: 2002 autism rates as function of 1998 pounds of mercury emission from power plant sources	Pounds of Hg per 1000	Non-linear term (Pounds of Hg per 1000)^2	Distance to industrial sources per 10 miles	1997 autism rates	District Wealth (per $100,000)	Urban vs. rural	Suburban vs. rural	Percent White
Model 2a								
Regression coefficient (standard error)	**.037 (.018)***	–	–	–	–	–	–	–
Incident Risk Ratio	**1.037**	–	–	–	–	–	–	–
Model 2b								
Regression coefficient (standard error)	**.044 (.020)***	.050(.030)^{ns}	–	–	–	–	–	–
Incident Risk Ratio	**1.044**	–	–	–	–	–	–	–
Model 2c								
Regression coefficient (standard error)	.017 (.022)^{ns}	–	**.011 (.040)***	–	–	–	–	–
Incident Risk Ratio	–	–	**.989**	–	–	–	–	–
Model 2d								
Regression coefficient (standard error)	.003 (.011) ^{ns}	–	**.014 (.045)***	**.161 (.01)*****	**.045 (.01)****	**.290 (.04)*****	**.330 (.04)*****	**.005 (.001)****
Incident Risk Ratio	–	–	**.986**	**1.170**	**1.056**	**1.33**	**1.39**	**1.005**

Note: Second column reflects the amount of mercury squared, the non-linear polynomial term.
*$p<.05$.
**$p<.01$.
***$p<.001$.

in other models. Model 1d is the fully adjusted model depicting that the positive non-linear term for pounds, and the inverse association for distance, remain independently associated with 2002 autism rates after adjustment for 1997 autism rates, urbanicity, racial composition, and district wealth. Urbanicity and 1997 autism rates demonstrate to be the strongest predictors of 2002 autism rates in the final model.

Table 3 shows the Poisson regression coefficients and the corresponding IRR for the models exploring the linear and non-linear association between 1998 mercury release from power plant sources, distance to these sources, and 2002 autism rates.

Model 2a shows that environmentally released mercury from power plants in 1998 is significantly associated with autism rates in 2002. For every 1000 pounds of release there is a corresponding 3.7% increase in autism rates. In model 2b, the squared term for pounds was entered into the model and was not significant and therefore, not used in the subsequent models. Adding distance to the equation in model 2c shows that for every 10 miles away from the source, there is a significant 1% decrease in the autism Incident Risk. A 20-mile distance would yield a 2.2% decreased risk. Adding non-linear distance terms (distance squared and the square root of distance) (not depicted) was not significant and therefore not utilized in the next model. Most importantly however, in model 2c, the coefficient for pounds is no longer significant. This suggests that the direct effect between pounds of release in 1998 and 2002 autism rates are fully explained by distance to the source of release. The fully adjusted model 2d shows that this effect remains independent after adjustment for the covariates.

Discussion

These results build upon two prior studies demonstrating an association between environmental mercury release and autism rates (Palmer et al., 2006; Windham et al., 2006). The current study shows that environmental mercury in 1998 is associated with autism rates in 2002 after adjusting for other relevant sociodemographic covariates including autism rates in 1997. This is consistent with the prior reports. The novel findings in this study are that distance to the sources of mercury release was independently related to autism rates. In the separate analysis of power plant emissions, distance to the source fully explained the association between total pounds of mercury release and autism rates.

We also found that the association between releases from industrial rather than power plant sources was non-linear—e.g. increases in pounds from industrial sites were associated with an accelerated risk function. This difference in the shapes of the exposure-response curve for industrial release (exponential increase) versus release from power plants (linear) might be explained by the fact that pollution from industrial sources are relatively more localized and not as far spreading as pollution from power plants. It is

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reasonably to suspect that greater local release could cause exponential effects as compared to more widely distributed releases.

On the other hand, the non-linear functions for distance were not significantly related to the outcome. It is plausible to suspect that exposure mediated by distance from the source depends more on other factors such as characteristics of the physical environment and predominant wind or rain patterns rather than simply distance alone. Exposure from power plants can potentially span thousands of miles and modeling the kinds of factors that affect exposure over time would require data that are not readily available. Notwithstanding, the results demonstrate an overall inverse association between distance to the source of release and subsequent autism rates. While these effects are relatively small, they are significant and demonstrate potential public health risks.

Although a major limitation to this study is that we cannot verify exposure at the individual level, a host of other plant, animal and human studies have demonstrated that distance to sources of environmental mercury exposure are related to increased body burdens of mercury (Ordonez et al., 2003; Fernandez et al., 2000; Hardaway et al., 2002; Navarro et al., 1993; Kalac et al., 1991; Moore and Sutherland, 1981). However, the effects of duration and dose amounts of environmental exposures are not currently known—and we do not know that body burden of mercury is in fact related to the potential exposure measures used in these analyses.

Mercury is a known immune modulator (Moszczynski, 1997). These effects include the production of autoanti- Q11 bodies to myelin basic protein (El-Fawal et al., 1999) and effects on the ratio of Th1/Th2 immunity factors (Kroemer et al., 1996). This is consistent with the literature demonstrating similar types of altered immune function in autistic children (Singh et al., 1997; Singh and Rivas, Q12 2004; Krause et al., 2002; Cohly and Panja, 2005; Vojdani et al., 2003). However, unlike the specific vector known about exposure through fish consumption, very little is known about exposure routes from seemingly randomly distributed ambient exposures in the environment—particularly in air.

Even if ambient air, ground exposure routes, and low-level toxic thresholds can be identified by researchers, differential genetic susceptibilities in the ability to metabolize heavy metals and other pollutants would still need to Q13 be considered in future research (Herbert et al., 2006). While inconclusive to date, the existing studies warrant the need for further investigation on environmental mercury pollution and the developmental health of children.

There are some important limitations to this manuscript that should be addressed. First, these data do not reflect the true community prevalence rates of autism, largely because children who are not of school age are not counted in the TEA data system. This is reflected in the $\frac{1}{500}$ autism rates for 2002 present in Table 1—which are lower than the current CDC reports of $\frac{1}{150}$ (CDC, 2007).

Further, individual risk cannot be inferred from population-based ecological studies such as this. Further, conclusions about exposure are limited, because distance was not calculated from individual homes to the pollution source, but from school district centroids of varying sizes. Rural school districts are usually larger in size than urban school districts and are one good reason to include urbanicty as covariates in these models.

This study should be viewed as hypothesis generating—a first step in examining the potential role of environmental mercury and childhood developmental disorders. Nothing is known about specific exposure routes, dosage, timing, and individual susceptibility. We suspect that persistent low-dose exposures to various environmental toxicants, including mercury, that occur during critical windows of neural development among genetically susceptible children (with a diminished capacity for metabolizing accumulated toxicants) may increase the risk for developmental disorders such as autism. Successfully identifying the specific combination of environmental exposures and genetic susceptibilities can inform the development of targeted prevention intervention strategies.

Uncited references Q14

Baron and Kenny, 1986; MacKinnon et al., 2002.

References

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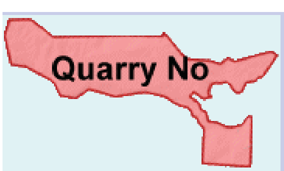
Santa Clara County EIR Input

No Expansion of Lehigh Mining Operations due to Excessive Toxic Emissions

Ken Smyth
Cupertino Resident



West Valley Citizens Air Watch
(WVCAW)

Quarry No

Position Statement

WVCAW

Lehigh should not be granted expansion of mining operations because:

- Excessive release of dozens of toxins to the region
  - Lehigh facility is the #1 polluter in the Bay Area

- Levels are mercury are especially high: 500+ lbs in 2010
  - Mercury is the #2 most toxic element on earth

- Mercury is a neurotoxin and causes brain neuron degeneration. View this video, http://movies.commons.ucalgary.ca/mercury
  - The Santa Clara County Supervisors are naïve about mercury and need to be educated on this highly toxic material

- Medical Center study correlates the rate of autism to the proximity of cement kilns and quarries.

UT Study
Mercury & Autism

Quarry No

Medical Center Mercury Research WVCAW

Study Links the Autism Risk to the proximity of Mercury emitting sources

October 2, 2006
January 15, 2008 (revised)

University of Texas (UT) Health Science Center San Antonio

Dr. Raymond Palmer, Dr. Steve Blanchard, and Robert Wood

Quarry No

Autism Epidemic in the U.S.

WVCAW

40,000 children diagnosed in 2009

12/09 – CDC confirms autism rate is 1-in-91 children; 1-in-57 for boys

1% of children in US are now diagnosed with autism

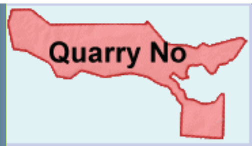
The costs for special education and adult services for autism is becoming an increasingly serious cost burden to local, state, and federal budgets.

UT Study Sources of Data

Sources of data used in the study

Data for environmentally released mercury were from the "United States Environmental Protection Agency Toxics Release Inventory." Data for releases by coal-fired power plants came from the same inventory and from the Texas Commission for Environmental Quality.

Data for school district autism rates came from the Texas Education Agency



UT Study Highlights

WVCAW

- Mercury-release data examined were from 95 facilities in Texas 39 coal-fired power plants, and 56 industrial facilities)

- Autism rates examined were from 1,040 Texas school districts.

- For every 1,000 pounds of mercury released by all industrial sources in Texas into the environment in 1998, there was a corresponding 2.6 percent increase in autism rates in the Texas school districts in 2002.

- For every 1,000 pounds of mercury released by Texas power plants in 1998, there was a corresponding 3.7 percent increase in autism rates in Texas school districts in 2002.

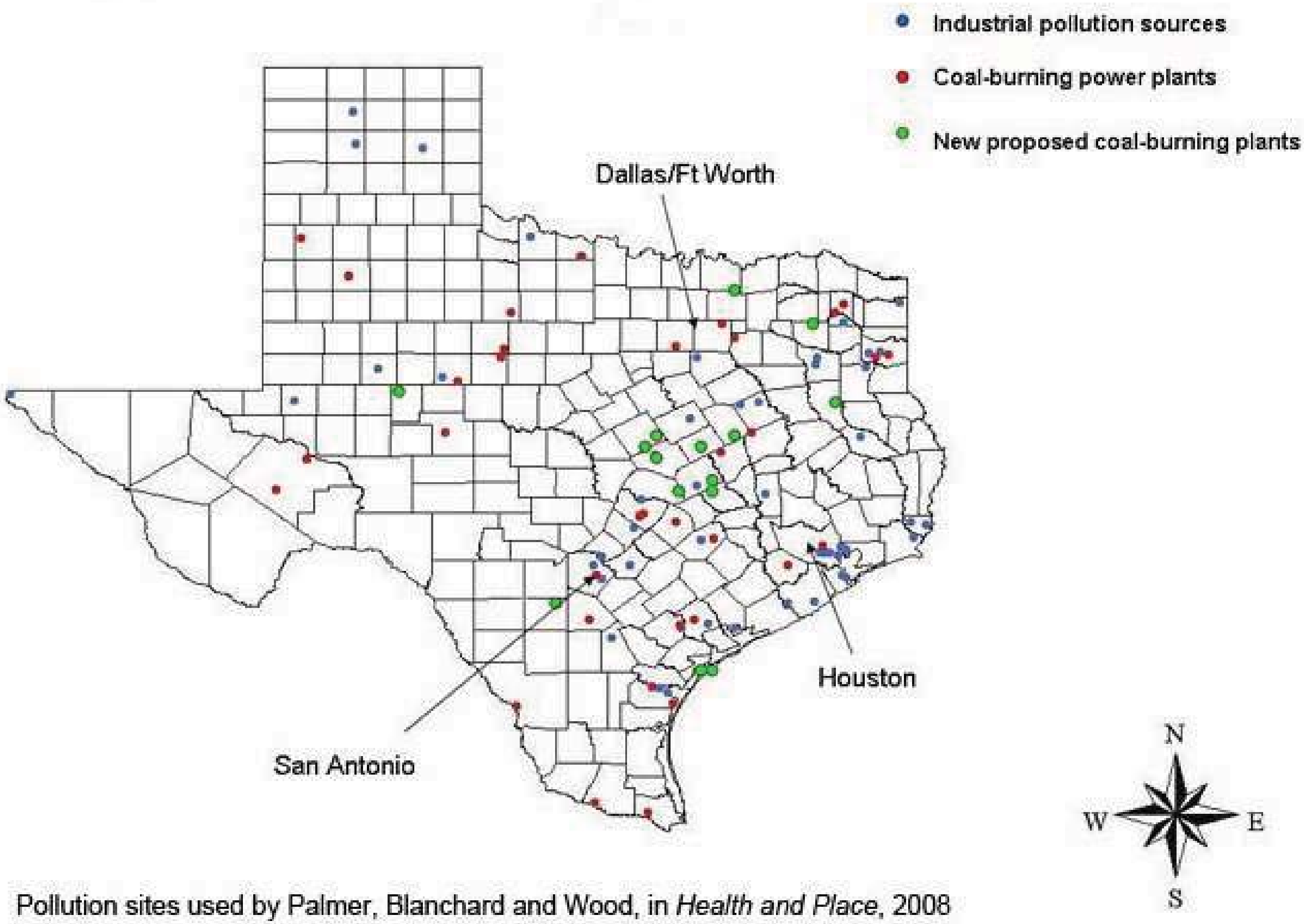
- Autism prevalence diminished 1% to 2% for every 10 miles from the source.
- Mercury exposure through fish consumption is well documented, but very little is known about exposure routes through air and ground water.
- There is evidence that children and other developing organisms are more susceptible to neurobiological effects of mercury.

Quarry No

Texas Mercury Pollution Sources

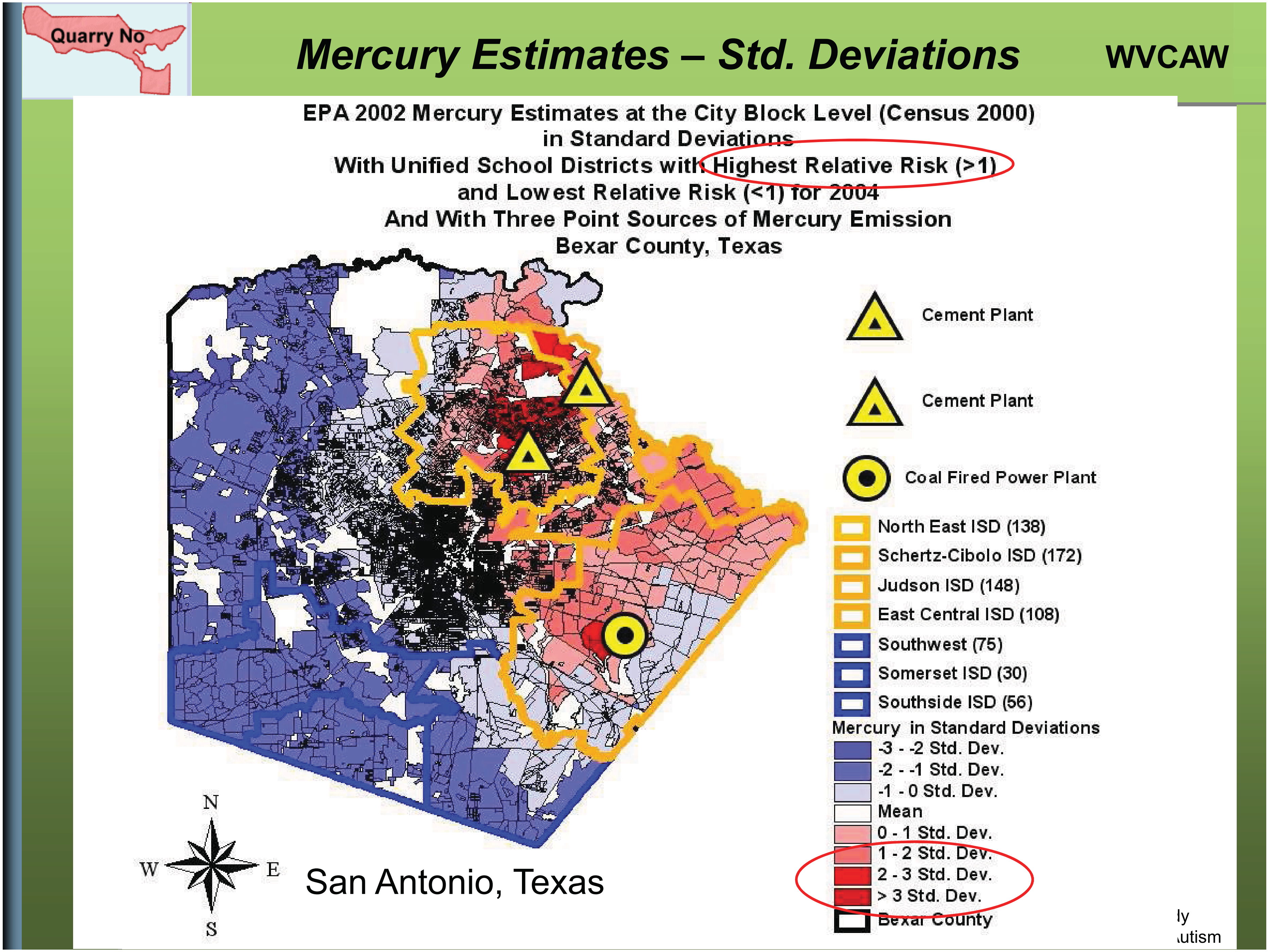
WVCAW

Geographic Location of Mercury Pollution Sources



Pollution sites used by Palmer, Blanchard and Wood, in *Health and Place*, 2008

UT Study
Mercury & Autism


Quarry No
Mercury Estimates – Std. Deviations
WVCAW
EPA 2002 Mercury Estimates at the City Block Level (Census 2000)
in Standard Deviations
With Unified School Districts with Highest Relative Risk (>1)
and Lowest Relative Risk (<1) for 2004
And With Three Point Sources of Mercury Emission
Bexar County, Texas
Cement Plant
Cement Plant
Coal Fired Power Plant
North East ISD (138)
Schertz-Cibolo ISD (172)
Judson ISD (148)
East Central ISD (108)
Southwest (75)
Somerset ISD (30)
Southside ISD (56)
Mercury in Standard Deviations
-3 - -2 Std. Dev.
-2 - -1 Std. Dev.
-1 - 0 Std. Dev.
Mean
0 - 1 Std. Dev.
1 - 2 Std. Dev.
2 - 3 Std. Dev.
> 3 Std. Dev.
Bexar County
N
W
E
S
San Antonio, Texas
ly
utism

Quarry No

UT Study Impact

WVCAW

After review of University of Texas Medical Center and the direct negative health impact on communities across the state, the Texas State legislature reduced the number of future coal-burning power plants to be built in the state from 15 to 3.

Quarry No

UT Future Studies

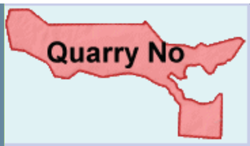
WVCAW

"We suspect low-dose exposures to various environmental toxicants, including mercury, that occur during critical windows of neural development among genetically susceptible children may increase the risk for developmental disorders such as autism"

- Dr. Robert Palmer
University of Texas, Medical Center, San Antonio

"…mercury ends up in cord blood, enters the placenta and into a developing fetus. A future study of blood samples in areas where conception occurred (down the street level) would be helpful in determining a hypothesis of high levels of ambient mercury in a region could be linked to genetic susceptibilities being triggered. Thus, there are potential consequences living in such an area, especially for pregnant women."

Dr. Steve Blanchard (UT research team member)



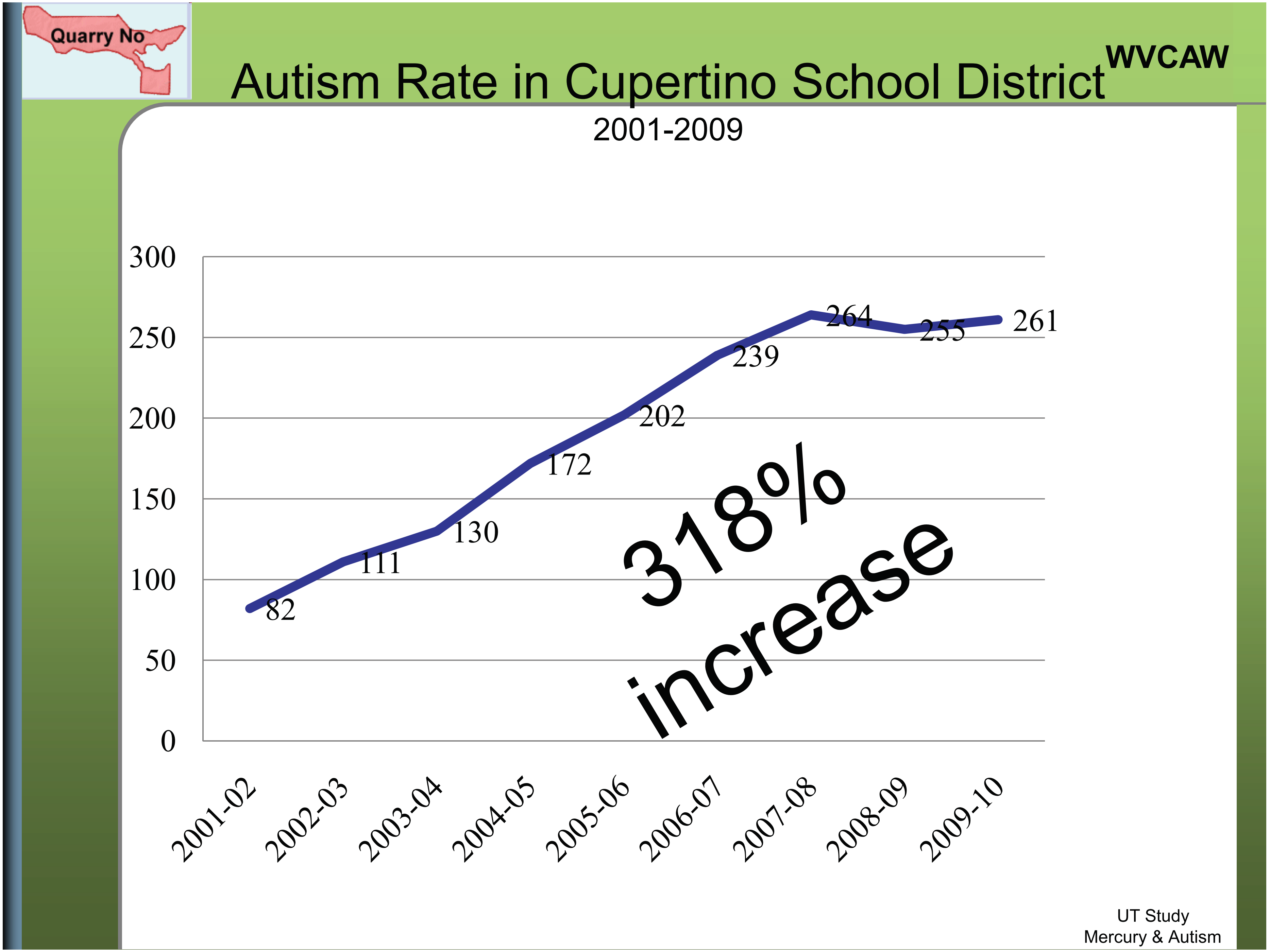
EPA Estimate of Mercury Releases

WVCAW

The U.S. Environmental Protection Agency (EPA) estimated environmental mercury releases at 158 million tons annually nationwide in the late 1990s

According to the Centers for Disease Control and Prevention, eight percent (8%) of American women of childbearing age have mercury in their bodies at levels high enough to put their babies at risk of birth defects, loss of IQ, learning disabilities and developmental problems.

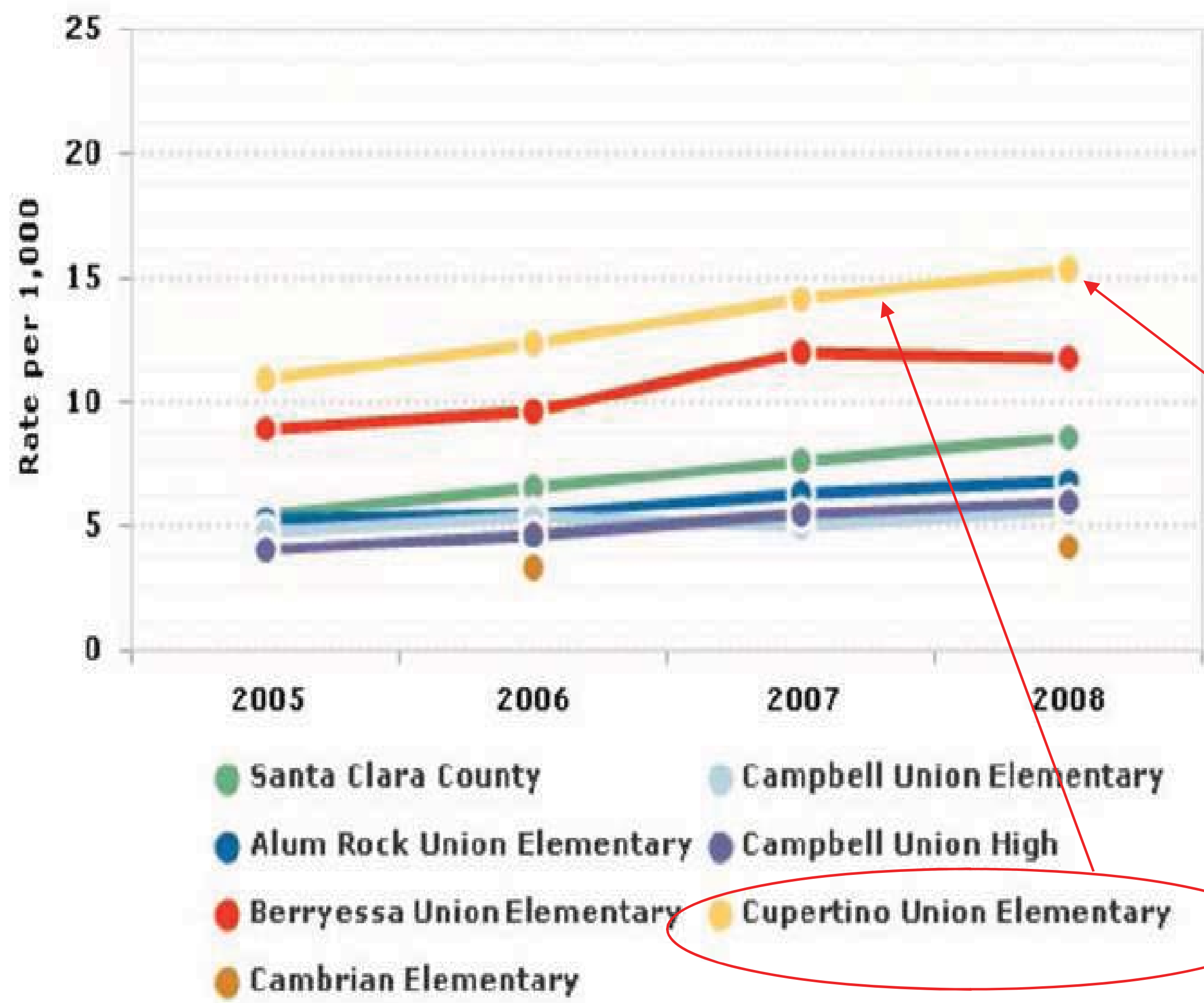
UT Study
Mercury & Autism


Quarry No
WVCAW
Autism Rate in Cupertino School District
2001-2009
300
250
200
150
100
50
0
82
111
130
172
202
239
264
255
261
318% increase
2001-02
2002-03
2003-04
2004-05
2005-06
2006-07
2007-08
2008-09
2009-10
UT Study
Mercury & Autism

Quarry No

Autism Trend in Cupertino

WVCAW



~ 30% increase in 3 years

~300% higher Than Alum Rock & Campbell

UT Study
Mercury & Autism

Quarry No

Autism Rate in Cupertino - 2008

WVCAW

Students with Autism: 2008

8.6

Region	Rate per 1,000	Range: 0 - 25.0
Santa Clara County	8.6	

Region	Rate per 1,000	Range: 0 - 25.0
Alum Rock Union Elementary	6.8	
Berryessa Union Elementary	11.0	
Cambrian Elementary	4.2	
Campbell Union Elementary	5.6	
Campbell Union High	5.9	
Cupertino Union Elementary	15.4	
East Side Union High	5.6	
Evergreen Elementary	12.3	
Franklin-McKinley Elementary	7.9	
Fremont Union High	8.9	
Gilroy Unified	5.7	
Lakeside Joint Elementary	LNE	
Loma Prieta Joint Union elementary	LNE	
Los Altos Elementary	8.2	
Los Gatos Union Elementary	5.9	
Los Gatos-Saratoga Joint Union	6.6	
Luther Burbank Elementary	LNE	
Milpitas Unified	9.4	
Montebello Elementary	N/A	
Moreland Elementary	11.2	
Morgan Hill Unified	6.0	
Mountain View-Los Altos Union	5.0	
Mountain View-Whisman Elementary	12.9	
Mt. Pleasant Elementary	10.6	
Oak Grove Elementary	9.4	

15.4

15.7

Orchard Elementary	15.7	
Palo Alto Unified	9.3	
San Jose Unified	7.4	
Santa Clara Unified	9.6	
Saratoga Union Elementary	12.1	
Sunnyvale Elementary	12.9	
Union Elementary	11.3	

Definition: Number of public school students with autism who are enrolled in special education per 1,000 students. District level data show district of residence; that is, the district in which students live. Some students with disabilities attend school outside their district of residence.

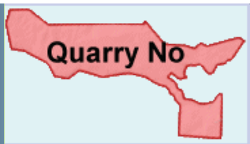
Data Source: State of California Department of Education, DataQuest. http://data1.cde.ca.gov/dataquest/ Retrieved 10/01/08.

Footnote: Years presented are the final year of a school year, e.g., 2006-2007 is shown as 2007. LNE (Low Number Event) means that the number of cases was less than 10, too small to calculate a rate.

- Orchard Elementary ranks #1
- Cupertino Union ranks #2 (almost double the autism rate of Santa Clara County

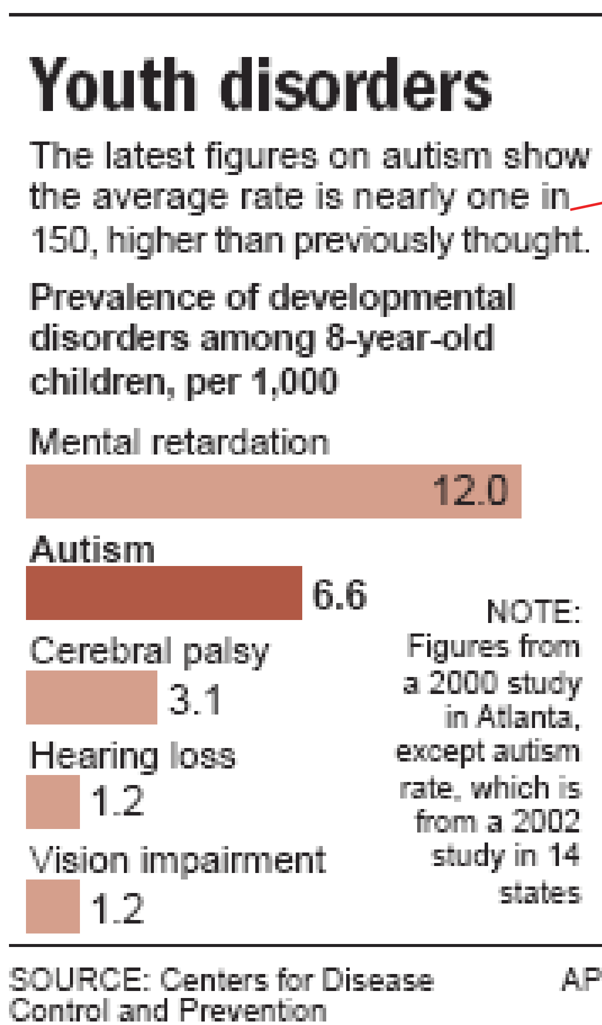
Source: State of California Dept of Education

UT Study
Mercury & Autism



Autism Rate

WVCAW



Rate is now 1-in-91
For children and
1-in-57 for boys!!

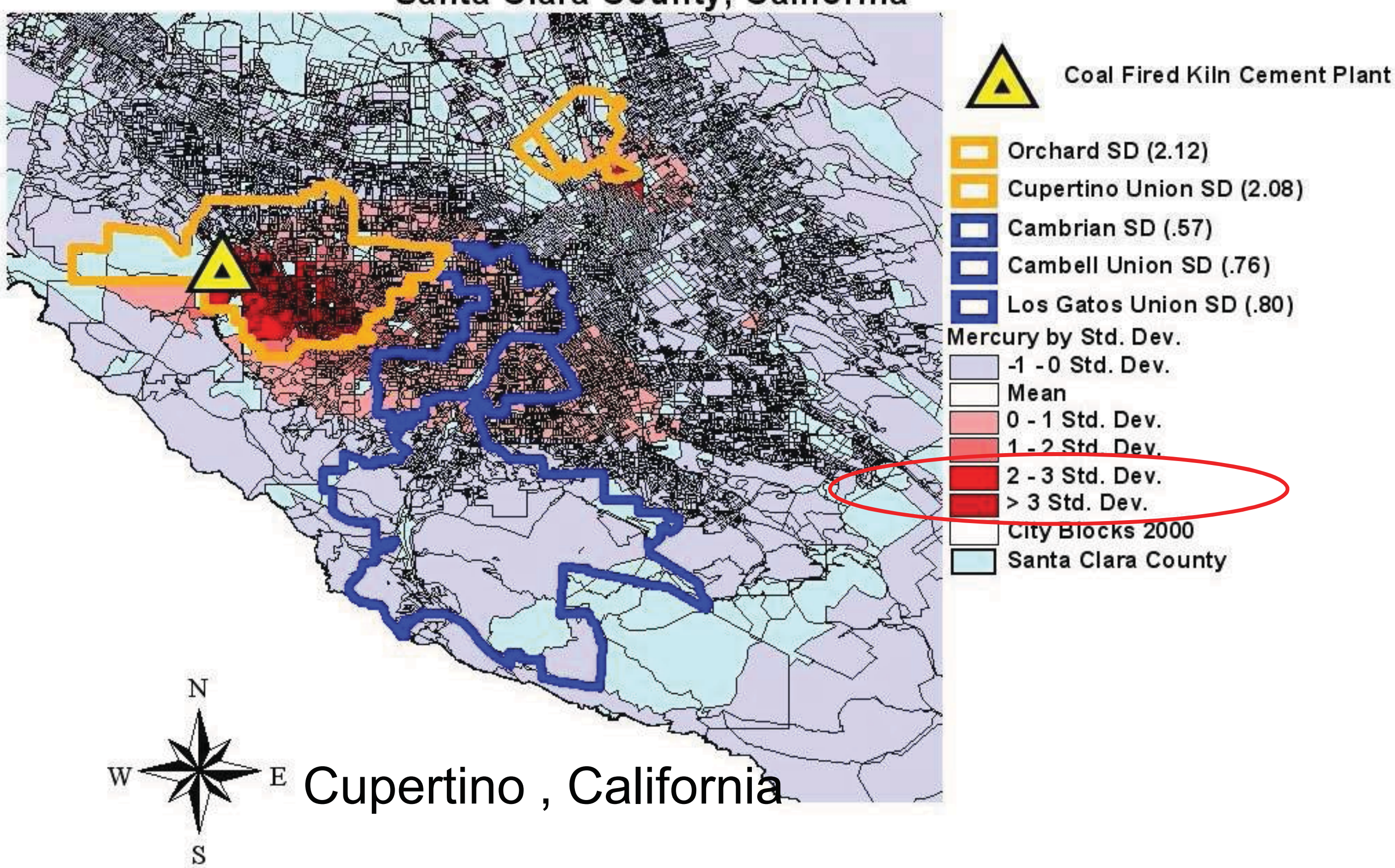
UT Study
Mercury & Autism

Quarry No

Mercury Estimates – Std. Deviations

WVCAW

Elementary School Districts with Highest Relative Risk > 1 of Autism
and Lowest Relative Risk < 1 (EDP2008)
by Standard Deviations of Ambient Mercury Estimates (EPA 2002)
with Point Source of Mercury Emission
Santa Clara County, California

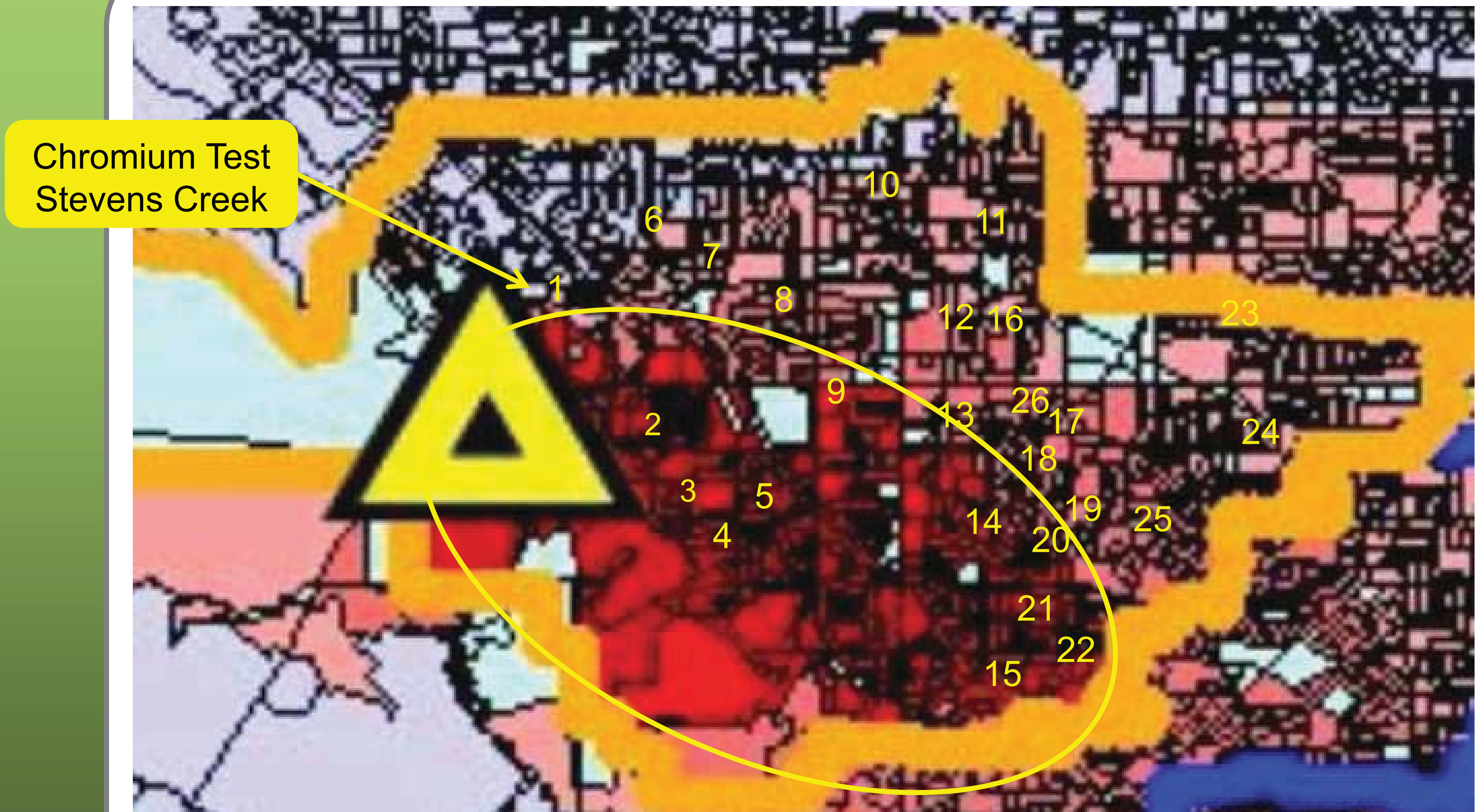


UT Study
Mercury & Autism

Quarry No

Cupertino Schools in 'Mercury Alley'

WVCAW



1 – Steven Creek 2 - Lincoln 3 – Kennedy 4 - Regnart 5 – Monte Vista 6 – Cupertino Middle 7 – Homestead High 8 - Garden Gate 9 – Faria – 10 – Nimitz 11 – Stocklmeir 12 - Lawson 13 – Eaton 14 – Meyerholz 15 - Blue Hills 16 – Collins 17 Sedgwich 18 – Hyde 19 – Dilworth 20 – Miller 21 - Muir 22 – McAuliffee 23 – Eisenhower 24 – De Vargas 25 – Murdock Portal 26 – Cupertino High

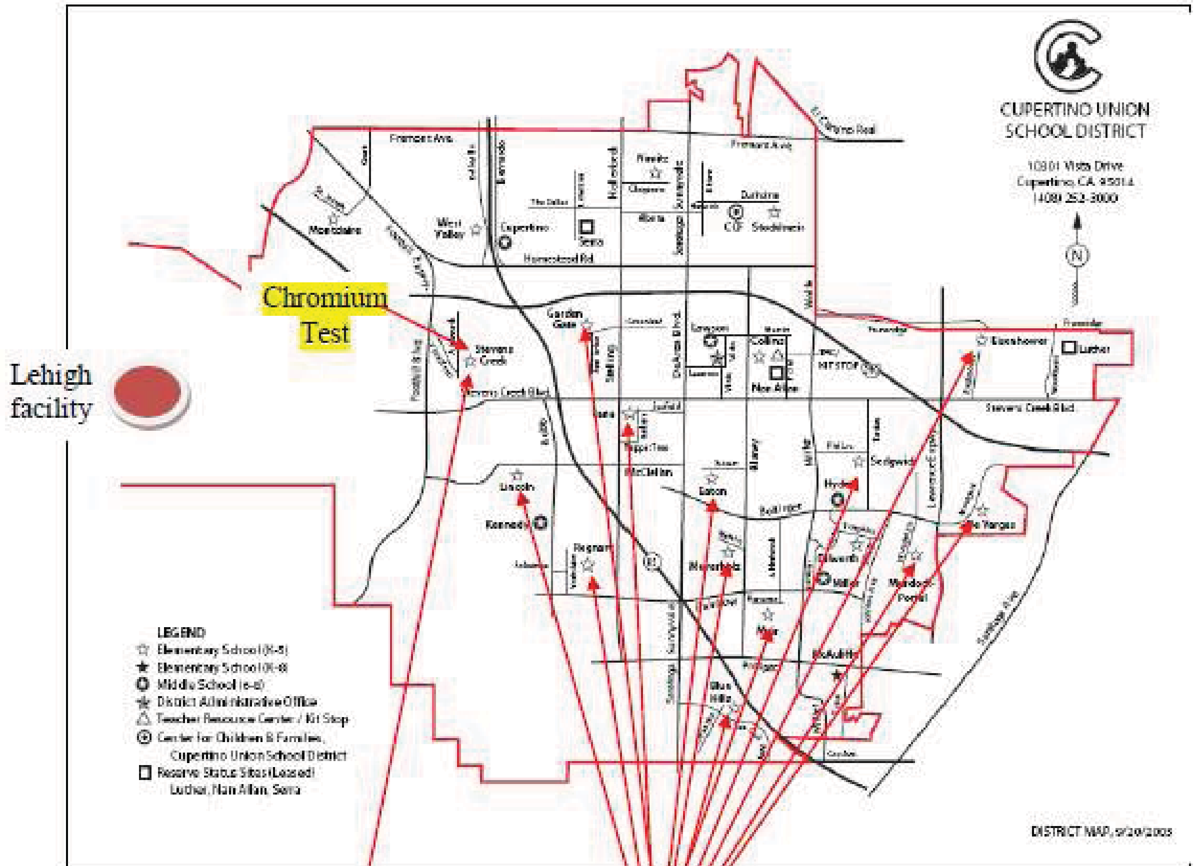
UT Study
Mercury & Autism

Quarry No

Chromium Testing

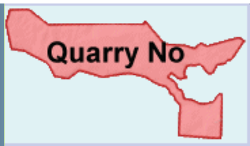
WVCAW

Cupertino Union School District Map



Stevens Creek Elementary school located here

11 other elementary schools only located to the southeast of where the Chromium test was conducted. Wind pattern is more southeastern than northwest.



USA Today Study - Cupertino

WVCAW

Stevens Creek Elementary
School District: Cupertino Union
National Rank: 28th percentile
35,316 of 127,809 schools have worse air
Exposure to cancer-causing toxics: Ranked 4 of 10
Note: Rankings are based on modeled concentrations and severity of chemicals known or believed to cause cancer.

Exposure to other toxic chemicals: Ranked 3 of 10
Note: Rankings are based on modeled concentrations of chemicals that cause health problems other than cancer.

Chemicals most responsible for the toxicity outside this school

Hydrochloric acid **43%** of overall toxicity
Mercury and mercury compounds **37%** of overall toxicity
Nickel and nickel compounds **12%** of overall toxicity
Chromium and chromium compounds **4%** of overall toxicity
Manganese and manganese compounds **1%** of overall toxicity
Polluters most responsible for toxics outside this school
Lehigh CementCupertino, California
United States Pipe & Foundry Co LlcUnion City, California

UT Study
Mercury & Autism

Teacher & Aide Ratio: District $Cost

WVCAW

1st grade Special Needs classroom
- 8-12 students
- 1 teacher
- 3 aides
- 1-2 additional specialists (speech, physical therapist, etc.) attend class weekly for 1 or more students for an hour or more

4th grade mainstream (normal) classroom
- 32 students
- 1 teacher

Quarry No

What is Autism?

WVCAW

Autism is a brain development disorder characterized by impaired social interaction and communication, and by restricted and repetitive behavior, and difficulties with play and leisure activities. These signs all begin before a child is three years old.[1] Autism involves many parts of the brain; how this occurs is not well understood.[2] Autism is one of five disorders diagnosed under a group of developmental disorders called "Autism Spectrum Disorders“ (ASD’s). The other ASD's are Asperger Syndrome, Rett Syndrome, childhood disintegrative disorder, and Pervasive developmental disorder not otherwise specified (PDD-NOS).

Autism has a strong genetic basis, although the genetics of autism are complex and it is unclear whether ASD is explained more by rare mutations, or by rare combinations of common genetic variants.[3]

Quarry No

Cement Kilns in US – 127

WVCAW

Lehigh has13 cement kilns in the US = 10.2% of the capacity

http://maps.google.com/maps/ms?hl=en&ie=UTF8&msa=0&msid=100120143528261920895.00044f685a5cea9739225&ll=36.597889,-95.449219&spn=29.173596,56.051945&source=embed

UT Study
Mercury & Autism

Quarry No

Lehigh Cement Kilns in US

WVCAW

Lehigh has 13 cement kilns in US or 10.2%

http://maps.google.com/maps/ms?hl=en&ie=UTF8&msa=0&msid=100120143528261920895.00044f685a5cea9739225&ll=36.597889,-95.449219&spn=29.173596,56.051945&source=embed

Location	Lbs of Mercury 2010	Comments
Tehachapi, CA		1748 (was #1 in 2008)
Union Bridge, MD		1539 in 2008
Evansville, PA		
Glen Falls, NY		
Leeds, AL		
Mitchell, IN		
Redding, CA		
York, PA		
Waco, TX		
Cupertino, CA	500+	
Catskill, NY		
Blandon, PA		
Buda, TX		

UT Study
Mercury & Autism

Quarry No

No Lehigh Expansion Summary

- No expansion plans recommended for Lehigh

- Toxic emission releases to the community, especially mercury, are causing numerous health problems and the rate of autism increase is linked to cement kiln and quarry operations based on University of Texas multi-year research

- Lehigh should provide regional materials requirements from their other California facilities to provide raw materials for the Bay Area supply chain.

- 47% of the US cement materials is imported from China; import a small amount more to offset the Lehigh output.
  - US produces only 3% of the cement production worldwide. Lehigh output is minuscule

From: Paula Wallis <wallis.notoxicair@gmail.com>
Date: April 11, 2011 3:20:38 PM PDT
To: Marina Rush <Marina.Rush@pln.sccgov.org>
Subject: Lehigh scoping for EIR

Hi Marina,

I would like the EIR on Lehigh's permit for a new quarry to include information on whether Lehigh will be able to conduct mining operations in both the current and the new pit mine at the same time. So in essence, will they be allowed to increase the number of earth movers and blasting etc., to quarry in both the current pit, until it's exhausted, and also the new pit mine, if its approved? If so, can you please assess the increased impact to the community in the EIR.

I understand the the cement plant determines the quarry production rates, but can the quarry stock pile raw limestone, and if so, where, and how much can it stock pile and will this aspect of their operation be included in the EIR. I would like it to be if it is not already.

Thank you.
Paula Wallis
650 722 0644

Barbara West
10670 Cordova Road
Cupertino, CA 95014
WestB@me.com
March 30, 2011

Marina Rush, Planner III
Rob Eastwood, Senior Planner
County of Santa Clara
Department of Planning and Development
Planning Office
County Government Center, East Wing, 7th Floor
70 West Hedding Street
San Jose, California 95110

Via First Class Mail and email

Re: Comments on the Notice of Preparation (NOP) of an Environmental Impact Report (EIR) for the proposed Comprehensive Reclamation Plan Amendment and Conditional Use Permit for Lehigh/Permanente Quarry

Dear Ms. Rush and Mr. Eastwood:

Simply Stated: Expanded mining and related activities should not increase fugitive dust, toxics, or noise currently experienced in adjacent neighborhoods.

Specifically Stated: In accordance with the California Environmental Quality Act (CEQA), comments on the subject NOP/EIR are submitted below for your consideration before the 11 April 2011 deadline.

<u>AIR QUALITY</u> (This Is A Comment On The Permanente Quarry Expansion, <u>Not</u> On The Cement Plant)

The top soil and overburden mining waste to be stored at various new project locations is not benign. This material has been exposed to decades of numerous contaminants (including arsenic and hexavalent chromium) from the nearby cement manufacturing facility and these contaminants accumulate in soil over time. Further, mercury and other contaminants are a naturally occurring part of the mined ore and overburden.

This top soil and overburden mining waste should not be the source of wind-driven toxic fugitive dust contaminating nearby residential neighborhoods.

The Bay Area Air Quality Management District (BAAQMD) is recording ambient toxic air contaminants and particulates in a nearby neighborhood park (Monta Vista Park, Cupertino). See project description at: http://www.baaqmd.gov/Divisions/Technical-Services/Special-Projects/Cupertino.aspx. See an example of the type of data collected at: http://www.baaqmd.gov/sitecore-s/~/media/Files/Technical%20Services/Cupertino_toxics.ashx See PM 2.5 collected in Cupertino by BAAQMD at: http://gate1.baaqmd.gov/aqmet/aq.aspx. Data collected by the BAAQMD in Cupertino and at Monta Vista Park should be used as the baseline measurement for air quality pre-quarry expansion.

Potential increases in toxic air contaminants and particulates from the expanded quarry operations beyond the baseline recorded by the BAAQMD should be considered a significant impact, and reasonable mitigation measures such as daily wetting of the disturbed area during the dry months to prevent fugitive dust followed by yearly hydro-seeding with nitrogen-fixing legumes or other suitable plants should be required mitigation measures.

NOISE AND VIBRATION (This Is A Comment On The Permanente Quarry Expansion, Not On The Cement Plant)

Santa Clara County residents that are near the proposed expanded quarry live mainly in quiet rural neighborhoods. In fact, the lack of noise was, in many cases, a reason for selecting our current locations.

Expanded quarry and mining operations should not be permitted to exceed the Santa Clara County General Plan Noise Ordinance Standards based on careful characterization of pre-quarry expansion ambient noise.

More specifically, since the Santa Clara County General Plan and Noise Ordinance Standards for maximum permissible exterior sound levels by receiving land can be based on the maximum ambient noise level at the receiving land (see General Plan, Sec. B11-192 (1)(c)), ambient noise should be characterized before quarry operations are expanded and for all the times provided in Table B11-192 and in all neighborhoods and streets near the proposed expanded quarry operations.

The EIR should evaluate noise and vibration impacts from the proposed mining and reclamation activities. Any potential noise impacts in excess of the the County Noise Ordinance Standards (using the pre-expansion ambient noise) should be considered significant impacts and be mitigated.

The above comments are made after considerable review, and with the intent of providing specific, helpful, and realistic comments with respect to the NOP/EIR

Respectfully submitted,

Barbara West
On Behalf Of West Cupertino Residents

cc (via email): Sandra James
Public Relations and Community Affairs Manager
Lehigh Southwest Cement/Permanente Quarry
24001 Stevens Creek Boulevard
Cupertino, CA 95014-5659

From: Ken Yew <ken_yew@yahoo.com>
Date: April 11, 2011 10:55:46 AM PDT
To: marina.rush@pln.sccgov.org
Subject: Comments for Lehigh Permanente Quarry Scoping

Dear Ms. Rush:

Thank you for the opportunity to comment on the Lehigh Permanente Quarry Reclamation Plan Amendment.

Please add the following for view shed analysis -
Hyannisport and Bubb
Stevens Creek just East of Janice (at top of small incline)
Voss Ave, just West of Foothill
Stevens Creek near Cupertino Post Office
Stevens Creek at intersection with Stelling

Also include the cement plan in the reclamation plan amendment as it meets the definition of "Mined Lands" according to SMARA.

Please do noise analysis of trucks braking at intersection of Stevens Creek and Foothill. The noise in the middle of the night in intolerable and must stop. What are the health dangers of this noise and noise from the trucks operating in the quarry? What effects are there on loss of productivity? Please include an assessment in the draft EIR.

Do an analysis of dust fallout. There has been an increase in dust in the neighborhood recently. It is unclear if it is from the increased use of East Material Storage Area or other factors. Based on document reviews from Santa Clara County and BAAQMD neighbors have been complaining for decades without any real response from regulating authorities, yet it continues and even worsens. Attached is a picture of an orange picked off of a tree from my yard, it did not fall on the ground or any other dirty surface. It is covered in dust that is difficult to wash of, especially the little pits of the orange skin. This dust covers our cars, homes and also enters our lungs. Why have the regulating authorities ignored this for so long? Why is the dust situation getting worse? Include an analysis of the dust, especially for hazardous materials such as asbestos.

Please include an analysis of the health benefits of not allowing this quarry to expand into more mercury laden limestone. Include the health benefits of no cement plant in the "no project" option. Include decreases in autism, cancer, respiratory function, cardiac function, etc and corresponding decreases in economic damages and death that occur with the "no project"option. Complete a detailed analysis of the decreased exposure to particulate matter, heavy metals, benzene and other carcinogens. Include a separate evaluation of the health dangers of allowing so many trucks to pass on roads with sensitive receptors (Sunnyview Retirement and Monarch Christian Preschool) and highly densely populated areas in general and also include economic damages from loss of life, decreased productivity and associated health care costs.

Include all the raw data and calculations in the Draft EIR and post it online so that concerned citizens and other groups have easy access to review them. There have been many "errors" in these calculations in the past that always seem in favor of Lehigh and documents have sometimes been difficult to access via public record requests.

Include economic and health damages of not being able to consume fish in Steven Creek Reservoir and San Francisco Bay due to mercury and other pollutants.

Evaluate the improvement/ no loss of value for the real estate in the area for the "no project" option. Look at the benefits of increased tourism/recreation that would occur if the "no project" option is selected.

Do a detailed traffic analysis of Stevens Creek and Foothill Ave. as there are many traffic jams, especially during the early morning rush hours.

Sincerely,

Karen Del Compare and Ken Yew

10136 Camino Vista Dr
Cupertino, CA 95014
(Please do not post my address online)

Chris Vongsarath
Editor
Cupertino Courier-Sunnyvale Sun

1095 The Alameda
San Jose, CA 95126
408.200.1039

B-55

LETTER RE: LEHIGH CEMENT PLANT
PRINTED IN CUPERTINO COURIER
2-18-2011

-----Original Message-----
From: HARRELL BELL [mailto:halsbels@pacbell.net]
Sent: Thursday, February 10, 2011 1:55 AM
To: Vongsarath, Chris
Cc: Thu Bui
Subject: Lehigh Permanente Cement Plant & Quarry

How can Lehigh Permanente Plant and Quarry have had a "long history of elevated mercury emissions" as stated by two members of NoToxicAir when mercury has not been recognized as a toxic pollutant for all that long?

I'm also not inclined to put much faith in their claim of 24 BAAQMD violations in four years with 11 still pending when a Courier article dated September 23, 2009 stated that Lehigh had no ongoing violations or pattern of violations according to District officials.

My husband and I moved to Cupertino in 1959 when Lehigh was Kaiser Permanente Cement Plant. We have always been in favor of allowing it to continue as it has since 1939 when there were very few residents living here. Over the years, as people intermittently complained about dust, gravel, trucks and trains associated with production of cement, we have often wondered why city fathers allowed housing to be built close to the plant. Even more have we wondered why people failed to check out the environment before buying homes there. It reminds one of those who buy near airports and then complain about the noise.

Current complaints about the plant started with ostensible concern about the effect mercury emissions might have on schoolchildren, but it turns out that only one school in all of Northern California is in the supposed "danger zone". It has been monitored constantly for air pollution and has been essentially cleared. Furthermore, mercury emissions from cement plants account for only about 3.2% of the worldwide amount. We are all no doubt in greater danger from broken fluorescent light bulbs that we are urged to use in our homes than from mercury in the air.

Rowena Bell

Rowena Bell

STATE OF CALIFORNIA—BUSINESS, TRANSPORTATION AND HOUSING AGENCY EDMUND G. BROWN, Jr., Governor

DEPARTMENT OF TRANSPORTATION
P.O. BOX 23660
OAKLAND, CA 94623-0660
PHONE (510) 622-5491
FAX (510) 286-5559
TTY 711

Flex your power!
Be energy efficient!

May 20, 2011

SCL-280-11.45
SCL280357
SCH2010042063

Ms. Marina Rush
County of Santa Clara
70 West Hedding Street
7th Floor, East Wing
San Jose, CA 95110

Dear Ms. Rush:

Comprehensive Reclamation ~~Plan~~ Amendment and Conditional Use Permit for Permanente Quarry – Notice of Preparation (NOP)

Thank you for including the California Department of Transportation (Department) in the environmental review process for the proposed project. We have reviewed the NOP and have the following comments to offer.

As lead agency, the County of Santa Clara is responsible for all project mitigation, including any needed improvements to state highways. The project's fair share contribution, financing, scheduling, implementation responsibilities and lead agency monitoring should be fully discussed for all proposed mitigation measures. The project's traffic mitigation fees should be specifically identified in the environmental document. Any required roadway improvements should be completed prior to issuance of project occupancy permits. While an encroachment permit is only required when the project involves work in the State Right of Way (ROW), the Department will not issue an encroachment permit until our concerns are adequately addressed. Therefore, we strongly recommend that the lead agency ensure resolution of the Department's California Environmental Quality Act (CEQA) concerns prior to submittal of the encroachment permit application. Further comments will be provided during the encroachment permit process if required; see the end of this letter for more information regarding the encroachment permit process.

While the County of Santa Clara conducts its traffic studies in accordance with guidelines, which conform to the local Congestion Management Program managed by the Santa Clara County Valley Transportation Authority, the Department's thresholds are primarily concerned with potential impacts to the State Highway System. We encourage the County of Santa Clara to coordinate preparation of the study with our office to help sharpen the focus of your scope of work and answer any questions you may have. Please see the Departments' "*Guide for the Preparation of Traffic Impact Studies*" at the following website for more information:
http://www.dot.ca.gov/hq/traffops/developserv/operationalsystems/reports/tisguide.pdf

Specifically, a detailed Traffic Impact Analysis (TIA) should identify impacts to all affected state facilities with and without the proposed project. The TIA should include, but not be limited to the following:

1. Information on the project's traffic impacts in terms of trip generation, distribution, and assignment. The assumptions and methodologies used in compiling this information should be addressed.
2. Average Daily Traffic (ADT), AM and PM peak hour volumes on all significantly affected streets and highways, including crossroads and controlling intersections.
3. Schematic illustration of the traffic conditions for: 1) existing, 2) existing plus project, and 3) cumulative for the intersections in the project area.
4. Calculation of cumulative traffic volumes should consider all traffic-generating developments, both existing and future, that would affect the State Highway facilities being evaluated.
5. Mitigation measures should consider highway and non-highway improvements and services. Special attention should be given to the development of alternate solutions to circulation problems that do not rely on increased highway construction.
6. All mitigation measures proposed should be fully discussed, including financing, scheduling, implementation responsibilities, and lead agency monitoring.
7. Impacts to transit systems, pedestrians and bicyclists. Please develop and apply pedestrian bicycling and transit performance or quality of service measures and model pedestrian, bicycle and transit trips that your project will generate so that impacts and mitigation can be quantified. In addition, analyze secondary impacts on pedestrians and bicyclists that may result from any traffic impact mitigation measures. Describe any pedestrian and bicycle mitigation measures and safety countermeasures that would therefore be needed as a means of maintaining and improving access to transit facilities and reducing vehicle trips and traffic impacts on state highways.

We look forward to reviewing the TIA, ***including*** Technical Appendices and the environmental document for this project. Please send two copies to:

Brian Brandert
Office of Transit and Community Planning
Department of Transportation, District 4
P.O. Box 23660
Oakland, CA 94623-0660

Encroachment Permit

Work that encroaches onto the State ROW requires an encroachment permit that is issued by the Department. To apply, a completed encroachment permit application, environmental documentation, and five (5) sets of plans clearly indicating State ROW must be submitted to the address below. Traffic-related mitigation measures should be incorporated into the construction plans during the encroachment permit process.

Office of Permits
California DOT, District 4
P.O. Box 23660
Oakland, CA 94623-0660

See the website link below for more information.
http://www.dot.ca.gov/hq/traffops/developserv/permits/

Should you have any questions regarding this letter, please contact my staff member Brian Brandert, Transportation Planner, at (510) 286-5505 or brian_brandert@dot.ca.gov.

Sincerely,

Lisa Carboni

LISA CARBONI
District Branch Chief
Local Development – Intergovernmental Review

c: Scott Morgan (State Clearinghouse)

No Toxic Air

May 23, 2011

Marina Rush
County of Santa Clara Planning Office
70 West Hedding, 7th Floor
San Jose, CA 95110

RE: Environmental Impact Report for the Comprehensive Reclamation Plan Amendment and Conditional Use Permit for Permanente Quarry

Dear Ms. Rush,

No Toxic Air believes that the California Environmental Quality Act (CEQA) and CEQA guidelines require Santa Clara County to consider the following issues within the Environmental Impact Report (EIR) for the Comprehensive Reclamation Plan Amendment and Conditional Use Permit for Permanente Quarry (the Permanente Quarry expansion project):

1. A quantitative assessment of air quality impacts caused by industrial uses of quarry materials, including air pollutant emissions from the Lehigh Southwest Cement Plant

Section 15126.2 of the CEQA Guidelines state:

> "An EIR shall identify and focus on the significant environmental effects of the proposed project. In assessing the impact of a proposed project on the environment, the lead agency should normally limit its examination to changes in the existing physical conditions in the affected area as they exist at the time the notice of preparation is published, or where no notice of preparation is published, at the time environmental analysis is commenced. Direct and <u>indirect significant effects of the project on the environment shall be clearly identified and described</u>, giving due consideration to both the short-term and long-term effects."

Section 15358 of the CEQA Guidelines further state:

> "(a) Effects include: ….
>
> (2) <u>Indirect or secondary effects which are caused by the project and are later in time or farther removed in distance, but are still reasonably foreseeable</u>. Indirect or secondary

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effects may include growth-inducing effects and other effects related to induced changes in the pattern of land use, population density, or growth rate, and related effects on air and water and other natural systems, including ecosystems."

Section 15064(d) of the CEQA Guidelines further clarifies:

"(d) In evaluating the significance of the environmental effect of a project, the lead agency shall consider direct physical changes in the environment which may be caused by the project and reasonably foreseeable indirect physical changes in the environment which may be caused by the project. ....

(2) An indirect physical change in the environment is a physical change in the environment which is not immediately related to the project, but which is caused indirectly by the project. If a direct physical change in the environment in turn causes another change in the environment, then the other change is an indirect physical change in the environment. For example, the construction of a new sewage treatment plant may facilitate population growth in the service area due to the increase in sewage treatment capacity and may lead to an increase in air pollution."

Air quality impacts caused by industrial uses of quarry materials, including air pollutant emissions from the Lehigh Southwest Cement Plant, are clearly "indirect impacts" of the proposed Permanente Quarry expansion project that the CEQA guidelines will require Santa Clara to assess within the EIR for the project. These air quality impacts are not only "reasonably foreseeable indirect physical changes in the environment which may be caused by the project," these impacts will result because of the intended design of the project to supply limestone for the Lehigh Southwest Cement Plant.

Failure of Santa Clara County to assess the air quality impacts caused by industrial uses of quarry materials, including air pollutant emissions from the Lehigh Southwest Cement Plant will prevent a required comparison of the proposed project to the 'no project' alternative.

Section 15126.6(e) of the CEQA Guidelines states:

(e) "No project" alternative.

(1) The specific alternative of "no project" shall also be evaluated along with its impact. The purpose of describing and analyzing a no project alternative is to allow decision makers to compare the impacts of approving the proposed project with the impacts of not approving the proposed project.

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It is reasonably foreseeable that under the no project alternative, operations at the Lehigh Southwest Cement Plant will cease because of the lack of an affordable supply of raw materials. Under this reasonably foreseeable scenario, air pollutant emissions from the Lehigh Southwest Cement Plant cease and air quality in the vicinity of the plant will improve, including air quality in the City of Cupertino. An assessment of the no project alternative will therefore include the extent to which air quality would improve if operations at the Lehigh Southwest Cement Plant cease, an indirect impact of the no project alternative. If Santa Clara County does not assess the air quality impacts caused by industrial uses of quarry materials, including air pollutant emissions from the Lehigh Southwest Cement Plant, then this would deprive decision-makers, including citizens of Cupertino and adjoining communities of Santa Clara County, of essential information decision-makers need" to compare the impacts of approving the proposed project with the impacts of not approving the proposed project."

Indirect impacts of the project on air quality is also required because of the relatively uncommon proximity of the Lehigh Southwest Cement Plant to a densely-populated residential area.

The Notice that Santa Clara County issued on March 10, 2011 states:

> "The EIR will not evaluate emissions related to existing plant operations."

For the reasons elaborated above, if this means that the EIR will not assess the air quality impacts caused by industrial uses of quarry materials, including air pollutant emissions from the Lehigh Southwest Cement Plant, then the EIR will be in violation of CEQA and CEQA Guidelines and, therefore, the EIR would not be a permissible basis for clearance of the proposed project.

2. A quantitative assessment of the mercury content of the limestone that would be excavated from the proposed South Quarry and other possible locations where the applicant may obtain raw materials and aggregates

Section 15125(a) of the CEQA Guidelines states:

> "An EIR must include a description of the physical environmental conditions in the vicinity of the project, as they exist at the time the notice of preparation is published, or if no notice of preparation is published, at the time environmental analysis is commenced, from both a local and regional perspective. This environmental setting will normally constitute the baseline physical conditions by which a lead agency determines whether an

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> impact is significant. The description of the environmental setting shall be no longer than is necessary to an understanding of the significant effects of the proposed project and its alternatives."

Mercury is a toxic air contaminant. The amount of mercury emissions from a cement plant depend entirely on the mercury content of the raw materials it uses, of which limestone is the dominant raw material. The mercury content of the limestone the applicant is currently extracting from the North Quarry has some of the highest mercury content in the nation – 0.36 parts per million (ppm). In a 30-day survey conducted in March-April of 2009, the mercury content of limestone at the existing quarry was highly variable, with some samples containing mercury at a level of 1.4 ppm.

In September 2010, the U.S. Environmental Protection Agency (U.S. EPA) adopted new National Emission Standards for Hazardous Air Pollutants (NESHAP) that will require existing cement plants, such as the Lehigh Southwest Cement Plant to reduce mercury emissions to no more than 55 pounds of mercury per million tons of clinker produced. U.S. EPA (September 9, 2010) "National Emission Standards for Hazardous Air Pollutants from the Portland Cement Manufacturing Industry and Standards of Performance for Portland Cement Plants," 75 FR 54970. At the rate at which Lehigh Southwest Cement Plant uses limestone, it will be required to remove at least 94% of mercury emissions in order to comply with the new U.S. EPA NESHAP for cement plants. This will require operators of the cement plant to employ multiple control measures for capturing mercury, as no one technology alone, including activated carbon injection, removes more than 90% of mercury emissions. Ibid. No combination of control technologies is capable of removing more than 98% of mercury emissions. Ibid.

Because of the heterogeneous and variable nature of the occurrence of mercury in limestone, it is reasonably foreseeable that the mercury content of limestone from the proposed South Quarry may be even higher than the mercury content of limestone from the North Quarry. If this were the case, then it might render the limestone unusable as a raw material for the production of cement because no combination of control technologies is capable of removing more than 98% of mercury emissions, and the operators of the Lehigh Southwest Cement Plant would be unable to use such limestone and comply with the U.S. EPA NESHAP for cement plants.

A quantitative assessment of the mercury content of the limestone that would be excavated from the new quarry areas is needed as part of the EIR to understand the significant effects of the proposed project and its alternatives. If it is found that the mercury content of the limestone from the proposed South Quarry is too high, then operators of the Lehigh Southwest Cement

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Plant may not use limestone from this source. If this fact is discovered before the Permanente Quarry expansion project commences, then the applicant may choose to abandon the project and the adverse environmental impacts of the proposed project might be avoided. If this fact is discovered after the Permanente Quarry expansion project commences, then the applicant may choose to abandon the project, but too late to avoid the adverse environmental impacts of the proposed project.

3. An assessment of the alternative of sourcing raw materials for the Lehigh Southwest Cement Plant more sustainably by using ash, demolished concrete, and other cementitious materials

Section 21002 of CEQA states:

> "The Legislature finds and declares that it is the policy of the state that public agencies should not approve projects as proposed if there are feasible alternatives or feasible mitigation measures available which would substantially lessen the significant environmental effects of such projects, and that the procedures required by this division are intended to assist public agencies in systematically identifying both the significant effects of proposed projects and the feasible alternatives or feasible mitigation measures which will avoid or substantially lessen such significant effects."

Section 15126.6(a) of the CEQA Guidelines states:

> "(a) Alternatives to the Proposed Project. An EIR shall describe a range of reasonable alternatives to the project, or to the location of the project, which would feasibly attain most of the basic objectives of the project but would avoid or substantially lessen any of the significant effects of the project, and evaluate the comparative merits of the alternatives."

The applicant's stated basic objective of the project is to supply raw material, chiefly limestone, for the continued operation of the Lehigh Southwest Cement Plant because the supply of such materials in the existing North Quarry is nearly exhausted.

Because of the unsustainability of relying on local supplies of limestone for cement plants, and because of the inherent greenhouse gas emissions associated with the calcination of limestone, increasing attention is turning to the use of alternative materials. A recent publication of a scientist from the University of Wisconsin-Milwaukee states:

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"Concrete is one of the most widely used construction materials in the world. However, the production of Portland cement, an essential constituent of concrete, leads to the release of significant amounts of CO_2, a greenhouse gas (GHG); production of one ton of Portland cement produces about one ton of CO_2 and other GHGs. The environmental issues associated with GHGs, in addition to natural resources issues, will play a leading role in the sustainable development of the cement and concrete industry during this century. For example, as the supply of good-quality limestone to produce cement decreases, producing adequate amounts of Portland cement for construction will become more difficult. There is a possibility that when there is no more good-quality limestone in, say, a geographical region, and thus no Portland cement, all the employment associated with the concrete industry, as well as new construction projects, will be terminated. Because of limited natural resources, concern over GHGs, or, both, cement production is being curtailed, or at least cannot be increased to keep up with the population increase, in some regions of the world. It is therefore necessary to look for sustainable solutions for future concrete construction. A sustainable concrete structure is constructed to ensure that the total environmental impact during its life cycle, including its use, will be minimal. Sustainable concrete should have a very low inherent energy requirement, be produced with little waste, be made from some of the most plentiful resources on earth, produce durable structures, have a very high thermal mass, and be made with recycled materials. Sustainable constructions have a small impact on the environment. They use "green" materials, which have low energy costs, high durability, low maintenance requirements, and contain a large proportion of recycled or recyclable materials. Green materials also use less energy and resources and can lead to high-performance cements and concrete. Concrete must keep evolving to satisfy the increasing demands of all its users. Designing for sustainability means accounting for the short-term and long-term environmental consequences in the design." Naik, T.R. (2008) Sustainability of Concrete Construction," Practice Periodical on Structural Design and Construction, Vol. 13, No. 2, May 2008, pp. 98-103.

A recent publication of a scientist from the Columbia University states:

"The concrete industry is known to leave an enormous environmental footprint on Planet Earth. First, there are the sheer volumes of material needed to produce the billions of tons of concrete worldwide each year. Then there are the CO_2 emissions caused during the production of Portland cement. Together with the energy requirements, water consumption and generation of construction and demolition waste, these factors

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contribute to the general appearance that concrete is not particularly environmentally friendly or compatible with the demands of sustainable development.

"This paper summarizes recent developments to improve the situation. Foremost is the increasing use of cementitious materials that can serve as partial substitutes for Portland cement, in particular those materials that are by-products of industrial processes, such as fly ash and ground granulated blast furnace slag. But also the substitution of various recycled materials for aggregate has made significant progress worldwide, thereby reducing the need to quarry virgin aggregates. The most important ones among these are recycled concrete aggregate, post-consumer glass, scrap tires, plastics, and by-products of the paper and other industries." Meyer, C. (2009) "The greening of the concrete industry," Cement and Concrete Composites, 31(8):601-605.

Materials that the applicant has submitted to Santa Clara County assume that quarrying virgin aggregates is the only alternative available to supply raw material, chiefly limestone, for the continued operation of the Lehigh Southwest Cement Plan. Clearly, this assumption is erroneous. Therefore, the EIR for the proposed project must also assess the alternative of sourcing raw materials for the Lehigh Southwest Cement Plant more sustainably by using ash, demolished concrete, and other cementitious materials.

4. In assessing impacts of the proposed action on water quality, the EIR must evaluate a scenario under which the applicant continuous to discharge wastewater to Permanente Creek in violation of the Clean Water Act

Section 15144 of the CEQA regulations state:

"Drafting an EIR or preparing a Negative Declaration necessarily involves some degree of forecasting. While foreseeing the unforeseeable is not possible, an agency must use its best efforts to find out and disclose all that it reasonably can."

On February 10, 2010, the U.S. EPA conducted an industrial storm water inspection of the quarry that the applicant wishes to expand. The inspection recorded numerous violations by the applicant resulting in adverse water quality impacts to Permanente Creek and included these photos of the applicant's impact on water quality in Permanente Creek:

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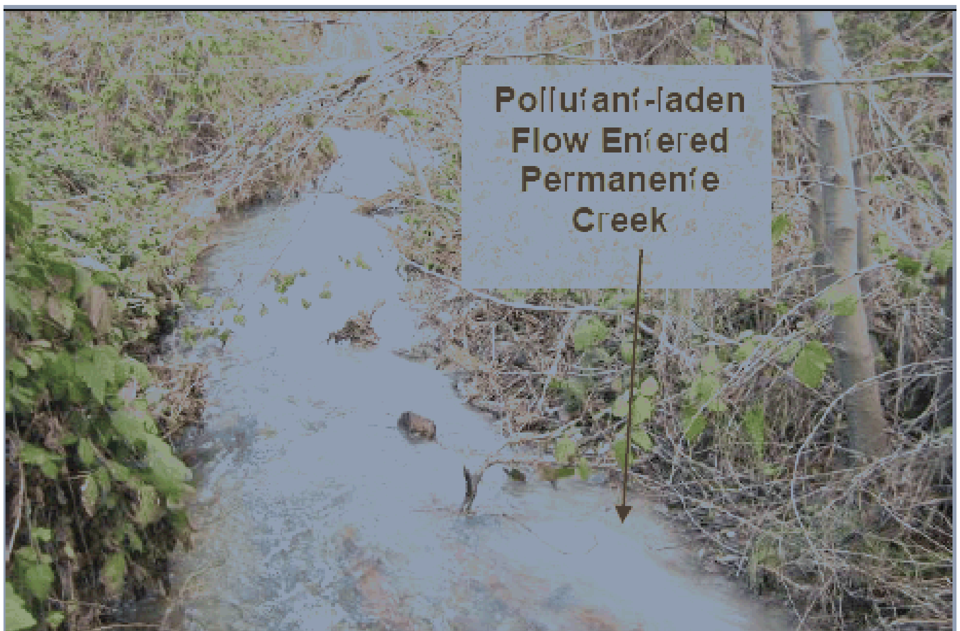
Photograph 18 – Close-up view of pollutant-laden discharge to Permanente Creek from Pond 17.



Photograph 19 – View downstream along Permanente Creek.

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In a letter dated February 18, 2011, the California Regional Water Quality Control Board reviewed the applicant's discharge of polluted water:

> "Lehigh's substantial and ongoing non-storm water discharges are unpermitted and prohibited by the Industrial Storm Water General Permit. ….
>
> "Lehigh is in violation of the Industrial Storm Water General Permit Effluent Limitation 3 due to inadequate erosion and sediment controls."

These violations demonstrate that the applicant has forfeited the presumption that in the future it will comply with the Clean Water Act. Considering the applicant's "substantial" and "ongoing" unpermitted and prohibited discharges that have impacted water quality in Permanente Creek, Santa Clara County must take into account that the applicant might operate the Permanente Quarry expansion project in a manner comparable to its existing quarry operations. Therefore, the EIR must quantitatively predict how water quality in Permanente Creek might change as a result of the Permanente Quarry expansion project under two scenarios: 1) operation of the proposed project in compliance with the Clean Water Act; and 2) operation of the project in no better compliance with the Clean Water Act than how the applicant managed its existing quarry operations in 2010.

Sincerely,

Barry Chang, Chair
No Toxic Air, Inc.

Hi Marina

Thanks for following up with me and me not getting around to comment. I am actually in the gold country with 4 th graders and not only learning about the old rush but also the serious consequences if all the mercury that was used and the impact it is still having on the environment locally but as far away as the bay area.

Being impacted today by activity 160 years ago it is mind boggling that the county it even still considering to allow Lehigh to expand allowing them to continue spewing nasty chemicals into the air and having them monitor how much they are polluting our air, water, environment, animals and humans

Knowing that there are serious water quality violations I am wondering what it would take to have the county district attorney look how it is possible to look at enforcing these water quality violations and probable air quality violations. I'm wondering just how much mercury LeHigh could spew into our air before the County would take some action. Is that limit 500 lbs a year or more for our community? Should I as a mother be concerned about my children breathing this air? There are longterm health consequences to the decisions County staff and our Board of Supervisors are making that are not properly understood. We know these chemicals are bad and should apply some level of reasonable to protect our community .

Secondly, as a citizen and parent living in Cupertino I am very concerned with the fact that the county doesn't seem to represent me and my neighbors interests in providing a safe environment for us to live in. It rather seems that personal interest and relationships are being honored and maintained on behalf of unsafe, unhealthy and for the future really bad decisions that will impact our area and environment for a really long time. I am sure the county officials are aware of these relationships and the impact they have on the county's residents.

I would like to know how the county is judging that the data the agencies measuring the impact of Lehigh's pollution is based??? I would like to suggest that an independent agency be contacted to do some research as to the severity of the environmental impact.

The amount and efforts put in place and spent on this case from the county and other agencies should hopefully soon be put to an end. It doesn't seem from any of the publicly available research on mercury that all this work and research should at all take place. Why do we have to pretend that there is a good reason for them to do business when it is so clear that what they do is not legal, it is dangerous and has ever lasting damaging impact on our environment. Common sense is enough to make a decision to completely stop what they are doing until there are no impact to the environment and for them not to be allowed to expand.

Looking forward to some serious right decisions from the county to take place in the near future.

Best regards,

Mette Christensen

Planning Commission:

I want to voice my support of the expansion of the Lehigh Facility west of
Cupertino. As a civil engineer, I am well aware of the rising cost of
construction materials. Curtailing the operations of the Lehigh Plant
will only increase the cost of construction in the Bay Area and stall the
recovery of an ailing economy. I am also a 33 year resident of Cupertino
and I am frustrated by people who bought houses near the plant with full
knowledge that the plant was there and now complain about it. Before it
was the noise and dust, now it is toxic air. You have to wonder why theyHi
bought or built a house where there was a cement plant if they are so
concerned about the noise, dust and air. Attached is a letter to the
Cupertino Courier in response to comments from a group representing
NoToxicAir.com. This group as well as others who want to stop the Lehigh
Plant from operating refer to studies that have been selected for their
bias and misuse of the scientific method. If you look into these studies,
you will find that their assumptions are based on

extraordinary
circumstances that have no basis in fact. Like so much of the
environmental movement these days, their study is based on the improper
use of the statistical method, improper modeling and erroneous
interpretation of the data.

Respectfully submitted
Mark Fantozzi
Cupertino, CA

------ End of Forwarded Message

NoToxicAir.com is a website with an agenda. Curtail or stop the operation of any industry that uses fossil fuels or produces refined products from fossil fuels through draconian regulation. NoToxicAir refers to studies that have been selected for their bias and misuse of the scientific method. Sinks and Wallis site a study by Windham and Palmer about the incidence of autism with respect to hazardous air pollutants and they go so far as to say that for each 1000 pounds of mercury released there is a significant increase in special education services and autism. We have not seen that here or anywhere in Santa Clara County even though the plant has been in operation since 1939. What is the basis of their study, how did they come to these conclusions? If you look into the report, you will find that their assumptions are based on extraordinary circumstances that have no basis in fact. Like so much of the environmental movement these days, their study is based on the improper use of the statistical method, improper modeling and erroneous interpretation of the data. For an unbiased report on mercury in the environment, visit: *www.junkscience.com/feb05/MercuryinPerspectiveReport.pdf*

The EPA has proposed rules that would require the Lehigh Southwest Cement plant in Cupertino to cut mercury emissions by up to 93% from current levels. The rules and regulations governing emission standards for cement plants and similar industries are wrought with errors which make it difficult if not impossible to comply. An example of the abuses of regulatory authority, people should refer to *www.killcarb.org*. The 100 pounds per year emissions level is a number based on improper modeling of mercury emissions. Many of the existing programs for modeling mercury emissions make worst case assumptions regarding the form of the mercury as it is emitted as well as the transformation path that the mercury takes once it is released to the environment. It is therefore critical that any modeling take into account the actual molecular form and valence state of any mercury that is emitted and make realistic assumptions regarding transformation of mercury emitted to the environment.

As we have seen with the global warming (now called climate change) and the banning of DDT, the environmental movement demonstrates a defined bias and a concerted effort to block any scrutiny of their data or analysis methods. There was no statistical correlation between the use of DDT and bird deaths or any other claims made by Rachael Carson. Go to *www.junkscience.com* and search DDT in their archives and you will find numerous studies, by highly reputable scientists, that debunk the DDT claim but did not get the attention they deserved. The UN estimates that over 1 million children have died from malaria as a result of the ban. If environmentalism is so concerned about the children, why didn't they secure a suitable alternative to DDT before an outright ban? Also remember that these are the same people that are making it necessary to replace all of the incandescent light bulbs in your home with CFL light bulbs despite the fact that the each CFL bulb contains enough mercury to contaminate 6000 gallons of water. If you break a CFL, it releases 300 times the EPA limit of mercury vapor. With CFL's, the average home will contain more mercury than you will ever be exposed to from the Lehigh Cement Plant in your lifetime.

Mark Fantozzi
33 year resident of Cupertino

From: "Rhoda Fry " <fryhouse@earthlink.net>
Date: May 23, 2011 11:38:24 AM PDT
To: <marina.rush@pln.sccgov.org>
Subject: Request for inclusion in EIR scoping . . .

Dear Marina –

Over the years, your office has received many comments regarding Lehigh Southwest and I hope you will use them as inspiration for EIR scoping. There were a number that came in during the vested rights process.

Here is one from 2007 from the State of California Attorney General's office which is equally applicable today (it is enclosed as an attachment as well): http://ag.ca.gov/globalwarming/pdf/comments_Hanson_Quarry.pdf

As others have pointed out, under CEQA, the quarry cannot be looked at as an independent project. In addition to examining the adjacent cement plant, the **effects on the adjacent aggregate facility must be taken into account as well**.

There should also be a comprehensive history of land use because this project proposed as significant change in land-use. The EIR should include a comprehensive list of historical structures, their content, removal, and associated impacts.

I was fascinated by the vested rights hearing process, where vested rights were granted to a parcel that for 50+ years had been used for manufacturing by a different company even though as far as I could tell, any mining rights had actually been abandoned. Anyway, what I learned is that there were a number of products manufactured on the hill that involved toxic materials – in fact the county fined the operator and the EPA did an extensive study of the property as did the department of environmental health etc…

There were many structures on the property above and below ground, some still stand many don’t. We need to understand the history of these structures and how the change of use will affect them. Although the county did show demolition permits for some of these structures, there was no record online of final inspection – this worries me. We need to understand the inspection history on these and others on the property. **Net net a complete audit of current and past structures on the entire property must be conducted**.

Regards,

Rhoda Fry, Cupertino
comments_Hanson_Quarry.pdf ¬

EDMUND G. BROWN JR.
Attorney General

State of California
DEPARTMENT OF JUSTICE

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P.O. BOX 70550
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November 20, 2007

By Electronic Mail and Telecopy

Mark J. Connolly
County of Santa Clara Planning Office
70 West Hedding St., 7th Floor, East Wing
San Jose, CA 95110

RE: Hanson Quarry Reclamation Plan -- File Number: 2250-13-66-07P-07EIR

Dear Mr. Connolly:

The Attorney General submits these comments on the Notice of Preparation of an environmental impact report ("EIR") for the Hanson Permanente Reclamation Plan Amendment ("the project"). Although the deadline for filing comments on the Notice of Preparation has passed, we request that you consider these comments in preparing the draft EIR.

The Hanson Quarry, located west of the City of Cupertino, consists of a limestone mine and cement plant, including a 250 foot cement kiln heated primarily with coal. The current Reclamation Plan for the Hanson Quarry was approved in 1985 and will expire in March 2010. The proposed project would expand the 330-acre area covered by the 1985 Reclamation Plan, to authorize 917 acres of mining and reclamation activity and extend operations for 25 years, until 2035. The project would authorize about 30 acres of new mining area, plus additional buffer areas, and reclamation of already disturbed areas that extend beyond the areas covered in the 1985 Plan.

The Notice of Preparation identifies the primary environmental issues that the EIR will address, but greenhouse gas ("GHG") emissions and/or impacts on climate change are not included. The effect of this project would be to authorize cement mining and manufacturing that has significant emissions of carbon dioxide, the leading GHG, for another 25 years. Therefore, California Environmental Quality Act requires the County to evaluate and mitigate the GHG emissions and climate change impacts from the project.

Climate Change Background

Emissions of GHG on the Earth's surface accumulate in the atmosphere: the increased atmospheric concentration of these same gases in turn adversely affects the climate.[1] The

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1. (Intergovernmental Panel on Climate Change, Fourth Assessment Report (IPCC 4th) (2007), Working Group (WG) I, Frequently Asked Question 2.1, *How do Human Activities Contribute to Climate Change and How do They Compare with Natural Influences?*

atmospheric concentration of carbon dioxide (CO_2), the leading GHG, is now 379 parts per million (ppm), higher than any time in the preceding 650,000 years.[2] According to some experts, an atmospheric concentration of CO_2 "exceeding 450 ppm is almost surely dangerous" because of the climate changes it will effect, "and the ceiling may be even lower."[3]

Currently, atmospheric GHG concentrations are far from stable. "The recent rate of change is dramatic and unprecedented[.]"[4] Over just the last 17 years, atmospheric concentrations of CO_2 have risen 30 ppm, a rate of change that, in pre-industrial times, would have taken 1,000 years.[5] Experts are clear that if we continue our "business as usual" emissions trend, atmospheric concentrations of CO_2 will likely exceed 650 ppm by the end of the century.[6]

In short, our past and current GHG emissions have pushed us to a climatic "tipping point." If we continue our business-as-ususal emissions trajectory, dangerous climate change will become unavoidable. According to NASA's James Hansen, proceeding at the emissions rate of the past decade will result in "disastrous effects, including increasingly rapid sea level rise, increased frequency of droughts and floods, and increased stress on wildlife and plants due to rapidly shifting climate zones."[7] And, the experts tell us, we have less than a decade to take decisive action.[8]

The need to make substantial cuts in emissions drives the global targets embodied in the Kyoto Protocol and the State's targets established by the Governor 's Executive Order S-3-05, and AB 32, the CA Global Warming Solution Act of 2006. In California, by these authorities,

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http://ipcc-wg1.ucar.edu/wg1/Report/AR4WG1_Pub_FAQs.pdf.)

2. (IPCC 4th, WG I, Frequently Asked Question 7.1, *Are the Increases in Atmospheric Carbon Dioxide and Other Greenhouse Gases During the Industrial Era Caused by Human Activities?* http://ipcc-wg1.ucar.edu/wg1/Report/AR4WG1_Pub_FAQs.pdf.)

3. (http://www.nasa.gov/centers/goddard/news/topstory/2007/danger_point.html.)

4. (IPCC 4th, WG I, Frequently Asked Question 7.1, *Are the Increases in Atmospheric Carbon Dioxide and Other Greenhouse Gases During the Industrial Era Caused by Human Activities?* http://ipcc-wg1.ucar.edu/wg1/Report/AR4WG1_Pub_FAQs.pdf.)

5. (*Id.*)

6. (http://www.epa.gov/climatechange/science/futureac.html.)

7. (http://www.giss.nasa.gov/research/news/20070530/; see also *Hansen et al., Dangerous Human-Made Interference with Climate* (2007) 7 Atmos. Chem. Phys. 2287–2312 http://pubs.giss.nasa.gov/docs/2007/2007_Hansen_etal_1.pdf.)

8. (*Id.*) For further discussion of dangerous climate change, see IPCC 4th, WG III, Ch. 1 at pp. 6-7 http://www.mnp.nl/ipcc/pages_media/FAR4docs/chapters/CH1_Introduction.pdf.

we are committed to reducing emissions to 1990 levels by 2020, and 80% below 1990 levels by 2050. To achieve the 2020 target, California must reduce its current emissions by 25%.[9]

CEQA Requirements

As the legislature recently recognized, global warming is an "effect on the environment" as defined by the California Environmental Quality Act ("CEQA"), and a project's contribution to global warming can be significant.[10] CEQA was enacted to ensure that public agencies do not approve projects unless they include feasible alternatives or mitigation measures that substantially reduce the significant environmental effects of the project.[11] CEQA requires that "[e]ach public agency shall mitigate or avoid the significant effects on the environment of projects that it carries out or approves whenever it is feasible to do so."[12] This requirement is extremely important and is recognized as "[t]he core of an EIR ... ."[13] Therefore, the EIR for the Hanson project must evaluate mitigation measures and examine alternatives that would reduce the project's emissions of GHG that contribute to global warming.[14]

Project Impacts and Potential Mitigation Measures

The Hanson Quarry is one of 11 cement facilities in California. California produces approximately 11.4 million tons of cement per year, out of 101 tons produced in the entire United States. These 11 cement facilities use large amounts of energy, including 2.3 million tons of coal per year.[15] This accounts for most of the coal used in all industrial and commercial

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9. (Office of the Governor, *Gov. Schwarzenegger Signs Landmark Legislation to Reduce Greenhouse Gas Emissions*, Press Release (Sept. 27, 2006) http://gov.ca.gov/index.php?/press-release/4111/.)

10. See Pub. Res. Code section 21083.05, subd. (a); see also Sen. Rules Com., Off. of Sen. Floor Analyses, Analysis of Sen. Bill No. 97 (2007-2008 Reg. Sess.) Aug. 22, 2007.

11. Public Resources Code § 21002.

12. Public Resources Code §§ 21002.1(b) and 21081; see also, *Mountain Lion Foundation v. Fish and Game Commission,* 16 Cal.4th 105, 134 (1997).

13. *Citizens of Goleta Valley v. Board of Supervisors of Santa Barbara County* (1990) 52 Cal.3d 553, 564-65.

14. Public Resources Code § 21002.1(a); Cal. Code Regs., tit. 14, § 15130, subd. (b)(5).

15. Draft Expanded List of Early Action Measures to Reduce GHG Emissions in CA Recommended For Board Consideration, Cal/EPA, Air Resources Board, October 2007, at C-27.

operations in California, which is approximately 2.6 million tons (2004 data).[16] Coal is a high-carbon intensity fuel, emitting over 210 pounds of $CO2$ per million Btu compared to only 117 pounds of $CO2$ per million Btu for natural gas. The Air Board estimates that the total C02 equivalent emissions from cement manufacturing in California are 10.8 million metric tons per year. (See fn. 15).

According to the Bay Area Air Quality Management District ("BAAQMD"), the Hanson Quarry emitted 1,115,075 metric tons CO2 equivalent in 2002. Approximately 60% of this is attributed to direct emissions from the manufacturing process (the "calcination" process that transforms limestone into clinker), and about 40% is from burning fuel (primarily coal). A third, but smaller, source of GHG emissions from the facility is electricity use. Thus, it is clear that the project will result in significant future GHG emissions.

Increasing the energy efficiency of cement facilities is recognized as a potential way to reduce GHG emissions in California. It is one of the proposed "early actions" for climate change mitigation that the Air Board is evaluating pursuant to AB 32. (See fn. 15 at p.16). The strategy involves "reducing CO2 emissions from fuel combustion, calcination, and electricity use by converting to a low-carbon fuel-based production, decreasing fuel consumption, and improving energy efficiency practices and technologies in cement production." (Id.) The Air Board does not plan to consider this measure formally until the 4th quarter of 2010. (Id. at C-27). However, there are feasible opportunities to reduce energy use and carbon emissions from cement manufacturing that can be implemented now; therefore, this is an appropriate mitigation measure to evaluate in the EIR.

Using biofuels as a supplemental fuel for the cement kiln is a potential way to reduce GHG emissions. A BAAQMD report on large stationary sources lists biofuel combustion for cement manufacturing on a "prioritized short list of mitigation technologies" that provide a favorable reduction to cost relative ratio.[17] A cement facility in Redding (Shasta County) owned by Lehigh Southwest Cement Company ("Lehigh") recently began using sawdust as a supplemental fuel.[18] This should significantly reduce the facility's use of coal and therefore reduce its GHG emissions. (We are informed that the same company, Lehigh, recently purchased the Hanson Quarry). In addition, the BAAQMD indicates that the Hanson Quarry is evaluating the use of solid biofuels, such as nut shells, as a supplemental fuel. (See fn. 17, at p. 6-3). Other types of wood waste (from orchards or construction, for example) and sewage

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16. Inventory of California GHG Emissions and Sinks: 1990 to 2004 (CEC, December 2006) and information provided by Webster Tasat, California Energy Commission.

17. See "Opportunities for Further Greenhouse Gas Emission Reductions for the BAAQMD Stationary Sources" Final Report (March 2007) prepared for the Bay Area Air Quality Management District, Table 4-2.

18. Shasta County Air Quality Management District issued an "Authority to Construct, Secondary/Supplemental Fuel System; Approval of Medium Density Fiberboard Sawdust as Auxiliary Fuel" on 5/16/06 and revised Permit to Operate (#85-PO-14) on 9/27/07.

sludge are other potential biofuels. A facility is under construction in Rialto, California to convert sewage sludge into fuel for cement kilns.[19/] Increasing the use of natural gas as a fuel would also reduce carbon emissions. (See fn. 15 at C-28).

Other mitigation measures that could be evaluated include the feasibility of co-generation (which is currently used at one California cement plant); to identify and remedy any areas of heat loss from the kiln; to evaluate, maintain and repair the kiln seals; and to identify opportunities to reduce electricity use. The Cemex facility in Victorville, California completed an Energy Savings Assessment in May 2007 through a DOE program and identified feasible, cost-effective actions to reduce its electricity use of 5.2 million kWh/year by 1.9 million kWh/year.[20/] An audit could be conducted of the Hanson facility prior to issuance of the draft EIR to identify any opportunities to reduce energy use and heat loss, and the identified actions could be evaluated in the EIR and adopted as mitigation measures if they are feasible. The EIR could also evaluate reducing the project's emissions of GHG (and criteria pollutants as well) from vehicle trips by using alternative fuel vehicles and/or vehicles with lower emitting engines and other measures.

Accordingly, it appears there may be several feasible mitigation measures that the County could evaluate and adopt in the EIR for the Hanson Quarry project. In addition, offsite mitigation may be an appropriate measure to address the facility's remaining climate change impacts. We urge the County, in this EIR and Reclamation Plan Amendment, to take the opportunity to show leadership in the state's efforts to avoid catastrophic climate change.

Thank you for your consideration of these comments. We would appreciate the opportunity to meet with you to discuss these issues, at your convenience.

Sincerely,

/S/

SANDRA GOLDBERG
Deputy Attorney General

For EDMUND G. BROWN JR.
Attorney General

cc: Supervisor Liz Kniss

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19. See "EnerTech and HDR Begin Construction of the First Full-Scale SlurryCarb Facility in Rialto, CA (4/19/07) at http://www.californiagreensolutions.com/cgi-bin/gt/tpl.h,content=343

20. ESA-021-2 CEMEX Inc. - Victorville Facility, Final Public Report, available at: www.eere.energy.gov/industry/saveenergynow/partners/pdfs/esa-021-2.pdf

From: Frank Geefay <fgeefay@yahoo.com>
Date: May 23, 2011 4:01:11 PM PDT
To: Marina Rush <marina.rush@pln.sccgov.org>
Cc: Frank Geefay <fgeefay@yahoo.com>
Subject: Public Comments for EIR & Use Permit for Lehigh Cement's Proposed Mine

It occurs to me that the primary objection to the new 210 acre open pit mine is its unsightly visibility to the general public. To this I add my objection. The present quarry has largely been hidden behind ridges of foothills for over 70 years, only slightly visible to a few nearby residents and to those hiking some of the nearby ridge trails. Lehigh Permanente Cement and Quarry's current proposal for a new open pit mine will make the upper southern exposure of the mine (about one third) clearly visible to residents and visitors of the Cupertino-Saratoga area because it is higher than the ridgelines which hide the present quarry. This white color blight would make Lehigh Permanente Quarry very prominent and broadcast Lehigh's unsightly presence to the general public. The upper portion of the quarry would be visible for many decades before the limestone is mined out and the pit returned to its natural state, assuming Lehigh honors the proposed reclamation plan. Lehigh would likely feel the wrath of local residents and increasing opposition as mining operations become progressively more prominent.

It is also my understanding that explosives are used to assist in the excavation of the limestone. The present mine is surrounded by hills that blocks or greatly muffle these explosive events. That would not be the case once the proposed new mining operation progresses beyond the blocking ridgelines. Many more residents would be exposed to loud explosions disturbing their peace. Noise created by heavy machinery use to excavate and transport the mined limestone would also become much more prominent as the mine progresses beyond the ridgelines. This noise would be noticeable 24 hr. a day all year round for many decades as mining operations progress disrupting the peace and quiet, especially at night time, of nearby residents.

The issue for a new open pit mine does not have to be a matter of approval for the proposal by Lehigh Permanente Cement or of denial for the new mine as suggested by many residents. Perhaps there is a compromise that would satisfy both Lehigh's need for more limestone and resident's object to the sight and sounds posed by the new mining operation. I propose that the southern most portion of the proposed open pit mine that is widely visible above the foreground ridgeline be excluded from the current proposal and that mining rights be granted for only those areas that is not visible. If at some time in the distant future Lehigh Permanente Cement desires to extend their mining operations they can submit another proposal at that time for an extension of the mine or perhaps fine another area that is less visible and troublesome to residents. The limestone below the ridgeline will probably satisfy the cement plant's needs for limestone for several decades and give them more time to plan for the more distant future. New technology may then be available to make it feasibly to extract limestone in less limestone rich areas allowing them to mine in less visible areas. This will satisfy the cement plant's immediate needs for more limestone for decades and leave the beautiful foothills undisturbed for all to enjoy in relative peace.

Frank Geefay

From: "Peter Hargreaves \(PHearth\)" <peterharg@earthlink.net>
Date: May 18, 2011 12:22:01 PM PDT
To: <Marina.Rush@pln.sccgov.org>
Subject: Objection to Lehigh Quarry Expansion in Cupertino

Hi Marina,

I write as a resident on the Cupertino/Sunnyvale border and a frequent amenity user of the foothills for running and walking and appreciating nature.

Please record my strong objection to any expansion by Lehigh Southwest Cement or any other company of its quarry operations in the beautiful Cupertino foothills. The Santa Clara County representatives should reject this planning application on many grounds including :

1) irreparable damage to the countryside, both in the immediate proposed quarry area and by destroying views from many angles,
2) risks to human health of industrial byproducts released into the air related to the quarrying,
3) impact in a residential area of heavy freight vehicles.

Thank you,

Peter Hargreaves

From: Vicky Ho <vickyyueho@yahoo.com>
Date: May 23, 2011 12:00:45 PM PDT
To: Marina Rush <marina.rush@pln.sccgov.org>
Subject: Re: Lehigh - NOP Extending Comment Period for NOP

With the high content of mercury in the rocks being mined in the hills emission of toxic air is a foregone conclusion.
The bottom line is: the site is not suitable for mining and cement mal
I do not understand how the county council could overwhelmingly ap
use of not only what they asked for and then some more, inspite of t
their staff to do otherwise and the loud protests of the citizens.
If this EIR is not a farce, they should really consdier for the health of
Santa Clara is a now a densly populated area and the huge amount
is poisonous to everyone. If for no one elsee, think of your grand kid
breathe in the toxic air, day in and day out.

Thanks,
Vicky Ho

--- On **Wed, 4/20/11, Marina Rush *<marina.rush@pln.sccgov.org***

From: Marina Rush <marina.rush@pln.sccgov.org>
Subject: Lehigh - NOP Extending Comment Period for NOP
To:
Cc: "Rob Eastwood" <Rob.Eastwood@pln.sccgov.org>, "Terry Mars
<tmarshall@lehighcement.com>, "Marvin E. Howell" <Marvin.Howel
Date: Wednesday, April 20, 2011, 4:03 PM

Everyone,

Please note, the County of Santa Clara is extending the public comr
of Preparation of an Environmental Impact Report for the Lehigh/Pe
Comprehensive Reclamation Plan Amendment and Use Permit prop
Period, which started March 11, 2011, will close on **MAY 23, 2011,**

Attached is the Notice of Preparation, including a brief project descri
effects of the project proposal. For your reference, the complete ap
plans can be viewed on the County website at: www.sccplanning.o

Thank you in advance, and please submit written comments regardi
EIR to the following:

Marina Rush, Planner III
County of Santa Clara Planning Office
70 West Hedding Street, East Wing, 7th Floor
San Jose, CA 95110

email: Marina.Rush@pln.sccgov.org
Phone: (408) 299-5784
Fax: (408) 288-9198

Sincerely,

Marina Rush

From: Nancy Mautino <nancy@mautino.com>
Date: May 18, 2011 4:07:30 PM PDT
To: Marina.Rush@pln.sccgov.org
Subject: Lehigh Quarry Expansion

Hi Marina Rush,

I live in Saratoga and I'd like to put a vote down for being against expansion for Lehigh Quarry. I believe that the quarry has already affected the health of one of my children and I feel that expansion would only put more of us at risk for health issues. Thank you.

Nancy Mautino

Regional OpenSpace | Midpeninsula Regional Open Space District

May 17, 2011

Marina Rush, Planner III
County of Santa Clara Planning Office
70 West Hedding Street, East Wing, 7th Floor
San Jose, CA 95110

RE: Notice of Preparation of an EIR Comprehensive Reclamation Plan Amendment and Conditional Use Permit for Permanente Quarry (State Mine ID# 91-43-004)

On behalf of Midpeninsula Regional Open Space District (District), I would like to provide the following comments on the scoping of the Environmental Impact Report (EIR) for the Lehigh Permanente Quarry Comprehensive Reclamation Plan Amendment and Conditional Use Permit (State Mine ID # 91-43-004). The District has previously commented on prior notices of preparation for Permanente Quarry Reclamation Plan Amendments dated June 20, 2007, May 20, 2010, and February 3, 2011. These comments remain valid due in part to the fact that the most current Comprehensive Reclamation Plan Amendment encompasses the same geographic areas. Prior written comments are therefore included as attachments to this comment letter.

The District is deeply troubled that the intent of the 2007 Comprehensive Reclamation Plan Amendment has expanded from an attempt to bring into compliance a grossly out-of-compliance quarry operation, to an Amendment that includes a new 250-acre quarry pit with a new 20-30 year life span. Since the 2007 Amendment, the East Materials Storage Area, referenced as "the main overburden storage site for the mining operation" was activated. The waste pile continues to grow in size even without having completed an adequate visual impact or human health analysis to understand the magnitude of the environmental and cumulative impacts or the mitigation measures that can be put in place to address these issues. In fact, an environmentally superior alternative exists, as is discussed at the end of this letter. The District urges the County to consider this permit review as an opportunity to relocate the waste material into the existing North Quarry rather than increase the existing waste storage area to avoid compounding the visual impacts and scenic easement issues associated with this project.

The following environmental concerns should be addressed in the proposed EIR:

Visual Impacts

The East Materials Storage Area is proposed to transition into the Central Materials Storage Area and result in a new terraced, unnatural ridge composed of dumped quarry waste that would ultimately lie at a considerable height above the natural existing ground surface. If permitted, this proposed new landform would be grossly out of compliance with Santa Clara County's scenic hillside protection policies. The District requests that the visual impact analysis in the proposed EIR include views from Cristo Rey Drive, at the entrance to Rancho San Antonio County Park and Open Space Preserve, and from the PG&E Trail, which lies adjacent to the proposed storage areas. Additionally, the analysis should include vantage points from the nearby scenic Monte Bello Road.

Dust Impacts

Dust impacts to sensitive resources and the recreating public at the adjacent County Park and Open Space Preserve must be analyzed in the proposed EIR.= Given the past decades of ongoing quarry operations at this location, cumulative long-term impacts due to dust are of great concern. As such, the District strongly recommends including a continuous air quality monitoring and reporting program as mitigation and as a condition of approval for any future quarry expansion or permit revision. This monitoring and reporting program should continue through the life of the operation and include monitoring stations within 100 feet of the adjacent PG&E Trail, which passes near the proposed and current materials storage areas. Monitoring parameters should include particulate matter and the suite of potentially toxic substances known to occur in the quarry waste.

Noise Impacts

Noise impacts associated with the proposed and ongoing waste materials storage areas should also be evaluated at the Quarry/Open Space boundary to assess compliance with County noise regulations. To note, according to the Santa Clara County General Plan, the maximum level of noise a new land use (in this case, it is an expanded land use) may impose on neighboring parks, open space reserves, and wildlife refuges, shall be the upper limit of the "Satisfactory Noise Level" (currently at 55 decibels).

Cumulative Impacts

The District is concerned that the currently full West Materials Storage Area has the potential to be re-mined for construction aggregate. This same concern exists for the new proposed storage areas. This concern, and real possibility, highlights the need to evaluate the extended length of use of these sites to then identify, analyze, and mitigate potential cumulative long-term impacts. For example, the cumulative visual impacts associated with the existing and proposed material storage areas need to be thoroughly evaluated against current County hillside protection policies, the existing scenic ridge easement language, and County General Plan goals for park and open space. This analysis should include a historic visual analysis since the visual impact has dramatically increased over time. The cumulative water resources impacts need to evaluate potential impacts to Permanente Creek given that Permanente Creek has been severely impacted by past quarry practices. It is reasonable to assume that an increase in quarry operations consisting of a new 250 acre South Quarry pit within the relatively pristine half of the watershed will result in a substantial cumulative impact.

Alternatives Analysis

Lastly, the EIR should identify and evaluate a range of reasonable alternatives. As previously stated in prior comment letters, feasible alternatives exist for the waste pile that would avoid creating an artificial, ridge-like mound adjacent to public recreation land and within full view of surrounding communities and the valley floor. An alternative that suspends fill placement in the East Materials Storage Area, eliminates the Central Materials Storage Area, and instead immediately begins backfilling the existing North Quarry Pit for reclamation should be evaluated as a potentially superior environmental alternative. This alternative may serve to balance long-standing quarry deficiencies, halt the unprecedented acceleration of visual impacts, and provide the quarry with future raw materials. The no project alternative, and alternatives that allow quarry expansion only on vested property, should also be evaluated as feasible alternatives.

The County's review of the proposed use permit amendment presents an opportunity for the County to reevaluate the current and proposed quarry practices and to identify any changes that would allow the County to more closely and effectively manage quarry operations. The District urges the County to consider this permit review as an opportunity to relocate the waste material into the existing North Quarry rather than increase the existing waste storage area to avoid compounding the visual impacts and scenic easement issues. The District also asks that any mitigation measure identified through the environmental process also be added as a condition of approval of the use permit.

Thank you for the opportunity to provide comments for the scoping of the subject EIR. Please feel free to contact me by email at mbaldzikowski@openspace.org or by phone at 650 691-1200 if you have any questions regarding this or any prior comment letters.

Sincerely,

Matt Baldzikoski

Matt Baldzikoski, Resource Planner II

cc: District Board of Directors
Stephen E Abbors, District General Manager

Regional OpenSpace | Midpeninsula Regional Open Space District

February 3, 2011

County of Santa Clara
Board of Supervisors
County Government Center
70 West Hedding St.
10th Floor, East Wing
San Jose, CA 95110

Re: Public Hearing Regarding Permanente Quarry/ Lehigh Southwest Cement Company Legal Non-Conforming Use Determination

Members of the Board:

The Midpeninsula Regional Open Space District (District) manages over 59,000 acres of Open Space Preserves (OSP) within Santa Clara, San Mateo, and Santa Cruz Counties, including the Monte Bello and Rancho San Antonio OSPs which share common parcel boundaries with Lehigh's Permanente Quarry owned properties. The District supports and applauds the Board of Supervisors (Board) decision to deliberate the issue of vested rights on the Quarry properties. From the District's perspective, this review is long overdue given the 2010 sunset of the 1984 Reclamation Plan.

The District remains extremely concerned with the numerous Reclamation Plan Amendments and ongoing operations of Lehigh Southwest Cement Company's Permanente Quarry (Permanente Quarry). We have previously submitted comments related to the Reclamation Plan Amendments proposed for the Permanente Quarry dated June 20, 2007 and May 21, 2010. Copies of these letters are attached for your convenience.

The remainder of this letter summarizes our concerns related to the Permanente Quarry Legal Non-conforming Use Analysis completed by the County, as well as documents prepared by Diepenbrock- Harrison on behalf of the Permanente Quarry.

Proposed East Materials Storage Area

We concur with the County Analysis that the proposed East Materials Storage Area (EMSA) is not a vested portion of the Permanente Quarry. Documents provided by the Quarry and County clearly show that the proposed EMSA parcel was a part of the manufacturing or 'Plant" operations that began in 1939 when former owner Kaiser applied for a use permit for the adjacent cement plant. The subsequent wartime construction of the magnesium plant, and conversion to an aluminum plant confirm the use as manufacturing or "plant" facilities that are not quarry related. Therefore the EMSA is not a vested portion of the quarry operations.

Viewshed impacts have always been prominent issues related to the Permanente Quarry. The 1979 dedication of the Permanente Ridge scenic easement to the County by Kaiser, 1985 Reclamation Plan visual impacts discussion, and the County General Plan designation of Hillside Resource Conservation Areas are examples of the importance of this issue. The EMSA proposal is particularly troubling with regard to visual resources and is inconsistent with viewshed protection values that have long been recognized. Santa Clara County Parks, together with the District, jointly manage Rancho San Antonio Park/OSP. We continue to field complaints on a regular basis from park users and District staff from our onsite Field Office related to ongoing visual impacts and dust impacts from quarry use of the EMSA. The massive and growing quarry tailings piles are clearly visible to a large portion of public who visit Rancho San Antonio Park/OSP. A survey, recently completed by the District, shows that Rancho San Antonio Park/OSP receives more than 500,000 visits by the public each year.

The Permanente Quarry does not have a vested right for quarry operations in the proposed EMSA location. The existing placement of quarry overburden has already been identified by the County as a violation and there are significant visual impacts ongoing as noted above. The District requests that the County enforce its Notice of Violation and prohibit any additional placement of material at this location and that the County require Lehigh Southwest Cement Company to implement all measures necessary to completely mitigate the visual impacts of the subject quarry overburden.

Original Quarry Parcel

Regarding the vesting of quarry operations, the 1971 analysis completed by County Counsel at the time noted that quarry operations could expand throughout the entire original parcel. The current analysis states that it is unclear which "original parcel" County Counsel was referring to. Parcel 351-09-013 is a very uniquely shaped parcel that appears to be shaped like a quarry pit. It is quite possible that this is the "original parcel" referenced. The July 14, 1977 Mineral Property and/or Mill and Processing Plant Report prepared by the California Division of Mines and Geology appears to map the Kaiser Permanente Quarry within the above mentioned parcel.

Regardless of how this original quarry parcel issue is resolved by the County, the expansion of quarry operations to new areas should not be allowed.

New Proposed South Quarry

In addition to correcting past and present violations, Permanente Quarry has added a new (South) quarry pit to their Reclamation Plan Amendment proposal. This addition is extremely troubling in light of Permanente Quarry's representatives attempt to make the case that they have vested rights on the former Morris parcel proposed as a portion of the new South Pit (Morris 351-11-001). The arguments made by Permanente Quarry representatives for vested rights on this parcel do not stand up to an analysis of the facts.

The quarry haul road identified in the far northeast corner of the Morris parcel appears to be Permanente Road, dedicated to the public in 1893, predating any quarry operations. It is entirely inappropriate to identify it as a quarry haul road to justify a vested rights determination. The road is also separated from the rest of the parcel by Permanente Creek and steep topography. Lehigh has not demonstrated unequivocal evidence of prior intent to mine this property.

Conclusion

While it is troubling that the County did not recognize that the Permanente Quarry had disturbed an area nearly three times the size allowed in the 1985 Reclamation Plan, all parties knew that the 1985 Reclamation Plan would sunset in 2010. We are now past that time and the existing quarry pit appears to be completely mined and the storage areas full. The County has required Permanente Quarry to submit Reclamation Plan Amendments to address existing violations, but the fact is that the Quarry needed a Reclamation Plan Amendment anyway to continue to operate. We are concerned that the County not be pressured by Lehigh to make hasty decisions or further compound the substantial existing deficiencies.

We ask that dumping in the EMSA be suspended immediately, and that the County take the steps needed to regain control of its quarry oversight responsibilities.

Sincerely,

Stephen E. Abbors

Stephen E. Abbors
General Manager
Midpeninsula Regional Open Space District

cc: MROSD Board of Directors
Paul Fong, California State Assemblymember
Marina Rush, County Planning
Brian Schmidt, Committee For Green Foothills

Regional OpenSpace | Midpeninsula Regional Open Space District

May 21, 2010

County of Santa Clara Planning Office
Attn: Marina Rush
County Government Center
70 West Hedding St., 7th floor, East Wing
San Jose, CA 95110

RE: Lehigh Hanson Permanente Quarry 2010 Reclamation Plan Amendment for the East Materials Storage Area, File # 2250-13-66-09EIR

Ms. Rush,

On behalf of Midpeninsula Regional Open Space District (MROSD), I would like to provide the following comments on the scoping for the Environmental Impact Report (EIR) that will assess the Lehigh Hanson Permanente Quarry 2010 Reclamation Plan Amendment proposed for the East Materials Storage Area.

Prior Comments and Review
MROSD staff commented on a previous Reclamation Plan Amendment proposed for the Permanente Quarry in a letter dated June 20, 2007. The original Reclamation Plan was approved in 1985. The 2007 Reclamation Plan Amendment included the proposed East Materials Storage Area (EMSA). It is our understanding that the County is now proposing to divide the Reclamation Plan Amendment area into a smaller area and evaluate the environmental impacts of this smaller area separately to address the quarry's active placement of waste material outside of the permitted area. The County issued a violation notice in 2008 and required that the quarry owner apply for a Reclamation Plan Amendment to rectify the violation.

Importance of Anticipating Future Issues
The EMSA was previously analyzed under a prior EIR process that was scoped in 2007, appropriately within the context of the entire quarry operation. MROSD understands that there are substantial new issues that need to be addressed and will take some time to evaluate, and that the 2007 Reclamation Plan Amendment had a sunset date of March 2010. Unfortunately, these issues were not previously anticipated years ago by the parties involved. The current EIR intends to address these unanticipated issues and expedite a resolution of the violation. In light of the current need to reevaluate the quarry's operations to address the violation, we urge the County to take an aggressive approach to consider and assess all potential issues that may emerge as a result of ongoing quarry activities and the proposed Reclamation Plan Amendment to ensure that these are reviewed in a timely manner to preempt a future violation.

| 330 Distel Circle Los Altos, CA 94022 | P 650.691.1200 | F 650.691.0485 | www.openspace.org |

Significant Adverse Visual Impacts

The quarry appears to have a waste material disposal problem. The West Materials Storage Area (WMSA) appears to be full. In fact based on the 1985 Reclamation Plan Staff Report and Environmental Assessment, the WMSA appears to also be in violation. Specifically, Condition of Approval #8 states that the maximum height of deposition in Area "A" (WMSA) shall not exceed the top of the ridgeline bordering to the north. The upper limit of the WMSA is clearly visible from the valley floor when viewed from the north and therefore, does not meet the requirement of this condition. This condition was deemed necessary to mitigate a significant potential adverse visual impact that was a prominent issue in the 1985 Reclamation Plan and County environmental review.

The proposed EMSA would dramatically expand the area of disturbance visible from surrounding communities and Public Open Space. It appears that the top elevation of the EMSA proposed in the 2010 Reclamation Plan Amendment is substantially higher in elevation than the ridgeline to the north (known as Kaiser or Permanente Ridge). This would create a new, prominent, unnaturally benched and stepped ridgeline behind the existing "protected" scenic ridgeline when viewed from Rancho San Antonio Open Space Preserve, County Park, and surrounding communities. This would be a significant visual impact that could be avoided if the waste material was instead disposed of within a portion of the quarry pit or other suitable location.

The County General Plan Scenic Resources policy includes the strategy to minimize development impacts on significant scenic resources, including prominent areas such as ridgelines. The Kaiser/ Permanente Ridge is unquestionably of scenic significance. Additionally, all of the ridge areas surrounding the proposed EMSA have the General Plan designation of Hillside Resource Conservation Area. While the EMSA itself appears outside of the designated Hillside Resource Conservation Area, building an artificial new ridgeline in the middle of and at a higher elevation than the protected ridgelines, would fail to minimize development impacts on these significant scenic resources.

The scenic importance of the Kaiser/Permanente Ridge has long been recognized by the nearby communities, County, and the Quarry, resulting in the dedication of a permanent scenic easement granted by then owner Kaiser Cement Company to the County years before the 1985 Reclamation Plan. All parties clearly recognized the visual significance of the ridgeline. The proposed EMSA as an unnatural, massive fill site that competes with the ridgeline is counter to the scenic protection benefit that was widely recognized years ago. The benefit of the County's scenic easement will either be lost or impaired unless the scenic value of the Kaiser/Permanent Ridge is protected.

Additional Waste Disposal Issues and Potential Solutions

It appears that both material storage areas may be in violation. The 2007 Reclamation Plan Amendment was previously required to address existing quarry disturbance areas of approximately 900 acres, exceeding the 330 acre area covered by the 1985 approved Reclamation Plan. It may not be appropriate to separate 89 acres to allow additional waste disposal given these conditions.

It also appears that the quarry waste disposal problem is somewhat self-inflicted. A possible solution to this dilemma is to dispose of waste material within the existing quarry pit. A thorough evaluation of the existing quarry pit area and depth should be undertaken to determine if opportunities exist within the pit for waste material disposal. The remaining areas to be quarried that would generate the waste material proposed for placement within the EMSA should also be identified and quantified. Waste material may be advantageous to buttress landslide areas or stabilize over-steepened quarry benches. A number of landslides have already encroached into the dedicated scenic ridge easement over the past decade unabated, and the 1987 "main landslide" has yet to be addressed. The material proposed for placement in the EMSA could be utilized to stabilize these landslides, and the 2007 Amendment includes this possibility. This again illustrates the need for a comprehensive evaluation of the quarry operations to anticipate potential future issues and remedies.

Lack of Reclamation
The visible quarry area continues to grow. The Surface Mining and Reclamation Act (SMARA) requires that reclamation occur concurrently with quarry disturbance activity, yet very little final reclamation has occurred over the substantial period of mining. Waste disposal within the quarry pit together with concurrent reclamation would actually meet the reclamation requirements of SMARA.

Waste Disposal Timeline
The timeline for waste disposal within the EMSA is also of concern. At the recent April 28th public hearing it was stated that existing quarry sales are 50% of normal. This has the potential to double the projected 5-year timeframe, which already seemed overly optimistic. It is also unclear if the waste material could be re-mined for construction aggregate as is the case for the material placed in the WMSA. This again could dramatically lengthen the timeline of operation and disturbance.

Determination of Vested Rights
Lastly, we remain concerned with the issue of vested rights at the Permanente Quarry. The EIR proposes only to evaluate the environmental impacts associated with the reclamation of the quarry, based on the conclusion that the environmental baseline for the project is the post-mining site condition that includes ongoing mining and processing operations (vested quarry operation). The significant new acreage that has been disturbed by quarry activities, including the EMSA, is of concern. Our concern is whether this expansion really is vested, and if not, that the potential environmental impacts associated with the quarry expansion necessitate a thorough analysis. We urge the County to complete a determination of what is actually vested at the Permanente Quarry. This determination is necessary for any new proposal related to quarry operations at the site, and should include references, maps, deeds, and other exhibits that support the conclusion.

We appreciate the opportunity to comment on the EMSA proposal for the Lehigh Hanson Permanente Quarry. If you have any questions regarding this letter, please contact Matt Baldzikowski, Resource Planner II, at (650) 691-1200.

Sincerely,

Ana Ruiz

Ana Ruiz, AICP
Planning Manager
Midpeninsula Regional Open Space District

cc: Stephen E. Abbors, MROSD General Manager
Matt Baldzikowski, MROSD Resource Planner II

Regional Open Space

MIDPENINSULA REGIONAL OPEN SPACE DISTRICT

June 20, 2007

County of Santa Clara Planning Office
Attn: Mark J. Connolly
County Government Center
70 West Hedding St., 7th floor, East Wing
San Jose, CA 95110

RE: Hanson Permanente Quarry Reclamation Plan Amendment EIR

Mr. Connolly,

On behalf of the Midpeninsula Regional Open Space District's (District), I'd like to provide the following comments on the scoping of the Environmental Impact Report (EIR) for the Hanson Permanente Quarry Reclamation Plan Amendment (Hanson Quarry).

The EIR proposes only to evaluate the environmental impacts associated with the reclamation of the Hanson Quarry, based on the conclusion that the environmental baseline for the project is the post-mining site condition that includes ongoing mining and processing operations (vested quarry operation). The significant new acreage that has been disturbed by quarry activities, and is the subject of the proposed EIR is of concern. Our concern is whether this expansion really is vested, and if not, that the potential environmental impacts associated with the quarry expansion have never been analyzed. Please provide a discussion within the EIR on how the determination regarding the vested operation was made and include references to maps, deeds, or other exhibits that support this conclusion.

Visual resources are an obvious concern to the surrounding Monte Bello and Ranch San Antonio Open Space Preserves operated by the District. The visual appearance of the reclaimed quarry landform, and the reclamation revegetation are of particular interest. The reclaimed landform should blend with the surrounding un-mined landform as much as possible. The District remains concerned with the relatively recent appearance of a portion of the west materials storage area that is visible above Permanente Ridge when viewed from the north. An evaluation and discussion of this storage area should be included in the EIR. The short-term erosion control species and long-term reclamation species should be compatible with the surrounding landscape, and should utilize locally collected and propagated native species wherever possible. The control of invasive species is also a significant concern, and should be included in the EIR and Financial Assurance.

Geology and slope stability issues associated with the ongoing operations at the Hanson Permanente Quarry remain a serious concern to the District, particularly the slopes and landslide in the northeast corner of the quarry pit. These have been identified along with a landslide on the northern wall of the quarry as "caused in part if not in whole, by the mining operation" in the Executive Officer's Report for July 13, 2006 meeting of the State Mining and Geology Board.

The landslide in the northeast corner of the quarry pit has the potential to continue to fail, and impact the significant scenic easement along Permanente Ridge. A failure at this location could daylight through the top existing ridge and into the scenic easement. This area was the subject of a Request for Emergency Grading Authorization (#2002-4) from the County of Santa Clara, and to our knowledge this work was never completed. The District is unclear on how and when remedial grading will occur to alleviate the slope stability and scenic easement concerns. This area was the subject of a land exchange between the District and Hanson, for the purpose of implementing remedial grading to stabilize the slopes. The property recently transferred to Hanson doesn't appear to qualify as a "vested" portion of the quarry. Therefore the remedial grading to rectify the slope instability caused at least in part by the quarry operation appears to require either a grading permit or a mining amendment. We are particularly concerned that the remedial grading for slope stability and scenic concerns be completed as soon as possible, and not be subject to delays associated with a potentially long EIR process. This issue may determine the condition of the post-mining site at this location, and therefore identify what the reclamation plan should address.

Drainage and quarry waste materials from the West Materials Storage Area have impacted District road infrastructure down slope to the north in the past. Future drainage from the active and reclaimed materials storage area should be designed to avoid future impacts.

We appreciate the opportunity to comment on the scope of the EIR for the Hanson Permanente Quarry, and request that the District be kept informed about the status of the EIR process, and that a copy of the DEIR is sent to the District for review upon completion.

Sincerely,

Matt Baldzikowski

Matt Baldzikowski
Resource Planner
Midpeninsula Regional Open Space District
330 Distel Circle
Los Altos CA 94022-1404
Phone (650) 625-6537, Fax (650) 691-0485

From: Wanda Ross <wanda1ross@gmail.com>
Date: May 21, 2011 3:04:12 PM PDT
To: Marina Ruch - Santa Clara Planning Office <Marina.Rush@pln.sccgov.org>
Subject: Comment regarding the EIR for the Quarry Reclamation Plan and proposed New South Quarry Pit (Lehigh Quarry)

Hello Marina,

We live on San Juan Road near the Lehigh Quarry and very highly encourage you NOT to allow any expansion of the quarry. Allowing them to expand will increase health risks to those of us living in the area. I already have been treated for excess mercury in my body; please do not expose us to even more.

In addition, our housing values will be subtantially negatively impacted as green space we so value would be replaced by an ugly open quarry. We already have an ugly open quarry right off Stevens Canyon Road. This area enjoys high housing prices because of the great schools. Don't you want to support the high housing values rather than diminish them?

I wonder why you would consider expanding the quarry. It would seem you'd want to improve the city and close down both quarries.

Thank you for considering my view,
Wanda Ross

From: randy shingai <randyshingai@gmail.com>
Date: May 20, 2011 11:09:44 AM PDT
To: Marina.Rush@pln.sccgov.org
Cc: "ken.yeager" <ken.yeager@bos.sccgov.org>
Subject: Comment on the proposed South Quarry Pit in the Cupertino foothills

Dear Ms. Rush,

Please do not allow the expansion. We visit Rancho San Antonio Park several times a week, and can see what is happening at the Lehigh complex. We do not want that company to expand their operations.

I also spoke at the vested rights hearing earlier this year, so we have strong feelings on this issue.

thank you,

Randall Shingai
Naomi Makihara
residents and registered voters of District 4

From: "Janet Warrington" <janet@jestech.net>
Date: May 18, 2011 4:51:21 PM PDT
To: <Marina.Rush@pln.sccgov.org>
Cc: <jon@jestech.net>
Subject: NO expansion of the open pit mine by Lehigh

Dear Marina,

As concerned residents, property owning tax payers and parents of two young children, we urge you to not allow expansion of the open pit mine by Lehigh. We are deeply troubled by the potential health risks posed by increased exposure to metals, mercury etc., as well as the environmental impact of the expansion.

Sincerely,

Janet A. Warrington, Ph.D. and Jonathan E. Saunders

1. Is there a complete Geological study on the impact of an Earthquake? This mine is sitting on the world famous San Andres fault.

2. How are they going to protect the endanger specices?

3. What would be the alternatives? Can Lehigh close its operation here and expand the operations in Redding or Southern California?

4. How Lehigh is going to cross Permenante Creek? build a big bridge? What is the impact to Permenante Creek?

5. Is there a fully study on the impact of the cumulative mercury emission to the air, water and ground in the area?.

6. We want to ask about transport of materials and risk of upset.

7. Please tell us your plan regarding storage, handling, transport, and disposal of toxic materials, both those Lehigh might be using in mining or processing and those (e.g., mercury) contained in the minerals they're mining.

8. What would be the Traffic impacts?

9. What are the impacts of our air and water quality?

10. Lehigh is the number 2 Greenhouse Gas producer in Santa Clara county? How are you going to deal or reduce it? What is Lehigh's energy use & what they're doing to reduce CO2 production?

11. What plan they have to reduce or at least monitor the massive air pollution caused by the hundreds of aging diesel trucks going through the residential neighborhood each day. Majority of these trucks are not conforming with the state laws and refuse to take the state incentive grant to upgrade their engines. The diesel traffic is a well known primary mobile source of severe air pollution contributing nearly 50% of the dirty air to our environment on daily basis and 24x7 all year around.

Barry Chang

Barry Chang,

No Toxic Air, Inc.

EIR SCOPING MEETING
LEHIGH-HANSON PERMANENTE QUARRY – EMSA
Public Comments Summary
April 28, 2010

###	Name	Organization	Written Comments	Oral Comments	Address	
1	Henrik Wessling	Lehigh		General overview of site and plant history.		C-1
2	Marvin Howell	Lehigh		General background of the project site.		C-2
3	Cathy Helgersen	CAP Citizen		Questioned the material content of the EMSA overburden. Concerned with views and vegetation over long term. Concerned mercury is in water and air. Request County to do independent tests.	Sharpset1@aol.com	C-3
4	Ashley Cushman	Breathe CA		EIR should cover health hazards. Air quality and emission concerns. Use native materials and larger specimens to improve views quicker.		C-4
5	Bill Almon	Quarry No		Notice of Violation, concerned resident reported the violation and not County staff. Concerned quarry is allowed to use EMSA before the Rec Plan Amend and EIR is approved. Concerned with processing 2 Rec Plan Amendments. Wants Rec Plan that fills the main pit	balmon@pacbell.net	C-5

				and limits use of the EMSA.		C-5 cont.
6	Paul Drapper	Ridge Vineyard		Air pollution concerns, concerned with vegetation plan and ensuring the success criteria is met. Concerned with County NOV allowed continued disposal.		C-6
7	Councilman Barry Chang	City of Cupertino	Do you have any penalty when violation occurs? For example issued the notice of violation. They mentioned the possible penalty, please see attached notice of violation from GPA dated 3/10/2010 , also Ca. Regional Water Quality Control Board (Attachment 1).	Suggested County have a financial penalty for (the) violation. Suggested cement plant is in a too populated area. Wants more vigilant enforment and oversight from County staff. Stated cement plant is the only one in USA that doesn't have a central stack. Suggested a scenic easement in adjoining jurisdictions (e.g. Cupertino).		C-7
8	Tim Brand	WVCAW		Would like to have the Main Pit filled. Would like Rec Plan Amendment to address filling the pit.		C-8
9	Christine Chot	Self		Would like EIR to address biological impacts. Concerned project will lower property values.		C-9
10	Ignatius Ding	WVCAW		Property owned next to quarry. Stated state law requires reclamation law requires land	Ignatius@sbcglobal, net	C-10

				be restored as original state. Wants main pit filled. 1985 Rec Plan is not adequate. There are landslides, please address. Concerned that two Rec Plans is piece-mealing process. Should have one that addresses whole site.		C-10 cont.
11	Barbara West	Cordova	See enclosed letter dated 4/28/10 to county of Santa Clara from Barbara West (Attachment 2)	Concerned that owner and operator are two separate entities, but financial assurances has one entity. Stated it should be both. The Rec Plan should bind all future successors to requirements of Rec Plan.	Barbara West 10670 Cordova Rd Cupertino, CA 95014 Barbara4444@me.com	C-11
12	Karen Del Compare			Concerned violation has no penalty. EMSA is closer to Cupertino, concerned about additional (low grade) dust impacts. Allowing use of EMSA binds County into approving this site, unlikely to dig up EMSA. Concerned with finished slopes not usable. Concerned with 2 Rec Plan Amendments. Concerned with asbestos and diesel emissions. Wants a vested rights hearing, where are they vested on the site?	10136 Camino Vista Dr Cupertino, CA 95014	C-12

13	Jane Alvarado	Lehigh		30 yr employee, provided some historical background.		C-13
14	Heather Zagar	Lehigh		Employee, historical background of local area. Stated EMSA has benefit of open space.		C-14
15	Ken Smyth	Resident		Concerned with health hazards, specifically autism. Wants County to look at data, specifically high std deviation data, and publisize it so people can be informed.		C-15
16	Rajg Krishnan	Self		Did not speak or leave written comments.	rajgkrishnan@gmail.com	
17	Eva Kashkooli		The EIR should address the health threat to all neighbors of the plant, not just the environmental issues. The plant should be closed. It is poisoning all of US. I have lived here 35 years & raised a family here.		evarieber@yahoo.com	C-16
18					mlmspks@hotmail.com	
19	Prem Mohan				mp_1983@yahoo.com	
20	Winston Shiah		1. The EIR report should include slope stability study for the open pit for land slide danger. 2. Dust fall-out increases very much, that is		wshiah@yahoo.com	C-17

			measurable and source can be identified, this need to be done in addition to invisible mercury, gas, heavy metal problems.			C-17 cont.
21	Vicky Ho		The county should explain how come they are changing the rule to accommodate the violation. Who should be held responsible and is the county working for the people or for Lehigh?		Vickyyueho@yahoo.com	C-18
22	Neela Srinivasan	De Anza College	Could you please explain why no EIRs were required for the expansion in 1980's and 1990's? What criteria did county use to determine that this project did not cause a significant impact on the environment?		Neela-nandu@yahoo.com	C-19
23	Randy Hylkema		Please consider impact of trucks noise, dust, diesel pollution, traffic etc. The other quarry (Stevens Creek) has accepted restrictions on operations hours. Why not Lehigh?		hylk@att.net	C-20
24	Jack Shabel	Cupertino Resident	Hope truck traffic and pollution it has on the		jennieshabel@juno.com	C-21

			neighborhood environment.			C-21 cont.
25	Elias & Ruth Zabor	Homeowner, Cupertino			rezall@sbcglobal.net	
26	Gail Bourp	None	• Noise pollution – too much noise! Consider in EIR. • It Lehigh violates rules they must have consequences-not a county who "fixes" things and not make them pay the violation. • Viewshed is huge concern & already terrible damage has been done-make them plant now. • Air pollution-on going-join 21st century & clean it up-central stack, real plantings & on-going air quality monitoring. • I do not trust the county at all. We need stand up people too make Lehigh do it right.			C-22

Santa Clara Valley Audubon Society
Founded 1926

June 4th, 2010

Marina Rush, Project Manager,
County of Santa Clara Planning Office

Dear Ms. Rush,

Thank you for your willingness to consider Santa Clara Valley Audubon Society's (SCVAS) scoping comments on the proposed amendment to an existing reclamation plan for the Permanente Quarry for the overburden storage area (East Materials Storage Area, EMSA), which is not encompassed in the existing 1985 Reclamation Plan (File Number: 2250-13-66-09EIR Assessors Parcel Number: 351-09-022, 351-10-005, 351-10-037 and 351-10-038).

We understand that part of the site has, and continues to be, used for overburden fill storage with no environmental review in place and in violation of the California Environmental Protection Act (CEQA), the State Mining and Reclamation Act (SMARA) requirements, and the Clean Water Act, and that the currently proposed amendment is aimed to belatedly rectify this problem.

We argue that the repeated violations of CEQA, SMARA and the Clean Water Act by Lehigh Hanson at the quarry necessitate a drastic measure, and that dumping of fill at the site must be curtailed until all a new, comprehensive EIR is produced for the entire cement factory and mining operation on site. The areas that were disturbed with no environmental review should be restored immediately (or the quarry must be required to pay maximum fines for each day that it continues to violate the law). As proposed, the amendment would simply allow violations to continue unhampered while environmental degradation continues.

The NOP states "This amendment does not involve mining operations, reclamation in the main mining pit, west materials storage area, or the operations of the adjacent Lehigh Southwest Cement" and that ""This Reclamation Plan Amendment is being processed separately from the 2007 Reclamation Plan Amendment. However, cumulative effects of the two projects together will be examined in this EIR." We believe that this is not in adherence to California environmental law. CEQA prohibits piece

22221 McClellan Road, Cupertino, CA 95014 Phone: (408) 252-3748 * Fax: (408) 252-2850
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mealing of environmental review by segmenting a large project into several smaller projects, each with a minimal potential impact on the environment, which cumulatively may have disastrous consequences. We believe that the county must consider "the whole of the action" meaning that a complete reclamation plan must be prepared for the entire quarry site and operations, and that CEQA review must also include the cement plant and all of its impacts. We expect integrity in the planning and permitting process, and insist that no new or unpermitted activities an disturbances should be allowed, until a comprehensive, all inclusive, SMARA compliant reclamation plan is put out for public scoping, a dEIR produced and put out for public comment and a final and compliant EIR is approved and published.

Potential Environmental Effects

SCVAS believes that the impacts of selenium, mercury, and other toxic substances released from mining associated activities, including storage, must be included in Sections:
B) Biological Resources: this section should include impacts on fish in the upper reaches of Permanente Creek that are designated for Cold Freshwater Habitat
D) Geology and Soils; This section should reveal the toxic metals that are released into Santa Clara County watersheds.
E) Surface Hydrology, Drainage and Water Quality. The East Materials Storage Area has the potential to impact two watersheds: Permanente Creek and Stevens Creek (due to the diversion of water from Permanente to Stevens Creek). Both should be included in the analysis. The bioaccumulation of Selenium in aquatic ecosystems and its impact on fish, birds, fish and wildlife must be considered as an ongoing impact, and not limited to storm events. Impacts on federally- threatened Central California Coast steelhead should be evaluated.
AND - In addition, an Environmental Justice segment is needed to evaluate the impacts of selenium and other toxic elements on the public parks and schools included in the Permanente Creek Flood protection Project (specifically, impacts on off-stream flood detention facilities at Rancho San Antonio County Park, Blach Intermediate School, Cuesta Park Annex, and McKelvey Park) should be considered).

Toxicity and Selenium in Permanente Creek

In February 2009 the San Francisco Bay Regional Water Quality Control Board approved the 303(d) listing for Permanente Creek for toxicity and Selenium in creek water. Section 303(d) of the federal Clean Water Act requires the State to identify waters within the State for which water quality standards are not attained.

The listing resulted from consistent water toxicity and consistent exceedences for Selenium in two monitoring sites along Permanente creek. One site is located at the

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mouth of the creek. The other site (PER070) is at Rancho San Antonio Regional Park, downstream from the Lehigh quarry and cement plant. The upper reaches of Permanente creek are designated by the San Francisco Bay Regional Water Quality Control Board for the beneficial use of Cold Freshwater Habitat and thus are designated to support an ecologically healthy creek habitat.

1. General Toxicity

Water samples in 2002 from Stevens and Permanente Creeks had by far the most numerous incidences of observed toxicity of any watershed in the nine Bay Area stream study. In Permanente creek, significant toxicity to fish and to invertebrates was found at site (PER070) at Rancho San Antonio Regional Park

The current Basin Plan of the San Francisco Bay Regional Water Quality Control Board has the following objectives: “All waters shall be maintained free of toxic substances that are lethal to or that produce other detrimental responses in aquatic organisms” and “There shall be no chronic toxicity in ambient waters. Chronic toxicity is a detrimental biological effect on growth rate, reproduction, fertilization success, larval development, population abundance, community composition, or any other relevant measure of the health of an organism, population, or community.” These objectives were not met, thus Permanente creek is listed for toxicity.

2. Selenium

Selenium-induced fish kills in Belews Lake, North Carolina in the late-1970s resulted in a substantial amount of research on selenium effects to aquatic life. Similarly, selenium-induced teratogenesis in aquatic birds at Kesterson Reservoir, California in the mid-1980s resulted in extensive research on selenium effects to aquatic birds. **Unlike many other contaminants for which water exposure is the critical pathway for environmental effects, selenium ecotoxicology is driven by bioaccumulation in invertebrates and exposure to fish and birds via the diet. At sufficiently high levels, these exposures result in embryo teratogenesis and reduced survival of larval fish and bird chicks.**

Water samples collected in the upper Permanente Creek (site PER070, Ranch San Antonio) in 2002/2003 and again in 2006/2007 consistently exceeded the National Toxics Rule (NTR) of continuous total Selenium concentration objective of 5.0μg/L (California Toxics Rule Criterion for Continuous Concentration of Selenium is the same). This objective is applicable in streams with waters that support coldwater ecosystems, including preservation or enhancement of aquatic habitats, vegetation, fish, or wildlife, including invertebrates. The upper reaches of Permanente creek are designated for the beneficial use of Cold Freshwater Habitat, and yet Selenium concentration consistently

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exceeded the criterion, and one water sample from site PER070 tested Selenium concentration of over 12 $\mu g/L$. When a creek is listed for a pollutant, the authorities must develop a TMDL (Total Maximum Daily Load) for the pollutant. TMDLs for Selenium and toxicity at Permanente Creek are expected to be developed by 2021.

On March 26, 2010, Lehigh Southwest was issued "NOTICE OF VIOLATION and required corrective actions for failure to protect stormwater at industrial facility" by the California Regional Water Quality Control Board, San Francisco Bay Region. The Water board noted numerous water quality violations (RWQCB) including the National Pollutant Discharge Elimination System (NPDES) General Permit for Discharges of Storm Water associated with Industrial Activities Excluding Construction Activities, Order No. 97-03-DWQ (Permit1) and the San Francisco Bay Water Quality Control Plan (Basin Plan2). Inspection by RWQCB revealed discharges that are in violation of, at a minimum, Basin Plan Prohibition 7 that prohibits solid wastes into surface waters or at any place where they would contact or where they would be eventually transported to surface waters, including flood plain areas.

On April 1st, 2010, Sandra James of Lehigh Hanson reported to Council Member Barry Chang of the Cupertino City Council that Lehigh's "voluntary analysis of stormwater runoff samples revealed levels of selenium that have triggered further evaluation of on-site sources of the element". Lehigh explained that they are "proactively working with the Regional Water Quality Control Board to ensure the most effective and efficient management of the presence of this naturally occurring element". In addition, "Lehigh has submitted a report to the RWQCB that describes the Best Management Practices currently being used and the process for developing additional protection measures if needed."

As suggested by Lehigh's Ms. James, Selenium is indeed a naturally occurring element that is commonly found in the soil and rock found in the Cupertino area. However, Lehigh explanation that "Selenium levels in the soil and rock at the Permanente site are consistent with naturally occurring levels in Santa Clara County" is misleading, given that no other creek in Santa Clara County have ever been listed for Selenium. The implication of Ms. James' statement should be that Santa Clara County is the wrong place to mine, and that the county be cautious and avoid the release of hazardous metals into our watersheds.

The levels of Selenium found in Lehigh storm runoff and consequently in Permanente creek water are of great concern to Santa Clara Valley Audubon Society, and the full environmental impacts of continued mining and fill operations at the quarry on fish and wildlife along Permanente and Stevens Creek watersheds and the San Francisco Bay must be properly analyzed in a comprehensive, all inclusive way.

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Conclusion:

SCVAS expect that CEQA processes should be followed with integrity. By rushing a Reclamation plan amendment for the EMSA alone, the County is indicating approval of the overburden pile dumped by Lehigh Southwest Cement Company outside of their permitted boundary and of repeated violations of CEQA, SMARA and the Clean Water Act. Instead, the maximum fine should be imposed, the pile should be required to be moved to a permitted area, and the area impacted should be restored. The risks of releasing Selenium into our watersheds and the San Francisco Bay must e adequately addresses in a comprehensive analysis of the Lehigh Hanson Company operations and associated activities.

Since other plans and permits for the Lehigh Hansen site are currently in process at various agencies including Santa Clara County, SCVAS argues that separating the EMSA amendment from a full environmental review of the Lehigh site and all its operations (quarry, storage, cement plant and traffic) is piecemealing of the project. We argue that a new reclamation plan and an inclusive, comprehensive CEQA analysis must be prepared instead of the attempt to patch a 1985 outdated plan. Approval of the current proposal may limit future CEQA analysis of reclamation and industrial projects on the site, and thereby may contravene the intent and perhaps the law of CEQA.

Please keep us informed as to the progress of this, and any other, projects on the Lehigh Hanson site.

Respectfully,

Shani Kleinhaus

Shani Kleinhaus
Environmental Advocate
Santa Clara Valley Audubon Society
22221 McClellan Rd.
Cupertino, CA 95014
shani@scvas.org

NOP

C-24

CUPERTINO

OFFICE OF COMMUNITY DEVELOPMENT

CITY HALL
10300 TORRE AVENUE • CUPERTINO, CA 95014-3255
(408) 777-3308 • FAX (408) 777-3333 • planning@cupertino.org

May 24, 2010 VIA EMAIL

County of Santa Clara
Planning Office, Attn: Marina Rush
70 West Hedding St, 7th Floor, East Wing
San Jose, CA 95110

RE: NOP of EIR for the Reclamation Plan Amendment for Permanente Quarry, East Materials Storage Area (EMSA)

Dear Marina:

Thank you for the opportunity to respond to this Notice of Preparation for the above captioned project. The future reclamation of the EMSA will have a significant impact on this visually-sensitive area. It is imperative that the overburden fill be mixed and topped with the appropriate topsoil that will successfully support a succession of native vegetative communities that mitigates erosion, facilitates the wildlife communities and restores the visual quality of the area.

If you have any questions, feel free to contact me at colinj@cupertino.org

Sincerely,

Colin Jung

Colin Jung
Senior Planner

File 2250-09EA

From: Joyce M Eden <comment@sonic.net>
Subject: **Scoping Lehigh Southwest EMSA, comments from WVCAW**
Date: May 21, 2010 4:45:36 PM PDT
To: marina.rush@pln.sccgov.org
Cc: lizzanne.reynolds@cco.sccgov.org, daisy.chu@bos.sccgov.org

County of Santa Clara Planning Office
Attn: Marina Rush
70 West Hedding St., 7th Floor, East Wing
San Jose CA 95110
marina.rush@pln.sccgov.org

May 21, 2010

Marina Rush, Planning Dept., Santa Clara County (SCC)

Re: West Valley Citizens Air Watch (WVCAW) Scoping comments: Lehigh Hanson (Lehigh Southwest), Incorporated, File Number: 2250-13-66-09EIR Assessors Parcel Number: 351-09-022, 351-10-005, 351-10-037 and 351-10-038.

WVCAW objects to the proposed EIR for the East Materials Storage Area (EMSA). The process for and scope of this proposed EIR is fatally flawed.
We ask that it be withdrawn from consideration.

SOME REASONS THIS PROCESS AND PROPOSED RECLAMATION PLAN AMENDMENT NEEDS TO BE HALTED AND REDONE.

A. Santa Clara County proposed to partially amend the current, inadequate 1985 "reclamation" plan.

To date, 31 years after the adoption of SMARA, no adequate reclamation plan under SMARA exists for the current Lehigh Southwest Cement Company quarry (Pit #1) nor for the other mining and related activities.

The 1985 "Reclamation" Plan, Attachment L to the application, is seriously inadequate and completely lacking in numerous criteria to fulfill State Mining and Reclamation Act (SMARA) requirements. For example, SMARA requires a reclamation plan to determine the approved end use so that appropriate reclamation plans can be built towards this end, SMARA Section 3700. Nor does it include reclamation planning to fulfill Section 2712, p 1, "mined lands are reclaimed to a usable condition which is readily adaptable for alternative land uses."

In addition, the Office of Mine Reclamation (OMR) stated that the cement operation should be included in the reclamation plan. (Attachment A of 3/6/2007, revised 6/21/2007 from a document obtained from the SCC Planning Department.) . SCC Planning Department has ignored the request of OMR as well as repeated oral and written requests from local citizens to include it. In fact, at the first Scoping Meeting for the DEIR in June, 2007, and again after that, SCC Planning Department representatives stated specifically that the cement plant would not be included in the DEIR. That is not acceptable. (1)

Due to the many and serious inadequacies of the 1985 "reclamation" plan, no new disturbances or mining should be proposed, let alone allowed, until a comprehensive, all inclusive, SMARA compliant reclamation plan is put out for public scoping, a dEIR produced and put out for public comment and a final and compliant EIR is put out to the public.

A new comprehensive overall and all-inclusive Reclamation Plan, including all the areas of disturbance from mining operations and which complies with SMARA needs to be put out for scoping to the public when the detailed geology analysis is completed. This geological analysis needs to be adequate and released to the public for review when it is completed.

B. Santa Clara County proposes to put out an EIR process for the EMSA alone, separated from an overall, and way overdue, comprehensive reclamation plan for the mining and quarrying operations. If SCC does not see this as a classic case of piecemeal planning, then it appears that once again their CEAQ processes need to be rectified. The public has the right to review the EMSA together with the rest of the mining and quarrying areas for reclamation. Piecemeal planning is not allowed under the California Environmental Quality Act (CEQA).

C. By rushing a separate "Reclamation" plan amendment for the EMSA, the County is making the overburden pile dumped by Lehigh Southwest Cement Company outside of their permitted boundary (see SCC's findings) a fait accompli. Instead, the maximum fine should be imposed and the pile should be required to be moved to a permitted area. Not only was it a resident and member of WVCAW; not SCC which discovered the aforementioned pile **; but she had to repeatedly call SCC and BAAQMD to try to get someone from one of the agencies to inspect the situation.**

D. Is the County assuming that parts or the whole of the EMSA has vested rights? If so, a public hearing is necessary which will present whatever proof there might be to determine its validity, if any.

In fact, in the summer of 2007, WVCAW asked for proof of vested rights for the proposed Pit #2 area which the county planner said we would get in one month. We never received any information regarding that, so it appears that there are no vested rights for that area.

ADDITIONAL COMMENTS AND OBJECTIONS

"The Reclamation Plan Amendment area is approximately 89 acres, located on the northeast portion of the Quarry." (p2, NOP, signed Ap 13 and 14, 2010)
One can see comparing the areas in yellow in the East Materials Storage Area from the 2007 Reclamation Plan Amendment, designated in the key as, Mining and Overburden Storage Progression Under Amended Reclamation Plan," to the Reclamation Plan Amendment (RPA) Area, Figure 2.3-1, that a huge portion appears undisturbed habitat. This could be 40% of the area. It could be around 30 to 40 acres of new degradation and destruction.

The NOP states on p. 3, "This Reclamation Plan Amendment is being processed separately from the 2007 Reclamation Plan Amendment. However, cumulative effects of the two projects together will be examined in this EIR." Is the County kidding? The public has the right to review an entire Reclamation Plan and to determine for themselves the cumulative effects. Since the other document is not out for public review, how can the public properly evaluate the cumulative impacts? ESP? Could this be an inappropriate attempt to overcome piecemeal planning?

The Notice of Preparation (NOP) does not include that a viable no project alternative should be included for the public to review, if new mining impacts are, inappropriately, included in a RPA.

On p. 3 of the NOP, Section B. claims much of the site is currently disturbed. However, we are doubtful of that evaluation. See the map. "Much" is too vague a description. What percentage is being claimed to be disturbed? What is the proof of that? At what date did it start to be "disturbed" as there has been a lot of new activity in the EMSA in the last 3 years. What is the baseline from 2000, from 2006, from 2007, 2008, 2009, 2020?

No new disturbances should take place until: 1. a new SMARA compliant reclamation plan is in place, and 2. a new CEQA document is put out for public scoping for any new areas of mining and mining operations.

The EMSA is in our neighborhoods. Lehigh Southwest Cement Plant has moved their operations into our neighborhoods by SCC allowing the new impacts that are going on their every day. This is not ok and needs to stop. The existing quarry, Pit #!, and the West Materials Storage Area is much further from our neighborhoods. We object to the new and serious disturbances of sediment into Permanente Creek which flows to the San Francisco Bay.

The RWQCB has recently issued a serious NOV for violations. We have NO confidence that the EMSA will comply with storm water, hazardous waste, sediment control and other compliance requirements. The RWQCB's photos of the hazardous materials sloshing around the Lehigh Plant are disgusting. Apparently the environmental oversight by Leigh leaves much to be desired. They are dirtying and polluting our land, water and air.

The Leigh Southwest Cement Company operations have taken our clean air, our views, our land, violated boundaries, slope requirements, safety requirements, polluted Permanente Creek, put noise and dust and spewed significant, cumulative and ongoing toxic air contaminants into our environment; they now propose to add injury to injury by proposing to expand their already harmful operation into our backyards and decrease our quality of life as well as our property values -- and all this without even the minimum required SMARA compliant reclamation plan for the lands they have already used.

The Leigh Southwest Cement Company has been allowed by Santa Clara County and other agencies to violate their permits. Santa Clara County proposes to reward Lehigh Southwest Cement Co. by redrawing the permitted boundary. Instead, the Company should be fined and made to move the pile and, when the geological studies are completed, be required to put out an overall reclamation plan compliant with SMARA and rigorously overseen by the County with the help of OMR, with all inspections and the raw data made available to the public on the SCC Planning Department web site, in real time or within weeks of the inspections.

The job of Santa Clara County is not to fulfill the wishes of Lehigh Southwest Cement Company.

The job of Santa Clara County is to ensure that an overall reclamation plan that complies with SMARA is produced AND is required and ensured to be fulfilled with adequate Financial Assurance (FACE) in the account of SCC for reclamation. Otherwise, it will be the taxpayers of Santa Clara County who will end up paying for the majority of the mess left, meanwhile Lehigh Southwest Cement Company will have left with its profits taken from our health, our land and our coffers.

The county has a poor record of monitoring the Lehigh operation and of CEQA compliance. It's time for the county to set this straight and not continue on this path, as evidenced by this fatally flawed "scoping" period to amend the current, 1985, so-called "reclamation" plan.

WVCAW herein incorporates our previous written and aural comments from the 2007 scoping period(s) for a new EIR reclamation plan.

Please keep us informed on a timely basis of the ongoing processes.

Thank You,

Joyce M Eden, for West Valley Citizens Air Watch
408 973 1085
<comment@sonic.net>

(1)
"'Mined Lands' include the surface, subsurface, and ground water of an area in which surface mining operations will be, are being, or have been conducted, including private ways and roads apartments to any such area, land excavations, workings, mining waste, and areas in which structures, facilities, equipment, machines, tools, or other materials or property which result from, or are used in, surface mining operations are located." (SMARA Section 2729, p 5)

LOS ALTOS HILLS
CALIFORNIA

May 21, 2010

Bay Area Air Quality Management District
Attn: Board Members
939 Ellis Street
San Francisco, CA 94109

RECEIVED MAY 24 2010 mH

County of Santa Clara, Board of Supervisors
County Govt. Center, E. Wing
70 W. Hedding St., 10th Fl.
San Jose, Calif. 95110

Brian Thompson, CEG, CHG
San Francisco Bay Regional Water Quality Control Board
1515 Clay St., Suite 1400
Oakland, CA 94612

Re: Request to the Agencies with Regulatory Authority over the Lehigh Hanson Quarry

Dear Members of the Bay Area Air Quality Management Board, Santa Clara County Supervisors, and the San Francisco Bay Regional Water Quality Control Board:

The Town of Los Altos Hills ("Town") appreciates this opportunity to comment on the current operation and possible permitting of the Lehigh Quarry and Cement Plant ("Lehigh"). The Town submits these comments on behalf of the Town's citizens to ensure that the Bay Area Air Quality Management District ("BAAQMD"), the County of Santa Clara Board of Supervisors ("County") and the San Francisco Regional Water Quality Control Board ("SFRWQCB") (collectively referred to as the "Regulatory Agencies") diligently exercise their regulatory authority and responsibility over Lehigh. The Town recognizes the need for aggregate production in the San Francisco Bay Area, however we urge the Regulatory Agencies to ensure that the health and welfare of the citizens of the region are fully taken into consideration when contemplating any future permitting of operations for Lehigh.

On March 10, 2010, The United States Environmental Protection Agency ("EPA) issued Lehigh a Notice of Violation ("NOV") regarding its current Title V operating permit. The NOV identifies increases in nitrous oxide and sulfur dioxide air emissions and production capacity resulting from its plant modifications. In addition, on March 26, 2010, the SFRWQCB issued Lehigh a Notice of Violation for failure to comply with stormwater protection requirements. Also, residents have recently presented the Town with lab results from independent monitoring of airborne dust generated from Lehigh's quarry pit. Those test results indicated that the dust contains levels of arsenic and lead that exceed established State health standards. Taken together, these developments are particularly concerning, as portions of the Town sit just over a mile from the quarry pit, and Lehigh is seeking extension of its operating permits.

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Los Altos Hills
California 94022
650/941-7222
Fax 650/941-3160

The Town's primary concern is that the Regulatory Agencies may not be using their regulatory authority in a manner that effectively monitors Lehigh's operations. Lehigh is now requesting a new Reclamation Plan and a new Title V permit to continue operations for the next twenty-five years. Through this letter, the Town is formally asking the Regulatory Agencies to fully consider the potential impacts that continued operation of Lehigh may have on the environment and the health of area residents. Further, the instances of violations suggest that attention and monitoring of Lehigh should be a priority of any regulatory actions. The Town requests the BAAQMD install a temporary monitoring station at Foothill College. Lastly, the Town requests formal notice of all further proceedings involving Lehigh.

Thank you for your consideration of the Town's comments.

Sincerely,

Breene Kerr
Mayor, Town of Los Altos Hills

cc: Jeffrey V. Smith, County Executive, County of Santa Clara

Jody Hall Essser, Director, Department of Planning and Development, County of Santa Clara

Jack Broadbent, Executive Officer/APCO, Bay Area Air Quality Management District

Regional OpenSpace | Midpeninsula Regional Open Space District

May 21, 2010

County of Santa Clara Planning Office
Attn: Marina Rush
County Government Center
70 West Hedding St., 7th floor, East Wing
San Jose, CA 95110

RE: Lehigh Hanson Permanente Quarry 2010 Reclamation Plan Amendment for the East Materials Storage Area, File # 2250-13-66-09EIR

Ms. Rush,

On behalf of Midpeninsula Regional Open Space District (MROSD), I would like to provide the following comments on the scoping for the Environmental Impact Report (EIR) that will assess the Lehigh Hanson Permanente Quarry 2010 Reclamation Plan Amendment proposed for the East Materials Storage Area.

Prior Comments and Review
MROSD staff commented on a previous Reclamation Plan Amendment proposed for the Permanente Quarry in a letter dated June 20, 2007. The original Reclamation Plan was approved in 1985. The 2007 Reclamation Plan Amendment included the proposed East Materials Storage Area (EMSA). It is our understanding that the County is now proposing to divide the Reclamation Plan Amendment area into a smaller area and evaluate the environmental impacts of this smaller area separately to address the quarry's active placement of waste material outside of the permitted area. The County issued a violation notice in 2008 and required that the quarry owner apply for a Reclamation Plan Amendment to rectify the violation.

Importance of Anticipating Future Issues
The EMSA was previously analyzed under a prior EIR process that was scoped in 2007, appropriately within the context of the entire quarry operation. MROSD understands that there are substantial new issues that need to be addressed and will take some time to evaluate, and that the 2007 Reclamation Plan Amendment had a sunset date of March 2010. Unfortunately, these issues were not previously anticipated years ago by the parties involved. The current EIR intends to address these unanticipated issues and expedite a resolution of the violation. In light of the current need to reevaluate the quarry's operations to address the violation, we urge the County to take an aggressive approach to consider and assess all potential issues that may emerge as a result of ongoing quarry activities and the proposed Reclamation Plan Amendment to ensure that these are reviewed in a timely manner to preempt a future violation.

| 330 Distel Circle Los Altos, CA 94022 | P 650.691.1200 | F 650.691.0485 | www.openspace.org |

Significant Adverse Visual Impacts
The quarry appears to have a waste material disposal problem. The West Materials Storage Area (WMSA) appears to be full. In fact based on the 1985 Reclamation Plan Staff Report and Environmental Assessment, the WMSA appears to also be in violation. Specifically, Condition of Approval #8 states that the maximum height of deposition in Area "A" (WMSA) shall not exceed the top of the ridgeline bordering to the north. The upper limit of the WMSA is clearly visible from the valley floor when viewed from the north and therefore, does not meet the requirement of this condition. This condition was deemed necessary to mitigate a significant potential adverse visual impact that was a prominent issue in the 1985 Reclamation Plan and County environmental review.

The proposed EMSA would dramatically expand the area of disturbance visible from surrounding communities and Public Open Space. It appears that the top elevation of the EMSA proposed in the 2010 Reclamation Plan Amendment is substantially higher in elevation than the ridgeline to the north (known as Kaiser or Permanente Ridge). This would create a new, prominent, unnaturally benched and stepped ridgeline behind the existing "protected" scenic ridgeline when viewed from Rancho San Antonio Open Space Preserve, County Park, and surrounding communities. This would be a significant visual impact that could be avoided if the waste material was instead disposed of within a portion of the quarry pit or other suitable location.

The County General Plan Scenic Resources policy includes the strategy to minimize development impacts on significant scenic resources, including prominent areas such as ridgelines. The Kaiser/ Permanente Ridge is unquestionably of scenic significance. Additionally, all of the ridge areas surrounding the proposed EMSA have the General Plan designation of Hillside Resource Conservation Area. While the EMSA itself appears outside of the designated Hillside Resource Conservation Area, building an artificial new ridgeline in the middle of and at a higher elevation than the protected ridgelines, would fail to minimize development impacts on these significant scenic resources.

The scenic importance of the Kaiser/Permanente Ridge has long been recognized by the nearby communities, County, and the Quarry, resulting in the dedication of a permanent scenic easement granted by then owner Kaiser Cement Company to the County years before the 1985 Reclamation Plan. All parties clearly recognized the visual significance of the ridgeline. The proposed EMSA as an unnatural, massive fill site that competes with the ridgeline is counter to the scenic protection benefit that was widely recognized years ago. The benefit of the County's scenic easement will either be lost or impaired unless the scenic value of the Kaiser/Permanent Ridge is protected.

Additional Waste Disposal Issues and Potential Solutions
It appears that both material storage areas may be in violation. The 2007 Reclamation Plan Amendment was previously required to address existing quarry disturbance areas of approximately 900 acres, exceeding the 330 acre area covered by the 1985 approved Reclamation Plan. It may not be appropriate to separate 89 acres to allow additional waste disposal given these conditions.

It also appears that the quarry waste disposal problem is somewhat self-inflicted. A possible solution to this dilemma is to dispose of waste material within the existing quarry pit. A thorough evaluation of the existing quarry pit area and depth should be undertaken to determine if opportunities exist within the pit for waste material disposal. The remaining areas to be quarried that would generate the waste material proposed for placement within the EMSA should also be identified and quantified. Waste material may be advantageous to buttress landslide areas or stabilize over-steepened quarry benches. A number of landslides have already encroached into the dedicated scenic ridge easement over the past decade unabated, and the 1987 "main landslide" has yet to be addressed. The material proposed for placement in the EMSA could be utilized to stabilize these landslides, and the 2007 Amendment includes this possibility. This again illustrates the need for a comprehensive evaluation of the quarry operations to anticipate potential future issues and remedies.

Lack of Reclamation
The visible quarry area continues to grow. The Surface Mining and Reclamation Act (SMARA) requires that reclamation occur concurrently with quarry disturbance activity, yet very little final reclamation has occurred over the substantial period of mining. Waste disposal within the quarry pit together with concurrent reclamation would actually meet the reclamation requirements of SMARA.

Waste Disposal Timeline
The timeline for waste disposal within the EMSA is also of concern. At the recent April 28th public hearing it was stated that existing quarry sales are 50% of normal. This has the potential to double the projected 5-year timeframe, which already seemed overly optimistic. It is also unclear if the waste material could be re-mined for construction aggregate as is the case for the material placed in the WMSA. This again could dramatically lengthen the timeline of operation and disturbance.

Determination of Vested Rights
Lastly, we remain concerned with the issue of vested rights at the Permanente Quarry. The EIR proposes only to evaluate the environmental impacts associated with the reclamation of the quarry, based on the conclusion that the environmental baseline for the project is the post-mining site condition that includes ongoing mining and processing operations (vested quarry operation). The significant new acreage that has been disturbed by quarry activities, including the EMSA, is of concern. Our concern is whether this expansion really is vested, and if not, that the potential environmental impacts associated with the quarry expansion necessitate a thorough analysis. We urge the County to complete a determination of what is actually vested at the Permanente Quarry. This determination is necessary for any new proposal related to quarry operations at the site, and should include references, maps, deeds, and other exhibits that support the conclusion.

We appreciate the opportunity to comment on the EMSA proposal for the Lehigh Hanson Permanente Quarry. If you have any questions regarding this letter, please contact Matt Baldzikowski, Resource Planner II, at (650) 691-1200.

Sincerely,

Ana Ruiz

Ana Ruiz, AICP
Planning Manager
Midpeninsula Regional Open Space District

cc: Stephen E. Abbors, MROSD General Manager
Matt Baldzikowski, MROSD Resource Planner II

County of Santa Clara
Parks and Recreation Department

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Los Gatos, California 95032-7669
(408) 355-2200 FAX 355-2290
Reservations (408) 355-2201
www.parkhere.org

MEMORANDUM

DATE: May 13, 2010

TO: Marina Rush, Planner
County Planning Office

FROM: Kimberly Brosseau, Park Planner
County Parks Department

SUBJECT: Notice of Preparation of an Environmental Impact Report for the Reclamation Plan Amendment for Permanente Quarry East Materials Storage Area (File No. 2250-13-66-09EIR)

The County Parks Department has reviewed the Notice of Preparation (NOP) of an Environmental Impact Report (EIR) for the Permanente Quarry Reclamation Plan Amendment for the East Materials Storage Area for issues related to park use, trails, and implementation of the Countywide Trails Master Plan and submits the following comments.

The Trails Element of the Park and Recreation Chapter of the 1995-2010 County General Plan indicates a trail alignment nearby the subject parcel. Per the General Plan, Countywide Trail Route R1-A (*Juan Bautista de Anza NHT*) is located northeast of the project site. The *Santa Clara County Countywide Trails Master Plan Update*, which is an adopted element of the General Plan, designates the countywide trail as a "trail route within other public lands" for hiking, off-road cycling, and equestrian use. This trail route provides an important connection between the City of Cupertino and Rancho San Antonio County Park. The City of Cupertino's Final Stevens Creek Trail Feasibility Study also indicates this trail route as an important connection between Rancho San Antonio County Park and the City of Cupertino.

Visual Resources
The quarry is located adjacent to Rancho San Antonio County Park (Diocese Property). Since the County Parks Department is an adjacent property owner, modifications to the Reclamation Plan should take into account the potential aesthetic/visual impacts of the quarry and mitigation of views from these public parklands and trails.

The project is located in a Zoning District with a Design Review overlay for the Santa Clara Valley

Viewshed (d1). It is expected that the applicant will construct as per the submitted plans and comply with design guidelines towards screening the project from public views.

An adequate vegetated buffer between the degraded hillsides and the adjacent County parkland and trails should be incorporated into the Reclamation Plan for the quarry.

Noise Impacts
The EIR for the Reclamation Plan Amendment should evaluate any potential noise impacts to the adjacent Rancho San Antonio County Park and impacts that noise from the quarry may have on park users.

Biological Resources
The EIR for the Reclamation Plan Amendment should discuss whether or not the project would have an impact on Permanente Creek and the California red-legged frog (CRLF) and California tiger salamander. The CRLF has mitigation sites on the adjacent Diocese property.

Surface Hydrology, Drainage and Water Quality
The EIR for the Reclamation Plan Amendment should evaluate potential hydrological impacts resulting from any grading, recontouring and seeding of the site. The EIR should also discuss if there are any proposed modifications to the riparian corridor or Permanente Creek. The Reclamation Plan Amendment should also take into account adequate erosion control measures and proposed grading and the potential impacts it may have to the adjacent County parkland and trails.

The Santa Clara Valley Water District (SCVWD) is currently preparing a Final EIR for the Permanente Creek Flood Protection Project, which includes a proposed flood detention basin facility to be constructed, operated and maintained at Rancho San Antonio County Park Diocese Property as the Project's Recommended Alternative. This Permanente Creek Quarry's Reclamation Plan should evaluate future hydrological modifications that may impact the District's Permanente Creek Flood Protection Project for portions of Permanente Creek through Rancho San Antonio County Park.

The County Parks and Recreation Department appreciates the opportunity to provide comments on the NOP of an EIR for the Permanente Quarry Reclamation Plan Amendment for the East Materials Storage Area. We look forward to reviewing the EIR once it becomes available. If you have any questions regarding this letter, please contact me at (408) 355-2230 or by email at: Kimberly.Brosseau@prk.sccgov.org.

Sincerely,

Kimberly Brosseau
Park Planner

cc: Jane Mark, Senior Planner
Don Rocha, Natural Resources Management Program Supervisor
CEQA responses to County Planning file

QUARRYNO.COM
10570 Blandor Way
Los Altos Hills, CA 94024

May 12, 2010

Ms. Marina Rush
County of Santa Clara
Planning Office
70 West Hedding
7th Floor, East Wing
San Jose, CA 95110

Dear Ms. Rush,

I hereby submit our written comments regarding the Environmental Impact Statement for the proposed amendment to the existing Permanente Quarry (State Mine ID#91-43-004) 1985 Reclamation Plan incorporating the new East Materials Storage Area.

We submit these comments under protest as the County has already acquiesced to the Quarry expansion in a flawed process and the expansion has been underway for the past year. The public has been asked to comment apparently only to satisfy procedural rules and not the substance of Quarry operation and Expansion.

We regard the simultaneous processing of two amendments to an expired Reclamation plan that is 25 years old to border on the absurd. There must be a totally new Reclamation Plan incorporating all proposed changes and not continuous amendment of an expired Plan.

This multi faceted process is justified on the basis of saving time but that is not believable after the County has sat on the EMSA Amendment Plan for over a year. Consequently it appears the entire flawed process is simply to provide a way for Lehigh (Permanente) to escape violating the 1985 Plan, as described in the NOP, by expanding without County Approval.

A new Reclamation Plan must be prepared incorporating all proposed changes and expansion rather than this piecemeal approach. It must include restoration "so that mined lands are reclaimed to a usable condition which is readily adaptable for alternate land uses and create no danger to public health or safety" per SMARA.

A mine pit 700 feet deep and a half mile across is a definite threat to alternate usage and public safety. This means the Pit must be filled in as has occurred elsewhere in California. In that case the East and West Materials Areas become truly storage

areas and are exhausted as they are used for fill and not treated as permanent scars on the hillsides as they currently are. It should be noted that the original 1985 Plan treated them as transition elements and stated "ultimate reclamation of the pit area will be addressed in a revised reclamation plan to be submitted around the year 2005".

This further suggests that the EMSA should be located elsewhere closer to the Pit and hence further from residential housing. While the proposed EMSA is only 2,000 feet away from residences it is even closer (1500 feet) to other occupied facilities such as the Gate of Heaven Cemetery offices.

In addition we remain very concerned over the Geological risks. We have as yet no data available to the public on the Geological Testing recently completed by Lehigh. However the testing was significant enough to delay the processing of the 2007 Reclamation Plan Amendment until now.

We also see only limited mention of the Berrocal Fault that adjoins the San Andreas Fault. This Fault adjoins Permanente Creek and actually bisects the new proposed EMSA area but it is dismissed as insignificant based on the 2008 Golder Analysis even though Golder was not able to test every soil type and based its conclusions mainly on earlier work done on the WMSA.

If this 850 foot high slope of mine waste goes all that will impede it from falling into Permanente Creek is the rickety Silt Fence that is the last line of defense. This is probably the lowest cost solution but not one inspiring great confidence.

Given that the final slopes of the EMSA are the most critical condition for stability and its proximity to homes and the creek we feel a much more rigorous analysis must be conducted including integration of the recent Geological Pit tests and positive determination of the Berrocal Fault Line. An alternative would be to move the EMSA away from Permanente Creek and the residential area as mentioned earlier.

Related to our Seismic concerns is our concern over the material to be dumped on the EMSA. It is labeled "overburden" but is more commonly called mine waste. It is treated here as benign but limestone when crushed releases arsenic and other toxins and this "overburden" must be extensively tested prior to any final EIR. The WMSA today is a strong reminder that seeding and nature won't restore the EMSA.

Lastly we are very concerned over the endangered species presently on the EMSA. The Dusky-footed Woodrat and White-tailed kite are identified as present in the EMSA but the California Red Leg Frog, while identified, is stated to be not impacted by the EMSA. This is incorrect. The Red Legged Frog is presently in abundance along Permanente Creek which will receive significant run off from the EMSA.

Far more dramatic all endangered species here will be wiped out and their habitat completely destroyed as mine waste up to 120 feet deep is dumped on their homes. Over 10 acres of Native Oak Woodland will go as well.

Consequently the ongoing grading must be stopped and a new and more detailed endangered species inventory must be immediately accomplished. It would appear from recent aerial photos that at least half of the Wood Rat nests are already plowed under.

In summary this EMSA expansion without an EIR in place should have never happened. A new complete Reclamation Plan must be prepared, not the multiple amendments of the 1985 expired Plan. The land must be restored to useable condition which means restoration of the Pit. Geological Fault lines must be verified and not just projected. The Overburden must be rigorously analyzed to prove it is not toxic. The Endangered Species must be protected per current law.

Bill Almon
Acting for the Members

NOP Comment

STATE OF CALIFORNIA—BUSINESS, TRANSP(TION AND HOUSING AGENCY ARNOLD SCHWARZENEGGER, GOVERNOR

DEPARTMENT OF TRANSPORTATION
P. O. BOX 23660
OAKLAND, CA 94623-0660
PHONE (510) 622-5491
FAX (510) 286-5559
TTY 711

Flex your power!
Be energy efficient!

April 30, 2010

SCL280357
SCH2010042063

Ms. Marina Rush
County of Santa Clara
70 West Hedding Street
7th Floor, East Wing
San Jose, CA. 95110

Dear Ms. Rush:

Permanente Quarry Reclamation Plan Amendment– Notice of Preparation (NOP)

Thank you for including the California Department of Transportation (Department) in the environmental review process for the proposed project. We have reviewed the NOP and have the following comments to offer.

As lead agency, the County of Santa Clara is responsible for all project mitigation, including any needed improvements to state highways. The project's fair share contribution, financing, scheduling, implementation responsibilities and lead agency monitoring should be fully discussed for all proposed mitigation measures. The project's traffic mitigation fees should be specifically identified in the environmental document. Any required roadway improvements should be completed prior to issuance of project occupancy permits. While an encroachment permit is only required when the project involves work in the State Right of Way (ROW), the Department will not issue an encroachment permit until our concerns are adequately addressed. Therefore, we strongly recommend that the lead agency ensure resolution of the Department's California Environmental Quality Act (CEQA) concerns prior to submittal of the encroachment permit application. Further comments will be provided during the encroachment permit process if required; see the end of this letter for more information regarding the encroachment permit process.

Traffic

While the County of Santa Clara conducts its traffic studies in accordance with guidelines, which conform to the local Congestion Management Program managed by the Santa Clara County Valley Transportation Authority, the Department's thresholds are primarily concerned with potential impacts to the State Highway System. We encourage the County of Santa Clara to coordinate preparation of the study with our office to help sharpen the focus of your scope of work and answer any questions you may have. Please see the Departments' "*Guide for the Preparation of Traffic Impact Studies*" at the following website for more information:
http://www.dot.ca.gov/hq/traffops/developserv/operationalsystems/reports/tisguide.pdf

"Caltrans improves mobility across California"

2250-09 EA

Specifically, a detailed Traffic Impact Analysis (TIA) should identify impacts to all affected state facilities with and without the proposed project. The TIA should include, but not be limited to the following:

1. Information on the project's traffic impacts in terms of trip generation, distribution, and assignment. The assumptions and methodologies used in compiling this information should be addressed.

2. Average Daily Traffic (ADT), AM and PM peak hour volumes on all significantly affected streets and highways, including crossroads and controlling intersections.

3. Schematic illustration of the traffic conditions for: 1) existing, 2) existing plus project, and 3) cumulative for the intersections in the project area.

4. Calculation of cumulative traffic volumes should consider all traffic-generating developments, both existing and future, that would affect the State Highway facilities being evaluated.

5. Mitigation measures should consider highway and non-highway improvements and services. Special attention should be given to the development of alternate solutions to circulation problems that do not rely on increased highway construction.

6. All mitigation measures proposed should be fully discussed, including financing, scheduling, implementation responsibilities, and lead agency monitoring.

We look forward to reviewing the TIA, ***including*** Technical Appendices and the environmental document for this project. Please send two copies to:

Jay Vega
Office of Transit and Community Planning
Department of Transportation, District 4
P.O. Box 23660
Oakland, CA 94623-0660

Encroachment Permit

Work that encroaches onto the State ROW requires an encroachment permit that is issued by the Department. To apply, a completed encroachment permit application, environmental documentation, and five (5) sets of plans clearly indicating State ROW must be submitted to the address below. Traffic-related mitigation measures should be incorporated into the construction plans during the encroachment permit process.

Office of Permits
California DOT, District 4
P.O. Box 23660
Oakland, CA 94623-0660

See the website link below for more information.
http://www.dot.ca.gov/hq/traffops/developserv/permits/

Should you have any questions regarding this letter, please call Jay Vega of my staff at (510) 286-0585.

Sincerely,

LISA CARBONI
District Branch Chief
Local Development – Intergovernmental Review

c: Scott Morgan (State Clearinghouse)

From: Vicky Ho <vickyyueho@yahoo.com>
Subject: **More comments: EIR for EMSA at Lehigh Cement Plant**
Date: April 29, 2010 12:31:06 PM PDT
To: marina.rush@pln.sccgov.org

1) An EIR should not be put out BEFORE a scoping period. It appears that decisions have already been made by the county before the public gets to comment.

2) The current "reclamation" plan is not following many of the important reclamation standards in the State Mining Law, SMARA. Therefore it should not be amended. Instead a new "reclamation" plan which follows the law should have a scoping period.

3) A new reclamation plan which includes all the disturbed areas from the mining operations including the quarry and the East Material Storage Area should be put out for scoping. All the impacts need to be taken into consideration in ONE document.

4) The county should not be rewarding Lehigh for their violation of placing a huge pile of materials in an unpermitted area.
Instead the county should fine Lehigh for this blatant violation of their permit and levy meaningful fines. (It was a citizen, NOT the county who discovered the pile and had to push and push scc to get them to investigate.)

5) The county has a poor record of monitoring the Lehigh operation and of CEQA and SMARA compliance. It's time for the county to set this straight and not continue on this path, as evidenced by this "scoping" period to amend the current so-called "reclamation" plan. And penalty terms should be specified and carried out.

Vicky Ho

Barbara West

April 28, 2010

Marina Rush
Rob Eastwood
County of Santa Clara
Planning Office
70 West Hedding, 7th Floor, East Wing
San Jose, CA 95110

Hand Delivery At The Public Scoping Session On April 28, 2010 on April 28, 2010 and via email to Marina.Rush@pln.sccgov.org

Re: Comments on the Notice of Preparation Of An Environmental Impact Report For The Reclamation Plan Amendment For Permanente Quarry (State Mine ID# 91-43-004) East Material Storage Area (EMSA)

POTENTIAL ENVIRONMENTAL EFFECTS, ITEM M, "CUMULATIVE IMPACTS"

It is critically important that both the quarry Owner (Hanson Permanente Cement, Inc.) and the quarry Operator (Lehigh Southwest Cement Company) as well as their assigns and successors in interest assume full financial responsibility for the EMSA Reclamation Amendment consistent with Section 3702 of the Surface Mining and Reclamation Act and Section 2773.1 of the Public Resources Code.

The concern is that a successor in interest may not live up to the terms of the EMSA Reclamation Agreement or provide adequate financial assurances or resources. To assure any potential successor in interest of the Quarry Owner or Operator is also bound to the terms of this EMSA Reclamation Agreement, it is suggested that Section 3.11 of the Reclamation Agreement by changed to read as follows:

Section 3.11 "Statement of Responsibility"

"Hanson Permanente Cement, Inc. and Lehigh Southwest Cement Company have authorized their legally authorized representative(s) to execute this Amendment.

Hanson Permanente Cement, Inc. and Lehigh Southwest Cement Company collectively and individually accept responsibility for reclamation as set forth in this Amendment and further will require any assign or successor in interest whether by way of merger, consolidation, or acquisition to assume all responsibilities, obligations, and liabilities under this Amendment."

Respectfully submitted,

Barbara West

Barbara West

April 28, 2010

Marina Rush
Rob Eastwood
County of Santa Clara
Planning Office
70 West Hedding, 7th Floor, East Wing
San Jose, CA 95110

Hand Delivery At The Public Scoping Session On April 28, 2010 and via email to
Marina.Rush@pln.sccgov.org

Re: Comments on the Notice of Preparation Of An Environmental Impact Report For The Reclamation Plan Amendment For Permanente Quarry (State Mine ID# 91-43-004) East Material Storage Area (EMSA)

POTENTIAL ENVIRONMENTAL EFFECTS, ITEM M. "CUMULATIVE IMPACTS"

It makes absolutely no sense to develop an Environmental Impact Report based on a Reclamation Plan Amendment that, by its own terms, can be completely undone.

Specifically, Section 3.9, "Effect of Reclamation on Future Recovery of Mineral Resources" states "(t)his Amendment does not preclude future extraction or overburden placement activities within the RPA Area, other areas of the site or on surrounding lands".

To have a meaningful Environmental Impact Report, the Reclamation Plan Amendment must be amended so that the RPA Area is not subject to future extraction or overburden activities once the reclamation activities are complete.

Accordingly, it is recommended that Section 3.9 "Effect of Reclamation on Future Recovery of Mineral Resources" be modified to read:

"This Amendment does not preclude future extraction or overburden placement activities in areas other than the RPA area."

Respectfully submitted,

Barbara West

NOP

C-34

April 23, 2010
To: County of Santa Clara
Attn: Marina Rush Phone: 408-299-5770
From: Cathy Helgerson
Regarding: East Material Storage Area at the Lehigh Southwest Cement and Quarry location is not part of the existing 1985 Reclamation Plan and so Santa Clara County is holding a scoping meeting that is being held at the City of Cupertino's City Hall Wednesday, April 28, 210 at 6:30 P. M.
The problem with this is that SCC gave Lehigh permission to use the east end area over a year ago and never gave the public a chance to object or approve the storage area addition. I called the SCC and told them about the fact that Lehigh was destroying the mountain and that I felt no one at SCC really knew or understood the magnitude of the destruction and that they needed to get up to Lehigh right away and see what was going on. I do not think that the SCC ever expected Lehigh to destroy the mountain and I also believe that Lehigh has definitely gone over and above what SCC was giving them permission to do. I also called the State Conservation Department who would not take charge of the responsibility to do anything about what was going on.
The storage area contains waste products and probably Petrolium coke that contains radio active material along with the coal that they have been piling up over many months. I was there Wed. 21st and noticed that the piles are higher and there are more of them and also that they have rock and a black product being dumped on top that I suspect maybe coal but I am not sure.
I have complaints in to the SCC Hazardous Environmental Dept. who have also sited them in the past for the Petrolium coke storage violations. I have called the BAAQMD and reported them because of the dust and pollution they are causing and they are investigating that. I also called your office and left you a message the other day suggesting that you get yourself or someone to view what is happening at the site first hand and I would also suggest now that you will be taking pictures for your records.
I suspect that they are in violation of the EPA Clean Air Act – BAAQMD and also SCC Hazardous Environmental regulations on storage with added violations to maintain a certain level of moisture in the piles to control the dust that is going everywhere. We need to know what is in the piles and why they are not completely contained in containment silos or boxed compartment of some kind.
The runoff from these piles is going into the groundwater, watershed and the Permanente Creek and it is very much suspected it is also going into the Stevens Creek Creek, the Wells that are inoperative and operative and the eventually all this is going into the Aquifer . The water companies California Water and San Jose water are pulling water up though the wells and we are drinking and using this water that is contaminated by Lehigh Southwest Cement and Quarry, Steven Creek Quarry, Stevens Creek Reservoir and probable Apple Computer's R & D Manufacturing Facility. Apple has a manufacturing facility that makes resin mold prototypes and they are using resin to make the molds that are heated up in their thermotron ovens that is being released next to an operating well that feeds 58,000 people. This well is next to my home and so is Apple Computer not even 100 feet away.
My husband and I have both had cancer and I also had a daughter born with brain damage who died when she was 3 ½ years old all this and more from what I believe to be the pollution from

2250-09EA

the Companies above. I have a great deal more to share about my health problem and my family health problems if you care and want to help.
The situation is desperate and this pollution needs to stop and I have written the SCC and phoned many times trying to get the personnel and people responsible for this problem to help but have had no luck. I am continually ignored. I have been told by SCC representatives that I need to prove that Lehigh Southwest Cement and Quarry are a public health hazard and a danger to the community well I think I have done that and am continuing to do so. There will be a major report from me to follow and a copy will be going to SCC.
In conclusion the public citizens of Cupertino and the Valley are tired of being polluted to death and we want Lehigh Southwest Cement and Quarry closed down immediately with out delay to insure that the public is protected from this blight on the community. Lehigh can not contain their polluted emissions and because of a cumulative effect from the pollution in our bodies over time which is causing cancer and other health problems it must be shut down once and for all and a Super Fund established to clean this mess up.
Lehigh Southwest Company needs to pay for the disaster they have caused and we as citizens need to make sure they do.
I have a lot of information, records, reports and pictures I could share but it would take to much of your time right now so maybe we could meet sometime later let me know.
Thanks,
Cathy Helgerson

NUP

C-35

From: Darwin <darwinlisa@yahoo.com>
Subject: **Zero Emissions Schedule**
Date: April 19, 2010 3:45:06 PM PDT
To: marina.rush@pln.sccgov.org

Hi Marina,

Thank you for the opportunity and interest to consider zero emissions with regards to Lehigh Hanson, Inc (Permanente Quarry).

Heat, dust, noise, powder, cement, mercury, vibration, etc. are all "emissions" that can and should be measured and reported in real-time. These results should be posted on the Internet in real-time as a requirement for operation.

The longer term goal should not necessarily be to close a business but rather to make a business transparent and responsible. Factories are no different than automobiles and should strive to achieve zero emissions. The technology is all readily available and inexpensive.

Beyond the health and environmental benefits, mandating a path to zero emissions will also create a platform for new jobs, innovation and corresponding tax basis. Surprisingly, this will also make intelligent businesses including Lehigh more viable, competitive and profitable. An aggressive schedule will yield quicker returns.

Californians with the support of the EPA are and can be proud to lead the rest of the country and the world in measuring and openly reporting zero factory emissions.

Regards, Darwin

Darwin Chang

darwinlisa@yahoo.com

F.le 2250-09

From: Peter Coglianese <PeterC@Cupertino.org>
Subject: **Public Scoping Video Online**
Date: April 28, 2010 9:36:23 PM PDT
To: Marina Rush <marina.rush@pln.sccgov.org>

Hi Marina,

The online video of the April 28th Public Scoping meeting is now available at the following links...

http://www.cupertino.org/index.aspx?page=973 (Flash Video Normal - 320 x 240)

http://www.cupertino.org/index.aspx?page=792 (Flash Video Large - 640 x 480)

http://cupertino.granicus.com/MediaPlayer.php?publish_id=128 (Windows Media Normal - 320 x 240)

Thanks!

Pete Coglianese
Media Coordinator
City of Cupertino
(408) 777-1358

-----Original Message-----
From: Marina Rush [mailto:marina.rush@pln.sccgov.org]

APPENDIX B
Air Resources

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ASHWORTH
LEININGER
GROUP

Air Quality Technical Analysis

Revised Reclamation Plan Amendment

Permanente Quarry
Santa Clara County, California

Prepared by:

Ashworth Leininger Group
601 East Daily Drive, Suite 302
Camarillo, California 93010

Tel: 805-764-6010
Fax: 805-764-6011

December 7, 2011 (Updated)

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<u>**Table of Contents**</u>

<u>**Appendices**</u>

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Executive Summary

Lehigh Southwest Cement Company (Lehigh) operates the Permanente Quarry (Quarry), a limestone and aggregate mining operation approximately two miles west of the City of Cupertino. The proposed project is the County's approval of an amendment to the Quarry's reclamation plan and associated reclamation requirements to include currently disturbed areas.

This current *Air Quality Technical Analysis* is intended to support the County's evaluation of the proposed project under the California Environmental Quality Act (CEQA). Its purpose is to properly characterize emissions of criteria air pollutants[1], toxic air contaminants (TAC)[2], and greenhouse gases (GHGs)[3] from existing operations and from the proposed project. These are compared to determine the net emissions changes anticipated to result from the project. These net emission increases or decreases are then compared to the Bay Area Air Quality Management District's (BAAQMD or District) CEQA significance thresholds. As shown below, the net emissions changes associated with the proposed project are below the District's CEQA significance thresholds.

Table ES-1 provides a comparison of the expected annual net emissions changes from the proposed project to the BAAQMD's annual CEQA significance thresholds for criteria pollutants and GHG emissions (expressed in carbon dioxide equivalents or CO_2e).

Table ES-1. Criteria Pollutants and GHGs – Annual Net Emissions Change Analysis (tons/year)[4]

	PM_{10}	$PM_{2.5}$	CO	NOx	ROG	SOx	CO_2e
Annual Net Emissions Change[5]	(463.87)	(76.23)	(65.40)	(22.68)	(5.34)	1.80	4,920.11
BAAQMD CEQA Significance Threshold	15	10	Local Impacts[6]	10	10	N/A	10,000
Above Threshold? (Yes/No)	No	No	No	No	No	No	No

Table ES-2 provides a comparison of the daily net emissions changes anticipated from the proposed project to the BAAQMD's daily CEQA significance thresholds for criteria pollutants.

1 Criteria pollutants refer to the class of pollutants for which there are ambient air quality standards, or which are considered precursors to these standards. Criteria pollutants evaluated in this technical analysis include oxides of nitrogen (NOx), oxides of sulfur (SOx), reactive organic gases (ROG), particulate matter less than 10 microns diameter(PM_{10}), particulate matter less than 2.5 microns diameter ($PM_{2.5}$), and carbon monoxide (CO).

2 TACs are listed by the California Air Resources Control Board (ARB) under the state's air toxic control program (AB2588), see: http://www.arb.ca.gov/ab2588/ab2588.htm accessed February 1, 2010.

3 Only those GHGs associated with quarry operations are considered in this technical analysis: carbon dioxide (CO_2), methane (CH_4), and nitrogen oxide (N_2O).

4 Values presented in Table ES-1 are presented in short tons per year, except for GHG (CO_2e) which are presented in metric tons per year.

5 Negative values are expressed with parentheses.

6 The threshold for local CO impacts is the California Ambient Air Quality Standard for CO, established at 20.0 parts per million (ppm) for the 1-hour standard and at 9.0 ppm for the 8-hour standard.

Table ES-2. Criteria Pollutants – Daily Net Significant Increase Analysis (pounds/day).

	PM_{10}	$PM_{2.5}$	CO	NOx	ROG	SOx
Daily Net Emissions Change[5]	(3,441.35)	(581.93)	(749.86)	(315.42)	(44.09)	5.25
BAAQMD CEQA Significance Threshold	82	54	Local Impacts	54	54	N/A
Above Threshold? (Yes/No)	No	No	No	No	No	No

The proposed project is expected to have a significant net reduction in emissions of toxic air contaminants, principally diesel particulate matter. Therefore, the proposed project is anticipated to have no incremental cancer risk to exposed persons.

The proposed project is expected to result in a net greenhouse gas emissions increase of approximately 4,900 metric tons CO_2e. This net emission increase is below the BAAQMD's GHG significance threshold of 10,000 metric tons per year CO_2e for stationary sources. The BAAQMD's GHG threshold of 10,000 metric tons per year is considered appropriate because the project's emissions sources are confined to a specific operational area as characteristic of a stationary source and include equipment that require permits to operate.

This current report updates the July 26, 2011 *Air Quality Technical Analysis* prepared by Ashworth Leininger Group (ALG) to reflect the following:

- Estimates of maximum waste rock haul truck trip length increased for 2012 and 2013, resulting in increased truck combustion emissions (including diesel particulate matter and greenhouse gases. This also increased average fleet-wide vehicle weight, in turn increasing particulate matter emissions from unpaved road dust entrainment.

- Because of the increased truck activity during 2012 and 2013, the peak Phase 1 year for combustion emissions changed from 2014 to 2013. This resulted in a different mix of activity by equipment type for the peak year, further changing the peak Phase 1 off-road equipment combustion emissions.

- Fleet-wide Phase 1 peak fuel use also increased slightly due to increased haul truck activity. This in turn resulted in slight increases to: fuel dispensing emissions, fuel delivery vehicle emissions, and paved road dust entrainment emissions.

- ALG corrected the load factors for three off-road diesel equipment categories in Tables C-21a and C-21b: rubber tired dozers – 59%; rubber-tired loaders – 54%; and water trucks – 20%. This resulted in a slight decrease in combustion-related emissions.

- Based on an area-by-area review of active disturbed areas for each year of the proposed project (see Table D-1), ALG updated the peak active area estimates to reflect areas disturbed during the peak year for each project phase. The July 26th estimates were based on the maximum expected activity for each area, independent of the year in which these maximum activities occurred. Therefore, the July 26th report overestimated wind erosion from active areas for the peak years in Phase 1 and 2. This report therefore reflects lower active area wind erosion particulate matter emissions.

- Emissions associated with Permanente Creek Reclamation Area activity have been incorporated. Total emissions are reflected in Appendix E. Note that peak emissions from Permanente Creek Reclamation Area activities only overlap peak emissions from other proposed project activities with respect to particulate matter emissions (PM_{10} and $PM_{2.5}$) associated with material handling and unpaved road dust entrainment in Phase 1 and wind erosion from disturbed areas in Phase 2.

- Emissions associated with Permanente Creek long-range restoration activities expected to occur in Phase 3 of the project have been incorporated into the report. As part of this restoration effort, Lehigh anticipates removing approximately 18,000 cubic yards of fill materials and stabilizing slopes within two areas along Permanente Creek. Criteria, toxic air contaminant, and GHG emission estimates associated with this effort, assumed to occur during 2026, are presented in Appendix F to this report.

- The report now assumes importation of 170,000 cubic yards (63,000 tons) of mulched green waste, which will be blended with the West Material Storage Area material that will be returned to the quarry pit from 2023 to 2025. The mulched green waste is assumed to be transported from a supplier located 45 miles from the quarry in 20-ton on-road heavy duty diesel trucks. This activity increases particulate matter emissions from material handling, the overland conveyor system, and off- and on-road dust entrainment during Phase 2 of the proposed project. The increased truck activity also increases Phase 2 combustion-related emissions from on-road vehicles. The green waste transport trucks also indirectly affect off- and on-road dust entrainment emissions during Phase 1, since the trucks slightly decrease the project's average off-road vehicle weight and significantly increase the average on-road vehicle weight.

Introduction

The Permanente Quarry is a limestone and aggregate mining operation in the unincorporated foothills of western Santa Clara County, located approximately two miles west of the City of Cupertino. The existing and planned operational areas of the Quarry occupy approximately 614 acres of a 3,510 acre property that is owned by Hanson Permanente Cement, Inc., and operated by Lehigh Southwest Cement Company (collectively, Lehigh).

The proposed project is the County's approval of an amendment to the Quarry's current reclamation plan. The amendment would update the reclamation plan and associated reclamation requirements to include all areas disturbed by mining activities. If approved, the amendment would incorporate 1,238.6 acres of Lehigh's property representing existing and proposed disturbance of land and various undisturbed buffer areas.

Lehigh will continue to operate its existing North Quarry under its existing vested entitlements to extract limestone and aggregate resources until resources have been exhausted. Lehigh will then reclaim the North Quarry by relocating overburden material from the West Material Storage Area to the North Quarry area, covering this fill with a combination of overburden and topsoil blends, and revegetating the area.

A more complete description of the proposed project is contained in Lehigh's Project Description and other materials provided to the County.

This air quality technical analysis is intended to support the County's evaluation of the proposed project by properly characterizing emissions of criteria air pollutants, toxic air contaminants (TAC), and greenhouse gases (GHG) from existing operations and from the proposed project. These estimated emissions are then compared to determine the net emissions that are estimated to result from the project. The net emissions are then compared to applicable CEQA significance thresholds.

This air quality technical analysis is organized as follows:

- Summary – Net Emissions Analysis. This section provides a summary of the net emissions change between the proposed project and the baseline, and compares these net emissions to CEQA significance thresholds, including those established by the BAAQMD for criteria pollutants and GHG emissions. This comparison is presented in Tables S1 through S5.

- Baseline Air Quality Emissions. This section describes the technical basis for estimating the baseline air quality emissions. The results of these calculations are presented in Tables 1 through 5.

- Proposed Project Air Quality Emissions. This section describes the technical basis for estimating project emissions. The results of these calculations are presented in Tables 6 through 10.

- Appendices A through F provide detailed documentation on the throughput, emission factors, and basis for all emission calculations contained in this analysis.

Summary – Net Emissions Analysis

Tables S-1 through S-5 compare baseline and proposed project emissions of criteria pollutants, TACs, and GHGs for the applicable averaging period for each class of compounds as required under the BAAQMD's CEQA Guidelines[7] (e.g., tons per year, pounds per day, etc.). By way of summary, the findings made by this technical analysis are:

- All criteria pollutant emissions from the proposed project are either below the existing baseline or below the applicable District significance thresholds (see Tables S-1 and S-2).

- TAC emissions associated with the project are below the baseline TAC emissions for all compounds (see Tables S-3 and S-4).

- GHG emissions are expected to increase by a maximum of 4,900 metric tons per year, which is below the District's significance threshold of 10,000 metric tons per year (expressed as carbon dioxide equivalents, or CO_2e) for stationary sources. The 10,000 metric tons per year GHG significance threshold is considered appropriate because emissions sources are confined to a specific operational area as is typical of a stationary source and include equipment that require permits to operate.

As described in greater detail below, the baseline for the net emissions analysis considers the average annual emissions over an 11-year period from 2000-2010 (see Baseline Air Quality Emissions). Proposed project emissions are calculated for each of the project phases (see Proposed Project Air Quality Emissions). The net emissions increase/decrease is then calculated by comparing the highest emissions for each pollutant for each averaging period during each project phase with the average emissions calculated for the baseline period. With the exception of annual and daily particulate matter (PM_{10} and $PM_{2.5}$) emissions, criteria, TAC and GHG emissions are highest during Phase 1 of the proposed project, which conservatively counts emissions associated with ongoing mining operations although Lehigh is not seeking approval for these activities. Annual and daily PM_{10} and $PM_{2.5}$ emissions are the highest during Phase 2 of the proposed project.

The net emissions calculation, also conservatively, does not consider emissions from certain ongoing activities within Lehigh's property that may continue, including the continued operation of the primary and secondary crushers, and the rock plant.

The net emissions calculation also does not consider emissions from the cement plant located adjacent to the Quarry. The cement plant is an industrial use that is separately permitted by the County of Santa Clara. Emissions from the cement plant have been quantified as part of the District's Title V Operating Permit renewal process, and previously reported to the BAAQMD.

Note that this report does not provide a comprehensive evaluation of the various and comparatively minor emissions associated with Phase 3 of the project, during which the facility will remove the rock plant, crusher, and surge pile and provide restoration of mining operations and other areas. No quantification of these emissions is necessary as material handling, areal extent of dust entrainment and wind erosion, off-road vehicle usage and related activities are substantially lower than in Phase 1 or 2. Therefore, Phase 3 emission calculations will have no

[7] *California Environmental Quality Act: Air Quality Guidelines*, Bay Area Air Quality Management District, updated May 2011.

effect on the net emissions analysis presented herein. Note that this report presents an evaluation of emissions associated with Permanente Creek long-term restoration activities expected to occur in Phase 3 of the project. This evaluation is presented in Appendix F.

All calculations presented in this analysis are based on generally accepted public sources, each of which is specifically referenced and documented in the calculation spreadsheets provided in Appendices A through F. Actual and estimated throughput data were obtained from Lehigh, and are also referenced in the calculation spreadsheets. The calculations reflect the application of the following controls:

- For the baseline:
    - Watering of unpaved roads

- For the proposed project:
    - Continued watering of unpaved roads
    - Watering of active areas consistent with a dust mitigation plan submitted to the District in 2010
    - Use of an Overland Conveyor System, powered by electric motors, to move 75% of the waste rock from the WMSA to reclaim the North Quarry
    - Watering of conveyor transfer points and screens associated with the proposed Overland Conveyor System

Table S-1. Comparison of Proposed Project to Baseline Emissions – Annual Criteria Pollutants (tons/year).

Activity	PM_{10}	$PM_{2.5}$	CO	NOx	ROG	SOx
Baseline						
Quarry Operations						
Drilling	1.87	1.87	--	--	--	--
Blasting	3.78	0.22	35.45	9.00	--	1.06
Bulldozing, Scraping & Grading	0.59	0.09	--	--	--	--
Material Handling	3.23	0.48	--	--	--	--
Dust Entrainment - Unpaved Roads	75.47	7.55	--	--	--	--
Wind Erosion - Unpaved Roads	11.70	1.75	--	--	--	--
Wind Erosion - Disturbed Mine Area	554.96	83.24	--	--	--	--
Subtotal - Mining:	651.60	95.21	35.45	9.00	--	1.06
Waste Rock Land Filling						
Material Handling	1.53	0.23	--	--	--	--
Dust Entrainment - Unpaved Roads	74.91	7.49	--	--	--	--
Wind Erosion - Unpaved Roads	7.26	1.09	--	--	--	--
Subtotal - Land Filling:	83.70	8.81	--	--	--	--
Fuel Storage and Dispensing						
Fuel Storage	--	--	--	--	0.06	--
Fuel Dispensing	--	--	--	--	0.01	--
Subtotal - Fuel Storage/Dispensing:	--	--	--	--	0.08	--
Combustion Sources						
Portable Diesel Welders	0.00	0.00	0.01	0.04	0.00	0.00
Portable Gasoline Welders	0.00	0.00	0.00	0.00	0.00	0.00
Off-road Diesel Equipment	19.04	17.58	250.86	314.77	23.47	0.16
On-road On-site Vehicles	0.01	0.01	0.74	0.10	0.06	0.00
On-road Off-site Vehicles	0.01	0.00	0.50	0.09	0.05	0.00
Dust Entrainment - Paved Roads	0.04	0.01	--	--	--	--
Subtotal - Combustion Sources:	19.10	17.60	252.11	315.01	23.59	0.16
Baseline Totals (tons/year):	**754.40**	**121.62**	**287.57**	**324.01**	**23.67**	**1.22**
Proposed Project						
Maximum Phase:	Phase 2	Phase 2	Phase 1	Phase 1	Phase 1	Phase 1
North Quarry						
Drilling	--	--	--	--	--	--
Blasting	--	--	94.09	23.87	--	2.81
Bulldozing, Scraping & Grading	1.26	0.19	--	--	--	--
Material Handling	5.71	0.86	--	--	--	--
Dust Entrainment - Unpaved Roads	8.56	0.86	--	--	--	--
Wind Erosion - Unpaved Roads	5.82	0.87	--	--	--	--
Wind Erosion - Active Areas	77.45	11.62	--	--	--	--
Subtotal - North Quarry:	98.81	14.39	94.09	23.87	--	2.81
Waste Rock Storage/Infill Areas						
Material Handling	5.75	0.86	--	--	--	--
Overland Conveyor System	10.14	2.08	--	--	--	--
Dust Entrainment - Unpaved Roads	44.35	4.44	--	--	--	--
Wind Erosion - Unpaved Roads	11.95	1.79	--	--	--	--
Wind Erosion - Active Areas	113.83	17.07	--	--	--	--
Subtotal - Waste Rock Storage/Infill:	186.02	26.24	--	--	--	--

Table S-1. Comparison of Proposed Project to Baseline Emissions – Annual Criteria Pollutants (tons/year).

Activity	PM_{10}	$PM_{2.5}$	CO	NOx	ROG	SOx
Permanente Creek Reclamation Area						
Bulldozing, Scraping & Grading	--	--	--	--	--	--
Material Handling	--	--	--	--	--	--
Unpaved Road Dust Entrainment	--	--	--	--	--	--
Wind Erosion - Disturbed Areas	0.05	0.01	--	--	--	--
Off-Road Diesel Equipment	--	--	--	--	--	--
Subtotal - Permanente Creek Recl. Area:	0.05	0.01	--	--	--	--
Fuel Storage and Dispensing						
Fuel Storage	--	--	--	--	0.05	--
Fuel Dispensing	--	--	--	--	0.03	--
Subtotal - Fuel Storage/Dispensing:	--	--	--	--	0.08	--
Combustion Sources						
Portable Diesel Welders	0.01	0.01	0.02	0.11	0.01	0.01
Off-road Diesel Equipment	4.97	4.59	127.00	277.13	18.14	0.20
On-road On-site Vehicles	0.01	0.00	0.52	0.07	0.05	0.00
On-road Off-site Vehicles	0.06	0.05	0.53	0.14	0.06	0.00
Dust Entrainment - Paved Roads	0.62	0.09	--	--	--	--
Subtotal - Combustion Sources:	5.67	4.74	128.07	277.45	18.26	0.21
Proposed Project Totals (tons/year):	**290.54**	**45.38**	**222.17**	**301.32**	**18.34**	**3.02**
Net Change (tons/year):	**(463.87)**	**(76.23)**	**(65.40)**	**(22.68)**	**(5.34)**	**1.80**
CEQA Significance Thresholds:						
BAAQMD (tons/year)	15	10	see Note 1	10	10	N/A
Exceed BAAQMD Thresholds?	**No**	**No**	**N/A**	**No**	**No**	**N/A**

Notes:
1. BAAQMD CEQA significance thresholds for local CO are 9.0 ppm (8-hr average) and 20.0 ppm (1-hr average).
2. In Phase 1, peak emissions from Permanente Creek Reclamation Area activities overlap peak emissions from other proposed activities with respect to particulate matter emissions (PM_{10} and $PM_{2.5}$) associated with material handling and unpaved road dust entrainment.
3. In Phase 2, peak emissions from Permanente Creek Reclamation Area activities overlap peak emissions from other proposed activities with respect to particulate matter emissions (PM_{10} and $PM_{2.5}$) associated with wind erosion from disturbed areas.

Table S-2. Comparison of Proposed Project to Baseline Emissions – Daily Criteria Pollutants (lbs/day).

Activity	PM_{10}	$PM_{2.5}$	CO	NOx	ROG	SOx
Baseline						
Quarry Operations						
Drilling	45.70	45.70	--	--	--	--
Blasting	92.18	5.32	864.75	219.41	--	25.81
Bulldozing, Scraping & Grading	4.13	0.62	--	--	--	--
Material Handling	22.75	3.41	--	--	--	--
Dust Entrainment - Unpaved Roads	531.45	53.15	--	--	--	--
Wind Erosion - Unpaved Roads	82.38	12.36	--	--	--	--
Wind Erosion - Disturbed Mine Area	3,908.20	586.23	--	--	--	--
Subtotal - Mining:	4,686.79	706.78	864.75	219.41	--	25.81
Waste Rock Land Filling						
Material Handling	10.78	1.62	--	--	--	--
Dust Entrainment - Unpaved Roads	527.55	52.76	--	--	--	--
Wind Erosion - Unpaved Roads	51.12	7.67	--	--	--	--
Subtotal - Land Filling:	589.45	62.04	--	--	--	--
Fuel Storage and Dispensing						
Fuel Storage	--	--	--	--	0.52	--
Fuel Dispensing	--	--	--	--	0.11	--
Subtotal - Fuel Storage/Dispensing:	--	--	--	--	0.63	--
Combustion Sources						
Portable Diesel Welders	0.13	0.13	0.38	1.78	0.14	0.12
Portable Gasoline Welders	0.00	0.00	0.04	0.06	0.12	0.00
Off-road Diesel Equipment	134.12	123.78	1,766.64	2,216.68	165.31	1.09
On-road On-site Vehicles	0.06	0.04	5.35	0.71	0.45	0.01
On-road Off-site Vehicles	0.06	0.04	3.61	1.01	0.41	0.00
Dust Entrainment - Paved Roads	0.31	0.05	--	--	--	--
Subtotal - Combustion Sources:	134.67	124.03	1,776.03	2,220.24	166.43	1.23
Baseline Totals (pounds/day):	**5,410.92**	**892.85**	**2,640.78**	**2,439.65**	**167.06**	**27.04**
Proposed Project						
Maximum Phase:	Phase 2	Phase 2	Phase 1	Phase 1	Phase 1	Phase 1
North Quarry						
Drilling	--	--	--	--	--	--
Blasting	--	--	1,033.97	262.35	--	30.86
Bulldozing, Scraping & Grading	8.40	1.26	--	--	--	--
Material Handling	38.10	5.71	--	--	--	--
Dust Entrainment - Unpaved Roads	57.07	5.71	--	--	--	--
Wind Erosion - Unpaved Roads	38.83	5.82	--	--	--	--
Wind Erosion - Active Areas	516.32	77.45	--	--	--	--
Subtotal - North Quarry:	658.72	95.95	1,033.97	262.35	--	30.86
Waste Rock Storage/Infill Areas						
Material Handling	38.32	5.75	--	--	--	--
Overland Conveyor System	67.62	13.84	--	--	--	--
Dust Entrainment - Unpaved Roads	295.67	29.57	--	--	--	--
Wind Erosion - Unpaved Roads	79.65	11.95	--	--	--	--
Wind Erosion - Active Areas	758.86	113.83	--	--	--	--
Subtotal - Waste Rock Storage/Infill:	1,240.12	174.93	--	--	--	--

Table S-2. Comparison of Proposed Project to Baseline Emissions – Daily Criteria Pollutants (lbs/day).

Activity	PM_{10}	$PM_{2.5}$	CO	NOx	ROG	SOx
Permanente Creek Reclamation Area						
Bulldozing, Scraping & Grading	--	--	--	--	--	--
Material Handling	--	--	--	--	--	--
Unpaved Road Dust Entrainment	--	--	--	--	--	--
Wind Erosion - Disturbed Areas	28.29	4.24	--	--	--	--
Off-Road Diesel Equipment	--	--	--	--	--	--
Subtotal - Permanente Creek Recl. Area:	28.29	4.24	--	--	--	--
Fuel Storage and Dispensing						
Fuel Storage	--	--	--	--	0.33	--
Fuel Dispensing	--	--	--	--	0.20	--
Subtotal - Fuel Storage/Dispensing:	--	--	--	--	0.53	--
Combustion Sources						
Portable Diesel Welders	0.05	0.05	0.15	0.71	0.06	0.05
Off-road Diesel Equipment	37.65	34.75	849.61	1,859.77	121.64	1.37
On-road On-site Vehicles	0.04	0.03	3.58	0.45	0.32	0.01
On-road Off-site Vehicles	0.40	0.33	3.60	0.95	0.43	0.01
Dust Entrainment - Paved Roads	4.30	0.65	--	--	--	--
Subtotal - Combustion Sources:	42.44	35.80	856.95	1,861.88	122.44	1.43
Proposed Project Totals (lbs/day):	**1,969.57**	**310.92**	**1,890.92**	**2,124.24**	**122.97**	**32.30**
Net change (pounds/day):	**(3,441.35)**	**(581.93)**	**(749.86)**	**(315.42)**	**(44.09)**	**5.25**
CEQA Significance Thresholds:						
BAAQMD (pounds/day)	82	54	see Note 1	54	54	N/A
Exceed BAAQMD Thresholds?	**No**	**No**	**N/A**	**No**	**No**	**N/A**

Notes:

1. BAAQMD CEQA significance thresholds for local CO are 9.0 ppm (8-hr average) and 20.0 ppm (1-hr average).
2. In Phase 1, peak emissions from Permanente Creek Reclamation Area activities overlap peak emissions from other proposed activities with respect to particulate matter emissions (PM_{10} and $PM_{2.5}$) associated with material handling and unpaved road dust entrainment.
3. In Phase 2, peak emissions from Permanente Creek Reclamation Area activities overlap peak emissions from other proposed activities with respect to particulate matter emissions (PM_{10} and $PM_{2.5}$) associated with wind erosion from disturbed areas.

Table S-3. Comparison of Proposed Project to Baseline Emissions – Annual Toxic Air Contaminants (pounds/year).

Activity	Diesel PM	Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Cobalt	Copper	Lead	Mercury	Molybdenum	Nickel	Selenium	Silver	Thallium	Vanadium	Zinc	Hex Chromium	Total Crystalline Silica	
Baseline																					
Quarry Operations																					
Drilling	--	0.01	0.00	2.92	0.00	0.00	0.09	0.02	0.05	0.00	0.00	0.01	0.09	0.01	0.00	0.00	0.07	0.09	0.00	13.91	
Blasting	--	0.02	0.01	5.90	0.01	0.01	0.18	0.05	0.11	0.01	0.00	0.02	0.17	0.02	0.01	0.01	0.14	0.19	0.00	28.07	
Bulldozing, Scraping & Grading	--	0.00	0.00	0.92	0.00	0.00	0.03	0.01	0.02	0.00	0.00	0.00	0.03	0.00	0.00	0.00	0.02	0.03	0.00	4.36	
Material Handling	--	0.02	0.01	5.04	0.00	0.01	0.16	0.04	0.09	0.01	0.00	0.02	0.15	0.02	0.01	0.01	0.12	0.16	0.00	23.99	
Dust Entrainment - Unpaved Roads	--	0.38	0.19	150.93	0.11	0.19	6.19	1.48	3.77	0.35	0.02	0.38	8.15	0.38	0.19	0.19	12.53	5.13	0.29	1,071.50	
Wind Erosion - Unpaved Roads	--	0.06	0.03	23.40	0.02	0.03	0.96	0.23	0.58	0.05	0.00	0.06	1.26	0.06	0.03	0.03	1.94	0.80	0.04	166.09	
Wind Erosion - Disturbed Mine Area	--	2.77	1.39	865.75	0.83	1.39	26.64	7.10	15.54	1.39	0.22	2.77	25.53	2.77	1.39	1.39	21.09	27.75	0.11	4,120.95	
Subtotal - Mining:	--	3.26	1.63	1,054.85	0.98	1.63	34.24	8.93	20.16	1.81	0.25	3.26	35.38	3.26	1.63	1.63	35.92	34.15	0.44	5,428.85	
Waste Rock Land Filling																					
Material Handling	--	0.01	0.00	2.39	0.00	0.00	0.07	0.02	0.04	0.00	0.00	0.01	0.07	0.01	0.00	0.00	0.06	0.08	0.00	11.36	
Dust Entrainment - Unpaved Roads	--	0.37	0.19	149.82	0.11	0.19	6.14	1.47	3.75	0.34	0.02	0.37	8.09	0.37	0.19	0.19	12.44	5.09	0.28	1,063.64	
Wind Erosion - Unpaved Roads	--	0.04	0.02	14.52	0.01	0.02	0.60	0.14	0.36	0.03	0.00	0.04	0.78	0.04	0.02	0.02	1.21	0.49	0.03	103.07	
Subtotal - Land Filling:	--	0.42	0.21	166.73	0.13	0.21	6.81	1.63	4.15	0.38	0.02	0.42	8.94	0.42	0.21	0.21	13.70	5.66	0.31	1,178.07	
Fuel Storage and Dispensing																					
Diesel Storage & Dispensing	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
Gasoline Storage & Dispensing	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
Subtotal - Fuel Storage/Dispensing:	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
Combustion Sources																					
Portable Diesel Welders	6.11	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
Portable Gasoline Welders	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
Off-road Diesel Equipment	38,088.83	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
On-road On-site Vehicles	0.05	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
On-road Off-site Vehicles	3.47	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
Subtotal - Combustion Sources:	38,098.46	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
Baseline Totals (pounds/year):	**38,098.46**	**3.68**	**1.84**	**1,221.58**	**1.10**	**1.84**	**41.05**	**10.56**	**24.31**	**2.19**	**0.27**	**3.68**	**44.32**	**3.68**	**1.84**	**1.84**	**49.62**	**39.81**	**0.76**	**6,606.93**	
Proposed Project - Maximum (Phase 1)																					
North Quarry																					
Drilling	--	0.02	0.01	5.23	0.01	0.01	0.16	0.04	0.09	0.01	0.00	0.02	0.15	0.02	0.01	0.01	0.13	0.17	0.00	24.91	
Blasting	--	0.00	0.00	0.81	0.00	0.00	0.02	0.01	0.01	0.00	0.00	0.00	0.02	0.00	0.00	0.00	0.02	0.03	0.00	3.85	
Bulldozing, Scraping & Grading	--	0.00	0.00	1.49	0.00	0.00	0.05	0.01	0.03	0.00	0.00	0.00	0.04	0.00	0.00	0.00	0.04	0.05	0.00	7.10	
Material Handling	--	0.03	0.01	9.01	0.01	0.01	0.28	0.07	0.16	0.01	0.00	0.03	0.27	0.03	0.01	0.01	0.22	0.29	0.00	42.91	
Dust Entrainment - Unpaved Roads	--	0.20	0.10	78.82	0.06	0.10	3.23	0.77	1.97	0.18	0.01	0.20	4.26	0.20	0.10	0.10	6.54	2.68	0.15	559.59	
Wind Erosion - Unpaved Roads	--	0.03	0.01	11.65	0.01	0.01	0.48	0.11	0.29	0.03	0.00	0.03	0.63	0.03	0.01	0.01	0.97	0.40	0.02	82.70	
Wind Erosion - Active Areas	--	0.42	0.21	132.16	0.13	0.21	4.07	1.08	2.37	0.21	0.03	0.42	3.90	0.42	0.21	0.21	3.22	4.24	0.02	629.10	
Subtotal - North Quarry:	--	0.70	0.35	239.19	0.21	0.35	8.29	2.11	4.93	0.45	0.05	0.70	9.27	0.70	0.35	0.35	11.13	7.84	0.19	1,350.16	
Waste Rock Storage/Infill Areas																					
Material Handling	--	0.02	0.01	4.85	0.00	0.01	0.15	0.04	0.09	0.01	0.00	0.02	0.14	0.02	0.01	0.01	0.12	0.16	0.00	23.10	
Overland Conveyor System	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
Dust Entrainment - Unpaved Roads	--	0.30	0.15	119.46	0.09	0.15	4.90	1.17	2.99	0.27	0.02	0.30	6.45	0.30	0.15	0.15	9.92	4.06	0.23	848.11	
Wind Erosion - Unpaved Roads	--	0.02	0.01	7.88	0.01	0.01	0.32	0.08	0.20	0.02	0.00	0.02	0.43	0.02	0.01	0.01	0.65	0.27	0.01	55.92	
Wind Erosion - Active Areas	--	0.08	0.04	25.33	0.02	0.04	0.78	0.21	0.45	0.04	0.01	0.08	0.75	0.08	0.04	0.04	0.62	0.81	0.00	120.58	
Subtotal - Waste Rock Storage/Infill:	--	0.42	0.21	157.53	0.12	0.21	6.15	1.50	3.73	0.34	0.03	0.42	7.77	0.42	0.21	0.21	11.30	5.30	0.25	1,047.71	
Permanente Creek Reclamation Area																					
Bulldozing, Scraping & Grading	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
Material Handling	--	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.07	
Unpaved Road Dust Entrainment	--	0.00	0.00	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.24	
Wind Erosion - Disturbed Areas	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
Off-Road Diesel Equipment	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
Subtotal - Permanente Creek Recl. Area:	--	0.00	0.00	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.30	
Fuel Storage and Dispensing																					
Fuel Storage	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
Fuel Dispensing	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
Subtotal - Fuel Storage/Dispensing:	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
Combustion Sources																					
Portable Diesel Welders	15.09	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
Off-road Diesel Equipment	25,167.71	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
On-road On-site Vehicles	0.03	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
On-road Off-site Vehicles	6.64	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
Subtotal - Combustion Sources:	25,189.48	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
Proposed Project Totals (pounds/year):	25,189.48	1.12	0.56	396.76	0.34	0.56	14.44	3.60	8.66	0.79	0.08	1.12	17.04	1.12	0.56	0.56	22.44	13.14	0.44	2,398.17	
Net change (pounds/year):	**(12,908.99)**	**(2.56)**	**(1.28)**	**(824.82)**	**(0.77)**	**(1.28)**	**(26.62)**	**(6.96)**	**(15.66)**	**(1.41)**	**(0.20)**	**(2.56)**	**(27.28)**	**(2.56)**	**(1.28)**	**(1.28)**	**(27.18)**	**(26.67)**	**(0.32)**	**(4,208.75)**	
Cancer Potency Weighted Net Emissions Change:																					**DPMeq**
Cancer Potency Factor (mg/kg-day)	1.10E+00		1.20E+01		8.40E+00	1.50E+01				4.20E-02			9.10E-01						5.10E+02		
Compared to Diesel PM	1.00		10.91		7.64	13.64				0.04			0.83						463.64		
Diesel PM Weighted Emissions	**(12,908.99)**		**(13.96)**		**(5.86)**	**(17.44)**				**(0.05)**			**(22.57)**						**(148.28)**		**(13,117.15)**

Note:

1. Methodology for calculating cancer potency weighted net emissions change based on the cancer potency weighted emissions analysis provided in *Final Report: Multiple Air Toxics Exposure Study in the South Coast Air Basin (MATES III*, South Coast Air Quality Management District, September 2008, Chapter 3 (Emissions Inventory Development), available at http://www.aqmd.gov/prdas/matesIII/matesIII.html. Cancer potency values derived from T *echnical Support Document for Cancer Potency Factors*, California Office of Environmental Health Hazard Assessment, May 2009, Appendix A, available at http://www.oehha.ca.gov/air/hot_spots/tsd052909.html. (Compounds for which there are no potency values are not included)
2. In Phase 1, peak emissions from Permanente Creek Reclamation Area activities overlap peak emissions from other proposed activities with respect to TAC emissions associated with material handling and unpaved road dust entrainment.

Table S-4. Comparison of Proposed Project to Baseline Emissions – Hourly Toxic Air Contaminants (pounds/hour).

Activity	Diesel PM	Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Cobalt	Copper	Lead	Mercury	Molybdenum	Nickel	Selenium	Silver	Thallium	Vanadium	Zinc	Hex Chromium	Total Crystalline Silica	
Baseline																					
Quarry Operations																					
Drilling	--	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	
Blasting	--	0.00	0.00	0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.34	
Bulldozing, Scraping & Grading	--	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Material Handling	--	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	
Dust Entrainment - Unpaved Roads	--	0.00	0.00	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.24	
Wind Erosion - Unpaved Roads	--	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04	
Wind Erosion - Disturbed Mine Area	--	0.00	0.00	0.19	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.01	0.00	0.91	
Subtotal - Mining:	--	0.00	0.00	0.31	0.00	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.01	0.01	0.00	1.55	
Waste Rock Land Filling																					
Material Handling	--	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Dust Entrainment - Unpaved Roads	--	0.00	0.00	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.23	
Wind Erosion - Unpaved Roads	--	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	
Subtotal - Land Filling:	--	0.00	0.00	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.26	
Fuel Storage and Dispensing																					
Diesel Storage & Dispensing	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
Gasoline Storage & Dispensing	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
Subtotal - Fuel Storage/Dispensing:	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
Combustion Sources																					
Portable Diesel Welders	0.04	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
Portable Gasoline Welders	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
Off-road Diesel Equipment	8.38	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
On-road On-site Vehicles	0.00	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
On-road Off-site Vehicles	0.02	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
Subtotal - Combustion Sources:	8.45	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
Baseline Totals (pounds/hour):	**8.45**	**0.00**	**0.00**	**0.34**	**0.00**	**0.00**	**0.01**	**0.00**	**0.01**	**0.00**	**0.00**	**0.00**	**0.01**	**0.00**	**0.00**	**0.00**	**0.01**	**0.01**	**0.00**	**1.81**	
Proposed Project - Maximum (Phase 1)																					
North Quarry																					
Drilling	--	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Blasting	--	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	
Bulldozing, Scraping & Grading	--	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Material Handling	--	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	
Dust Entrainment - Unpaved Roads	--	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.08	
Wind Erosion - Unpaved Roads	--	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	
Wind Erosion - Active Areas	--	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.09	
Subtotal - North Quarry:	--	0.00	0.00	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.21	
Waste Rock Storage/Infill Areas																					
Material Handling	--	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Overland Conveyor System	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
Dust Entrainment - Unpaved Roads	--	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.12	
Wind Erosion - Unpaved Roads	--	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	
Wind Erosion - Active Areas	--	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	
Subtotal - Waste Rock Storage/Infill:	--	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.15	
Permanente Creek Reclamation Area																					
Bulldozing, Scraping & Grading	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
Material Handling	--	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Unpaved Road Dust Entrainment	--	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	
Wind Erosion - Disturbed Areas	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
Off-Road Diesel Equipment	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
Subtotal - Permanente Creek Recl. Area:	--	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	
Fuel Storage and Dispensing																					
Fuel Storage	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
Fuel Dispensing	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
Subtotal - Fuel Storage/Dispensing:	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
Combustion Sources																					
Portable Diesel Welders	0.00	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
Off-road Diesel Equipment	6.69	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
On-road On-site Vehicles	0.00	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
On-road Off-site Vehicles	0.00	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
Subtotal - Combustion Sources:	6.69	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
Proposed Project Totals (pounds/hour):	6.69	0.00	0.00	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.36	
Net change (pounds/hour):	**(1.76)**	**(0.00)**	**(0.00)**	**(0.28)**	**(0.00)**	**(0.00)**	**(0.01)**	**(0.00)**	**(0.01)**	**(0.00)**	**(0.00)**	**(0.00)**	**(0.01)**	**(0.00)**	**(0.00)**	**(0.00)**	**(0.01)**	**(0.01)**	**(0.00)**	**(1.45)**	
Cancer Potency Weighted Net Emissions Change																					**DPMeq**
Cancer Potency Factor (mg/kg-day)	1.10E+00		1.20E+01		8.40E+00	1.50E+01				4.20E-02			9.10E-01						5.10E+02		
Compared to Diesel PM	1.00		10.91		7.64	13.64				0.04			0.83						463.64		
Diesel PM Weighted Emissions	**(1.76)**		**(0.00)**		**(0.00)**	**(0.01)**				**(0.00)**			**(0.01)**						**(0.05)**		**(1.83)**

Note:
1. Methodology for calculating cancer potency weighted net emissions change based on the cancer potency weighted emissions analysis provided in *Final Report: Multiple Air Toxics Exposure Study in the South Coast Air Basin (MATES III*, South Coast Air Quality Management District, September 2008, Chapter 3 (Emissions Inventory Development), available at http://www.aqmd.gov/prdas/matesIII/matesIII.html. Cancer potency values derived from T *echnical Support Document for Cancer Potency Factors*, California Office of Environmental Health Hazard Assessment, May 2009, Appendix A, available at http://www.oehha.ca.gov/air/hot_spots/tsd052909.html. (Compounds for which there are no potency values are not included)
2. In Phase 1, peak emissions from Permanente Creek Reclamation Area activities overlap peak emissions from other proposed activities with respect to TAC emissions associated with material handling and unpaved road dust entrainment.

Table S-5. Comparison of Proposed Project to Baseline Emissions – Greenhouse Gases (metric tons/year).

Activity	CO_2	CH_4	N_2O	CO_2e
Baseline				
Quarry Operations				
Drilling	--	--	--	--
Blasting	159.81	--	--	159.81
Bulldozing, Scraping & Grading	--	--	--	--
Material Handling	--	--	--	--
Dust Entrainment - Unpaved Roads	--	--	--	--
Wind Erosion - Unpaved Roads	--	--	--	--
Wind Erosion - Disturbed Mine Area	--	--	--	--
Subtotal - Mining:	159.81	--	--	159.81
Waste Rock Land Filling				
Material Handling	--	--	--	--
Dust Entrainment - Unpaved Roads	--	--	--	--
Wind Erosion - Unpaved Roads	--	--	--	--
Subtotal - Land Filling:	--	--	--	--
Fuel Storage and Dispensing				
Fuel Storage	--	--	--	--
Fuel Dispensing	--	--	--	--
Subtotal - Fuel Storage/Dispensing:	--	--	--	--
Combustion Sources				
Portable Diesel Welders	1.80	0.00	0.00	1.81
Portable Gasoline Welders	0.06	0.00	0.00	0.06
Off-road Diesel Equipment	14,810.69	0.83	0.36	14,941.31
On-road On-site Vehicles	106.09	0.01	0.00	107.16
On-road Off-site Vehicles	50.84	0.00	0.00	51.40
Subtotal - Combustion Sources:	14,969.47	0.85	0.37	15,101.73
Indirect GHG Emissions				
Electricity Use	578.05	0.02	0.01	580.19
Baseline Totals (metric tons/year):	**15,707.33**	**0.87**	**0.37**	**15,841.74**
Proposed Project				
Maximum: Phase 1				
North Quarry				
Drilling	--	--	--	--
Blasting	424.11	--	--	424.11
Bulldozing, Scraping & Grading	--	--	--	--
Material Handling	--	--	--	--
Dust Entrainment - Unpaved Roads	--	--	--	--
Wind Erosion - Unpaved Roads	--	--	--	--
Wind Erosion - Active Areas	--	--	--	--
Subtotal - North Quarry:	424.11	--	--	424.11

Table S-5. Comparison of Proposed Project to Baseline Emissions – Greenhouse Gases (metric tons/year).

Activity	CO_2	CH_4	N_2O	CO_2e
Waste Rock Storage/Infill Areas				
Material Handling	--	--	--	--
Overland Conveyor System	--	--	--	--
Dust Entrainment - Unpaved Roads	--	--	--	--
Wind Erosion - Unpaved Roads	--	--	--	--
Wind Erosion - Active Areas	--	--	--	--
Subtotal - Waste Rock Storage/Infill:	--	--	--	--
Fuel Storage and Dispensing				
Fuel Storage	--	--	--	--
Fuel Dispensing	--	--	--	--
Subtotal - Fuel Storage/Dispensing:	--	--	--	--
Combustion Sources				
Portable Diesel Welders	4.44	0.00	0.00	4.48
Off-road Diesel Equipment	19,430.78	1.09	0.48	19,602.15
On-road On-site Vehicles	80.44	0.01	0.00	81.17
On-road Off-site Vehicles	69.09	0.00	0.00	69.74
Subtotal - Combustion Sources:	19,584.76	1.10	0.48	19,757.55
Indirect GHG Emissions				
Electricity Use	578.05	0.02	0.01	580.19
Proposed Project Totals (metric tons/yr):	**20,586.92**	**1.13**	**0.49**	**20,761.85**
Net change (metric tons/year):	**4,879.59**	**0.26**	**0.11**	**4,920.11**
CEQA Significance Threshold:				
BAAQMD (metric tons/year)				10,000.00
Exceeds BAAQMD Threshold?				**No**

Note: Peak emissions from Permanente Creek Reclamation Area activities do not overlap peak emissions from other proposed project activities with respect to greenhouse gases in either Phase 1 or Phase 2.

Baseline Air Quality Emissions

Under CEQA, a lead agency will ordinarily compare the potential environmental impacts associated with a proposed project with existing conditions to determine whether those impacts are significant. The existing conditions are usually referred to as a project's baseline. Generally, the baseline is established as the physical conditions existing at the time the environmental review process begins.

In this case, the proposed project involves an existing quarry operation. Such operations are characterized by fluctuating production and associated air emissions, in response to continually changing market demands. An inventory that only considers conditions existing at the time that the environmental review commences will tend to over-report or under-report actual conditions. Accordingly, consistent with the Project Description, this baseline technical air quality assessment considers the 11-year period from January 1, 2000 to December 31, 2010, which is representative of the existing conditions at the Quarry because it includes periods of relatively high production as well as relatively low production, in response to changing market demands. Using data provided by Lehigh, ALG prepared baseline estimates of criteria pollutant, TAC, and GHG emissions associated with quarry operations for this 11-year baseline period. The following operations and activities are included in the baseline emissions estimates:

- Quarry operations
- Waste rock material storage (land filling)
- Associated mobile sources and portable equipment
- Indirect greenhouse gas emissions associated with electricity use

Consistent with the Project Description, emissions associated with operation of Lehigh's adjacent cement manufacturing facility are not included in the baseline analysis since the cement plant is a separately-permitted industrial use, and because the project will not affect the cement plant's use permit, operating permits or regulatory status. For reference, cement plant emissions of criteria pollutants and TACs are detailed in the *Comprehensive Emission Inventory Report (2008 CEIR) for Lehigh Southwest Cement Company's Cupertino Facility for 2008*, dated March 27, 2009, which has been submitted to the BAAQMD.

Emission factors used to quantify criteria pollutants, TACs and GHG emission estimates are based on data available from generally accepted public sources, specifically:

- U.S. Environmental Protection Agency, *Compilation of Air Pollutant Emission Factors* (Document No. AP-42).
- Mojave Desert Air Quality Management District, *Emissions Inventory Guidance – Mineral Handling and Processing Industries*, April 2000.
- California Air Resources Board, *OFFROAD2007 (December 15, 2006 Release)* Emissions Model, for non-road vehicles and equipment.
- California Air Resources Board, *EMFAC2007, Version 2.3* Emissions Model, for on-road vehicles.
- The Climate Registry, *General Reporting Protocol, Version 1.1*, May 2008.
- Australian Greenhouse Office, *AGO Factors and Methods Workbook*, December 2006.

Specific factors used to quantify emissions are referenced individually in each of the spreadsheets that are included in this technical assessment. In addition, ALG used TAC sampling analysis, operational, and other data from the *2008 CEIR*, which are also specifically referenced in the appendices (see Appendix A).

ALG based its calculation of baseline emissions from motor vehicles assuming emission factors for calendar year 2010. For off-road diesel equipment, ALG utilized zero-hour factors and deterioration rates from the California Air Resources Board's OFFROAD2007 emissions model to estimate emissions for each vehicle for calendar year 2010, accounting for vehicle age, horsepower, and baseline period use. Calculations assume that off-road diesel emission factors deteriorate only up to a maximum of 12,000 hours per the document, *Staff Report: Initial Statement of Reasons for Proposed Rulemaking – Proposed Amendments to the Regulation for In-use Off-road Diesel-fueled Fleets and the Off-road Large Spark-ignition Fleet Requirements*, California Air Resources Board, October 2010, Appendix D (OSM and Summary of Off-road Emissions Inventory Update), pages D-27 to D-28.

With respect to wind erosion, ALG updated the meteorological data utilized in the 2008 CEIR to reflect data collected at Lehigh's own meteorological station during 2008 and to prepare factors representative of topsoil wind erosion. An independent quality assurance audit conducted April 29, 2008, demonstrated that the station satisfied U.S. Environmental Protection Agency and BAAQMD quality assurance criteria for meteorological data. As a result of the update to the meteorological data, wind erosion emission factors associated with quarry operations, waste disposal/infill, and unpaved roads increased relative to those applied in the 2008 CEIR.

As previously mentioned, production and usage data were obtained from Lehigh. In general, data presented in internal production reports and annual reports sent to agencies (e.g., BAAQMD annual reports, SMARA reports filed with the County of Santa Clara, etc.) were averaged over an 11-year period (2000-2010). Summaries of criteria pollutant, TAC, and GHG emissions are presented in the following sections. Detailed tables documenting how emissions were calculated from each emission source category are presented in Appendix A.

Criteria Pollutant Emissions

Tables 1 and 2 present summaries of baseline annual and hourly criteria pollutant emissions (in tons per year and pounds per day, respectively) associated with operation of Lehigh's existing North Quarry.

Toxic Air Contaminant Emissions

Tables 3 and 4 present summaries of baseline annual and hourly TACs associated with operation of the existing North Quarry.

Greenhouse Gas Emissions

Table 5 presents a summary of baseline annual emissions, in metric tons per year, including direct GHG emissions associated with use of explosives, operation of combustion equipment at the facility and indirect emissions associated with electric power and water use. Metric tons are used as this is consistent with AB32 and other GHG initiatives, which express emissions data in metric tons of carbon dioxide equivalent (CO_2e). Other pollutants (i.e., TACs and criteria pollutants) are expressed in pounds and tons.

Emission Sources and Activities

Emissions are calculated for each specific emission source within an applicable area of the facility. Following is a summary of emission sources and activities included in the baseline emissions technical analysis:

- Quarry Operations – This category encompasses the following emission sources associated with operation of the existing Quarry:
    - Drilling of charge holes to allow placement of explosives for blasting
    - Blasting to fracture and loosen ore, overburden and substrate through the use of explosives
    - Bulldozing, scraping and grading of overburden, waste material, and limestone using heavy equipment such as bulldozers, graders, and scrapers. Note that this does not include the loading and dumping of materials into transport trucks.
    - Material handling, including loading and dumping of materials into transport trucks
    - Dust entrainment due to vehicular travel on unpaved roads
    - Wind erosion associated with actively disturbed unpaved areas, including unpaved roads and actively disturbed mine areas within the existing Quarry. (Note that for the baseline, all non-road disturbed areas are allocated to the existing Quarry.) The wind erosion emission calculation procedure outlined in AP-42 Section 13.2.5 (Industrial Wind Erosion) is based on research conducted at coal mining and storage facilities. The calculation procedure is sensitive to the threshold friction velocity of the material stored[8]. ALG selected a threshold friction velocity value (0.62 meters per second) for scraper tracks on a lightly crusted coal pile as a reasonable worst case assumption, given the range of values presented in AP-42 Section 13.2.5 (from 0.54 meters per second[9] to 1.33 meters per second[10]). This methodology is also consistent with the technical approach used in the CEIR.

- Waste Rock Land Filling – This category encompasses the following emission sources associated with landfilling activities within the facility's waste rock storage areas:
    - Material handling, including loading and dumping of waste materials
    - Bulldozing, scraping and grading of waste material using heavy equipment such as bulldozers, graders, and scrapers
    - Dust entrainment dust due to vehicular travel on unpaved roads
    - Wind erosion associated with actively disturbed unpaved roads

- Fuel Storage and Dispensing – This category reflects that portion of emissions associated with operation of diesel and gasoline storage tanks attributable to operation of the existing Quarry

- Combustion Sources – This category encompasses operation of the following equipment in conjunction with operation of the existing Quarry:
    - Portable Internal Combustion Engines (diesel- and gasoline-fueled welders)
    - Off-road diesel equipment (bore/drill rigs, crawler-tractors, excavators, graders, off-highway trucks, rubber-tired dozers, rubber-tired loaders, water trucks, and portable light towers)
    - On-road, on-site vehicles (work trucks)
    - On-road, off-site vehicles (fuel transport trucks and employee commute vehicles)

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8 Essentially, when observed wind velocity at a site is greater than the threshold friction velocity for a given material, wind erosion of that material is expected. When the observed wind velocity is less than or equal to the threshold friction velocity wind erosion is not expected. Generally speaking, a lower threshold wind velocity will result in greater wind erosion, while a higher threshold wind velocity will result in less wind erosion.

9 For fine coal dust on a concrete pad at an eastern power plant.

10 For scoria (roadbed material) at a western surface coal mine.

Toxic Air Contaminant Emissions

- Particulate Matter Sources – Toxic air contaminant emissions associated with drilling and blasting; bulldozing, scraping and grading; material handling; dust entrainment from unpaved roads; and wind erosion are based on analytical results from sampling conducted at the Permanente facility in November 2008. These data are documented in the *2008 CEIR*, previously cited. Notably, emission estimates of naturally occurring asbestos were not prepared, as prior studies at the site, which were required by the BAAQMD and the ARB, did not detect naturally occurring asbestos at the Quarry site. (See *Permanente Limestone & Aggregate Quarry, Cupertino, Santa Clara County, California, Geologic Review – Naturally Occurring Asbestos*, Geocon Consultants, Inc., December 11, 2007.)

- Combustion & Fuel Sources – To quantify toxic air contaminant emissions for diesel-fueled vehicles and equipment (off-road diesel equipment, portable ICEs, and on-road vehicles), ALG quantified the diesel exhaust particulate matter. This is consistent with the ARB toxic air contaminant program for diesel fueled equipment (e.g., off-road diesel, on-road heavy duty diesel, and portable diesel greater than 50 HP). Given the small contribution of reactive organic gases from gasoline-fueled vehicles and equipment (less than 0.2 tons per year), ALG determined that gasoline fueled vehicles and equipment would have a minimal contribution to the facility's baseline TAC emissions. This is because TAC emissions constitute a very small portion of total reactive organic gas emissions, which by itself is insignificant.

Greenhouse Gas Emissions

- Direct GHG Sources – This category includes combustion equipment operated on-site, specifically both on-road and off-road equipment. Emission estimates are provided for CO_2, CH_4, and NO_2, and expressed as CO_2e, consistent with ARB GHG emission estimating protocols.

- Indirect GHG Sources – This category includes indirect, off-site, remote sources of GHG emissions associated with use of electricity for quarry dewatering and quarry office operations.

Table 1. Baseline Criteria Pollutants - Annual Emissions (tons/year).

Activity	PM_{10}	$PM_{2.5}$	CO	NOx	ROG	SOx
Quarry Operations						
Drilling	1.87	1.87	--	--	--	--
Blasting	3.78	0.22	35.45	9.00	--	1.06
Bulldozing, Scraping & Grading	0.59	0.09	--	--	--	--
Material Handling	3.23	0.48	--	--	--	--
Dust Entrainment - Unpaved Roads	75.47	7.55	--	--	--	--
Wind Erosion - Unpaved Roads	11.70	1.75	--	--	--	--
Wind Erosion - Disturbed Mine Area	554.96	83.24	--	--	--	--
Waste Rock Land Filling						
Material Handling	1.53	0.23	--	--	--	--
Dust Entrainment - Unpaved Roads	74.91	7.49	--	--	--	--
Wind Erosion - Unpaved Roads	7.26	1.09	--	--	--	--
Fuel Storage and Dispensing						
Fuel Storage	--	--	--	--	0.06	--
Fuel Dispensing	--	--	--	--	0.01	--
Combustion Sources						
Portable Diesel Welders	0.00	0.00	0.01	0.04	0.00	0.00
Portable Gasoline Welders	0.00	0.00	0.00	0.00	0.00	0.00
Off-road Diesel Equipment	19.04	17.58	250.86	314.77	23.47	0.16
On-road On-site Vehicles	0.01	0.01	0.74	0.10	0.06	0.00
On-road Off-site Vehicles	0.01	0.00	0.50	0.09	0.05	0.00
Dust Entrainment - Paved Roads	0.04	0.01	--	--	--	--
Totals (tons/year):	754.40	121.62	287.57	324.01	23.67	1.22

Table 2. Baseline Criteria Pollutants - Daily Emissions (pounds/day).

Activity	PM_{10}	$PM_{2.5}$	CO	NOx	ROG	SOx
Quarry Operations						
Drilling	45.70	45.70	--	--	--	--
Blasting	92.18	5.32	864.75	219.41	--	25.81
Bulldozing, Scraping & Grading	4.13	0.62	--	--	--	--
Material Handling	22.75	3.41	--	--	--	--
Dust Entrainment - Unpaved Roads	531.45	53.15	--	--	--	--
Wind Erosion - Unpaved Roads	82.38	12.36	--	--	--	--
Wind Erosion - Disturbed Mine Area	3,908.20	586.23	--	--	--	--
Waste Rock Land Filling						
Material Handling	10.78	1.62	--	--	--	--
Dust Entrainment - Unpaved Roads	527.55	52.76	--	--	--	--
Wind Erosion - Unpaved Roads	51.12	7.67	--	--	--	--
Fuel Storage and Dispensing						
Fuel Storage	--	--	--	--	0.52	--
Fuel Dispensing	--	--	--	--	0.11	--
Combustion Sources						
Portable Diesel Welders	0.13	0.13	0.38	1.78	0.14	0.12
Portable Gasoline Welders	0.00	0.00	0.04	0.06	0.12	0.00
Off-road Diesel Equipment	134.12	123.78	1,766.64	2,216.68	165.31	1.09
On-road On-site Vehicles	0.06	0.04	5.35	0.71	0.45	0.01
On-road Off-site Vehicles	0.06	0.04	3.61	1.01	0.41	0.00
Dust Entrainment - Paved Roads	0.31	0.05	--	--	--	--
Totals (pounds/day):	5,410.92	892.85	2,640.78	2,439.65	167.06	27.04

Table 3. Baseline Toxic Air Contaminants - Annual Emissions (pounds/year).

Activity	Diesel PM	Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Cobalt	Copper	Lead	Mercury	Molybdenum	Nickel	Selenium	Silver	Thallium	Vanadium	Zinc	Hex Chromium	Total Crystalline Silica
<u>Quarry Operations</u>																				
Drilling	--	0.01	0.00	2.92	0.00	0.00	0.09	0.02	0.05	0.00	0.00	0.01	0.09	0.01	0.00	0.00	0.07	0.09	0.00	13.91
Blasting	--	0.02	0.01	5.90	0.01	0.01	0.18	0.05	0.11	0.01	0.00	0.02	0.17	0.02	0.01	0.01	0.14	0.19	0.00	28.07
Bulldozing, Scraping & Grading	--	0.00	0.00	0.92	0.00	0.00	0.03	0.01	0.02	0.00	0.00	0.00	0.03	0.00	0.00	0.00	0.02	0.03	0.00	4.36
Material Handling	--	0.02	0.01	5.04	0.00	0.01	0.16	0.04	0.09	0.01	0.00	0.02	0.15	0.02	0.01	0.01	0.12	0.16	0.00	23.99
Dust Entrainment - Unpaved Roads	--	0.38	0.19	150.93	0.11	0.19	6.19	1.48	3.77	0.35	0.02	0.38	8.15	0.38	0.19	0.19	12.53	5.13	0.29	1,071.50
Wind Erosion - Unpaved Roads	--	0.06	0.03	23.40	0.02	0.03	0.96	0.23	0.58	0.05	0.00	0.06	1.26	0.06	0.03	0.03	1.94	0.80	0.04	166.09
Wind Erosion - Disturbed Mine Area	--	2.77	1.39	865.75	0.83	1.39	26.64	7.10	15.54	1.39	0.22	2.77	25.53	2.77	1.39	1.39	21.09	27.75	0.11	4,120.95
<u>Waste Rock Land Filling</u>																				
Material Handling	--	0.01	0.00	2.39	0.00	0.00	0.07	0.02	0.04	0.00	0.00	0.01	0.07	0.01	0.00	0.00	0.06	0.08	0.00	11.36
Dust Entrainment - Unpaved Roads	--	0.37	0.19	149.82	0.11	0.19	6.14	1.47	3.75	0.34	0.02	0.37	8.09	0.37	0.19	0.19	12.44	5.09	0.28	1,063.64
Wind Erosion - Unpaved Roads	--	0.04	0.02	14.52	0.01	0.02	0.60	0.14	0.36	0.03	0.00	0.04	0.78	0.04	0.02	0.02	1.21	0.49	0.03	103.07
<u>Fuel Storage and Dispensing</u>																				
Fuel Storage	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Fuel Dispensing	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
<u>Combustion Sources</u>																				
Portable Diesel Welders	6.11	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Portable Gasoline Welders	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Off-road Diesel Equipment	38,088.83	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
On-road On-site Vehicles	0.05	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
On-road Off-site Vehicles	3.47	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Totals (pounds/year):	38,098.46	3.68	1.84	1,221.58	1.10	1.84	41.05	10.56	24.31	2.19	0.27	3.68	44.32	3.68	1.84	1.84	49.62	39.81	0.76	6,606.93

Table 4. Baseline Toxic Air Contaminants - Hourly Emissions (pounds/hour).

Activity	Diesel PM	Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Cobalt	Copper	Lead	Mercury	Molybdenum	Nickel	Selenium	Silver	Thallium	Vanadium	Zinc	Hex Chromium	Total Crystalline Silica
Quarry Operations																				
Drilling	--	1.43E-05	7.14E-06	4.46E-03	4.28E-06	7.14E-06	1.37E-04	3.66E-05	8.00E-05	7.14E-06	1.14E-06	1.43E-05	1.31E-04	1.43E-05	7.14E-06	7.14E-06	1.09E-04	1.43E-04	5.71E-07	2.12E-02
Blasting	--	2.30E-04	1.15E-04	7.19E-02	6.91E-05	1.15E-04	2.21E-03	5.90E-04	1.29E-03	1.15E-04	1.84E-05	2.30E-04	2.12E-03	2.30E-04	1.15E-04	1.15E-04	1.75E-03	2.30E-03	9.22E-06	3.42E-01
Bulldozing, Scraping & Grading	--	6.46E-07	3.23E-07	2.02E-04	1.94E-07	3.23E-07	6.20E-06	1.65E-06	3.62E-06	3.23E-07	5.17E-08	6.46E-07	5.94E-06	6.46E-07	3.23E-07	3.23E-07	4.91E-06	6.46E-06	2.58E-08	9.59E-04
Material Handling	--	3.55E-06	1.78E-06	1.11E-03	1.07E-06	1.78E-06	3.41E-05	9.10E-06	1.99E-05	1.78E-06	2.84E-07	3.55E-06	3.27E-05	3.55E-06	1.78E-06	1.78E-06	2.70E-05	3.55E-05	1.42E-07	5.28E-03
Dust Entrainment - Unpaved Roads	--	8.30E-05	4.15E-05	3.32E-02	2.49E-05	4.15E-05	1.36E-03	3.26E-04	8.30E-04	7.64E-05	4.65E-06	8.30E-05	1.79E-03	8.30E-05	4.15E-05	4.15E-05	2.76E-03	1.13E-03	6.31E-05	2.36E-01
Wind Erosion - Unpaved Roads	--	1.29E-05	6.44E-06	5.15E-03	3.86E-06	6.44E-06	2.11E-04	5.05E-05	1.29E-04	1.18E-05	7.21E-07	1.29E-05	2.78E-04	1.29E-05	6.44E-06	6.44E-06	4.27E-04	1.75E-04	9.78E-06	3.66E-02
Wind Erosion - Disturbed Mine Area	--	6.11E-04	3.05E-04	1.91E-01	1.83E-04	3.05E-04	5.86E-03	1.56E-03	3.42E-03	3.05E-04	4.89E-05	6.11E-04	5.62E-03	6.11E-04	3.05E-04	3.05E-04	4.64E-03	6.11E-03	2.44E-05	9.07E-01
Waste Rock Land Filling																				
Material Handling	--	1.68E-06	8.42E-07	5.25E-04	5.05E-07	8.42E-07	1.62E-05	4.31E-06	9.43E-06	8.42E-07	1.35E-07	1.68E-06	1.55E-05	1.68E-06	8.42E-07	8.42E-07	1.28E-05	1.68E-05	6.74E-08	2.50E-03
Dust Entrainment - Unpaved Roads	--	8.24E-05	4.12E-05	3.30E-02	2.47E-05	4.12E-05	1.35E-03	3.23E-04	8.24E-04	7.58E-05	4.62E-06	8.24E-05	1.78E-03	8.24E-05	4.12E-05	4.12E-05	2.74E-03	1.12E-03	6.26E-05	2.34E-01
Wind Erosion - Unpaved Roads	--	7.99E-06	3.99E-06	3.20E-03	2.40E-06	3.99E-06	1.31E-04	3.13E-05	7.99E-05	7.35E-06	4.47E-07	7.99E-06	1.73E-04	7.99E-06	3.99E-06	3.99E-06	2.65E-04	1.09E-04	6.07E-06	2.27E-02
Fuel Storage and Dispensing																				
Fuel Storage	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Fuel Dispensing	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Combustion Sources																				
Portable Diesel Welders	0.04	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Portable Gasoline Welders	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Off-road Diesel Equipment	8.38	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
On-road On-site Vehicles	0.00	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
On-road Off-site Vehicles	0.02	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Totals (pounds/hour):	8.45	0.00	0.00	0.34	0.00	0.00	0.01	0.00	0.01	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.01	0.01	0.00	1.81

Table 5. Baseline Greenhouse Gases - Annual Emissions (metric tons/year).

Activity	CO_2	CH_4	N_2O	CO_2e
Quarry Operations				
Drilling	--	--	--	--
Blasting	159.81	--	--	159.81
Bulldozing, Scraping & Grading	--	--	--	--
Material Handling	--	--	--	--
Dust Entrainment - Unpaved Roads	--	--	--	--
Wind Erosion - Unpaved Roads	--	--	--	--
Wind Erosion - Disturbed Mine Area	--	--	--	--
Waste Rock Land Filling				
Material Handling	--	--	--	--
Dust Entrainment - Unpaved Roads	--	--	--	--
Wind Erosion - Unpaved Roads	--	--	--	--
Fuel Storage and Dispensing				
Fuel Storage	--	--	--	--
Fuel Dispensing	--	--	--	--
Combustion Sources				
Portable Diesel Welders	1.80	0.00	0.00	1.81
Portable Gasoline Welders	0.06	0.00	0.00	0.06
Off-road Diesel Equipment	14,810.69	0.83	0.36	14,941.31
On-road On-site Vehicles	106.09	0.01	0.00	107.16
On-road Off-site Vehicles	50.84	0.00	0.00	51.40
Indirect GHG Emissions				
Electricity Use	578.05	0.02	0.01	580.19
Totals (metric tons/year):	15,707.33	0.87	0.37	15,841.74

Proposed Project Air Quality Emissions

To evaluate the proposed project's impact on air quality, ALG prepared estimates of anticipated criteria pollutant emissions, TACs, and GHGs associated with each of the project phases. The following activities are included in the proposed project emission estimates for each phase:

- Continued operation of the existing Quarry during Phase 1 (a conservative approach because the Quarry is not seeking approval to continue these mining operations)
- Operation of the waste rock material storage areas associated with the Quarry
- Mobile sources and portable equipment associated with quarry operations
- Indirect greenhouse gas emissions associated with electricity and water use
- Reclamation of the existing North Quarry, waste rock material storage areas, and other disturbed areas in the project area, including the Permanente Creek Reclamation Area

Emissions associated with the following activities are not included in this air quality analysis:

- Continued operation of the adjacent cement manufacturing facility,
- Continued operation of the existing primary and secondary crushers, and
- Continued operation of the existing rock plant

As discussed above, the cement plant is not included since the facility is a separately-permitted industrial use, is not considered part of this project, and is not be affected by the proposed amendment to the 1985 reclamation plan. Similarly, the primary and secondary crushers and the rock plant have not been included because they could continue to operate.

The emission factors applied for the project analysis are from the same sources as applied in the baseline analysis and derive from the same generally accepted and publicly available sources. For a list of specific references, see the Baseline Air Quality Emissions section. Specific factors used to quantify emissions are referenced individually in each of the spreadsheets included in this technical assessment. Consistent with the baseline analysis, ALG used TAC sampling analysis, operational, and other data from the 2008 CEIR[11], which are also specifically referenced in the appendices.

ALG based its calculation of emissions from motor vehicles assuming emission factors for calendar year 2012, the anticipated first year of operation under the proposed project. For off-road diesel equipment, ALG utilized zero-hour factors and deterioration rates from the California Air Resources Board's OFFROAD2007 emissions model to estimate emissions for each vehicle for the peak year of each phase (in terms of total horsepower-hours). As with the baseline analysis, proposed project off-road diesel emission calculations assume that off-road diesel emission factors deteriorate only up to a maximum of 12,000 hours. This is consistent with the document, *Staff Report: Initial Statement of Reasons for Proposed Rulemaking – Proposed Amendments to the Regulation for In-use Off-road Diesel-fueled Fleets and the Off-road Large Spark-ignition Fleet Requirements*, California Air Resources Board, October 2010, Appendix D (OSM and Summary of Off-road Emissions Inventory Update), pages D-27 to D-28. With respect to wind erosion, all wind data were managed consistent with the baseline analysis, and relies on on-site meteorological data.

[11] *Comprehensive Emission Inventory Report (CEIR) for Lehigh Southwest Cement Company's Cupertino Facility for 2008* (2008 CEIR), prepared for Lehigh Southwest Cement Company, March 2009.

ALG prepared estimates of criteria pollutant, TAC, and GHG emissions for each of the project phases based on the maximum level of annual activity expected to occur during each phase. Emission estimates for each of the phases are based on the following activity data provided by Lehigh, which are summarized in Appendix D:

- Maximum anticipated annual production levels of limestone and waste rock
- Drilling and blasting necessary to support maximum anticipated production
- Estimated acres of actively disturbed areas (i.e., Quarry and waste storage/infill areas) for each year
- Limestone/rock/topsoil on-site haul distances for each year
- Annual hours of activity of off-road diesel-fired equipment, by equipment type, to support maximum anticipated production
- Anticipated number of employees to support maximum anticipated production

Criteria Pollutant Emissions. Tables 6 and 7 present summaries of annual and hourly criteria pollutant emissions (in tons per year and pounds per day, respectively) anticipated from Lehigh's proposed project.

Toxic Air Contaminant Emissions. Tables 8 and 9 present summaries of annual and hourly TACs (in pounds per year and pounds per hour, respectively) anticipated from operation of Lehigh's proposed project.

Greenhouse Gas Emissions. Table 10 presents a summary of annual GHG emissions (in metric tons per year) anticipated from operation of Lehigh's proposed project, and are calculated and presented consistent with the baseline analysis.

Appendix C documents each emission calculation by process/pollutant. Appendix D provides the supporting documentation (activity data and emission factors) that are relied upon to perform these calculations. (Emission estimates for Permanente Creek Reclamation Area activities are separately documented in Appendix E.)

Proposed Project Emission Sources and Activities

Emissions are calculated for each specific emission source associated with proposed project components. Following is a summary of emission sources and activities included in the proposed project air quality emissions analysis:

- Quarry Operations – This category encompasses the following emission sources associated with continued operation and reclamation of the existing Quarry:
    - Drilling of charge holes to allow placement of explosives for blasting
    - Blasting to fracture and loosen ore, overburden and substrate through the use of explosives
    - Bulldozing, scraping, and grading of limestone and waste rock
    - Loading and dumping of materials into transport trucks during the excavation phase, and dumping of materials from transport trucks and the overland conveyor system during the quarry reclamation phase (referred to as material handling)
    - Dust entrainment due to vehicle travel on unpaved roads in the vicinity of the Quarry
    - Wind erosion associated with actively disturbed unpaved areas, including unpaved roads in the vicinity of the Quarry and active quarry operating and reclamation areas within the Quarry. The wind erosion emission calculation

procedure outlined in AP-42 Section 13.2.5 (Industrial Wind Erosion) is based on research conducted at coal mining and storage facilities. The calculation procedure is sensitive to the threshold friction velocity of the material stored[12]. For active quarry operating areas, ALG selected a threshold friction velocity value for scraper tracks on a lightly crusted coal pile (0.62 meters per second) as a reasonable worst case assumption, given the range of values presented in AP-42 Section 13.2.5 (from 0.54 meters per second[13] to 1.33 meters per second[14]). This methodology is also consistent with the technical approach used in the CEIR, although ALG has used wind data from the onsite meteorological station. For active topsoil removal and reclamation areas, ALG applied the AP-42 threshold friction velocity value for overburden (1.02 meters per second).

- Waste Rock Storage/Infill Areas – This category encompasses the following emission sources associated with operation and reclamation of the West Material Storage Area (WMSA) and East Material Storage Area (EMSA):
  - Material handling associated with waste rock from the Quarry, reclamation of the WMSA and EMSA, and transport of waste rock for quarry reclamation
  - Bulldozing of waste rock in the WMSA to reclaim the North Quarry (this is accounted for in the bulldozing, scraping, and grading activity for quarry operations)
  - Operation of an overland conveyor system to transport waste rock from the WMSA into the North Quarry for reclamation of the Quarry. Lehigh will utilize a Grizzly screen to separate material that can be transported via the conveyor system from larger material that must be transported by truck. Lehigh expects that approximately 75% of the material will be transported by conveyor, and the remainder will be transported by truck.
  - Associated dust entrainment due to vehicle travel on unpaved roads in the vicinity of the WMSA and EMSA
  - Wind erosion associated with actively disturbed unpaved areas, including unpaved roads in the vicinity of waste rock material storage areas, active waste rock material storage/infill areas, and active reclamation areas within the WMSA and EMSA

- Permanente Creek Reclamation Area – Peak particulate matter and TAC emissions from Permanente Creek Reclamation Area activities overlap peak emissions from other proposed project activities with respect to material handling and unpaved road dust entrainment in Phase 1, and disturbed area wind erosion in Phase 2. (See Table D-1 for additional information on project activity overlap.) Therefore, Tables 6 through 9 reflect particulate matter and TAC emissions associated with the Permanente Creek Reclamation Area for these overlapped activities. (There is no overlap with respect to GHG emissions.) Incremental emissions increases associated with overlapped activities do not affect significance relative to overall proposed project emission totals. Additional documentation on Permanente Creek Reclamation Area emissions is provided in Appendix E.

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12 Briefly, when observed wind velocity at a site is greater than the threshold friction velocity for a given material, wind erosion of that material is expected. When the observed wind velocity is less than or equal to the threshold friction velocity wind erosion is not expected. Generally, a lower threshold wind velocity will result in greater wind erosion, while a higher threshold wind velocity will result in less wind erosion.
13 For fine coal dust on a concrete pad at an eastern power plant.
14 For scoria (roadbed material) at a western surface coal mine.

- Permanente Creek Long-Term Restoration (Phase 3) – As noted previously, this report does not provide a comprehensive evaluation of emissions associated with Phase 3 of the project. This is because emissions from material handling, dust entrainment, wind erosion, off-road equipment, on-road vehicles, and related activities during Phase 3 will be substantially lower than in either Phase 1 or Phase 2. Therefore, Phase 3 emissions will not affect this report's analysis of peak emissions expected to occur during Phases 1 and 2. This report does include, however, an evaluation of emissions from Permanente Creek long-term restoration activities expected to occur during Phase 3 of the project. As part of the long-term restoration effort, Lehigh anticipates removing approximately 18,000 cubic yards of fill materials and stabilizing slopes along Permanente Creek. Work is expected to occur in two areas: a 1.8 acre upper area south of the North Quarry in the vicinity of current Pond 4, and a 1.2 acre lower area west of the current surge pile. Criteria, toxic air contaminant, and GHG emission estimates associated with this work, assumed to occur during 2026, are presented in Appendix F to this report.

- Fuel Storage and Dispensing – This category reflects the portion of emissions associated with operation of diesel and gasoline storage tanks attributable to operation of the proposed project.

- Combustion Sources – This category encompasses operation of the following equipment in conjunction with operation of Lehigh's proposed project:
  - Portable diesel-fueled welders
  - Off-road diesel equipment (bore/drill rigs, rubber-tired loaders, off-highway trucks, crawler-tractors, rubber-tired dozers, graders, water trucks, excavators, hydroseeders, and portable light towers)
  - On-road, on-site vehicles (work trucks)
  - On-road, off-site vehicles (fuel transport trucks and employee commute vehicles)

- Reclamation Activities – These activities encompass reclamation of the North Quarry, waste rock storage and infill areas, and other disturbed areas as identified in the proposed project. Emissions associated with reclamation activities are included within the emission calculations for material handling, dust entrainment, wind erosion, and combustion sources for each of the different project areas. Activities related to reclamation include:
  - Material handling associated with transporting topsoil and mulched green waste material from outside each area to be reclaimed (if necessary), and moving topsoil within an area as part of concurrent reclamation activities
  - Dust entrainment due to vehicle travel on unpaved roads
  - Wind erosion associated with active reclamation within each of the areas to be reclaimed
  - Combustion equipment operation due to topsoil transport for each of the reclamation areas, topsoil handling, topsoil mixing with the waste rock or other subsurface materials, and hydroseeding activities.

Proposed Project Toxic Air Contaminant Emissions

- Particulate Matter Sources – Toxic air contaminant emissions associated with drilling and blasting; bulldozing, scraping and grading; material handling; dust entrainment from unpaved roads; and wind erosion are based on analytical results from sampling conducted at the Permanente facility in November 2008. These data are documented in the *2008 CEIR*, previously cited. Consistent with the baseline analysis, emission estimates of naturally occurring asbestos were not prepared, as prior studies at the site, which were required by the BAAQMD and the ARB, did not detect naturally occurring asbestos at the Quarry site. (See *Permanente Limestone & Aggregate Quarry, Cupertino, Santa Clara County, California, Geologic Review – Naturally Occurring Asbestos*, Geocon Consultants, Inc., December 11, 2007.)

- Combustion & Fuel Sources – To quantify toxic air contaminant emissions for diesel-fueled vehicles and equipment (off-road diesel equipment, portable internal combustion engines, and on-road vehicles), ALG quantified exhaust diesel particulate matter emissions. This calculation is consistent with the methodology used to calculate baseline emissions.

Proposed Project Greenhouse Gas Emissions

- Direct GHG Sources – This category includes emissions from combustion equipment operated on-site, specifically both on-road and off-road equipment. Emission estimates are provided for CO_2, CH_4, and N_2O, consistent with ARB GHG emission estimating protocols.

- Indirect GHG Sources – This category includes indirect, off-site, remote sources of GHG emissions associated with anticipated use of electricity for quarry dewatering, operation of the overland conveyor system, purchased water, and quarry office operations.

Table 6. Proposed Project Criteria Pollutants - Annual Emissions (tons/year).

Phase	Component	PM_{10}	$PM_{2.5}$	CO	NOx	ROG	SOx
1	North Quarry	140.56	21.92	94.09	23.87	--	2.81
	Waste Rock Storage/Infill Areas	83.02	9.47	--	--	--	--
	Permanente Creek Reclamation Area	0.03	0.00	--	--	--	--
	Fuel Storage and Dispensing	--	--	--	--	0.08	--
	Combustion Sources	13.03	11.70	128.07	277.45	18.26	0.21
	Total - Phase 1	236.64	43.08	222.17	301.32	18.34	3.02
2	North Quarry	98.81	14.39	--	--	--	--
	Waste Rock Storage/Infill Areas	186.02	26.24	--	--	--	--
	Permanente Creek Reclamation Area	0.05	0.01	--	--	--	--
	Fuel Storage and Dispensing	--	--	--	--	0.05	--
	Combustion Sources	5.67	4.74	39.54	125.74	8.37	0.12
	Total - Phase 2	290.54	45.38	39.54	125.74	8.42	0.12

Notes:

1. In Phase 1, peak emissions from Permanente Creek Reclamation Area activities overlap peak emissions from other proposed activities with respect to particulate matter emissions (PM_{10} and $PM_{2.5}$) associated with material handling and unpaved road dust entrainment.
2. In Phase 2, peak emissions from Permanente Creek Reclamation Area activities overlap peak emissions from other proposed activities with respect to particulate matter emissions (PM_{10} and $PM_{2.5}$) associated with wind erosion from disturbed areas.

Table 7. Proposed Project Criteria Pollutants - Daily Emissions (pounds/day).

Phase	Component	PM_{10}	$PM_{2.5}$	CO	NOx	ROG	SOx
1	North Quarry	939.34	146.25	1,033.97	262.35	--	30.86
	Waste Rock Storage/Infill Areas	553.47	63.11	--	--	--	--
	Permanente Creek Reclamation Area	10.87	1.28	--	--	--	--
	Fuel Storage and Dispensing	--	--	--	--	0.53	--
	Combustion Sources	87.40	78.38	856.95	1,861.88	122.44	1.43
	Total - Phase 1	1,591.08	289.02	1,890.92	2,124.24	122.97	32.30
2	North Quarry	658.72	95.95	--	--	--	--
	Waste Rock Storage/Infill Areas	1,240.12	174.93	--	--	--	--
	Permanente Creek Reclamation Area	28.29	4.24	--	--	--	--
	Fuel Storage and Dispensing	--	--	--	--	0.33	--
	Combustion Sources	42.44	35.80	293.39	957.34	63.85	0.91
	Total - Phase 2	1,969.57	310.92	293.39	957.34	64.18	0.91

Notes:

1. In Phase 1, peak emissions from Permanente Creek Reclamation Area activities overlap peak emissions from other proposed activities with respect to particulate matter emissions (PM_{10} and $PM_{2.5}$) associated with material handling and unpaved road dust entrainment.
2. In Phase 2, peak emissions from Permanente Creek Reclamation Area activities overlap peak emissions from other proposed activities with respect to particulate matter emissions (PM_{10} and $PM_{2.5}$) associated with wind erosion from disturbed areas.

Table 8. Proposed Project Toxic Air Contaminants - Annual Emissions (pounds/year).

Phase	Component	Diesel PM	Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Cobalt	Copper	Lead	Mercury	Molyb-denum	Nickel	Selenium	Silver	Thallium	Vanadium	Zinc	Hexavalent Chromium	Crystalline Silica
1	North Quarry	--	0.70	0.35	239.19	0.21	0.35	8.29	2.11	4.93	0.45	0.05	0.70	9.27	0.70	0.35	0.35	11.13	7.84	0.19	1,350.16
	Waste Rock Storage/Infill Areas	--	0.42	0.21	157.53	0.12	0.21	6.15	1.50	3.73	0.34	0.03	0.42	7.77	0.42	0.21	0.21	11.30	5.30	0.25	1,047.71
	Permanente Creek Reclamat'n Area	--	0.00	0.00	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.30
	Fuel Storage and Dispensing	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	Combustion Sources	25,189.48	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	Total - Phase 1	25,189.48	1.12	0.56	396.76	0.34	0.56	14.44	3.60	8.66	0.79	0.08	1.12	17.04	1.12	0.56	0.56	22.44	13.14	0.44	2,398.17
2	North Quarry	--	0.49	0.25	160.47	0.15	0.25	5.23	1.36	3.08	0.28	0.04	0.49	5.44	0.49	0.25	0.25	5.60	5.20	0.07	831.13
	Waste Rock Storage/Infill Areas	--	0.93	0.47	314.96	0.28	0.47	10.84	2.76	6.45	0.58	0.07	0.93	12.05	0.93	0.47	0.47	14.27	10.31	0.24	1,762.60
	Permanente Creek Reclamat'n Area	--	0.00	0.00	0.07	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.34
	Fuel Storage and Dispensing	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	Combustion Sources	10,060.72	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	Total - Phase 2	10,060.72	1.42	0.71	475.50	0.43	0.71	16.08	4.13	9.53	0.86	0.11	1.42	17.49	1.42	0.71	0.71	19.87	15.52	0.31	2,594.07

Notes:

1. In Phase 1, peak emissions from Permanente Creek Reclamation Area activities overlap peak emissions from other proposed activities with respect to TAC emissions associated with material handling and unpaved road dust entrainment.
2. In Phase 2, peak emissions from Permanente Creek Reclamation Area activities overlap peak emissions from other proposed activities with respect to TAC emissions associated with wind erosion from disturbed areas.

Table 9. Proposed Project Toxic Air Contaminants - Hourly Emissions (pounds/hour).

Phase	Component	Diesel PM	Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Cobalt	Copper	Lead	Mercury	Molyb-denum	Nickel	Selenium	Silver	Thallium	Vanadium	Zinc	Hexavalent Chromium	Crystalline Silica
1	North Quarry	--	1.12E-04	5.58E-05	3.76E-02	3.35E-05	5.58E-05	1.28E-03	3.28E-04	7.63E-04	6.89E-05	8.17E-06	1.12E-04	1.42E-03	1.12E-04	5.58E-05	5.58E-05	1.65E-03	1.23E-03	2.71E-05	2.08E-01
	Waste Rock Storage/Infill Areas	--	5.77E-05	2.88E-05	2.19E-02	1.73E-05	2.88E-05	8.54E-04	2.08E-04	5.17E-04	4.74E-05	3.55E-06	5.77E-05	1.08E-03	5.77E-05	2.88E-05	2.88E-05	1.57E-03	7.36E-04	3.41E-05	1.46E-01
	Permanente Creek Reclamat'n Area	--	3.40E-06	1.70E-06	1.25E-03	1.02E-06	1.70E-06	4.75E-05	1.17E-05	2.86E-05	2.62E-06	2.19E-07	3.40E-06	5.83E-05	3.40E-06	1.70E-06	1.70E-06	8.17E-05	4.18E-05	1.71E-06	8.00E-03
	Fuel Storage and Dispensing	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	Combustion Sources	6.69E+00	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	Total - Phase 1	6.69E+00	1.73E-04	8.63E-05	6.07E-02	5.18E-05	8.63E-05	2.19E-03	5.48E-04	1.31E-03	1.19E-04	1.19E-05	1.73E-04	2.55E-03	1.73E-04	8.63E-05	8.63E-05	3.30E-03	2.01E-03	6.29E-05	3.62E-01
2	North Quarry	--	6.86E-05	3.43E-05	2.23E-02	2.06E-05	3.43E-05	7.27E-04	1.89E-04	4.28E-04	3.85E-05	5.25E-06	6.86E-05	7.55E-04	6.86E-05	3.43E-05	3.43E-05	7.77E-04	7.22E-04	9.94E-06	1.15E-01
	Waste Rock Storage/Infill Areas	--	1.29E-04	6.46E-05	4.37E-02	3.88E-05	6.46E-05	1.51E-03	3.84E-04	8.95E-04	8.10E-05	9.40E-06	1.29E-04	1.67E-03	1.29E-04	6.46E-05	6.46E-05	1.98E-03	1.43E-03	3.33E-05	2.45E-01
	Permanente Creek Reclamat'n Area	--	8.84E-06	4.42E-06	2.76E-03	2.65E-06	4.42E-06	8.49E-05	2.26E-05	4.95E-05	4.42E-06	7.07E-07	8.84E-06	8.13E-05	8.84E-06	4.42E-06	4.42E-06	6.72E-05	8.84E-05	3.54E-07	1.31E-02
	Fuel Storage and Dispensing	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	Combustion Sources	8.37E+00	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	Total - Phase 2	8.37E+00	2.07E-04	1.03E-04	6.88E-02	6.20E-05	1.03E-04	2.32E-03	5.96E-04	1.37E-03	1.24E-04	1.54E-05	2.07E-04	2.51E-03	2.07E-04	1.03E-04	1.03E-04	2.83E-03	2.24E-03	4.36E-05	3.73E-01

Notes:

1. In Phase 1, peak emissions from Permanente Creek Reclamation Area activities overlap peak emissions from other proposed activities with respect to TAC emissions associated with material handling and unpaved road dust entrainment.
2. In Phase 2, peak emissions from Permanente Creek Reclamation Area activities overlap peak emissions from other proposed activities with respect to TAC emissions associated with wind erosion from disturbed areas.

Table 10. Proposed Project Greenhouse Gases - Annual Emissions (metric tons/year).

Phase	Component	CO_2	CH_4	N_2O	CO_2e
1	North Quarry	424.11	--	--	424.11
	Waste Rock Storage/Infill Areas	--	--	--	--
	Fuel Storage and Dispensing	--	--	--	--
	Combustion Sources	19,584.76	1.10	0.48	19,757.55
	Indirect GHG Emissions	578.05	0.02	0.01	580.19
	Total - Phase 1	20,586.92	1.13	0.49	20,761.85
2	North Quarry	--	--	--	--
	Waste Rock Storage/Infill Areas	--	--	--	--
	Fuel Storage and Dispensing	--	--	--	--
	Combustion Sources	10,568.37	0.59	0.26	10,661.97
	Indirect GHG Emissions	8,294.90	0.34	0.08	8,325.66
	Total - Phase 2	18,863.28	0.93	0.34	18,987.63

Note: Peak emissions from Permanente Creek Reclamation Area activities do not overlap peak emissions from other proposed project activities with respect to greenhouse gases in either Phase 1 or Phase 2.

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Appendix A

Baseline Emission Calculations

Baseline Emission Calculations.

Table	Activity
	Quarry Operations
A-1	Drilling
A-1, A-2	Blasting
A-3	Bulldozing, Scraping & Grading
A-3	Material Handling
A-4	Dust Entrainment – Unpaved Roads
A-4	Wind Erosion – Unpaved Roads
A-4	Wind Erosion – Disturbed Quarry Area
A-5	Quarry Operations TAC Emissions
	Waste Rock Land Filling
A-6	Material Handling
A-7	Dust Entrainment – Unpaved Roads
A-7	Wind Erosion – Unpaved Roads
A-8	Waste Rock Land Filling TAC Emissions
	Fuel Storage and Dispensing
A-9	Fuel Storage
A-10	Fuel Dispensing
	Combustion Sources
A-11	Portable Diesel-fueled Welders
A-12	Portable Gasoline-fueled Welders
A-13	Off-road Diesel Equipment
A-14	On-road On-site Vehicles
A-15	On-road Off-site Vehicles
A-16	On-road Dust Entrainment
	Indirect Greenhouse Gas Sources
A-17	Electrical Power Use
	Emission Factors
A-18	Combustion Sources – Off-road Diesel Equipment
A-19	Combustion Sources – On-road Motor Vehicles

Table A-1. Baseline Quarry Operations - Drilling and Blasting.

Activity	Emission Factor Reference	Emission Factors		Annual	Control	PM_{10} Emissions			$PM_{2.5}$ Emissions		
		PM_{10}	$PM_{2.5}$	Activity[1]	Efficiency[2]	(ton/yr)	(lb/day)	(lb/hr)	(ton/yr)	(lb/day)	(lb/hr)
Drilling	MDAQMD Guidance, VI.A	0.68 lb/hole	0.68 lb/hole	5,510 holes/yr	0%	1.87	45.70	5.71	1.87	45.70	5.71
Blasting	MDAQMD Guidance, VI.B	92.18 lb/blast	5.32 lb/blast	82 blasts/yr	0%	3.78	92.18	92.18	0.22	5.32	5.32
Totals:						5.65	137.88	97.90	2.09	51.01	11.03

Notes:
1. Annual activity based on quarry blasting records for 2000-2010.
2. Assumed control: none.
3. Average operating schedule (2000-2010):
   8 hours/day
   82 days/year
4. Blasting assumes:
   1 blast/day
   1 blast/hour
5. Conversion Factors:
   2,000 lb = 1 ton
   43,560 square feet = 1 acre

Blasting Emission Factor[1]

Data Input	Data Reference	Symbol	Value	Unit
Area Shifted per Blast	Calculated[2]	A	5,009	ft^2
PM_{10} Particle size multiplier	MDAQMD Guidance (Em. Inventory Form)	k	0.52	--
$PM_{2.5}$ Particle size multiplier	MDAQMD Guidance (Em. Inventory Form)	k	0.03	--
Blasting Emission Factor	*MDAQMD Guidance, VI.B*	*Ef*	*Calculated*	*lb/blast*

$$Ef = k * 0.0005 * A^{1.5}$$

Notes:
1. AP-42 Chapter 11.19.2, Crushed Stone Processing and Pulverized Mineral Processing, indicates that AP-42 Chapter 11.9, Western Surface Coal Mining, should not be used to estimate particulate matter emissions from blasting in stone quarries. Therefore, the approach outlined in *Emissions Inventory Guidance Mineral Handling and Processing Industries* , Mojave Desert Air Quality Management District, April 2000 (MDAQMD Guidance), sections VI.A and VI.B, was used instead.
2. Area shifted per blast calculated based on production, blast pattern, and related data for 2000-2010, provided by Lehigh Southwest Cement Company, January 2010 and May 2011.

Table A-2. Baseline Quarry Operations - Blasting Explosives.

Activity	Emission Factor Reference	Emission Factors				Explosives Used[3]	Control Efficiency[4]	CO Emissions[5,6]		NOx Emissions[5,6]		SOx Emissions[5,6]		CO_2 Emissions[5,6]	
		CO	NOx	SOx	CO_2			(ton/yr)	(lb/day)	(ton/yr)	(lb/day)	(ton/yr)	(lb/day)	(tonne/yr)	(lb/day)
Blasting - ANFO	AP-42 Chap. 13.3 (CO, NOx, SOx); AGO Factors & Methods Sec. 2.3 (CO_2)[1]	67.00 lb/ton	17.00 lb/ton	2.00 lb/ton	0.151 tonne/ton	1,058 tons/yr	0%	35.45	864.75	9.00	219.41	1.06	25.81	159.81	4,296.65

Notes:
1. Sources for emission factors associated with use of ANFO (ammonium nitrate/fuel oil):
   - CO, NOx, and SOx: U.S. AP-42 Chapter 13.3 (Explosives Detonation)
   - CO_2: *AGO Factors and Methods Workbook for Use in Australian Greenhouse Emissions Reporting*, Australian Greenhouse Office, December 2006, Section 2.3 (Explosives).
2. CO_2 emission factor reported as 0.167 tonne CO_2/tonne ANFO, equivalent to 0.151 tonne CO_2/ton ANFO, assuming 1 tonne/1,000 kg, 0.45359 kg/lb, and 2,000 lbs/short ton, or ton.
3. Based on quarry blasting records for 2000-2010.
4. Assumed control: none.
5. Average operating schedule (2000-2010):
   82 days/year
   1 blast/day
6. Conversion factors:
   2,000 lb = 1 ton
   1,000 kg = 1 tonne
   0.45359 kg = 1 pound

Table A-3. Baseline Quarry Operations - Various Material Handling Processes.

Activity	Emission Factor Reference	Emission Factors		Annual Activity[1]	Transfer Points	Control Efficiency[2]	PM_{10} Emissions			$PM_{2.5}$ Emissions		
		PM_{10}	$PM_{2.5}$				(ton/yr)	(lb/day)	(lb/hr)	(ton/yr)	(lb/day)	(lb/hr)
Material Handling	AP-42 13.2.4.3, MDAQMD	1.15E-03 lb/ton	1.73E-04 lb/ton	5,607,455 tons/yr	1	0%	3.23	22.75	1.42	0.48	3.41	0.21
Bulldozing, Scraping & Grading (BSG)	MDAQMD Guidance VI.D	1.24E-01 lb/hr	1.86E-02 lb/hr	9,443	N/A	0%	0.59	4.13	0.26	0.09	0.62	0.04
Total							3.82	26.88	1.68	0.57	4.03	0.25

Notes:
1. Throughputs based on quarry production records for 2000-2010.
2. Assumed control: none.
3. Average operating schedule (2000-2010):
   16 hours/day
   284 days/year
4. Conversion Factors:
   2,000 lb/ton
   43,560 square feet/acre

Emission Factor (EF) Equations:

Data Input	Data Reference	Symbol	Value	Unit
Moisture Content, Limestone Products	AP-42 13.2.4-1	M	2.1	%
Silt Content, Limestone	MDAQMD Guidance (Stockpile Table 2)	s	0.5	%
Mean wind speed	Mean 2008 wind speed for Lehigh Station	U	5.27	mph
PM_{10} Particle size multiplier	MDAQMD Guidance, Secs. VI.D, VI.E	k	0.36	--
$PM_{2.5}$ Particle size multiplier	WRAP AP-42 Fug. Dust $PM_{2.5}/PM_{10}$ Ratios[1]	k	0.054	--
Material Handling Emission Factor	*AP-42 13.2.4.3, Eqn 1, MDAQMD Guidance Sec. VI.E*	*Ef*	*Calculated*	*lb/ton*
BSG Emission Factor	*MDAQMD Guidance, VI.D*	*Ef*	*Calculated*	*lb/hr*

$$E_f = k \times 0.0032 \times \frac{\left(\frac{U}{5}\right)^{1.3}}{\left(\frac{M}{2}\right)^{1.4}}$$

$$E_f = 2.76 \times k \times \frac{s^{1.5}}{M^{1.4}}$$

Notes:
1. Source: *Background Document for Revisions to Fine Fraction Ratios Used for AP-42 Fugitive Dust Emission Factors* (prepared for Western Governors' Association Western Regional Air Partnership (WRAP)), Midwest Research Institute, November 1, 2006, Table 1 (Proposed Particle Size Ratios for AP-42).

Table A-4. Baseline Quarry Operations - Unpaved Road Dust Entrainment and Wind Erosion.

Activity	Emission Factor Reference	Emission Factors PM_{10}	Emission Factors $PM_{2.5}$	Annual Activity[1,2,3]	Control Efficiency[4]	PM_{10} Emissions[5] (ton/yr)	PM_{10} Emissions[5] (lb/day)	PM_{10} Emissions[5] (lb/hr)	$PM_{2.5}$ Emissions[5] (ton/yr)	$PM_{2.5}$ Emissions[5] (lb/day)	$PM_{2.5}$ Emissions[5] (lb/hr)
Dust Entrainment - Unpaved Roads	AP-42 13.2.2	1.75 lb/VMT	0.18 lb/mile	344,744 miles/year	75%	75.47	531.45	33.22	7.55	53.15	3.32
Wind Erosion - Unpaved Roads	AP-42 13.2.5	1.40 ton/acre	0.21 ton/acre	33 acres/yr	75%	11.70	82.38	5.15	1.75	12.36	0.77
Wind Erosion - Disturbed Quarry Area	AP-42 13.2.5	1.40 ton/acre	0.21 ton/acre	395 acres/yr	0%	554.96	3,908.20	244.26	83.24	586.23	36.64

Notes:
1. Annual activity data based on 2000-2010 average road data (from annual topography maps) and average production rates.
2. Unpaved roads acreage based on average road data from annual topography maps.
3. Disturbed mine area acreage based on 2000-2010 average disturbed areas reported under SMARA. Note: SMARA reports combine disturbed areas from both the quarry and the material storage areas.
4. Assumed control: 75% control associated with watering of unpaved roads; no control assumed for active areas.
5. Average operating schedule (2000-2010):
   16 hours/day
   284 days/year
6. Conversion Factors:
   2,000 lb/ton — 453.59 grams/pound
   43,560 square feet/acre — 4,047 square meters/acre

Unpaved Roads Emission Factor.

Data Input	Data Reference	Symbol	Value	Unit
Surface Silt Content	2008 CEIR, Table B-8	s	2.7	%
Average Vehicle Weight	2011 Caterpillar Handbook & http://autos.yahoo.com	W	83.6	tons
Particle size multiplier for PM10	AP-42 13.2.2-2	k	1.5	lb/VMT
Particle size multiplier for PM2.5	AP-42 13.2.2-2	k	0.15	lb/VMT
Empirical Constants	AP-42 13.2.2-2	a	0.9	--
	AP-42 13.2.2-2	b	0.45	--
Unpaved Road Emission Factor	*AP-42 13.2.2, Eqn 1a*	E_f	*Calculated*	*lb/VMT*

Eqn 1a $$E_f = k\left(\frac{s}{12}\right)^a\left(\frac{W}{3}\right)^b$$

Wind Erosion Emission Factor.

Data Input	Data Reference	Symbol	Value	Unit
Erosion Potential per disturbance	AP-42 13.2.5, Eqn 3	P_i	Calculated	g/m^2
Friction Velocity per disturbance	AP-42 13.2.5, Eqn 4	u^*	Calculated	m/s
Threshold Friction Velocity (Roads/Disturbed Mine Area):	AP-42 Table 13.2.5-2 (scraper tracks on coal pile)	u^*_t	0.62	m/s
Fastest mile wind speed per disturbance at 10 meters	Daily maximum wind gust data from Lehigh Permanente Meteorological Station for 2008	u^+_{10}	Varies	m/s
Disturbances	Lehigh Permanente wind gust data	N	262 (M-F)	--
PM_{10} Size Multiplier	AP-42 13.2.2-2	k	0.5	--
$PM_{2.5}$ Size Multiplier	AP-42 13.2.2-2	k	0.075	--
Wind Erosion Emission Factor	*AP-42 13.2.5, Eqn 2*	*Ef*	*Calculated*	$g/(m^2\text{-}yr)$

Eqn 3 $$P = 58(u^* - u_t)^2 + 25(u^* - u_t)$$

Eqn 4 $$u^* = 0.053u_{10}$$

Eqn 2 $$E_f = k\sum_{P_i}^{N} P_i$$

Baseline Mining Miles Traveled Activity Data[1]

Trip Type	Trips/Year	1-Way Trip Distance	Annual Miles Traveled	Average Vehicle	Annual Ton-Miles[2]	Notes
Quarry Limestone Transport	27,307	3.4 mi/trip	187,694	151.1	28,363,250	(Calculations reflect two-way trips)
Quarry In-Plant Vehicles	--	--	157,051	3.0	471,152	
Total Fleet			344,744	83.6	28,834,402	

Notes:
1. Based on production, road length, and equipment data provided by Lehigh Southwest Cement Company, January 2010 and July 2011
2. Annual ton-miles used only to calculate average vehicle weight.

Table A-5. Baseline Quarry Operations - Toxic Air Contaminants.

Annual Emissions (pounds/year).

TAC[1]	TAC EF Overbuden (mg/kg)	TAC EF Roads (mg/kg)		Dust Entrainment Unpaved Roads	Wind Erosion Unpaved Roads	Wind Erosion Disturbed Area	Drilling	Blasting	Material Handling	BSG	Total TAC Emissions (lb/yr)
			PM_{10} (tpy)	75.47	11.70	554.96	1.87	3.78	3.23	0.59	
Antimony	2.5	2.5		3.77E-01	5.85E-02	2.77E+00	9.37E-03	1.89E-02	1.62E-02	2.94E-03	3.26E+00
Arsenic	1.25	1.25		1.89E-01	2.92E-02	1.39E+00	4.68E-03	9.45E-03	8.08E-03	1.47E-03	1.63E+00
Barium	780	1000		1.51E+02	2.34E+01	8.66E+02	2.92E+00	5.90E+00	5.04E+00	9.16E-01	1.05E+03
Beryllium	0.75	0.75		1.13E-01	1.75E-02	8.32E-01	2.81E-03	5.67E-03	4.85E-03	8.81E-04	9.77E-01
Cadmium	1.25	1.25		1.89E-01	2.92E-02	1.39E+00	4.68E-03	9.45E-03	8.08E-03	1.47E-03	1.63E+00
Chromium	24	41		6.19E+00	9.59E-01	2.66E+01	8.99E-02	1.81E-01	1.55E-01	2.82E-02	3.42E+01
Cobalt	6.4	9.8		1.48E+00	2.29E-01	7.10E+00	2.40E-02	4.84E-02	4.13E-02	7.51E-03	8.93E+00
Copper	14	25		3.77E+00	5.85E-01	1.55E+01	5.25E-02	1.06E-01	9.04E-02	1.64E-02	2.02E+01
Lead	1.25	2.3		3.47E-01	5.38E-02	1.39E+00	4.68E-03	9.45E-03	8.08E-03	1.47E-03	1.81E+00
Mercury	0.2	0.14		2.11E-02	3.28E-03	2.22E-01	7.49E-04	1.51E-03	1.29E-03	2.35E-04	2.50E-01
Molybdenum	2.5	2.5		3.77E-01	5.85E-02	2.77E+00	9.37E-03	1.89E-02	1.62E-02	2.94E-03	3.26E+00
Nickel	23	54		8.15E+00	1.26E+00	2.55E+01	8.62E-02	1.74E-01	1.49E-01	2.70E-02	3.54E+01
Selenium	2.5	2.5		3.77E-01	5.85E-02	2.77E+00	9.37E-03	1.89E-02	1.62E-02	2.94E-03	3.26E+00
Silver	1.25	1.25		1.89E-01	2.92E-02	1.39E+00	4.68E-03	9.45E-03	8.08E-03	1.47E-03	1.63E+00
Thallium	1.25	1.25		1.89E-01	2.92E-02	1.39E+00	4.68E-03	9.45E-03	8.08E-03	1.47E-03	1.63E+00
Vanadium	19	83		1.25E+01	1.94E+00	2.11E+01	7.12E-02	1.44E-01	1.23E-01	2.23E-02	3.59E+01
Zinc	25	34		5.13E+00	7.95E-01	2.77E+01	9.37E-02	1.89E-01	1.62E-01	2.94E-02	3.41E+01
Hex Chromium	0.1	1.9		2.87E-01	4.45E-02	1.11E-01	3.75E-04	7.56E-04	6.46E-04	1.17E-04	4.44E-01
Total Crystalline Silica	3712.8	7099.2		1.07E+03	1.66E+02	4.12E+03	1.39E+01	2.81E+01	2.40E+01	4.36E+00	5.43E+03

Hourly Emissions (pounds/hour).

TAC[1]	TAC EF Overbuden (mg/kg)	TAC EF Roads (mg/kg)		Dust Entrainment Unpaved Roads	Wind Erosion Unpaved Roads	Wind Erosion Disturbed Area	Drilling	Blasting	Material Handling	BSG	Total TAC Emissions (lb/hr)
			PM_{10} (lb/hr)	33.22	5.15	244.26	5.71	92.18	1.42	0.26	
Antimony	2.5	2.5		8.30E-05	1.29E-05	6.11E-04	1.43E-05	2.30E-04	3.55E-06	6.46E-07	9.56E-04
Arsenic	1.25	1.25		4.15E-05	6.44E-06	3.05E-04	7.14E-06	1.15E-04	1.78E-06	3.23E-07	4.78E-04
Barium	780	1000		3.32E-02	5.15E-03	1.91E-01	4.46E-03	7.19E-02	1.11E-03	2.02E-04	3.07E-01
Beryllium	0.75	0.75		2.49E-05	3.86E-06	1.83E-04	4.28E-06	6.91E-05	1.07E-06	1.94E-07	2.87E-04
Cadmium	1.25	1.25		4.15E-05	6.44E-06	3.05E-04	7.14E-06	1.15E-04	1.78E-06	3.23E-07	4.78E-04
Chromium	24	41		1.36E-03	2.11E-04	5.86E-03	1.37E-04	2.21E-03	3.41E-05	6.20E-06	9.83E-03
Cobalt	6.4	9.8		3.26E-04	5.05E-05	1.56E-03	3.66E-05	5.90E-04	9.10E-06	1.65E-06	2.58E-03
Copper	14	25		8.30E-04	1.29E-04	3.42E-03	8.00E-05	1.29E-03	1.99E-05	3.62E-06	5.77E-03
Lead	1.25	2.3		7.64E-05	1.18E-05	3.05E-04	7.14E-06	1.15E-04	1.78E-06	3.23E-07	5.18E-04
Mercury	0.2	0.14		4.65E-06	7.21E-07	4.89E-05	1.14E-06	1.84E-05	2.84E-07	5.17E-08	7.41E-05
Molybdenum	2.5	2.5		8.30E-05	1.29E-05	6.11E-04	1.43E-05	2.30E-04	3.55E-06	6.46E-07	9.56E-04
Nickel	23	54		1.79E-03	2.78E-04	5.62E-03	1.31E-04	2.12E-03	3.27E-05	5.94E-06	9.98E-03
Selenium	2.5	2.5		8.30E-05	1.29E-05	6.11E-04	1.43E-05	2.30E-04	3.55E-06	6.46E-07	9.56E-04
Silver	1.25	1.25		4.15E-05	6.44E-06	3.05E-04	7.14E-06	1.15E-04	1.78E-06	3.23E-07	4.78E-04
Thallium	1.25	1.25		4.15E-05	6.44E-06	3.05E-04	7.14E-06	1.15E-04	1.78E-06	3.23E-07	4.78E-04
Vanadium	19	83		2.76E-03	4.27E-04	4.64E-03	1.09E-04	1.75E-03	2.70E-05	4.91E-06	9.72E-03
Zinc	25	34		1.13E-03	1.75E-04	6.11E-03	1.43E-04	2.30E-03	3.55E-05	6.46E-06	9.90E-03
Hex Chromium	0.1	1.9		6.31E-05	9.78E-06	2.44E-05	5.71E-07	9.22E-06	1.42E-07	2.58E-08	1.07E-04
Total Crystalline Silica	3712.8	7099.2		2.36E-01	3.66E-02	9.07E-01	2.12E-02	3.42E-01	5.28E-03	9.59E-04	1.55E+00

Notes:

1. TAC emission factors obtained from sampling performed 11/20/2008 analyzed via EPA Methods 3060/7199 and 6020/7471A. Note, non-detect (ND) results were assumed to be 1/2 the detection limit. See Tables 5A and D-1 of the 2008 CEIR.
2. Conversion factors:

453.59 grams/pound	1,000 milligrams/gram
907.18 kilograms/ton	2,000 pounds/ton

Table A-6. Baseline Waste Rock Land Filling Operations - Material Handling.

Activity	Emission Factor Reference	Emission Factors		Annual Activity[1]	Transfer Points	Control Efficiency[2]	PM_{10} Emissions			$PM_{2.5}$ Emissions		
		PM_{10}	$PM_{2.5}$				(ton/yr)	(lb/day)	(lb/hr)	(ton/yr)	(lb/day)	(lb/hr)
Material Handling	AP-42 13.2.4.3, MDAQMD	1.15E-03 lb/ton	1.73E-04 lb/ton	2,656,620 tons/yr	1	0%	1.53	10.78	0.67	0.23	1.62	0.10

Notes:
1. Throughputs based on quarry production records for 2000-2010.
2. Assumed control: none.
3. Average operating schedule (2000-2010):
   16 hours/day
   284 days/year
4. Conversion Factors:
   2,000 lb/ton
   43,560 square feet/acre

Emission Factor (EF) Equations:

Data Input	Data Reference	Symbol	Value	Unit
Moisture Content, Limestone Products	AP-42 13.2.4-1	M	2.1	%
Silt Content, Limestone	MDAQMD Guidance (Stockpile Table 2)	s	0.5	%
Mean wind speed	Mean 2008 wind speed for Lehigh Station	U	5.27	mph
PM_{10} Particle size multiplier	MDAQMD Guidance, Secs. VI.D, VI.E	k	0.36	--
$PM_{2.5}$ Particle size multiplier	WRAP AP-42 Fug. Dust $PM_{2.5}$/PM_{10} Ratios[1]	k	0.054	--
Handling Emission Factor	*AP-42 13.2.4.3, Eqn 1, MDAQMD Guidance Sec. VI.E*	*Ef*	*Calculated*	*lb/ton*

$$E_f = k \times 0.0032 \times \frac{\left(\frac{U}{5}\right)^{1.3}}{\left(\frac{M}{2}\right)^{1.4}}$$

Notes:
1) Source: *Background Document for Revisions to Fine Fraction Ratios Used for AP-42 Fugitive Dust Emission Factors* (prepared for Western Governors' Association Western Regional Air Partnership (WRAP)), Midwest Research Institute, November 1, 2006, Table 1 (Proposed Particle Size Ratios for AP-42).

Table A-7. Baseline Waste Rock Land Filling Operations - Dust Entrainment and Wind Erosion.

Activity	Emission Factor Reference	Emission Factors		Annual Activity[1,2]	Control Efficiency[3]	PM_{10} Emissions[4]			$PM_{2.5}$ Emissions[4]		
		PM_{10}	$PM_{2.5}$			(ton/yr)	(lb/day)	(lb/hr)	(ton/yr)	(lb/day)	(lb/hr)
Dust Entrainment - Unpaved Roads	AP-42 13.2.2	2.19 lb/VMT	0.22 lb/mile	274,011 miles/year	75%	74.91	527.55	32.97	7.49	52.76	3.30
Wind Erosion - Unpaved Roads	AP-42 13.2.5	1.40 ton/acre	0.21 ton/acre	21 acres/yr		7.26	51.12	3.20	1.09	7.67	0.48

Notes:
1. Throughputs based on 2000-2010 average road data (from annual topography maps) and average production rates.
2. Acreage based on average road data from annual topography maps.
3. Assumed control: 75% control associated with watering of unpaved roads.
4. Average operating schedule (2000-2010):
   16 hours/day
   284 days/year
5. Conversion Factors:
   2,000 lb/ton — 453.59 grams/pound
   43,560 square feet/acre — 4,047 square meters/acre

Unpaved Roads Emission Factor.

Data Input	Data Reference	Symbol	Value	Unit
Surface Silt Content	2008 CEIR, Table-8	s	2.7	%
Average Vehicle Weight	2011 Caterpillar Handbook	W	137.0	tons
Particle size multiplier for PM_{10}	AP-42 13.2.2-2	k	1.5	lb/VMT
Particle size multiplier for $PM_{2.5}$	AP-42 13.2.2-2	k	0.15	lb/VMT
Empirical Constants	AP-42 13.2.2-2	a	0.9	--
	AP-42 13.2.2-2	b	0.45	--
Unpaved Road Emission Factor	*AP-42 13.2.2, Eqn 1a*	*E_f*	*Calculated*	*lb/VMT*

Eqn 1a $$E_f = k\left(\frac{s}{12}\right)^a\left(\frac{W}{3}\right)^b$$

Wind Erosion Emission Factor.

Data Input	Data Reference	Symbol	Value	Unit
Erosion Potential per disturbance	AP-42 13.2.5, Eqn 3	P_i	Calculated	g/m^2
Friction Velocity per disturbance	AP-42 13.2.5, Eqn 4	u^*	Calculated	m/s
Threshold Friction Velocity (Roads):	CEIR Table B-4 (AP-42 Table 13.2.5-2, uncrusted coal pile)	u^*_t	0.62	m/s
Fastest mile wind speed per disturbance at 10 meters	Permanente Meteorological Station for 2008	u^+_{10}	Varies	m/s
Disturbances	Lehigh Permanente wind gust data	N	262 (M-F)	--
PM_{10} Size Multiplier	AP-42 13.2.2-2	k	0.5	--
$PM_{2.5}$ Size Multiplier	AP-42 13.2.2-2	k	0.075	--
Wind Erosion Emission Factor	*AP-42 13.2.5, Eqn 2*	*Ef*	*Calculated*	*$g/(m^2\text{-}yr)$*

Eqn 3 $$P = 58(u^* - u_t)^2 + 25(u^* - u_t)$$

Eqn 4 $$u^* = 0.053u_{10}$$

Eqn 2 $$E_f = k\sum_{P_i}^{N} P_i$$

Baseline Landfilling Miles Traveled Activity Data[1]

Trip Type	Trips/Year	1-Way Trip Distance (mi/trip)	Ann. Miles Traveled	Average Vehicle Weight (tons)	Annual Ton-Miles[2]	Notes
Waste Rock Transport	21,034	5.6 mi/trip	234,300	151.1	35,406,052	(Calculations reflect two-way trips)
Disposal of Rock Plant Fines	6,192	3.2 mi/trip	39,712	53.5	2,126,060	(Calculations reflect two-way trips)
Total Fleet			274,011	137.0	37,532,112	

Notes:
1. Based on production, road length, and equipment data provided by Lehigh Southwest Cement Company, January 2010 and July 2011
2. Annual ton-miles used only to calculate average vehicle weight.

Table A-8. Baseline Waste Rock Land Filling Operations - Toxic Air Contaminants.

Annual Emissions (pounds/year).

TAC[1]	TAC EF Overbuden (mg/kg)	TAC EF Roads (mg/kg)	PM10 (tpy)	Dust Entrainment Unpaved Roads	Wind Erosion Unpaved Roads	Material Handling	Total TAC Emissions (lb/yr)
				74.91	7.26	1.53	
Antimony	2.5	2.5		3.75E-01	3.63E-02	7.65E-03	4.19E-01
Arsenic	1.25	1.25		1.87E-01	1.81E-02	3.83E-03	2.09E-01
Barium	780	1000		1.50E+02	1.45E+01	2.39E+00	1.67E+02
Beryllium	0.75	0.75		1.12E-01	1.09E-02	2.30E-03	1.26E-01
Cadmium	1.25	1.25		1.87E-01	1.81E-02	3.83E-03	2.09E-01
Chromium	24	41		6.14E+00	5.95E-01	7.35E-02	6.81E+00
Cobalt	6.4	9.8		1.47E+00	1.42E-01	1.96E-02	1.63E+00
Copper	14	25		3.75E+00	3.63E-01	4.28E-02	4.15E+00
Lead	1.25	2.3		3.45E-01	3.34E-02	3.83E-03	3.82E-01
Mercury	0.2	0.14		2.10E-02	2.03E-03	6.12E-04	2.36E-02
Molybdenum	2.5	2.5		3.75E-01	3.63E-02	7.65E-03	4.19E-01
Nickel	23	54		8.09E+00	7.84E-01	7.04E-02	8.94E+00
Selenium	2.5	2.5		3.75E-01	3.63E-02	7.65E-03	4.19E-01
Silver	1.25	1.25		1.87E-01	1.81E-02	3.83E-03	2.09E-01
Thallium	1.25	1.25		1.87E-01	1.81E-02	3.83E-03	2.09E-01
Vanadium	19	83		1.24E+01	1.21E+00	5.82E-02	1.37E+01
Zinc	25	34		5.09E+00	4.94E-01	7.65E-02	5.66E+00
Hex Chromium	0.1	1.9		2.85E-01	2.76E-02	3.06E-04	3.13E-01
Total Crystalline Silica	3712.8	7099.2		1.06E+03	1.03E+02	1.14E+01	1.18E+03

Hourly Emissions (pounds/hour).

TAC[1]	TAC EF Overbuden (mg/kg)	TAC EF Roads (mg/kg)	PM10 (lb/hr)	Dust Entrainment Unpaved Roads	Wind Erosion Unpaved Roads	Material Handling	Total TAC Emissions (lb/hr)
				32.97	3.20	0.67	
Antimony	2.5	2.5		8.24E-05	7.99E-06	1.68E-06	9.21E-05
Arsenic	1.25	1.25		4.12E-05	3.99E-06	8.42E-07	4.61E-05
Barium	780	1000		3.30E-02	3.20E-03	5.25E-04	3.67E-02
Beryllium	0.75	0.75		2.47E-05	2.40E-06	5.05E-07	2.76E-05
Cadmium	1.25	1.25		4.12E-05	3.99E-06	8.42E-07	4.61E-05
Chromium	24	41		1.35E-03	1.31E-04	1.62E-05	1.50E-03
Cobalt	6.4	9.8		3.23E-04	3.13E-05	4.31E-06	3.59E-04
Copper	14	25		8.24E-04	7.99E-05	9.43E-06	9.14E-04
Lead	1.25	2.3		7.58E-05	7.35E-06	8.42E-07	8.40E-05
Mercury	0.2	0.14		4.62E-06	4.47E-07	1.35E-07	5.20E-06
Molybdenum	2.5	2.5		8.24E-05	7.99E-06	1.68E-06	9.21E-05
Nickel	23	54		1.78E-03	1.73E-04	1.55E-05	1.97E-03
Selenium	2.5	2.5		8.24E-05	7.99E-06	1.68E-06	9.21E-05
Silver	1.25	1.25		4.12E-05	3.99E-06	8.42E-07	4.61E-05
Thallium	1.25	1.25		4.12E-05	3.99E-06	8.42E-07	4.61E-05
Vanadium	19	83		2.74E-03	2.65E-04	1.28E-05	3.01E-03
Zinc	25	34		1.12E-03	1.09E-04	1.68E-05	1.25E-03
Hex Chromium	0.1	1.9		6.26E-05	6.07E-06	6.74E-08	6.88E-05
Total Crystalline Silica	3712.8	7099.2		2.34E-01	2.27E-02	2.50E-03	2.59E-01

Notes:

1. TAC emission factors obtained from sampling performed 11/20/2008 analyzed via EPA Methods 3060/7199 and 6020/7471A. Note, non-detect (ND) results were assumed to be 1/2 the detection limit. See Tables 5A and D-1 of the 2008 CEIR.
2. Conversion factors:

453.59 grams/pound	1,000 milligrams/gram
907.18 kilograms/ton	2,000 pounds/ton

Table A-9. Baseline Fuel Storage and Dispensing - Fuel Storage.

Criteria Emissions.

Activity	Emission Reference	Throughput[1]	Working Loss	Breathing Loss	Total ROG Emissions		
			(lb/yr)	(lb/yr)	(ton/yr)	(lb/day)	(lb/hr)
Diesel Storage - AST	US EPA TANKs 4.0.9d	411,277 gal/yr	9.74	5.58	0.008	6.13E-02	1.53E-02
Diesel Storage - UST	US EPA TANKs 4.0.9d	411,277 gal/yr	7.93	0.00	0.004	3.17E-02	7.93E-03
Gasoline Storage - UST	US EPA TANKs 4.0.9d	12,615 gal/yr	106.44	0.00	0.053	4.26E-01	1.06E-01
Total					0.065	0.519	0.130

Toxic Air Contaminant (TAC) Emissions.

Activity	Emission Reference	Hexane (-n)		Benzene		Toluene		Ethylbenzene		Xylene (-m)		1,2,4-Trimethylbenzene	
		(lb/yr)	(lb/hr)	(lb/yr)	(lb/hr)	(lb/yr)	(lb/hr)	(lb/yr)	(lb/hr)	(lb/yr)	(lb/hr)	(lb/yr)	(lb/hr)
Diesel Storage - AST	US EPA TANKs 4.0.9d	0.00	0.00	0.03	0.00	0.35	0.00	0.05	0.00	0.89	0.00	0.71	0.00
Diesel Storage - UST	US EPA TANKs 4.0.9d	0.00	0.00	0.02	0.00	0.18	0.00	0.02	0.00	0.46	0.00	0.36	0.00
Gasoline Storage - UST	US EPA TANKs 4.0.9d	0.55	0.00	0.61	0.00	0.68	0.00	0.04	0.00	0.19	0.00	0.02	0.00
Total		0.55	0.00	0.66	0.00	1.21	0.00	0.11	0.00	1.54	0.00	1.09	0.00

Notes:
1. Quarry fuel use throughputs based on fuel purchase records for 2000-2010.
2. Both criteria and TAC emissions were calculated using the US EPA TANKS Model (v 4.0.9d).
3. Average operating schedule (2000-2010):
   4 hours/day
   250 days/year
4. Conversion factors:
   2,000 lb/ton

Emission Calculation Data Inputs.

Data Input	Diesel - AST	Diesel - UST	Gasoline - UST	Unit
Capacity	12,000	10,000	10,000	gal
Length	34	25	25	ft
Diameter	8.33	8.33	8.33	ft
Condition	Good	NA	NA	--

Table A-10. Baseline Fuel Storage and Dispensing - Fuel Dispensing.

Criteria Emissions.

Activity	EF Reference	ROG EF	Unit	Throughput[1]	Total ROG Emissions (ton/yr)	Total ROG Emissions (lb/day)	Total ROG Emissions (lb/hr)
Diesel Dispensing	SCAQMD [2]	0.000028	lb/gal	822,554 gal/yr	0.012	9.21E-02	2.30E-02
Gasoline Dispensing	ARB [3]	0.00038	lb/gal	12,615 gal/yr	0.002	1.92E-02	4.79E-03
Total					0.014	0.111	0.028

Toxic Air Contaminant (TAC) Emissions.

Activity	EF Reference	Hexane (-n)		Benzene		Toluene		Ethylbenzene		Xylene (-m)		1,2,4-Trimethylbenzene	
		(lb/yr)	(lb/hr)	(lb/yr)	(lb/hr)	(lb/yr)	(lb/hr)	(lb/yr)	(lb/hr)	(lb/yr)	(lb/hr)	(lb/yr)	(lb/hr)
Diesel Dispensing	US EPA TANKs 4.0.9d	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.07	0.00	0.23	0.00
Gasoline Dispensing	US EPA TANKs 4.0.9d	0.05	0.00	0.09	0.00	0.34	0.00	0.07	0.00	0.34	0.00	0.12	0.00
Total		0.05	0.00	0.09	0.00	0.34	0.00	0.07	0.00	0.40	0.00	0.35	0.00

Notes:
1. Quarry fuel use throughputs based on fuel purchase records for 2000-2010.
2. Diesel emission factor (0.028 lb/1,000 gallons) based on SCAQMD AER "Supplemental Instructions for Liquid Organic Storage Tanks and References" June 2005.
3. Gasoline emission factor (0.38 pounds/1,000 gallons) based on ARB "Vapor Recovery Certification Procedure CP - 201 Amended: May 25, 2006.
4. Average operating schedule (2000-2010):
   4 hours/day
   250 days/year
5. Conversion factors:
   2,000 lb/ton

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TAC Emission Factors from TANKS.

Parameter	Diesel Fractions	Gasoline Fractions
Hexane (-n)	0.0000	0.0100
Benzene	0.0000	0.0180
Toluene	0.0003	0.0700
Ethylbenzene	0.0001	0.0140
Xylene (-m)	0.0029	0.0700
1,2,4-Trimethylbenzene	0.0100	0.0250

Notes:
1. TAC fractions were obtained from the US EPA TANKS Model (v 4.0.9d) emission speciation profiles.

Table A-11. Baseline Combustion Sources - Portable Diesel-Fueled Welders.

Criteria and Greenhouse Gas Emissions from Diesel-Fueled Welders.

	CO	NOx	ROG	SOx	PM_{10}	$PM_{2.5}$	CO_2	CH_4	N_2O	CO_2e
Emission Factors (lb/hp-hr)[1,2]	6.68E-03	3.10E-02	2.51E-03	2.05E-03	2.20E-03	2.20E-03	1.43E+00	8.16E-05	3.66E-05	--
Annual Emissions (tons/year, except GHGs expressed in metric tons/year)	0.01	0.04	0.00	0.00	0.00	0.00	1.80	0.00	0.00	1.81
Daily Emissions (lbs/day)	0.38	1.78	0.14	0.12	0.13	0.13	82.07	0.00	0.00	82.82
Hourly Emissions (lbs/hour)	0.13	0.59	0.05	0.04	0.04	0.04	27.36	0.00	0.00	27.61

Toxic Air Contaminant Emissions from Diesel-Fueled Welders.

	Diesel PM	1,3-Buta-diene	Acetalde-hyde	Acrolein	Benzene	Formal-dehyde	PAHs	Propylene	Toluene	Xylenes
Emission Factors (lb/MMBtu)[1,3]	--	3.91E-05	7.67E-04	9.25E-05	9.33E-04	1.18E-03	1.68E-04	2.58E-03	4.09E-04	2.85E-04
(lb/hp-hr)	2.20E-03	3.42E-07	6.71E-06	8.09E-07	8.16E-06	1.03E-05	1.47E-06	2.26E-05	3.58E-06	2.49E-06
Annual Emissions (lbs/year)	6.11	0.00	0.02	0.00	0.02	0.03	0.00	0.06	0.01	0.01
Daily Emissions (lbs/day)	0.13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hourly Emissions (lbs/hour)	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Notes:

1. Criteria and TAC emission factors are based on AP-42, Chapter 3.3, Gasoline and Diesel Industrial Engines, Table 3.3-1.
2. GHG factors in grams/gallon are from the Climate Registry, *General Reporting Protocol* Version 1.1 (May 2008), Tables 13.1 (U.S. Default CO_2 Emission Factors for Transport Fuels) and 13.6 (Default CH_4 and N_2O Emission Factors Factors for Non-Highway Vehicles - factors for diesel-fueled construction vehicles.)
   To convert factors in grams/gallon to pounds/bhp-hr, the following equations were employed:
   CO_2 = 10,150 grams CO_2/gallon * (1 gallon diesel/7.05 lb) * (0.45 lb diesel/bhp-hr BSFC) * (1 lb/453.59 grams) = 1.43 pounds CO_2/bhp-hr
   CH_4 = 0.58 grams CH_4/gallon * (1 gallon diesel/7.05 lb) * (0.45 lb diesel/bhp-hr BSFC) * (1 lb/453.59 grams) = 8.16 X 10^{-5} pound CH_4/bhp-hr
   N_2O = 0.26 grams N_2O/gallon * (1 gallon diesel/7.05 lb) * (0.45 lb diesel/bhp-hr BSFC) * (1 lb/453.59 grams) = 3.66 X 10^{-5} pound N_2O/bhp-hr
3. TAC emission factors converted from lb/MMBtu assuming 137,000 Btu/gallon diesel, 0.45 lb diesel/bhp-hr brake-specific fuel consumption (BSFC), and 7.05 lb/gallon diesel.
4. Conversion factors:

453.59 grams/pound	0.45 lb/hp-hr BSFC (from Offroad2007)	7.05 lb/gal diesel (from AP-42)
2,000 pounds/ton	137,000 Btu/gallon (from AP-42)	ROG = TOC
1,000,000 grams/metric ton	1,000,000 Btu/MMBtu	

Table A-11. Baseline Combustion Sources - Portable Diesel-Fueled Welders.

Diesel-Fueled Welder Annual, Daily, and Hourly Operating Parameters.

Facility	Average HP Rating	Load Factor	Operating Hours/Yr	Operating Hours/Day
Quarry	42.6	0.45	145	3

Notes:
1. Operating hours/day assumes all welding operations occur on one day per week, utilizing provided allocation of usage within facility.
2. Based on the diesel-fueled welding inventory, the average size of welders used within the quarry are reflected above.

Diesel-Fueled Welder Inventory.

Brand	Model	Hp	Fuel	Department	% Time Used at Quarry 2000 - 2010	Total Hours/ Year	Hours Allocated To Quarry
Miller	Bobcat 250D	18.8	Diesel	Maintenance	1%	90	0.9
Miller	Big Blue 600 D	61	Diesel	Garage	65%	90	58.5
Miller	Bobcat 225D	16	Diesel	Garage	60%	90	54
Miller	Bobcat 225D	16	Diesel	Maintenance	5%	90	4.5
Lincoln	SAM 400	63	Diesel	Maintenance	5%	90	4.5
Miller	Big Blue 502 D	41.5	Diesel	Maintenance	5%	90	4.5
Miller	Big Blue 600 D	61	Diesel	Maintenance	5%	90	4.5
Lincoln	Commander 400	44.2	Diesel	Maintenance	5%	90	4.5
Lincoln	SAM 650	93	Diesel	Maintenance	5%	90	4.5
Lincoln	SAM 400	63	Diesel	Maintenance	5%	90	4.5
Totals:						900	144.9

Source:
Inventory provided by Lehigh Southwest Cement Company, January 2010. Assume facility-wide diesel welding operations 16-20 hours/week (18 hours/week on average). Assume operation an average of 50 weeks/year (300 work days, assuming 6-day work week).

Table A-12. Baseline Combustion Sources - Portable Gasoline-Fueled Welders.

Criteria and Greenhouse Gas Emissions from Gasoline-Fueled Welders.

	CO	NOx	ROG	SOx	PM_{10}	$PM_{2.5}$	CO_2	CH_4	N_2O	CO_2e
Emission Factors (lb/hp-hr)[1,2]	6.96E-03	1.10E-02	2.16E-02	5.91E-04	7.21E-04	7.21E-04	1.61E+00	9.11E-05	4.01E-05	--
Annual Emissions (tons/year, except GHGs expressed in tonnes/year)	0.00	0.00	0.00	0.00	0.00	0.00	0.06	0.00	0.00	0.06
Daily Emissions (lbs/day)	0.04	0.06	0.12	0.00	0.00	0.00	9.10	0.00	0.00	9.18
Hourly Emissions (lbs/hour)	0.04	0.06	0.12	0.00	0.00	0.00	9.10	0.00	0.00	9.18

Toxic Air Contaminant Emissions from Gasoline-Fueled Welders.

	1,3-Buta-diene	Benzene	Formal-dehyde	Nickel	PAHs
Emission Factors (lb/1,000 gal)[3]	0.9183	3.8061	3.4520	0.0033	0.1438
(lb/hp-hr)	7.59E-05	3.15E-04	2.85E-04	2.73E-07	1.19E-05
Annual Emissions (lbs/year)	0.01	0.02	0.02	0.00	0.00
Daily Emissions (lbs/day)	0.00	0.00	0.00	0.00	0.00
Hourly Emissions (lbs/hour)	0.00	0.00	0.00	0.00	0.00

Notes:

1. Criteria emission factors are based on AP-42, Chapter 3.3, Gasoline and Diesel Industrial Engines, Table 3.3-1.
2. GHG factors in grams/gallon are from the Climate Registry, *General Reporting Protocol* Version 1.1 (May 2008), Tables 13.1 (U.S. Default CO_2 Emission Factors for Transport Fuels) and 13.6 (Default CH_4 and N_2O Emission Factors Factors for Non-Highway Vehicles - factors for gasoline-fueled construction vehicles.)
   To convert factors in grams/gallon to pounds/bhp-hr, the following equations were employed:
   CO_2 = 8,810 grams CO_2/gallon * (1 gallon gasoline/6.17 lb) * (0.51 lb gasoline/bhp-hr BSFC) * (1 lb/453.59 grams) = 1.61 pounds CO_2/bhp-hr
   CH_4 = 0.50 grams CH_4/gallon * (1 gallon gasoline/6.17 lb) * (0.51 lb gasoline/bhp-hr BSFC) * (1 lb/453.59 grams) = 9.11 X 10^{-5} pound CH_4/bhp-hr
   N_2O = 0.22 grams N_2O/gallon * (1 gallon gasoline/6.17 lb) * (0.51 lb gasoline/bhp-hr BSFC) * (1 lb/453.59 grams) = 4.10 X 10^{-5} pound N_2O/bhp-hr
3. TAC emission factors are based on South Coast AQMD's Default Toxic Emission Factors for Gasoline Combustion, Annual Emission Reporting System, available at http://www.aqmd.gov/webappl/Help/AER/index.html (accessed June 17, 2011). TAC emission factors converted from lb/1,000 gal assuming 0.51 lb gasoline/bhp-hr brake-specific fuel consumption (BSFC) and 6.17 lb/gallon gasoline.
4. Conversion factors:

453.59 grams/pound	0.51 lb/hp-hr BSFC (from Offroad2007)
2,000 pounds/ton	6.17 lb/gal diesel (from AP-42)
1,000,000 grams/metric ton	ROG = TOC

Table A-12. Baseline Combustion Sources - Portable Gasoline-Fueled Welders.

Gasoline-Fueled Welder Annual, Daily, and Hourly Operating Parameters.

Facility	Average HP Rating	Load Factor	Operating Hours/Yr	Operating Hours/Day
Quarry	12.6	0.45	14	1

Notes:
1. Operating hours/day assumes all welding operations occur on one day per week, utilizing provided allocation of usage within facility.
2. Based on the gasoline-fueled welding inventory, the average size of welders used within the quarry are reflected above.

Gasoline-Fueled Welder Inventory.

Brand	Model	HP	Fuel	Department	% Time Used at Quarry 2000 - 2010	Total Hours/ Year	Hours Allocated To Quarry
Miller	Blue Star 6000	13	Gasoline	Maintenance	5%	75	3.8
Miller	Blue Star 185	12.75	Gasoline	Maintenance	0%	75	0.0
Miller	Blue Star 185	12.75	Gasoline	Maintenance	5%	75	3.8
Miller	Blue Star 6000	13	Gasoline	Maintenance	5%	75	3.8
Miller	Blue Fire 180	13	Gasoline	Maintenance	0%	75	0.0
Lincoln	Power Arc 5000	11	Gasoline	Yard	3%	75	2.3
Totals:						450	13.5

Source: Inventory provided by Lehigh Southwest Cement Company, January 2010. Assume facility-wide gasoline welding operations 8-10 hours/week (9 hours/week on average). Assume operation an average of 50 weeks/year (300 work days, assuming 6-day work week).

Table A-13. Baseline Combustion Sources - Off-Road Diesel Equipment.

Off-Road Diesel Equipment Emissions - Annual (Tons per Year).

						Emissions (tons/year)								Emissions (metric tons/year)			
Equipment	Model	Model Year	Horse-power	Hours per Year	Load Factor	THC	ROG	CO	NOx	PM	PM_{10}	$PM_{2.5}$	SO_2	CO_2	CH_4	N_2O	CO_2e
Bore/Drill Rigs	DM50	1989	525	616.4	0.75	0.32	0.27	3.70	3.53	0.23	0.23	0.21	0.00	137.93	0.01	0.00	139.14
	LM100	1994	115	28.0	0.75	0.01	0.00	0.02	0.04	0.00	0.00	0.00	0.00	1.37	0.00	0.00	1.38
	DK45	1999	450	1,928.3	0.75	0.69	0.58	2.40	7.03	0.45	0.45	0.41	0.00	369.85	0.02	0.01	373.11
Crawler Tractors	D10N	1995	520	497.3	0.64	0.18	0.15	0.61	1.79	0.11	0.11	0.10	0.00	94.05	0.01	0.00	94.88
	D10R	1997	570	1,761.8	0.64	0.68	0.57	2.37	6.94	0.44	0.44	0.41	0.00	365.25	0.02	0.01	368.47
	D10R	1999	570	2,561.7	0.64	0.99	0.83	3.44	10.10	0.64	0.64	0.59	0.01	531.09	0.03	0.01	535.77
	D10N	1995	520	1,031.7	0.64	0.37	0.31	1.26	3.71	0.24	0.24	0.22	0.00	195.13	0.01	0.00	196.85
	D10T	2005	580	785.2	0.64	0.11	0.10	0.35	1.56	0.05	0.05	0.05	0.00	165.63	0.01	0.00	167.09
	D10T	2005	580	655.5	0.64	0.10	0.08	0.30	1.31	0.05	0.05	0.04	0.00	138.28	0.01	0.00	139.50
Excavators	LS-5800	1995	300	223.2	0.57	0.04	0.03	0.14	0.41	0.03	0.03	0.02	0.00	21.69	0.00	0.00	21.88
Graders	16G	1995	275	1,188.0	0.61	0.21	0.18	0.73	2.15	0.14	0.14	0.13	0.00	113.25	0.01	0.00	114.25
Off-Highway Trucks																	
150-ton Trucks	785	1992	1290	2,760.0	0.57	2.67	2.23	30.97	29.52	1.94	1.94	1.79	0.01	1,153.34	0.06	0.03	1,163.51
	785B	1993	1290	3,675.2	0.57	3.55	2.98	41.24	39.31	2.58	2.58	2.38	0.02	1,535.75	0.09	0.04	1,549.29
	785B	1995	1290	3,428.6	0.57	3.31	2.78	38.47	36.67	2.41	2.41	2.22	0.02	1,432.71	0.08	0.04	1,445.34
	785B	1995	1290	3,469.0	0.57	3.35	2.81	38.93	37.10	2.44	2.44	2.25	0.02	1,449.59	0.08	0.04	1,462.38
	785B	1996	1290	3,731.7	0.57	3.60	3.02	41.87	39.91	2.62	2.62	2.42	0.02	1,559.37	0.09	0.04	1,573.12
100-ton Trucks	777C	1996	870	1,407.3	0.57	0.92	0.77	10.65	10.15	0.67	0.67	0.62	0.00	396.61	0.02	0.01	400.11
	777D	2000	938	1,738.2	0.57	0.83	0.70	3.42	10.04	0.41	0.41	0.38	0.01	528.15	0.03	0.01	532.80
	777D	2005	938	765.1	0.57	0.19	0.16	0.50	3.29	0.10	0.10	0.10	0.00	232.47	0.01	0.01	234.52
	777D	2005	938	961.1	0.57	0.24	0.21	0.62	4.13	0.13	0.13	0.12	0.00	292.04	0.02	0.01	294.61
	777D	2006	938	701.7	0.57	0.14	0.12	0.44	2.29	0.07	0.07	0.07	0.00	213.21	0.01	0.01	215.09
	777F	2007	938	298.9	0.57	0.05	0.04	0.18	0.86	0.03	0.03	0.02	0.00	90.81	0.01	0.00	91.61
60-ton Truck	773B	1994	650	2,378.4	0.57	1.16	0.97	13.45	12.82	0.84	0.84	0.78	0.01	500.78	0.03	0.01	505.19
40-ton Trucks	740	2003	415	1,878.7	0.57	0.20	0.17	0.56	2.58	0.09	0.09	0.08	0.00	252.56	0.01	0.01	254.79
	740	2003	415	2,162.3	0.57	0.23	0.19	0.64	2.97	0.10	0.10	0.09	0.00	290.68	0.02	0.01	293.24
	740	2003	415	1,989.0	0.57	0.21	0.18	0.59	2.73	0.09	0.09	0.09	0.00	267.38	0.02	0.01	269.74
Rubber Tired Dozers	824C	1995	315	962.3	0.59	0.19	0.16	0.66	1.93	0.12	0.12	0.11	0.00	101.63	0.01	0.00	102.53
Rubber Tired Loaders	992D	1995	710	2,291.6	0.54	0.93	0.78	3.24	9.49	0.60	0.60	0.56	0.01	499.32	0.03	0.01	503.72
	992D	1996	710	2,478.7	0.54	1.01	0.85	3.50	10.27	0.65	0.65	0.60	0.01	540.08	0.03	0.01	544.84
	WA-900	1999	897	2,240.2	0.54	0.97	0.82	4.00	11.72	0.48	0.48	0.45	0.01	616.66	0.03	0.02	622.10
	992G	2005	800	938.4	0.54	0.19	0.16	0.49	3.26	0.10	0.10	0.09	0.00	230.37	0.01	0.01	232.40
	992G	2006	800	754.0	0.54	0.12	0.10	0.38	1.99	0.06	0.06	0.06	0.00	185.11	0.01	0.00	186.74
	992G	2007	800	522.6	0.54	0.07	0.06	0.26	1.22	0.04	0.04	0.03	0.00	128.31	0.01	0.00	129.44
Water Trucks	773E	2003	671	2,229.3	0.20	0.13	0.11	0.38	1.74	0.06	0.06	0.06	0.00	170.02	0.01	0.00	171.52
Portable Light Towers	ML 695	2002	11	2,272.0	0.74	0.02	0.02	0.10	0.19	0.01	0.01	0.01	0.00	10.22	0.00	0.00	10.31
Total Off-Road Equipment Emissions:						28.00	23.47	250.86	314.77	19.04	19.04	17.58	0.16	14,810.69	0.83	0.36	14,941.31

Conversion Factors:
- 453.59 grams/pound
- 2,000 pounds/ton
- 1,000,000 grams/metric ton

Table A-13. Baseline Combustion Sources - Off-Road Diesel Equipment.

Off-Road Diesel Equipment Emissions - Daily (Pounds per Day).

Equipment	Model	Model Year	Horse-power	Hours per Day	Load Factor	Emissions (pounds/day) THC	ROG	CO	NOx	PM	PM_{10}	$PM_{2.5}$	SO_2	CO_2	CH_4	N_2O	CO_2e
Bore/Drill Rigs	DM50	1989	525	2.2	0.75	2.24	1.88	26.08	24.86	1.63	1.63	1.51	0.01	1,070.68	0.06	0.03	1,080.13
	LM100	1994	115	0.1	0.75	0.04	0.04	0.12	0.31	0.03	0.03	0.03	0.00	10.65	0.00	0.00	10.75
	DK45	1999	450	6.8	0.75	4.87	4.08	16.88	49.52	3.14	3.14	2.90	0.03	2,871.09	0.16	0.07	2,896.41
Crawler Tractors	D10N	1995	520	1.8	0.64	1.24	1.04	4.29	12.59	0.80	0.80	0.74	0.01	730.09	0.04	0.02	736.52
	D10R	1997	570	6.2	0.64	4.81	4.03	16.67	48.90	3.11	3.11	2.87	0.03	2,835.38	0.16	0.07	2,860.39
	D10R	1999	570	9.0	0.64	7.00	5.86	24.24	71.11	4.52	4.52	4.17	0.04	4,122.72	0.23	0.10	4,159.08
	D10N	1995	520	3.6	0.64	2.57	2.15	8.91	26.13	1.66	1.66	1.53	0.01	1,514.76	0.09	0.04	1,528.12
	D10T	2005	580	2.8	0.64	0.81	0.68	2.49	11.02	0.38	0.38	0.35	0.01	1,285.77	0.07	0.03	1,297.11
	D10T	2005	580	2.3	0.64	0.67	0.56	2.08	9.20	0.32	0.32	0.29	0.01	1,073.41	0.06	0.03	1,082.87
Excavators	LS-5800	1995	300	0.8	0.57	0.29	0.24	0.99	2.90	0.18	0.18	0.17	0.00	168.35	0.01	0.00	169.84
Graders	16G	1995	275	4.2	0.61	1.49	1.25	5.17	15.16	0.96	0.96	0.89	0.01	879.14	0.05	0.02	886.89
Off-Highway Trucks																	
150-ton Trucks	785	1992	1290	9.7	0.57	18.77	15.74	218.10	207.89	13.66	13.66	12.61	0.09	8,953.17	0.50	0.22	9,032.13
	785B	1993	1290	12.9	0.57	25.00	20.95	290.42	276.82	18.19	18.19	16.79	0.11	11,921.69	0.67	0.29	12,026.83
	785B	1995	1290	12.1	0.57	23.32	19.55	270.93	258.25	16.97	16.97	15.66	0.11	11,121.83	0.63	0.27	11,219.91
	785B	1995	1290	12.2	0.57	23.59	19.78	274.13	261.29	17.17	17.17	15.85	0.11	11,252.91	0.63	0.28	11,352.15
	785B	1996	1290	13.1	0.57	25.38	21.27	294.88	281.08	18.47	18.47	17.05	0.12	12,105.07	0.68	0.30	12,211.83
100-ton Trucks	777C	1996	870	5.0	0.57	6.46	5.41	75.00	71.49	4.70	4.70	4.34	0.03	3,078.79	0.17	0.08	3,105.95
	777D	2000	938	6.1	0.57	5.88	4.92	24.11	70.71	2.92	2.92	2.69	0.04	4,099.89	0.23	0.10	4,136.04
	777D	2005	938	2.7	0.57	1.37	1.15	3.50	23.15	0.73	0.73	0.67	0.02	1,804.61	0.10	0.04	1,820.53
	777D	2005	938	3.4	0.57	1.72	1.44	4.40	29.08	0.92	0.92	0.85	0.02	2,267.02	0.13	0.06	2,287.02
	777D	2006	938	2.5	0.57	1.01	0.84	3.10	16.13	0.50	0.50	0.46	0.02	1,655.11	0.09	0.04	1,669.71
	777F	2007	938	1.1	0.57	0.34	0.28	1.28	6.06	0.18	0.18	0.17	0.01	704.95	0.04	0.02	711.17
60-ton Truck	773B	1994	650	8.4	0.57	8.15	6.83	94.70	90.27	5.93	5.93	5.47	0.04	3,887.42	0.22	0.10	3,921.71
40-ton Trucks	740	2003	415	6.6	0.57	1.40	1.18	3.93	18.18	0.63	0.63	0.58	0.02	1,960.56	0.11	0.05	1,977.85
	740	2003	415	7.6	0.57	1.61	1.35	4.52	20.92	0.72	0.72	0.67	0.02	2,256.48	0.13	0.06	2,276.38
	740	2003	415	7.0	0.57	1.48	1.24	4.16	19.24	0.67	0.67	0.61	0.02	2,075.65	0.12	0.05	2,093.95
Rubber Tired Dozers	824C	1995	315	3.4	0.59	1.34	1.12	4.64	13.61	0.86	0.86	0.80	0.01	788.95	0.04	0.02	795.91
Rubber Tired Loaders	992D	1995	710	8.1	0.54	6.58	5.51	22.79	66.85	4.25	4.25	3.92	0.04	3,876.09	0.22	0.10	3,910.27
	992D	1996	710	8.7	0.54	7.11	5.96	24.65	72.31	4.59	4.59	4.24	0.04	4,192.52	0.24	0.10	4,229.49
	WA-900	1999	897	7.9	0.54	6.86	5.75	28.15	82.57	3.41	3.41	3.14	0.05	4,787.02	0.27	0.12	4,829.24
	992G	2005	800	3.3	0.54	1.36	1.14	3.47	22.94	0.72	0.72	0.67	0.02	1,788.34	0.10	0.04	1,804.11
	992G	2006	800	2.7	0.54	0.87	0.73	2.69	14.00	0.44	0.44	0.40	0.01	1,436.94	0.08	0.04	1,449.61
	992G	2007	800	1.8	0.54	0.48	0.40	1.80	8.57	0.26	0.26	0.24	0.01	996.07	0.06	0.02	1,004.85
Water Trucks	773E	2003	671	7.8	0.20	0.94	0.79	2.64	12.24	0.42	0.42	0.39	0.01	1,319.85	0.07	0.03	1,331.49
Portable Light Towers	ML 695	2002	11	8.0	0.74	0.15	0.12	0.70	1.31	0.08	0.08	0.07	0.00	79.36	0.00	0.00	80.06
Total Off-Road Equipment Emissions:						197.22	165.31	1,766.64	2,216.68	134.12	134.12	123.78	1.09	114,972.34	6.47	2.83	115,986.31

Conversion Factors:
453.59 grams/pound

Table A-13. Baseline Combustion Sources - Off-Road Diesel Equipment.

Off-Road Equipment Emission Factors (Grams/Horsepower-hour).

		Model	Horse-	Calculation	Cumulative	Emission Factors (grams/horsepower-hour)										
Equipment	Model	Year	power	Year	Hours	THC	ROG	CO	NOx	PM	PM_{10}	$PM_{2.5}$	SO_2	CO_2	CH_4	N_2O
Bore/Drill Rigs	DM50	1989	525	2010	12000	1.192	0.999	13.844	13.196	0.867	0.867	0.800	0.0054	568.3	0.032	0.014
	LM100	1994	115	2010	12000	2.239	1.877	6.324	16.612	1.573	1.573	1.452	0.0054	568.3	0.032	0.014
	DK45	1999	450	2010	12000	0.964	0.808	3.342	9.802	0.622	0.622	0.574	0.0054	568.3	0.032	0.014
Crawler Tractors	D10N	1995	520	2010	12000	0.964	0.808	3.342	9.802	0.622	0.622	0.574	0.0054	568.3	0.032	0.014
	D10R	1997	570	2010	12000	0.964	0.808	3.342	9.802	0.622	0.622	0.574	0.0054	568.3	0.032	0.014
	D10R	1999	570	2010	12000	0.964	0.808	3.342	9.802	0.622	0.622	0.574	0.0054	568.3	0.032	0.014
	D10N	1995	520	2010	12000	0.964	0.808	3.342	9.802	0.622	0.622	0.574	0.0054	568.3	0.032	0.014
	D10T	2005	580	2010	10000	0.356	0.298	1.102	4.871	0.168	0.168	0.155	0.0054	568.3	0.032	0.014
	D10T	2005	580	2010	10000	0.356	0.298	1.102	4.871	0.168	0.168	0.155	0.0054	568.3	0.032	0.014
Excavators	LS-5800	1995	300	2010	12000	0.964	0.808	3.342	9.802	0.622	0.622	0.574	0.0054	568.3	0.032	0.014
Graders	16G	1995	275	2010	12000	0.964	0.808	3.342	9.802	0.622	0.622	0.574	0.0054	568.3	0.032	0.014
Off-Highway Trucks																
150-ton Trucks	785	1992	1290	2010	12000	1.192	0.999	13.844	13.196	0.867	0.867	0.800	0.0054	568.3	0.032	0.014
	785B	1993	1290	2010	12000	1.192	0.999	13.844	13.196	0.867	0.867	0.800	0.0054	568.3	0.032	0.014
	785B	1995	1290	2010	12000	1.192	0.999	13.844	13.196	0.867	0.867	0.800	0.0054	568.3	0.032	0.014
	785B	1995	1290	2010	12000	1.192	0.999	13.844	13.196	0.867	0.867	0.800	0.0054	568.3	0.032	0.014
	785B	1996	1290	2010	12000	1.192	0.999	13.844	13.196	0.867	0.867	0.800	0.0054	568.3	0.032	0.014
100-ton Trucks	777C	1996	870	2010	12000	1.192	0.999	13.844	13.196	0.867	0.867	0.800	0.0054	568.3	0.032	0.014
	777D	2000	938	2010	12000	0.814	0.683	3.342	9.802	0.404	0.404	0.373	0.0054	568.3	0.032	0.014
	777D	2005	938	2010	10000	0.432	0.362	1.102	7.290	0.230	0.230	0.212	0.0054	568.3	0.032	0.014
	777D	2005	938	2010	10000	0.432	0.362	1.102	7.290	0.230	0.230	0.212	0.0054	568.3	0.032	0.014
	777D	2006	938	2010	8000	0.346	0.290	1.066	5.537	0.172	0.172	0.159	0.0054	568.3	0.032	0.014
	777F	2007	938	2010	6000	0.273	0.229	1.029	4.889	0.146	0.146	0.135	0.0054	568.3	0.032	0.014
60-ton Truck	773B	1994	650	2010	12000	1.192	0.999	13.844	13.196	0.867	0.867	0.800	0.0054	568.3	0.032	0.014
40-ton Trucks	740	2003	415	2010	12000	0.406	0.341	1.138	5.268	0.182	0.182	0.168	0.0054	568.3	0.032	0.014
	740	2003	415	2010	12000	0.406	0.341	1.138	5.268	0.182	0.182	0.168	0.0054	568.3	0.032	0.014
	740	2003	415	2010	12000	0.406	0.341	1.138	5.268	0.182	0.182	0.168	0.0054	568.3	0.032	0.014
Rubber Tired Dozers	824C	1995	315	2010	12000	0.964	0.808	3.342	9.802	0.622	0.622	0.574	0.0054	568.3	0.032	0.014
Rubber Tired Loaders	992D	1995	710	2010	12000	0.964	0.808	3.342	9.802	0.622	0.622	0.574	0.0054	568.3	0.032	0.014
	992D	1996	710	2010	12000	0.964	0.808	3.342	9.802	0.622	0.622	0.574	0.0054	568.3	0.032	0.014
	WA-900	1999	897	2010	12000	0.814	0.683	3.342	9.802	0.404	0.404	0.373	0.0054	568.3	0.032	0.014
	992G	2005	800	2010	10000	0.432	0.362	1.102	7.290	0.230	0.230	0.212	0.0054	568.3	0.032	0.014
	992G	2006	800	2010	8000	0.346	0.290	1.066	5.537	0.172	0.172	0.159	0.0054	568.3	0.032	0.014
	992G	2007	800	2010	6000	0.273	0.229	1.029	4.889	0.146	0.146	0.135	0.0054	568.3	0.032	0.014
Water Trucks	773E	2003	671	2010	12000	0.406	0.341	1.138	5.268	0.182	0.182	0.168	0.0054	568.3	0.032	0.014
Portable Light Towers	ML 695	2002	10.7	2010	12000	1.050	0.880	5.000	9.350	0.570	0.570	0.526	0.0054	568.3	0.032	0.014

Notes:

1. Per the document, *Overview: OFFROAD Model*, California Air Resources Board, November 2006 (available at www.arb.ca.gov/msei/offroad/offroad.htm), THC, CO, NOx, PM, and CO_2 emission factors are determined by the following equation:

   EF = ZH + dr * CHrs, where

   EF = emission factor, in grams per hoursepower-hour (g/bhp-hr)

   ZH = zero-hour emission rate or when the equipment is new (g/bhp-hr)

   dr = deterioration rate or the increase in ZH emissions as the equipment is used (g/bhp-hr^2)

   CHrs = cumulative hours or total number of hours accumulated on the equipment
2. Values utilized in the above emission factor table for ZH and dr are derived from *Offroad2007* (Version 2.0.1.2), California Air Resources Board, December 15, 2006, data from emfac.csv data file, lines 41-149 (default exhaust emission factors for off-road diesel equipment for which specific factors are not provided.)
3. ROG = 83.82% THC, PM10 = 100% PM, and PM2.5 = 92.29% PM. Source: *2008 Estimated Annual Average Emissions – Statewide*, California Air Resources Board, data for Off-Road Equipment, sorted for diesel-fueled vehicles, available at http://www.arb.ca.gov/ei/emissiondata.htm (accessed February 25, 2011).

Table A-13. Baseline Combustion Sources - Off-Road Diesel Equipment.

4. Per the document, *Overview: OFFROAD Model* (op cit.) and the OFFROAD2007 emfac.csv file, the SO_2 emission factor is based on fuel sulfur content and brake-specific fuel consumption. Per *Title 13 California Code of Regulations* sec. 2281 (Sulfur Content of Fuel), as of June 2006 diesel sulfur content in diesel fuel is limited to 15 parts per million. Per the October 2010 CARB Staff Report (op cit.), CARB staff used BSFC values from EPA's NONROAD emissions model, as documented in the report, *Exhaust and Crankcase Emission Factors for Nonroad Engine Modeling – Compression-Ignition* (EPA Report No. EPA420-P-04-009/NR-009C), U.S. Environmental Protection Agency, April 2004. Table A2 of the EPA report (pages A5-A8) documents that for diesel engines up to 100 hp, a brake specific fuel consumption (BSFC) value of 0.408 lb/hp-hr is used. For diesel engines larger than 100 hp, a BSFC value of 0.367 lb/hp-hr is used. The above factors assume a BSFC value of 0.4 lb/hp-hr. The SO2 emission factor is calculated as follows:

   EF_{SO2} = (Parts S in fuel/million) * (MW_{SO2}/MW_S) * BSFC (lb/hp-hr) * 453.6 g/lb
   = (15 parts S/million) * (64 g/g-mole SO_2/32 g/g-mole S) * 0.4 lb/hp-hr * 453.6 g/lb
   = 0.0054 g SO_2/hp-hr

5. CH_4 and N_2O factors in grams/gallon are from the Climate Registry, *General Reporting Protocol* Version 1.1 (May 2008), Table 13.6 (Default CH_4 and N_2O Emission Factors for Non-Highway Vehicles), factors for diesel-fueled construction vehicles. To convert CH_4 and N_2O factors in g/gallon to g/bhp, the following equations were employed:

   CH_4 = 0.58 g CH_4/gallon * (1 gallon/137,000 Btu) * 7,500 Btu/bhp-hr = 0.032 g CH_4/bhp-hr, and
   N_2O = 0.26 g N_2O/gallon * (1 gallon/137,000 Btu) * 7,500 Btu/bhp-hr = 0.014 g N_2O/bhp-hr.

   Source for the higher heating value of 137,000 Btu/gallon for diesel and the brake specific fuel combustion factor of 7,500 Btu/bhp-hr: Santa Barbara County Air Pollution Control District, *Piston IC Engine Technical Reference Document* (November 1, 2002), Tables 5 (Default Fuel Properties) and 6 (Default Engine Specifications - diesel turbocharged engines), available at http://www.sbcapcd.org/eng/spice/sbcapcdicerefdoc.pdf.

6. CO_2 equivalent emissions (CO_2e) calculated based on the global warming potentials in the IPCC's *Second Assessment Report* (SAR, 1996), as presented in the Climate Registry *General Reporting Protocol* (op cit.), Table B.1. $CO_2e = 1 * CO_2 + 21 * CH_4 + 310 * N_2O$.
7. Cumulative hours for each equipment item assumes that each item accumulates 2,000 hours of operation each year. Per the document, *Staff Report: Initial Statement of Reasons for Proposed Rulemaking – Proposed Amendments to the Regulation for In-use Off-road Diesel-fueled Fleets and the Off-road Large Spark-ignition Fleet Requirements,* California Air Resources Board, October 2010, Appendix D (OSM and Summary of Off-road Emissions Inventory Update), pages D-27 to D-28, CARB staff now assumes emission factors deteriorate only up to a maximum of 12,000 hours.
8. 2000-2009 baseline annual activity data provided by Lehigh Southwest Cement Company, January 2010. 2010 baseline annual activity data provided by Lehigh Southwest Cement Company, July 2011. Daily activity data derived from average annual activity data using the average annual quarry operating days.
9. Equipment load factors from *Offroad2007* (Version 2.0.1.2), op cit.

Table A-14. Baseline Combustion Sources - On-road On-site Vehicles.

Annual Emissions (2010 Emission Factors - Other Than Entrained Road Dust) (tons/year except for GHGs, which are in metric tons/year).

Trip Type	CO (tons/yr)	NOx (tons/yr)	ROG (tons/yr)	SOx (tons/yr)	PM_{10} (tons/yr)	$PM_{2.5}$ (tons/yr)	Diesel PM (tons/yr)	CO_2 (MT/yr)	CH_4 (MT/yr)	N_2O (MT/yr)	CO_2e[1] (MT/yr)
On-road On-ste Vehicles	0.74	0.10	0.06	0.00	0.01	0.01	0.00	106.09	0.01	0.00	107.16

Daily Baseline Emissions (2010 Emission Factors - Other Than Entrained Road Dust) (pounds/day).

Trip Type	CO (lb/day)	NOx (lb/day)	ROG (lb/day)	SOx (lb/day)	PM_{10} (lb/day)	$PM_{2.5}$ (lb/day)	Diesel PM (lb/day)	CO_2 (lb/day)	CH_4 (lb/day)	N_2O (lb/day)	CO_2e (lb/day)
On-road On-ste Vehicles	5.35	0.71	0.45	0.01	0.06	0.04	0.00	823.54	0.06	0.02	831.84

Hourly Baseline Emissions (2010 Emission Factors - Other Than Entrained Road Dust) (pounds/hour).

Trip Type	CO (lb/hr)	NOx (lb/hr)	ROG (lb/hr)	SOx (lb/hr)	PM_{10} (lb/hr)	$PM_{2.5}$ (lb/hr)	Diesel PM (lb/hr)	CO_2 (lb/hr)	CH_4 (lb/hr)	N_2O (lb/hr)	CO_2e (lb/hr)
On-road On-ste Vehicles	0.34	0.04	0.03	0.00	0.00	0.00	0.00	52.12	0.00	0.00	52.65

Emission Factors for 2010 - Santa Clara County - Other Than Entrained Road Dust (pounds/mile).

Vehicle Type		CO	NOx	ROG	SOx	PM_{10}	$PM_{2.5}$	Diesel PM	CO_2	CH_4	N_2O
Medium Duty Vehicles (MDV)[2]	Annual Average[3]	0.00945913	0.00131351	0.00079302	0.00001445	0.00010530	0.00007191	0.00000033	1.48922029	0.00010197	0.00004151
	Peak Day[4]	0.00968096	0.00127762	0.00081321	0.00001575	0.00010530	0.00007191	0.00000033	1.48922029	0.00010197	0.00004151

Baseline Activity Data.

Component	Gallons/ Year[5]	Miles/ Year[6]	Subtract Pers. Use[7]	Oper. Days/Yr[8]	Oper. Hrs/Day[9]	On-site Use Mi./Year	On-site Use Mi./Day	On-site Use Mi./Hour
Average 2000 - 2010 Gasoline Use Allocated To:								
Quarry	12,615	189,218	-32,167	284	16	157,051	553	35

Notes:

1. CO_2 equivalent emissions (CO_2e) calculated based on the global warming potentials in the IPCC's *Second Assessment Report* (SAR, 1996), as presented in the Climate Registry, *General Reporting Protocol*, Version 1.1 (May 2008), Table B.1. $CO_2e = 1 * CO_2 + 21 * CH_4 + 310 * N_2O$.
2. On-road on-site work vehicle fleet consists of 24 half-ton and larger pickup trucks and sports utility vehicles (Lehigh Southwest Cement Company, January 2010). Since vehicles of this size can range from 5,500 to 6,600 pounds curb weight (source: Yahoo! Autos, http://autos.yahoo.com, January 5, 2010), medium duty vehicle (5,751 to 8,500 pounds) emission factors from CARB's EMFAC2007 on-road emissions model for Santa Clara County were used.
3. Source: On-road Motor Vehicle Emission Factors from EMFAC2007 for Santa Clara County, Annual Emission Factors for Medium Duty Vehicles.
4. Source: On-road Motor Vehicle Emission Factors from EMFAC2007 for Santa Clara County, Daily/Hourly Emission Factors for Medium Duty Vehicles.
5. Source: Lehigh Southwest Cement Company, 2000 - 2010 gasoline and diesel fuel consumption data as summarized in On-road Off-site Motor Vehicles: Baseline Activity Data, Baseline Fuel Use Activity Data.
6. Assumes an average vehicle fuel efficiency of 15 miles/gallon. Source: U.S. Department of Energy and U.S. Environmental Protection Agency, Fuel Economy Guide, for 2005 two- and four-wheel drive Ford F150 pickups (8 cylinder, 5.4 liter engine) and 2005 two- and four-wheel drive Ford Explorer Sports Utility Vehicles (8 cylinder, 4.6 liter engine).
7. Source: assumes 25% personal use for 2000 - 2004, 15% personal use for 2005 - 2007, and 5% personal use for 2008 and later years (11-year average of 17% personal use). Personal use estimates provided by Lehigh Southwest Cement Company, January 2010.
8. Source for quarry hours: Lehigh Southwest Cement Company, equipment availability data - December 2009 (2000-2008) and January 2010 (2009); daily production data - May 2011 (2010).
9. Quarry operating hours/day: 16 hours/day (two shifts/day).
10. Conversion Factors:
    453.59 grams/pound
    2,000 pounds/ton
    1,000,000 grams/metric ton

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Table A-15. Baseline Combustion Sources - On-road Off-site Vehicles.

Annual Emissions (2010 Emission Factors - Other Than Entrained Road Dust) (tons/year except for GHGs, which are in metric tons/year).

Trip Type	Vehicle Type	CO (tons/yr)	NOx (tons/yr)	ROG (tons/yr)	SOx (tons/yr)	PM_{10} (tons/yr)	$PM_{2.5}$ (tons/yr)	Diesel PM (tons/yr)	CO_2 (MT/yr)	CH_4 (MT/yr)	N_2O (MT/yr)	CO_2e[1] (MT/yr)
Quarry Fuel Transport	HHDT-Dsl	0.01	0.05	0.00	0.00	0.00	0.00	0.00	5.29	0.00	0.00	5.34
Employee Commute	Passenger	0.49	0.05	0.05	0.00	0.00	0.00	0.00	45.56	0.00	0.00	46.06
Total - All Trip Types:		0.50	0.09	0.05	0.00	0.01	0.00	0.00	50.84	0.00	0.00	51.40

Daily Baseline Emissions (2010 Emission Factors - Other Than Entrained Road Dust) (pounds/day).

Trip Type	Vehicle Type	CO (lb/day)	NOx (lb/day)	ROG (lb/day)	SOx (lb/day)	PM_{10} (lb/day)	$PM_{2.5}$ (lb/day)	Diesel PM (lb/day)	CO_2 (lb/day)	CH_4 (lb/day)	N_2O (lb/day)	CO_2e (lb/day)
Quarry Fuel Transport	HHDT-Dsl	0.20	0.68	0.05	0.00	0.03	0.02	0.02	83.83	0.00	0.00	84.73
Employee Commute	Passenger	3.42	0.33	0.36	0.00	0.03	0.02	0.00	353.65	0.03	0.01	357.55
Total - All Trip Types:		3.61	1.01	0.41	0.00	0.06	0.04	0.02	437.48	0.03	0.01	442.29

Hourly Baseline Emissions (2010 Emission Factors - Other Than Entrained Road Dust) (pounds/hour).

Trip Type	Vehicle Type	CO (lb/hr)	NOx (lb/hr)	ROG (lb/hr)	SOx (lb/hr)	PM_{10} (lb/hr)	$PM_{2.5}$ (lb/hr)	Diesel PM (lb/hr)	CO_2 (lb/hr)	CH_4 (lb/hr)	N_2O (lb/hr)	CO_2e (lb/hr)
Quarry Fuel Transport	HHDT-Dsl	0.20	0.68	0.05	0.00	0.03	0.02	0.02	83.83	0.00	0.00	84.73
Employee Commute	Passenger	1.71	0.17	0.18	0.00	0.01	0.01	0.00	176.83	0.02	0.01	178.78
Total - All Trip Types:		1.91	0.85	0.23	0.00	0.04	0.03	0.02	260.66	0.02	0.01	263.51

Emission Factors for 2010 - Santa Clara County - Other Than Entrained Road Dust (pounds/mile).

Vehicle Type	Averaging Period	CO	NOx	ROG	SOx	PM_{10}	$PM_{2.5}$	Diesel PM	CO_2	CH_4	N_2O
Heavy-heavy Duty Truck - Diesel (HHDT-DSL)[2]	Annual Average	0.00983090	0.03391604	0.00240666	0.00004002	0.00136212	0.00116940	0.00122053	4.19153919	0.00011178	0.00013789
Passenger Vehicles[3]		0.00967582	0.00094533	0.00101525	0.00000977	0.00008434	0.00005240	0.00000079	1.00112300	0.00008773	0.00002969
Heavy-heavy Duty Truck - Diesel (HHDT-DSL)[4]	Peak Day	0.01019910	0.03469475	0.00238586	0.00004012	0.00136977	0.00117643	0.00122053	4.19153919	0.00011178	0.00013789
Passenger Vehicles[5]		0.00993492	0.00091773	0.00109191	0.00001063	0.00008434	0.00005240	0.00000079	1.00112300	0.00008773	0.00002969

Baseline Activity Data.

Trip Type	Trips/Year	Trips/Day	Trips/Hour	Trip Distance	Notes
Quarry Fuel Transport[6]	139	1	1	10	(one-way - two-way trips reflected in calculations)
Employee Commute[7]	9,940	35	35	5.046	(one-way - two-way trips reflected in annual/daily calculations; one-way trips reflected in hourly calculations)

Notes:

1. CO_2 equivalent emissions (CO_2e) calculated based on the global warming potentials in the IPCC's *Second Assessment Report* (SAR, 1996), as presented in the Climate Registry, *General Reporting Protocol*, Version 1.1 (May 2008), Table B.1. $CO_2e = 1 * CO_2 + 21 * CH_4 + 310 * N_2O$.
2. Source: On-road Motor Vehicle Emission Factors from EMFAC2007 for Santa Clara County, Annual Emission Factors for Heavy-Heavy Duty Diesel Trucks.
3. Source: On-road Motor Vehicle Emission Factors from EMFAC2007 for Santa Clara County, Annual Emission Factors for Passenger Vehicles.
4. Source: On-road Motor Vehicle Emission Factors from EMFAC2007 for Santa Clara County, Daily/Hourly Emission Factors for Heavy-Heavy Duty Diesel Trucks.
5. Source: On-road Motor Vehicle Emission Factors from EMFAC2007 for Santa Clara County, Daily/Hourly Emission Factors for Passenger Vehicles.
6. Source: Permanente Quarry Baseline On-road Off-site Motor Vehicle Activity Data. Since the total trips per year associated with fuel transport is less than 250 trips/year it is assumed that 1 trip/day and 1 trip/hour are associated with quarry fuel transport (since it is estimated that 146 trips/year are associated with quarry fuel transport).
7. Source: On-road Off-site Motor Vehicles: Baseline Activity Data, Baseline Sales, Truck, and Operating Days. Annual employee commute trips/year calculated by multiplying the average employee count by the average annual operating days . Daily trips assume 1 two-way trip/day per employee, and hourly trips assume 1 one-way trip/employee.
   Average employee count and operating day data:
   35 average employee count (2000-2010)
   284 quarry work days/year (2000-2010)
8. Conversion Factors:
   453.59 grams/pound
   2,000 pounds/ton
   1,000,000 grams/metric ton

Table A-16. Baseline Combustion Sources - On-road Dust Entrainment.

Trip Type	Annual Emissions (tons/year) Veh. Miles Traveled	PM_{10}	$PM_{2.5}$	Daily Emissions (pounds/day) Veh. Miles Traveled	PM_{10}	$PM_{2.5}$	Hourly Emissions (pounds/hour) Veh. Miles Traveled	PM_{10}	$PM_{2.5}$
Quarry Fuel Transport	2,780			20			20		
Employee Commute	100,324			353			177		
Fleet Average:	103,104	0.04	0.01	373	0.31	0.05	197	0.16	0.02

Notes:
1. Assumed Control: none
2. Conversion factors:
   2,000 pounds/ton

Emission Factors.

Road Type	PM_{10} k factor (lb/VMT)	sL[2] (g/m^2)	W[3] (tons)	C (lb/VMT)	P[4]	N	$PM_{2.5}/PM_{10}$ Ratio[5]	VMT Fraction by Road Type[6]	PM_{10} Factors (lb/VMT) Daily & Hourly	PM_{10} Factors (lb/VMT) Annual	$PM_{2.5}$ Factors (lb/VMT) Daily & Hourly	$PM_{2.5}$ Factors (lb/VMT) Annual
Freeway	0.016	0.02	3.1	0.00047	62	365	15%	0.471	0.000	0.000	0.0001	0.0001
Major	0.016	0.035	3.1	0.00047	62	365	15%	0.407	0.001	0.001	0.0001	0.0001
Collector	0.016	0.035	3.1	0.00047	62	365	15%	0.055	0.001	0.001	0.0001	0.0001
Local	0.016	0.32	3.1	0.00047	62	365	15%	0.067	0.005	0.004	0.0007	0.0007
Composite Emission Factors (assuming Santa Clara County VMT fractions by road type):								1.000	0.0008	0.0008	0.0001	0.0001

Notes:
1. AP-42 Sec. 13.2.1 (Paved Roads, Eqn. 1) provides the following equation to estimate entrained paved road dust emissions:

$$E = k\left(\frac{sL}{2}\right)^{0.65}\left(\frac{W}{3}\right)^{1.5} - C$$

   where: E = particulate emission factor (grams/vehicle miles traveled, or g/VMT),
   k = particle size multiplier for particle size range and units of interest, 0.016 lb/VMT for PM_{10}.
   sL = road surface silt loading (grams per square meter, or g/m^2),
   W = average weight (tons) of the vehicles traveling the road, and
   C = emission factor for 1980's vehicle fleet exhaust, brake wear and tire wear (0.00047 lb/VMT for TSP and PM_{10}).

   For long-term emissions (annual, seasonal, or monthly) AP-42 Sec. 13.2.1 Eqn. 2 suggests that a precipitation correction factor can be applied as follows: [3]

$$E_{ext} = \left[k\left(\frac{sL}{2}\right)^{0.65}\left(\frac{W}{3}\right)^{1.5} - C\right]\left(1 - \frac{P}{4N}\right)$$

   where: E_{ext} = annual or other long-term particulate emission factor (grams/vehicle miles traveled, or g/VMT),
   P = number of “wet” days with at least 0.254 mm (0.01 in) of precipitation during the averaging period, and
   N = number of days in the averaging period (e.g., 365 for annual, 91 for seasonal, 30 for monthly).

   Note that per AP-42 Sec. 13.2.1, emissions are to be calculated for the fleet average only, not individual trip or weight classes.
2. Source: California Air Resources Board, Entrained Dust from Paved Road Travel: Emission Estimation Methodology Background Document, July 2, 1997, Table 3 (California Default Paved Road Silt Loading Values) - silt loading for local & collector road types, available at www.arb.ca.gov/ei/areasrc/arbmiscprocpaverddst.htm.
3. Average vehicle weight (W) for on-road offsite fleet derived below.
4. Number of days with precipitation at least 0.254 mm (0.01 in) from the University of Utah at http://www.met.utah.edu/jhorel/html/wx/climate/daysrain.html, data for

Table A-16. Baseline Combustion Sources - On-road Dust Entrainment.

San Francisco Airport (62 days/year).

5. The California Air Resources Board's "Almanac Emission Projection Data by EIC", 2009 (available at http://www.arb.ca.gov/ei/emissiondata.htm - Areawide Sources - Paved Road Dust), assumes a $PM_{2.5}/PM_{10}$ ratio of 15%.
6. Source: California Air Resources Board, Emissions Inventory Methodology Section 7.9: Entrained Paved Road Dust-Paved Road Travel, July 1997, Table 2 (1993 Roadway Travel Fractions and VMT Estimates for California Entrained Paved Road Dust Emission Estimates).

Baseline Activity Data.[1]

Trip Type	Trips/Year	1-Way Trip Distance (mi/trip)	Ann. Miles Traveled	Av. Veh. Weight (tons)[2]	Annual Ton-Miles[3]	Trips/Day	Trips/Hour	Notes
Quarry Fuel Transport	139	10	2,780	27.5	76,450	1	1	(Calculations reflect two-way trips)
Employee Commute	9,940	5.046	100,324	2.4	240,778	35	35	(Annual/daily calculations reflect two-way trips; hourly calculations reflect one-way trips)
Total Fleet			103,104	3.1	317,228			

Notes:

1. Source for data other than average vehicle weight data: see On-road Off-site Motor Vehicles - Emissions Other Than Entrained Road Dust.
2. Fuel transport trucks assumed to be 40 tons loaded and 15 tons unloaded (average weight of 27.5 tons). Source for average employee commute vehicle weight: California Air Resources Board, Emissions Inventory Methodology Section 7.9 (op cit.), Table 3 (Silt Loadings and Emission Factors for California Entrained Paved Road Dust Estimates), average vehicle weight for Santa Clara County (2.4 tons).
3. Used to calculate average vehicle weight for total fleet.

Table A-17. Baseline Indirect Greenhouse Gas Emissions - Electrical Power Use.

Use	Annual Activity	Annual Electric Power Use Metric	Annual Electric Power Use (kW-hr)	GHG Emission Factors (lb/MW-hr)[5]			Indirect GHG Emissions (MT/yr)[6]			
				CO_2	CH_4	N_2O	CO_2	CH_4	N_2O	CO_2e[7]
Quarry Lighting[1]	(Provided by portable light towers)		0							
Quarry Dewatering[2]	6,720 hours/year	274.6 kilowatts (kW)	1,845,043							
Purchased Water (Dust Suppression)[3]	0 million gal/yr	3,500 kW-hr/million gal	0							
Quarry Office[4]	1,800 square feet	14.6 kW-hr/sq ft-yr	26,280							
Total Quarry Electric Power Use			1,871,323	681.01	0.02829	0.00623	578.05	0.02	0.01	580.19

Notes:

1. Quarry lighting provided by diesel-fueled portable light towers - see off-road diesel equipment emission calculations.
2. Quarry dewatering system, powered by two 300 HP electric powered motors, is rated at 2,000 gallons per minute (gpm) but typically runs at 1,860 gpm. Each motor draws on average 33 amps at 4,160 volts. The dewatering system operates on average 24 hours/day, 7 days/week, 40 weeks/year. Source: Lehigh Southwest Cement Company, May 2010.
3. For the baseline period, water used for dust suppression is drawn from the quarry dewatering system; no purchased water is used. The water-energy proxy value of 3,500 kW-hr per million gallons is derived from *Refining Estimates of Water-Related Energy Use in California* (Report No. CEC-500-2006-118), California Energy Commission, December 2006, page 2 (Northern California outdoor uses).
4. The quarry office measures 30 feet by 60 feet. The Electricity Energy Intensity (EEI) value of 14.6 kW-hr/square foot-year is derived from *the 2003 Commercial Buildings Energy Consumption Survey (CBECS): 2003 Detailed Tables*, U.S. Department of Energy - Energy Information Agency, Table C19 (Electricity Consumption and Conditional Energy Intensity by Census Division for Non-Mall Buildings, Part 3), data for office buildings, Pacific Census Division, available at http://www.eia.doe.gov/emeu/cbecs/cbecs2003/detailed_tables_2003/detailed_tables_2003.html.
5. Source: U.S. Department of Energy, *Emissions & Generation Resource Integrated Database (eGRID)*, eGRID2010 Version 1.1, May 2011, available at http://www.epa.gov/cleanenergy/energy-resources/egrid/index.html - 2007 Summary Table 1 ("Year 2007 eGRID Subregion Emissions - Greenhouse Gases"), data for Western Electricity Coordinating Council (WECC) California (CAMX) Subregion.
6. CO_2 equivalent emissions (CO_2e) calculated based on the global warming potentials in the IPCC's *Second Assessment Report* (SAR, 1996), as presented in the Climate Registry's *General Reporting Protocol*, Version 1.1 (May 2008), Table B.1. $CO_2e = 1 * CO_2 + 21 * CH_4 + 310 * N_2O$.
7. Conversion factors:
   1,000 kW-hr/MW-hr
   0.45359 kilograms/pound
   1,000 kilograms/metric ton (MT)

Table A-18. Baseline Combustion Sources - Emission Zero Hour and Deterioration Rate Emission Factors for Off-Road Diesel Equipment.

Fuel	Min HP	Max HP	Year	THCzh	THCdr	THCunits	COzh	COdr	COunits	NOXzh	NOXdr	NOXunits	PMzh	PMdr	PMunits	CO2zh	CO2dr	CO2units
D	1	15	1994	1.5	0.00E+00	G/HP-HR	5	0.00E+00	G/HP-HR	10	0.00E+00	G/HP-HR	1	0.00E+00	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	1	15	1999	1.05	0.00E+00	G/HP-HR	5	0.00E+00	G/HP-HR	9.35	0.00E+00	G/HP-HR	0.57	0.00E+00	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	1	15	2004	0.68	0.00E+00	G/HP-HR	3.47	0.00E+00	G/HP-HR	6.08	0.00E+00	G/HP-HR	0.47	0.00E+00	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	1	15	2007	0.49	0.00E+00	G/HP-HR	3.47	0.00E+00	G/HP-HR	4.37	0.00E+00	G/HP-HR	0.38	0.00E+00	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	1	15	2040	0.49	0.00E+00	G/HP-HR	3.47	0.00E+00	G/HP-HR	4.37	0.00E+00	G/HP-HR	0.19	0.00E+00	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	16	25	1994	1.84	0.00E+00	G/HP-HR	5	0.00E+00	G/HP-HR	6.92	0.00E+00	G/HP-HR	0.76	0.00E+00	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	16	25	1999	0.9	0.00E+00	G/HP-HR	5	0.00E+00	G/HP-HR	6.92	0.00E+00	G/HP-HR	0.57	0.00E+00	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	16	25	2004	0.64	0.00E+00	G/HP-HR	2.34	0.00E+00	G/HP-HR	5.79	0.00E+00	G/HP-HR	0.38	0.00E+00	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	16	25	2007	0.57	0.00E+00	G/HP-HR	2.34	0.00E+00	G/HP-HR	4.57	0.00E+00	G/HP-HR	0.38	0.00E+00	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	16	25	2040	0.57	0.00E+00	G/HP-HR	2.34	0.00E+00	G/HP-HR	4.57	0.00E+00	G/HP-HR	0.19	0.00E+00	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	26	50	1987	1.84	2.35E-04	G/HP-HR	5	5.13E-04	G/HP-HR	7	1.05E-04	G/HP-HR	0.76	5.89E-05	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	26	50	1998	1.8	2.30E-04	G/HP-HR	5	5.13E-04	G/HP-HR	6.9	1.04E-04	G/HP-HR	0.76	5.89E-05	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	26	50	2003	1.45	1.85E-04	G/HP-HR	4.1	4.20E-04	G/HP-HR	5.55	1.03E-04	G/HP-HR	0.6	4.65E-05	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	26	50	2004	0.64	9.80E-05	G/HP-HR	3.27	3.34E-04	G/HP-HR	5.1	9.33E-05	G/HP-HR	0.43	3.36E-05	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	26	50	2005	0.37	6.90E-05	G/HP-HR	3	3.05E-04	G/HP-HR	4.95	9.67E-05	G/HP-HR	0.38	2.93E-05	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	26	50	2007	0.24	5.45E-05	G/HP-HR	2.86	2.90E-04	G/HP-HR	4.88	9.83E-05	G/HP-HR	0.35	2.72E-05	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	26	50	2012	0.1	4.00E-05	G/HP-HR	2.72	2.76E-04	G/HP-HR	4.8	1.00E-04	G/HP-HR	0.16	1.20E-05	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	26	50	2040	0.1	4.00E-05	G/HP-HR	2.72	2.76E-04	G/HP-HR	2.9	6.00E-05	G/HP-HR	0.01	1.20E-06	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	51	120	1987	1.44	6.66E-05	G/HP-HR	4.8	1.27E-04	G/HP-HR	13	3.01E-04	G/HP-HR	0.84	6.11E-05	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	51	120	1997	0.99	4.58E-05	G/HP-HR	3.49	9.23E-05	G/HP-HR	8.75	2.02E-04	G/HP-HR	0.69	5.02E-05	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	51	120	2003	0.99	4.58E-05	G/HP-HR	3.49	9.23E-05	G/HP-HR	6.9	1.60E-04	G/HP-HR	0.69	5.02E-05	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	51	120	2004	0.46	3.33E-05	G/HP-HR	3.23	8.55E-05	G/HP-HR	5.64	1.03E-04	G/HP-HR	0.39	2.85E-05	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	51	120	2005	0.28	2.92E-05	G/HP-HR	3.14	8.33E-05	G/HP-HR	5.22	8.40E-05	G/HP-HR	0.29	2.12E-05	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	51	120	2007	0.19	2.71E-05	G/HP-HR	3.09	8.21E-05	G/HP-HR	5.01	7.45E-05	G/HP-HR	0.24	1.76E-05	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	51	120	2011	0.1	2.50E-05	G/HP-HR	3.05	8.10E-05	G/HP-HR	2.89	3.80E-05	G/HP-HR	0.2	8.58E-06	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	51	120	2012	0.09	2.31E-05	G/HP-HR	3.05	8.10E-05	G/HP-HR	2.53	3.38E-05	G/HP-HR	0.07	4.30E-06	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	51	120	2014	0.09	2.31E-05	G/HP-HR	3.05	8.10E-05	G/HP-HR	2.53	3.38E-05	G/HP-HR	0.01	1.04E-06	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	51	120	2040	0.07	1.74E-05	G/HP-HR	3.05	8.10E-05	G/HP-HR	1.4	1.88E-05	G/HP-HR	0.01	1.04E-06	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	121	175	1969	1.32	6.11E-05	G/HP-HR	4.4	1.16E-04	G/HP-HR	14	3.24E-04	G/HP-HR	0.77	5.60E-05	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	121	175	1971	1.1	5.09E-05	G/HP-HR	4.4	1.16E-04	G/HP-HR	13	3.01E-04	G/HP-HR	0.66	4.80E-05	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	121	175	1979	1	4.63E-05	G/HP-HR	4.4	1.16E-04	G/HP-HR	12	2.78E-04	G/HP-HR	0.55	4.00E-05	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	121	175	1984	0.94	4.35E-05	G/HP-HR	4.3	1.14E-04	G/HP-HR	11	2.54E-04	G/HP-HR	0.55	4.00E-05	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	121	175	1987	0.88	4.07E-05	G/HP-HR	4.2	1.11E-04	G/HP-HR	11	2.54E-04	G/HP-HR	0.55	4.00E-05	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	121	175	1996	0.68	3.15E-05	G/HP-HR	2.7	7.14E-05	G/HP-HR	8.17	1.89E-04	G/HP-HR	0.38	2.76E-05	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	121	175	2002	0.68	3.15E-05	G/HP-HR	2.7	7.14E-05	G/HP-HR	6.9	1.60E-04	G/HP-HR	0.38	2.76E-05	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	121	175	2003	0.33	2.79E-05	G/HP-HR	2.7	7.14E-05	G/HP-HR	5.26	9.64E-05	G/HP-HR	0.24	1.70E-05	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	121	175	2004	0.22	2.63E-05	G/HP-HR	2.7	7.14E-05	G/HP-HR	4.72	7.52E-05	G/HP-HR	0.19	1.35E-05	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	121	175	2006	0.16	2.57E-05	G/HP-HR	2.7	7.14E-05	G/HP-HR	4.44	6.46E-05	G/HP-HR	0.16	1.18E-05	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	121	175	2011	0.1	2.50E-05	G/HP-HR	2.7	7.14E-05	G/HP-HR	2.45	3.20E-05	G/HP-HR	0.14	1.00E-05	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	121	175	2014	0.09	2.17E-05	G/HP-HR	2.7	7.14E-05	G/HP-HR	2.27	2.88E-05	G/HP-HR	0.01	5.00E-07	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	121	175	2040	0.05	1.17E-05	G/HP-HR	2.7	7.14E-05	G/HP-HR	0.27	3.75E-06	G/HP-HR	0.01	5.00E-07	G/HP-HR	568.3	0.00E+00	G/HP-HR

Table A-18. Baseline Combustion Sources - Emission Zero Hour and Deterioration Rate Emission Factors for Off-Road Diesel Equipment.

Fuel	Min HP	Max HP	Year	THCzh	THCdr	THCunits	COzh	COdr	COunits	NOXzh	NOXdr	NOXunits	PMzh	PMdr	PMunits	CO2zh	CO2dr	CO2units
D	176	250	1969	1.32	6.11E-05	G/HP-HR	4.4	1.16E-04	G/HP-HR	14	3.24E-04	G/HP-HR	0.77	5.60E-05	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	176	250	1971	1.1	5.09E-05	G/HP-HR	4.4	1.16E-04	G/HP-HR	13	3.01E-04	G/HP-HR	0.66	4.80E-05	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	176	250	1979	1	4.63E-05	G/HP-HR	4.4	1.16E-04	G/HP-HR	12	2.78E-04	G/HP-HR	0.55	4.00E-05	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	176	250	1984	0.94	4.35E-05	G/HP-HR	4.3	1.14E-04	G/HP-HR	11	2.54E-04	G/HP-HR	0.55	4.00E-05	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	176	250	1987	0.88	4.07E-05	G/HP-HR	4.2	1.11E-04	G/HP-HR	11	2.54E-04	G/HP-HR	0.55	4.00E-05	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	176	250	1995	0.68	3.15E-05	G/HP-HR	2.7	7.14E-05	G/HP-HR	8.17	1.89E-04	G/HP-HR	0.38	2.76E-05	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	176	250	2002	0.32	1.48E-05	G/HP-HR	0.92	2.43E-05	G/HP-HR	6.25	1.45E-04	G/HP-HR	0.15	7.96E-06	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	176	250	2003	0.19	2.09E-05	G/HP-HR	0.92	2.43E-05	G/HP-HR	5	9.05E-05	G/HP-HR	0.12	6.51E-06	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	176	250	2004	0.14	2.30E-05	G/HP-HR	0.92	2.43E-05	G/HP-HR	4.58	7.23E-05	G/HP-HR	0.11	6.03E-06	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	176	250	2006	0.12	2.40E-05	G/HP-HR	0.92	2.43E-05	G/HP-HR	4.38	6.33E-05	G/HP-HR	0.11	5.79E-06	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	176	250	2010	0.1	2.50E-05	G/HP-HR	0.92	2.43E-05	G/HP-HR	2.45	3.18E-05	G/HP-HR	0.11	5.59E-06	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	176	250	2013	0.07	1.83E-05	G/HP-HR	0.92	2.43E-05	G/HP-HR	1.36	1.75E-05	G/HP-HR	0.01	3.75E-07	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	176	250	2040	0.05	1.17E-05	G/HP-HR	0.92	2.43E-05	G/HP-HR	0.27	3.75E-06	G/HP-HR	0.01	3.75E-07	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	251	500	1969	1.26	4.39E-05	G/HP-HR	4.2	8.32E-04	G/HP-HR	14	2.33E-04	G/HP-HR	0.74	3.93E-05	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	251	500	1971	1.05	3.66E-05	G/HP-HR	4.2	8.32E-04	G/HP-HR	13	2.16E-04	G/HP-HR	0.63	3.34E-05	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	251	500	1979	0.95	3.31E-05	G/HP-HR	4.2	8.32E-04	G/HP-HR	12	2.00E-04	G/HP-HR	0.53	2.81E-05	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	251	500	1984	0.9	3.14E-05	G/HP-HR	4.2	8.32E-04	G/HP-HR	11	1.83E-04	G/HP-HR	0.53	2.81E-05	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	251	500	1987	0.84	2.93E-05	G/HP-HR	4.1	8.12E-04	G/HP-HR	11	1.83E-04	G/HP-HR	0.53	2.81E-05	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	251	500	1995	0.68	2.37E-05	G/HP-HR	2.7	5.35E-05	G/HP-HR	8.17	1.36E-04	G/HP-HR	0.38	2.02E-05	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	251	500	2000	0.32	1.12E-05	G/HP-HR	0.92	1.82E-05	G/HP-HR	6.25	1.04E-04	G/HP-HR	0.15	7.96E-06	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	251	500	2001	0.19	1.95E-05	G/HP-HR	0.92	1.82E-05	G/HP-HR	4.95	7.34E-05	G/HP-HR	0.12	6.51E-06	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	251	500	2002	0.14	2.22E-05	G/HP-HR	0.92	1.82E-05	G/HP-HR	4.51	6.32E-05	G/HP-HR	0.11	6.03E-06	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	251	500	2004	0.12	2.36E-05	G/HP-HR	0.92	1.82E-05	G/HP-HR	4.29	5.81E-05	G/HP-HR	0.11	5.79E-06	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	251	500	2005	0.1	2.50E-05	G/HP-HR	0.92	1.82E-05	G/HP-HR	4	5.30E-05	G/HP-HR	0.11	5.55E-06	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	251	500	2010	0.1	2.50E-05	G/HP-HR	0.92	1.82E-05	G/HP-HR	2.45	3.18E-05	G/HP-HR	0.11	5.55E-06	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	251	500	2013	0.07	1.83E-05	G/HP-HR	0.92	1.82E-05	G/HP-HR	1.36	1.75E-05	G/HP-HR	0.01	3.75E-07	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	251	500	2040	0.05	1.17E-05	G/HP-HR	0.92	1.82E-05	G/HP-HR	0.27	3.75E-06	G/HP-HR	0.01	3.75E-07	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	501	750	1969	1.26	4.39E-05	G/HP-HR	4.2	8.32E-04	G/HP-HR	14	2.33E-04	G/HP-HR	0.74	3.93E-05	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	501	750	1971	1.05	3.66E-05	G/HP-HR	4.2	8.32E-04	G/HP-HR	13	2.16E-04	G/HP-HR	0.63	3.34E-05	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	501	750	1979	0.95	3.31E-05	G/HP-HR	4.2	8.32E-04	G/HP-HR	12	2.00E-04	G/HP-HR	0.53	2.81E-05	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	501	750	1984	0.9	3.14E-05	G/HP-HR	4.2	8.32E-04	G/HP-HR	11	1.83E-04	G/HP-HR	0.53	2.81E-05	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	501	750	1987	0.84	2.93E-05	G/HP-HR	4.1	8.12E-04	G/HP-HR	11	1.83E-04	G/HP-HR	0.53	2.81E-05	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	501	750	1995	0.68	2.37E-05	G/HP-HR	2.7	5.35E-05	G/HP-HR	8.17	1.36E-04	G/HP-HR	0.38	2.02E-05	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	501	750	2001	0.32	1.12E-05	G/HP-HR	0.92	1.82E-05	G/HP-HR	6.25	1.04E-04	G/HP-HR	0.15	7.96E-06	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	501	750	2002	0.19	1.95E-05	G/HP-HR	0.92	1.82E-05	G/HP-HR	4.95	7.34E-05	G/HP-HR	0.12	6.51E-06	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	501	750	2003	0.14	2.22E-05	G/HP-HR	0.92	1.82E-05	G/HP-HR	4.51	6.32E-05	G/HP-HR	0.11	6.03E-06	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	501	750	2005	0.12	2.36E-05	G/HP-HR	0.92	1.82E-05	G/HP-HR	4.29	5.81E-05	G/HP-HR	0.11	5.79E-06	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	501	750	2010	0.1	2.50E-05	G/HP-HR	0.92	1.82E-05	G/HP-HR	2.45	3.18E-05	G/HP-HR	0.11	5.55E-06	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	501	750	2013	0.07	1.83E-05	G/HP-HR	0.92	1.82E-05	G/HP-HR	1.36	1.75E-05	G/HP-HR	0.01	3.75E-07	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	501	750	2040	0.05	1.17E-05	G/HP-HR	0.92	1.82E-05	G/HP-HR	0.27	3.75E-06	G/HP-HR	0.01	3.75E-07	G/HP-HR	568.3	0.00E+00	G/HP-HR

Table A-18. Baseline Combustion Sources - Emission Zero Hour and Deterioration Rate Emission Factors for Off-Road Diesel Equipment.

Fuel	Min HP	Max HP	Year	THCzh	THCdr	THCunits	COzh	COdr	COunits	NOXzh	NOXdr	NOXunits	PMzh	PMdr	PMunits	CO2zh	CO2dr	CO2units
D	751	1000	1969	1.26	4.39E-05	G/HP-HR	4.2	8.32E-04	G/HP-HR	14	2.33E-04	G/HP-HR	0.74	3.93E-05	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	751	1000	1971	1.05	3.66E-05	G/HP-HR	4.2	8.32E-04	G/HP-HR	13	2.16E-04	G/HP-HR	0.63	3.34E-05	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	751	1000	1979	0.95	3.31E-05	G/HP-HR	4.2	8.32E-04	G/HP-HR	12	2.00E-04	G/HP-HR	0.53	2.81E-05	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	751	1000	1984	0.9	3.14E-05	G/HP-HR	4.2	8.32E-04	G/HP-HR	11	1.83E-04	G/HP-HR	0.53	2.81E-05	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	751	1000	1987	0.84	2.93E-05	G/HP-HR	4.1	8.12E-04	G/HP-HR	11	1.83E-04	G/HP-HR	0.53	2.81E-05	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	751	1000	1999	0.68	1.12E-05	G/HP-HR	2.7	5.35E-05	G/HP-HR	8.17	1.36E-04	G/HP-HR	0.38	2.02E-06	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	751	1000	2005	0.32	1.12E-05	G/HP-HR	0.92	1.82E-05	G/HP-HR	6.25	1.04E-04	G/HP-HR	0.15	7.96E-06	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	751	1000	2006	0.19	1.95E-05	G/HP-HR	0.92	1.82E-05	G/HP-HR	4.95	7.34E-05	G/HP-HR	0.12	6.51E-06	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	751	1000	2007	0.14	2.22E-05	G/HP-HR	0.92	1.82E-05	G/HP-HR	4.51	6.32E-05	G/HP-HR	0.11	6.03E-06	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	751	1000	2009	0.12	2.36E-05	G/HP-HR	0.92	1.82E-05	G/HP-HR	4.29	5.81E-05	G/HP-HR	0.11	5.79E-06	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	751	1000	2010	0.1	2.50E-05	G/HP-HR	0.92	1.82E-05	G/HP-HR	4.08	5.30E-05	G/HP-HR	0.11	5.55E-06	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	751	1000	2014	0.07	1.83E-05	G/HP-HR	0.92	1.82E-05	G/HP-HR	2.36	3.00E-05	G/HP-HR	0.06	2.50E-06	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	751	1000	2040	0.05	1.17E-05	G/HP-HR	0.92	1.82E-05	G/HP-HR	2.36	3.00E-05	G/HP-HR	0.02	1.00E-06	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	1001	9999	1969	1.26	4.39E-05	G/HP-HR	4.2	8.32E-04	G/HP-HR	14	2.33E-04	G/HP-HR	0.74	3.93E-05	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	1001	9999	1971	1.05	3.66E-05	G/HP-HR	4.2	8.32E-04	G/HP-HR	13	2.16E-04	G/HP-HR	0.63	3.34E-05	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	1001	9999	1979	0.95	3.31E-05	G/HP-HR	4.2	8.32E-04	G/HP-HR	12	2.00E-04	G/HP-HR	0.53	2.81E-05	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	1001	9999	1984	0.9	3.14E-05	G/HP-HR	4.2	8.32E-04	G/HP-HR	11	1.83E-04	G/HP-HR	0.53	2.81E-05	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	1001	9999	1987	0.84	2.93E-05	G/HP-HR	4.1	8.12E-04	G/HP-HR	11	1.83E-04	G/HP-HR	0.53	2.81E-05	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	1001	9999	1999	0.68	1.12E-05	G/HP-HR	2.7	5.35E-05	G/HP-HR	8.17	1.36E-04	G/HP-HR	0.38	2.02E-06	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	1001	9999	2005	0.32	1.12E-05	G/HP-HR	0.92	1.82E-05	G/HP-HR	6.25	1.04E-04	G/HP-HR	0.15	7.96E-06	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	1001	9999	2006	0.19	1.95E-05	G/HP-HR	0.92	1.82E-05	G/HP-HR	4.95	7.34E-05	G/HP-HR	0.12	6.51E-06	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	1001	9999	2007	0.14	2.22E-05	G/HP-HR	0.92	1.82E-05	G/HP-HR	4.51	6.32E-05	G/HP-HR	0.11	6.03E-06	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	1001	9999	2009	0.12	2.36E-05	G/HP-HR	0.92	1.82E-05	G/HP-HR	4.29	5.81E-05	G/HP-HR	0.11	5.79E-06	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	1001	9999	2010	0.1	2.50E-05	G/HP-HR	0.92	1.82E-05	G/HP-HR	4.08	5.30E-05	G/HP-HR	0.11	5.55E-06	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	1001	9999	2014	0.1	2.50E-05	G/HP-HR	0.92	1.82E-05	G/HP-HR	2.36	3.00E-05	G/HP-HR	0.06	2.50E-06	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	1001	9999	2040	0.05	1.17E-05	G/HP-HR	0.92	1.82E-05	G/HP-HR	2.36	3.00E-05	G/HP-HR	0.02	1.00E-06	G/HP-HR	568.3	0.00E+00	G/HP-HR

Notes:
1. The above factors are derived from *Offroad2007* (Version 2.0.1.2), California Air Resources Board, December 15, 2006, data from emfac.csv data file, lines 41-149 (default exhaust emission factors for off-road diesel equipment for which specific factors are not provided).
2. The above factors are consistent with the factors used by CARB staff to estimate off-road diesel equipment emissions, as documented in *Staff Report: Initial Statement of Reasons for Proposed Rulemaking – Proposed Amendments to the Regulation for In-use Off-road Diesel-fueled Fleets and the Off-road Large Spark-ignition Fleet Requirements*, California Air Resources Board, October 2010, Appendix D (OSM and Summary of Off-road Emissions Inventory Update), Attachment D (Diesel Emission Factors (g/bhp-hr)).

Table A.19. Baseline Combustion Sources - Emission Factors for On-road Motor Vehicles.

Emission Factors for 2010.[1]

Parameter	Units	Annual Emission Factors[2]			Daily/Hourly Emission Factors[3]		
		Heavy-heavy Duty Trucks - Diesel[4]	Passenger Vehicles[5]	Medium Duty Vehicles[6]	Heavy-heavy Duty Trucks - Diesel[4]	Passenger Vehicles[5]	Medium Duty Vehicles[6]
Criteria Pollutants[7]							
CO	lb/mile	0.00983090	0.00967582	0.00945913	0.01019910 (Win)	0.00993492 (Win)	0.00968096 (Win)
NOx	lb/mile	0.03391604	0.00094533	0.00131351	0.03469475 (Sum)	0.00091773 (Sum)	0.00127762 (Sum)
ROG	lb/mile	0.00240666	0.00101525	0.00079302	0.00238586 (Sum)	0.00109191 (Sum)	0.00081321 (Sum)
SOx	lb/mile	0.00004002	0.00000977	0.00001445	0.00004012 (Sum)	0.00001063 (Sum)	0.00001575 (Sum)
PM_{10}	lb/mile	0.00136212	0.00008434	0.00010530	0.00136977 (Win)	0.00008434 (Win)	0.00010530 (Win)
$PM_{2.5}$	lb/mile	0.00116940	0.00005240	0.00007191	0.00117643 (Win)	0.00005240 (Win)	0.00007191 (Win)
Diesel Particulates[8]							
DPM_{10}	lb/mile	0.00122053	0.00000079	0.00000033	0.00122053 (Ann)	0.00000079 (Ann)	0.00000033 (Ann)
$DPM_{2.5}$	lb/mile	0.00112289	0.00000073	0.00000031	0.00112289 (Ann)	0.00000073 (Ann)	0.00000031 (Ann)
Greenhouse Gases[9]							
CO_2	lb/mile	4.19153919	1.00112300	1.48922029	4.19153919 (Ann)	1.00112300 (Ann)	1.48922029 (Ann)
CH_4	lb/mile	0.00011178	0.00008773	0.00010197	0.00011178 (Ann)	0.00008773 (Ann)	0.00010197 (Ann)
N_2O	lb/mile	0.00013789	0.00002969	0.00004151	0.00013789 (Ann)	0.00002969 (Ann)	0.00004151 (Ann)
EMFAC Trips[10]							
Trip Distance	mi/trip	31.441	5.046	5.825	31.441 (Ann)	5.046 (Ann)	5.825 (Ann)

Notes:

1. Emission factors for on-road motor vehicles were derived from California Air Resources Board's EMFAC2007 (version 2.3) model daily seasonal emissions inventories (summer, winter, and annual average) for vehicles in Santa Clara County.
2. Source: EMFAC2007 model 2010 annual average emission inventory for Santa Clara County.
3. Source: EMFAC2007 model 2010 seasonal average emission inventories for Santa Clara County, as follows: a) emission factors for diesel particulates and greenhouse gases, as well as average trip distances, are based on annual average data; b) emission factors for NOx and ROG (both ozone precursors) are based on summer season data since peak ozone levels are typically observed in the summer; c) emission factors for the remaining pollutants (CO, SOx, PM_{10}, and $PM_{2.5}$) are based on peak emission rates observed between the winter and summer seasons. "(Ann)" indicates that a factor is based on annual average data, "(Sum)" indicates that a factor is based on summer season data, and that "(Win)" indicates that a factor is based on winter season data.
4. Includes the following vehicle class: Heavy-Heavy-Duty Trucks (33,001 to 60,000 pounds) - diesel-fueled vehicles only.
5. Includes the following vehicle classes: Light Duty Autos, Light Duty Trucks, & Medium Duty Vehicles (8,500 pounds curb weight and under).
6. Includes the following vehicle class: Medium Duty Vehicles (5,751 to 8,500 pounds curb weight).
7. Criteria pollutant emission factors include total emissions for each pollutant. In addition to exhaust emissions, ROG factors include diurnal, hot soak, running loss, and resting loss emissions, and PM_{10} and $PM_{2.5}$ factors include emissions from brake wear and tire wear.
8. Diesel particulate emission factors include only exhaust PM emissions from diesel vehicles. For calculation purposes, DPM_0 (diesel particulates sized 10 microns and smaller) is used to represent diesel particulate matter (DPM).
9. Greenhouse gas emission factors for carbon dioxide (CO_2) and methane (CH_4) based on EMFAC2007 exhaust emissions for each compound. Factor for nitrous oxide (N_2O) are based on the California Air Resources Board's methodology described in *California's 1990-2004 Greenhouse Gas Emissions Inventory and 1990 Emissions Level: Technical Support Document*, May 2009, pp 28-29 (available at http://www.arb.ca.gov/cc/inventory/doc/doc.htm). For diesel vehicles, N_2O emissions are based on an ARB-observed N_2O emission rate per gallon of diesel fuel. For gasoline vehicles, N_2O emissions are based on a linear correlation of N_2O emissions to NOx exhaust emissions.
10. Based on EMFAC2007 emission inventories for Santa Clara County.

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Appendix B

Baseline Supporting Documentation

Baseline Supporting Documentation.

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Table B-1. Permanente Quarry Baseline Production: 2000 - 2010 (units: short tons).

Year	Limestone - High Grade	Limestone - Medium Grade	Rock Plant Aggregate	Mineral Aggregate Plant	Quarry Production Totals	Waste	Production Totals with Waste	Rock Plant Waste (Fines)
2000	1,217,359	971,951	1,326,029	406,358	3,921,697	2,727,467	6,649,164	238,685
2001	1,106,881	931,488	1,315,476	501,931	3,855,776	3,544,363	7,400,139	236,786
2002	891,503	960,893	1,388,034	758,660	3,999,090	3,475,817	7,474,907	249,846
2003	887,950	811,898	1,365,049	691,026	3,755,923	3,260,202	7,016,125	245,709
2004	950,351	989,437	1,205,394	596,808	3,741,990	4,006,314	7,748,304	216,971
2005	910,575	845,010	1,183,260	395,388	3,334,233	3,873,880	7,208,113	212,987
2006	687,692	986,517	1,399,287	--	3,073,496	1,182,283	4,255,779	251,872
2007	794,373	847,203	1,206,124	--	2,847,700	2,081,220	4,928,920	217,102
2008	578,990	570,859	1,026,369	--	2,176,218	1,135,480	3,311,698	184,746
2009	439,951	596,802	883,587	--	1,920,340	984,439	2,904,779	159,046
2010	551,460	719,348	945,940	--	2,216,748	567,333	2,784,081	170,269
11-Year Average	819,735	839,219	1,204,050	558,362	3,167,565	2,439,891	5,607,455	216,729
Peak Year	1,217,359	989,437	1,399,287	758,660	3,999,090	4,006,314	7,748,304	251,872

Sources:
1. 2000-2010 limestone, rock plant, mineral aggregate, and waste data from monthly quarry production reports (year to date values from December report for each year)
2. Rock Plant waste (fines) assume that waste = 18% of the Rock Plant aggregate input

Table B-2. Permanente Quarry Baseline Work Days and Shifts: 2000 - 2010.

	Days Worked:			Total Quarry	Total Days
Year	1 Shift	2 Shifts	3 Shifts	Work Days	in Year
2000	37	16	251	304	366
2001	43	10	249	302	365
2002	27	10	242	279	365
2003	46	19	224	289	365
2004	47	12	244	303	366
2005	40	61	196	297	365
2006	34	212	40	286	365
2007	32	218	25	275	365
2008	68	187	1	256	366
2009	65	201	0	266	365
2010	87	178	0	265	365
Averages	48	102	134	284	365.3

Notes:

1. Sources: Lehigh Southwest Cement Company, equipment availability data - December 2009 (2000-2008) and January 2010 (2009); daily production data - May 2011 (2010).

Table B-3. Permanente Quarry Baseline Drilling and Blasting: 2000-2010.

Year	Total Annual Production (Short Tons)	Calculated Annual Feet Drilled	Calculated Holes Drilled per Year	Calculated 4-Hole Patterns/Year	Calculated Annual Surface Disturbance (Square Feet)	Actual Blasting Patterns/Year	Blasting Patterns/ Week	Production (Short Tons) per Actual Pattern	Calculated Surface Disturbance per Actual Pattern	Explosives Used (Tons)
2000	6,649,164	346,311	6,534	1,634	472,093	105	2.0	63,325.4	4,496	1261.4
2001	7,400,139	385,424	7,272	1,818	525,413	77	1.5	96,105.7	6,824	1179.4
2002	7,474,907	389,318	7,346	1,836	530,721	71	1.4	105,280.4	7,475	1113.0
2003	7,016,125	365,423	6,895	1,724	498,148	67	1.3	104,718.3	7,435	1000.8
2004	7,748,304	403,558	7,614	1,904	550,133	90	1.7	86,092.3	6,113	1343.5
2005	7,208,113	375,423	7,083	1,771	511,779	71	1.4	101,522.7	7,208	1318.0
2006	4,255,779	221,655	4,182	1,046	302,162	88	1.7	48,361.1	3,434	662.0
2007	4,928,920	256,715	4,844	1,211	349,955	114	2.2	43,236.1	3,070	1602.0
2008	3,311,698	172,484	3,254	814	235,132	85	1.6	38,961.2	2,766	790.0
2009	2,904,779	151,291	2,855	714	206,240	56	1.1	51,871.1	3,683	579.8
2010	2,784,081	145,004	2,736	684	197,671	76	1.5	36,632.6	2,601	792.1
Average	5,607,455	292,055	5,510	1,378	398,132	82	1.6	70,555.2	5,009	1,058

Sources:
- Production data from monthly quarry production reports (year to date for December of each year)
- 2000-2009 blasting and explosives data: Lehigh Southwest Cement Company, January 2010.
- 2010 blasting and explosives data: Lehigh Southwest Cement Company, May 2011.

Blast Pattern Assumptions (used to calculate surface disturbance - based on information provided by Lehigh 5/12/2010):
- 289 square foot disturbance per 4-hole pattern, assuming a 17-foot X 17-foot pattern
- 53 feet drilled/hole
- 19.2 short tons produced/foot drilled, 6.5-inch hole (Lehigh data indicates 17.4 tonnes produced/foot drilled)

Explosives Used:
- ANFO (Ammonium Nitrate and Diesel Mixture)
- Emulsion (Ammonium Nitrate in slurry form - water proof)
- Cast Boosters
- Non-electric ignitation system (blasting caps down the hole and surafce delays.)

Table B-4. Permanente Quarry Baseline Unpaved Road Data: 2000-2010.

Roadway Area, Widths, and Distances.

Roadway Segment	Area, (ft^2)	Acres	Width (feet)	Distance (miles)	Notes
NQ to WMSA	900,928	20.7	80	2.1	Crusher to WMSA
NQ to EMSA	264,980	6.1	60	0.8	Crusher to EMSA (width taken from Google Earth)
North Quarry	1,451,698	33.3	80	3.4	Bottom of Pit to Crusher
Rock Plant	170,070	3.9	30	1.1	Rock Plant to Crusher

Sources: From Topography Maps and/or aerial photos, information provided by Lehigh Southwest Cement Company, January 2010.

Truck Characteristics and Activity.

	Average Production (tons/yr)	Load Capacity (tons)	Operating Weight (Empty) (tons)	Average Truck Weight (tons)	Truck Trips (round trips /year)	Total Traveled (miles/yr)
Quarry Products[2]	3,167,565	116.0	93.1	151.1	27,307	187,694
Quarry Waste[2]	2,439,891	116.0	93.1	151.1	21,034	234,300
Rock Plant Waste	216,729	35.0	36.0	53.5	6,192	39,712

Notes:
1. Source: Information provided by Lehigh Southwest Cement Company, January 2010.
2. Truck weight data for Quarry Products and Quarry Waste reflects an average of the Cat 777 (100-ton) and Cat 785 (150-ton) trucks.

Wind Erosion Data.

Year	Disturbed Acreage	Reclaimed Acreage
2000	200	0
2001	200	0
2002	200	0
2003	200	5
2004	421	10
2005	411	0
2006	558	4
2007	554	15
2008	542	0
2009	522	0
2010	540	0
Average	395.27	3.09

Conversion Factors:
43,560 square feet = 1 acre
5,280 feet = 1 mile

Table B-5. Wind Erosion Particulate Matter Factors for Unpaved Roads and Disturbed Mine Areas.

Date	N	u (max gust) (mph)	u^+ (m/s)	u^+_{10} (m/s)	u^* (m/s)	P_i (g/m^2)	Weekday Only:	Pi (g/m^2)
1/1/2008	1	12.5	5.588	5.588	0.296	0.000		0.000
1/2/2008	2	19.5	8.717	8.717	0.462	0.000		0.000
1/3/2008	3	45.5	20.340	20.340	1.078	23.619		23.619
1/4/2008	4	67.6	30.220	30.220	1.602	80.433		80.433
1/5/2008	5	33.9	15.155	15.155	0.803	6.526		0.000
1/6/2008	6	17.8	7.957	7.957	0.422	0.000		0.000
1/7/2008	7	13	5.812	5.812	0.308	0.000		0.000
1/8/2008	8	43.1	19.267	19.267	1.021	19.364		19.364
1/9/2008	9	10.4	4.649	4.649	0.246	0.000		0.000
1/10/2008	10	12.7	5.677	5.677	0.301	0.000		0.000
1/11/2008	11	12.3	5.499	5.499	0.291	0.000		0.000
1/12/2008	12	14	6.259	6.259	0.332	0.000		0.000
1/13/2008	13	18.5	8.270	8.270	0.438	0.000		0.000
1/14/2008	14	10.8	4.828	4.828	0.256	0.000		0.000
1/15/2008	15	14	6.259	6.259	0.332	0.000		0.000
1/16/2008	16	28.6	12.785	12.785	0.678	1.633		1.633
1/17/2008	17	25.8	11.534	11.534	0.611	0.000		0.000
1/18/2008	18	16.5	7.376	7.376	0.391	0.000		0.000
1/19/2008	19	11.5	5.141	5.141	0.272	0.000		0.000
1/20/2008	20	24	10.729	10.729	0.569	0.000		0.000
1/21/2008	21	16.3	7.287	7.287	0.386	0.000		0.000
1/22/2008	22	14.2	6.348	6.348	0.336	0.000		0.000
1/23/2008	23	11.4	5.096	5.096	0.270	0.000		0.000
1/24/2008	24	25.2	11.265	11.265	0.597	0.000		0.000
1/25/2008	25	31.1	13.903	13.903	0.737	3.713		3.713
1/26/2008	26	27.1	12.115	12.115	0.642	0.580		0.000
1/27/2008	27	55	24.587	24.587	1.303	44.144		0.000
1/28/2008	28	22.5	10.058	10.058	0.533	0.000		0.000
1/29/2008	29	25.6	11.444	11.444	0.607	0.000		0.000
1/30/2008	30	19.4	8.673	8.673	0.460	0.000		0.000
1/31/2008	31	30	13.411	13.411	0.711	2.748		2.748
2/1/2008	32	15.8	7.063	7.063	0.374	0.000		0.000
2/2/2008	33	36.7	16.406	16.406	0.870	9.850		0.000
2/3/2008	34	32.8	14.663	14.663	0.777	5.360		0.000
2/4/2008	35	27.6	12.338	12.338	0.654	0.915		0.915
2/5/2008	36	19.4	8.673	8.673	0.460	0.000		0.000
2/6/2008	37	15	6.706	6.706	0.355	0.000		0.000
2/7/2008	38	15.4	6.884	6.884	0.365	0.000		0.000
2/8/2008	39	15.1	6.750	6.750	0.358	0.000		0.000

Table B-5. Wind Erosion Particulate Matter Factors for Unpaved Roads and Disturbed Mine Areas.

Date	N	u (max gust) (mph)	u^+ (m/s)	u^+_{10} (m/s)	u* (m/s)	P_i (g/m^2)	Weekday Only:	Pi (g/m^2)
2/9/2008	40	15.9	7.108	7.108	0.377	0.000		0.000
2/10/2008	41	14.2	6.348	6.348	0.336	0.000		0.000
2/11/2008	42	15.4	6.884	6.884	0.365	0.000		0.000
2/12/2008	43	13.3	5.946	5.946	0.315	0.000		0.000
2/13/2008	44	34.3	15.333	15.333	0.813	6.970		6.970
2/14/2008	45	29.9	13.366	13.366	0.708	2.664		2.664
2/15/2008	46	15.2	6.795	6.795	0.360	0.000		0.000
2/16/2008	47	12.2	5.454	5.454	0.289	0.000		0.000
2/17/2008	48	11.4	5.096	5.096	0.270	0.000		0.000
2/18/2008	49	11.2	5.007	5.007	0.265	0.000		0.000
2/19/2008	50	13.9	6.214	6.214	0.329	0.000		0.000
2/20/2008	51	17.2	7.689	7.689	0.408	0.000		0.000
2/21/2008	52	33.2	14.842	14.842	0.787	5.775		5.775
2/22/2008	53	16.1	7.197	7.197	0.381	0.000		0.000
2/23/2008	54	37.9	16.943	16.943	0.898	11.431		0.000
2/24/2008	55	47.1	21.056	21.056	1.116	26.664		0.000
2/25/2008	56	13	5.812	5.812	0.308	0.000		0.000
2/26/2008	57	12.7	5.677	5.677	0.301	0.000		0.000
2/27/2008	58	14	6.259	6.259	0.332	0.000		0.000
2/28/2008	59	14.2	6.348	6.348	0.336	0.000		0.000
2/29/2008	60	19.1	8.538	8.538	0.453	0.000		0.000
3/1/2008	61	29	12.964	12.964	0.687	1.939		0.000
3/2/2008	62	30.7	13.724	13.724	0.727	3.353		0.000
3/3/2008	63	14.6	6.527	6.527	0.346	0.000		0.000
3/4/2008	64	17.4	7.778	7.778	0.412	0.000		0.000
3/5/2008	65	13	5.812	5.812	0.308	0.000		0.000
3/6/2008	66	15.4	6.884	6.884	0.365	0.000		0.000
3/7/2008	67	17.6	7.868	7.868	0.417	0.000		0.000
3/8/2008	68	20.1	8.986	8.986	0.476	0.000		0.000
3/9/2008	69	13	5.812	5.812	0.308	0.000		0.000
3/10/2008	70	17.5	7.823	7.823	0.415	0.000		0.000
3/11/2008	71	98.2	43.899	43.899	2.327	211.603		211.603
3/12/2008	72	15.8	7.063	7.063	0.374	0.000		0.000
3/13/2008	73	25.9	11.578	11.578	0.614	0.000		0.000
3/14/2008	74	20.7	9.254	9.254	0.490	0.000		0.000
3/15/2008	75	29.3	13.098	13.098	0.694	2.175		0.000
3/16/2008	76	31.4	14.037	14.037	0.744	3.990		0.000
3/17/2008	77	24.3	10.863	10.863	0.576	0.000		0.000
3/18/2008	78	15.6	6.974	6.974	0.370	0.000		0.000

Table B-5. Wind Erosion Particulate Matter Factors for Unpaved Roads and Disturbed Mine Areas.

Date	N	u (max gust) (mph)	u^+ (m/s)	u^+_{10} (m/s)	u* (m/s)	P_i (g/m^2)	Weekday Only:	Pi (g/m^2)
3/19/2008	79	16.9	7.555	7.555	0.400	0.000		0.000
3/20/2008	80	20.5	9.164	9.164	0.486	0.000		0.000
3/21/2008	81	20.1	8.986	8.986	0.476	0.000		0.000
3/22/2008	82	15.3	6.840	6.840	0.363	0.000		0.000
3/23/2008	83	17.2	7.689	7.689	0.408	0.000		0.000
3/24/2008	84	20.6	9.209	9.209	0.488	0.000		0.000
3/25/2008	85	18.6	8.315	8.315	0.441	0.000		0.000
3/26/2008	86	23.9	10.684	10.684	0.566	0.000		0.000
3/27/2008	87	25.2	11.265	11.265	0.597	0.000		0.000
3/28/2008	88	19.2	8.583	8.583	0.455	0.000		0.000
3/29/2008	89	28.5	12.741	12.741	0.675	1.558		0.000
3/30/2008	90	38.1	17.032	17.032	0.903	11.703		0.000
3/31/2008	91	14.3	6.393	6.393	0.339	0.000		0.000
4/1/2008	92	18.9	8.449	8.449	0.448	0.000		0.000
4/2/2008	93	12.3	5.499	5.499	0.291	0.000		0.000
4/3/2008	94	16.5	7.376	7.376	0.391	0.000		0.000
4/4/2008	95	20.8	9.298	9.298	0.493	0.000		0.000
4/5/2008	96	17.9	8.002	8.002	0.424	0.000		0.000
4/6/2008	97	22.8	10.193	10.193	0.540	0.000		0.000
4/7/2008	98	20.8	9.298	9.298	0.493	0.000		0.000
4/8/2008	99	23.6	10.550	10.550	0.559	0.000		0.000
4/9/2008	100	19.1	8.538	8.538	0.453	0.000		0.000
4/10/2008	101	16.8	7.510	7.510	0.398	0.000		0.000
4/11/2008	102	18.1	8.091	8.091	0.429	0.000		0.000
4/12/2008	103	13.8	6.169	6.169	0.327	0.000		0.000
4/13/2008	104	17.2	7.689	7.689	0.408	0.000		0.000
4/14/2008	105	26.6	11.891	11.891	0.630	0.262		0.262
4/15/2008	106	25.9	11.578	11.578	0.614	0.000		0.000
4/16/2008	107	17.6	7.868	7.868	0.417	0.000		0.000
4/17/2008	108	15.3	6.840	6.840	0.363	0.000		0.000
4/18/2008	109	16	7.153	7.153	0.379	0.000		0.000
4/19/2008	110	31.2	13.948	13.948	0.739	3.805		0.000
4/20/2008	111	20.2	9.030	9.030	0.479	0.000		0.000
4/21/2008	112	22.6	10.103	10.103	0.535	0.000		0.000
4/22/2008	113	22	9.835	9.835	0.521	0.000		0.000
4/23/2008	114	20.8	9.298	9.298	0.493	0.000		0.000
4/24/2008	115	17.1	7.644	7.644	0.405	0.000		0.000
4/25/2008	116	18.9	8.449	8.449	0.448	0.000		0.000
4/26/2008	117	18.8	8.404	8.404	0.445	0.000		0.000

Table B-5. Wind Erosion Particulate Matter Factors for Unpaved Roads and Disturbed Mine Areas.

Date	N	u (max gust) (mph)	u^+ (m/s)	u^+_{10} (m/s)	u* (m/s)	P_i (g/m^2)	Weekday Only:	Pi (g/m^2)
4/27/2008	118	21.2	9.477	9.477	0.502	0.000		0.000
4/28/2008	119	17.3	7.734	7.734	0.410	0.000		0.000
4/29/2008	120	72.2	32.276	32.276	1.711	96.257		96.257
4/30/2008	121	22.9	10.237	10.237	0.543	0.000		0.000
5/1/2008	122	18.4	8.226	8.226	0.436	0.000		0.000
5/2/2008	123	14.6	6.527	6.527	0.346	0.000		0.000
5/3/2008	124	19.2	8.583	8.583	0.455	0.000		0.000
5/4/2008	125	26.5	11.847	11.847	0.628	0.200		0.000
5/5/2008	126	16.3	7.287	7.287	0.386	0.000		0.000
5/6/2008	127	15.5	6.929	6.929	0.367	0.000		0.000
5/7/2008	128	26.8	11.981	11.981	0.635	0.387		0.387
5/8/2008	129	16.5	7.376	7.376	0.391	0.000		0.000
5/9/2008	130	15.8	7.063	7.063	0.374	0.000		0.000
5/10/2008	131	14.7	6.571	6.571	0.348	0.000		0.000
5/11/2008	132	20.3	9.075	9.075	0.481	0.000		0.000
5/12/2008	133	23.9	10.684	10.684	0.566	0.000		0.000
5/13/2008	134	20.4	9.120	9.120	0.483	0.000		0.000
5/14/2008	135	17.4	7.778	7.778	0.412	0.000		0.000
5/15/2008	136	17.8	7.957	7.957	0.422	0.000		0.000
5/16/2008	137	17.9	8.002	8.002	0.424	0.000		0.000
5/17/2008	138	15.2	6.795	6.795	0.360	0.000		0.000
5/18/2008	139	14.7	6.571	6.571	0.348	0.000		0.000
5/19/2008	140	14	6.259	6.259	0.332	0.000		0.000
5/20/2008	141	34.3	15.333	15.333	0.813	6.970		6.970
5/21/2008	142	26.9	12.025	12.025	0.637	0.451		0.451
5/22/2008	143	36	16.093	16.093	0.853	8.971		8.971
5/23/2008	144	30.1	13.456	13.456	0.713	2.832		2.832
5/24/2008	145	24.2	10.818	10.818	0.573	0.000		0.000
5/25/2008	146	27	12.070	12.070	0.640	0.515		0.000
5/26/2008	147	21.5	9.611	9.611	0.509	0.000		0.000
5/27/2008	148	27.1	12.115	12.115	0.642	0.580		0.580
5/28/2008	149	25.7	11.489	11.489	0.609	0.000		0.000
5/29/2008	150	28.9	12.919	12.919	0.685	1.861		1.861
5/30/2008	151	17.2	7.689	7.689	0.408	0.000		0.000
5/31/2008	152	17.6	7.868	7.868	0.417	0.000		0.000
6/1/2008	153	24.7	11.042	11.042	0.585	0.000		0.000
6/2/2008	154	17.6	7.868	7.868	0.417	0.000		0.000
6/3/2008	155	23.2	10.371	10.371	0.550	0.000		0.000
6/4/2008	156	26.1	11.668	11.668	0.618	0.000		0.000

Table B-5. Wind Erosion Particulate Matter Factors for Unpaved Roads and Disturbed Mine Areas.

Date	N	u (max gust) (mph)	u^+ (m/s)	u^+_{10} (m/s)	u* (m/s)	P_i (g/m^2)	Weekday Only:	Pi (g/m^2)
6/5/2008	157	21.4	9.567	9.567	0.507	0.000		0.000
6/6/2008	158	22.6	10.103	10.103	0.535	0.000		0.000
6/7/2008	159	18.6	8.315	8.315	0.441	0.000		0.000
6/8/2008	160	19.1	8.538	8.538	0.453	0.000		0.000
6/9/2008	161	17.6	7.868	7.868	0.417	0.000		0.000
6/10/2008	162	22.6	10.103	10.103	0.535	0.000		0.000
6/11/2008	163	21.7	9.701	9.701	0.514	0.000		0.000
6/12/2008	164	19.9	8.896	8.896	0.471	0.000		0.000
6/13/2008	165	14.6	6.527	6.527	0.346	0.000		0.000
6/14/2008	166	13.9	6.214	6.214	0.329	0.000		0.000
6/15/2008	167	14.9	6.661	6.661	0.353	0.000		0.000
6/16/2008	168	12.9	5.767	5.767	0.306	0.000		0.000
6/17/2008	169	22.5	10.058	10.058	0.533	0.000		0.000
6/18/2008	170	16.6	7.421	7.421	0.393	0.000		0.000
6/19/2008	171	20.2	9.030	9.030	0.479	0.000		0.000
6/20/2008	172	17.4	7.778	7.778	0.412	0.000		0.000
6/21/2008	173	23.9	10.684	10.684	0.566	0.000		0.000
6/22/2008	174	15.6	6.974	6.974	0.370	0.000		0.000
6/23/2008	175	15.2	6.795	6.795	0.360	0.000		0.000
6/24/2008	176	15.5	6.929	6.929	0.367	0.000		0.000
6/25/2008	177	14.7	6.571	6.571	0.348	0.000		0.000
6/26/2008	178	12.6	5.633	5.633	0.299	0.000		0.000
6/27/2008	179	16.2	7.242	7.242	0.384	0.000		0.000
6/28/2008	180	15.4	6.884	6.884	0.365	0.000		0.000
6/29/2008	181	16.8	7.510	7.510	0.398	0.000		0.000
6/30/2008	182	15.1	6.750	6.750	0.358	0.000		0.000
7/1/2008	183	13.7	6.124	6.124	0.325	0.000		0.000
7/2/2008	184	14.9	6.661	6.661	0.353	0.000		0.000
7/3/2008	185	20.4	9.120	9.120	0.483	0.000		0.000
7/4/2008	186	17.7	7.913	7.913	0.419	0.000		0.000
7/5/2008	187	19.9	8.896	8.896	0.471	0.000		0.000
7/6/2008	188	13.7	6.124	6.124	0.325	0.000		0.000
7/7/2008	189	16.3	7.287	7.287	0.386	0.000		0.000
7/8/2008	190	15.4	6.884	6.884	0.365	0.000		0.000
7/9/2008	191	13.5	6.035	6.035	0.320	0.000		0.000
7/10/2008	192	13.9	6.214	6.214	0.329	0.000		0.000
7/11/2008	193	15.2	6.795	6.795	0.360	0.000		0.000
7/12/2008	194	16.3	7.287	7.287	0.386	0.000		0.000
7/13/2008	195	16.7	7.466	7.466	0.396	0.000		0.000

Table B-5. Wind Erosion Particulate Matter Factors for Unpaved Roads and Disturbed Mine Areas.

Date	N	u (max gust) (mph)	u^+ (m/s)	u^+_{10} (m/s)	u* (m/s)	P_i (g/m^2)	Weekday Only:	Pi (g/m^2)
7/14/2008	196	16.2	7.242	7.242	0.384	0.000		0.000
7/15/2008	197	16.6	7.421	7.421	0.393	0.000		0.000
7/16/2008	198	13.8	6.169	6.169	0.327	0.000		0.000
7/17/2008	199	16.4	7.331	7.331	0.389	0.000		0.000
7/18/2008	200	12.7	5.677	5.677	0.301	0.000		0.000
7/19/2008	201	14	6.259	6.259	0.332	0.000		0.000
7/20/2008	202	16.4	7.331	7.331	0.389	0.000		0.000
7/21/2008	203	15.3	6.840	6.840	0.363	0.000		0.000
7/22/2008	204	14.9	6.661	6.661	0.353	0.000		0.000
7/23/2008	205	14.3	6.393	6.393	0.339	0.000		0.000
7/24/2008	206	15.3	6.840	6.840	0.363	0.000		0.000
7/25/2008	207	16.6	7.421	7.421	0.393	0.000		0.000
7/26/2008	208	19.6	8.762	8.762	0.464	0.000		0.000
7/27/2008	209	17.1	7.644	7.644	0.405	0.000		0.000
7/28/2008	210	15.9	7.108	7.108	0.377	0.000		0.000
7/29/2008	211	18	8.047	8.047	0.426	0.000		0.000
7/30/2008	212	15.7	7.019	7.019	0.372	0.000		0.000
7/31/2008	213	15.3	6.840	6.840	0.363	0.000		0.000
8/1/2008	214	15.1	6.750	6.750	0.358	0.000		0.000
8/2/2008	215	21.3	9.522	9.522	0.505	0.000		0.000
8/3/2008	216	14.8	6.616	6.616	0.351	0.000		0.000
8/4/2008	217	13.8	6.169	6.169	0.327	0.000		0.000
8/5/2008	218	12.4	5.543	5.543	0.294	0.000		0.000
8/6/2008	219	14.4	6.437	6.437	0.341	0.000		0.000
8/7/2008	220	15.1	6.750	6.750	0.358	0.000		0.000
8/8/2008	221	18.3	8.181	8.181	0.434	0.000		0.000
8/9/2008	222	16.6	7.421	7.421	0.393	0.000		0.000
8/10/2008	223	17.8	7.957	7.957	0.422	0.000		0.000
8/11/2008	224	15.3	6.840	6.840	0.363	0.000		0.000
8/12/2008	225	12.8	5.722	5.722	0.303	0.000		0.000
8/13/2008	226	13.5	6.035	6.035	0.320	0.000		0.000
8/14/2008	227	12.3	5.499	5.499	0.291	0.000		0.000
8/15/2008	228	12.7	5.677	5.677	0.301	0.000		0.000
8/16/2008	229	14.8	6.616	6.616	0.351	0.000		0.000
8/17/2008	230	15.2	6.795	6.795	0.360	0.000		0.000
8/18/2008	231	17.3	7.734	7.734	0.410	0.000		0.000
8/19/2008	232	20.6	9.209	9.209	0.488	0.000		0.000
8/20/2008	233	17.7	7.913	7.913	0.419	0.000		0.000
8/21/2008	234	17	7.600	7.600	0.403	0.000		0.000

Table B-5. Wind Erosion Particulate Matter Factors for Unpaved Roads and Disturbed Mine Areas.

Date	N	u (max gust) (mph)	u^+ (m/s)	u^+_{10} (m/s)	u* (m/s)	P_i (g/m^2)	Weekday Only:	Pi (g/m^2)
8/22/2008	235	15.5	6.929	6.929	0.367	0.000		0.000
8/23/2008	236	15.2	6.795	6.795	0.360	0.000		0.000
8/24/2008	237	14	6.259	6.259	0.332	0.000		0.000
8/25/2008	238	17	7.600	7.600	0.403	0.000		0.000
8/26/2008	239	17	7.600	7.600	0.403	0.000		0.000
8/27/2008	240	18.6	8.315	8.315	0.441	0.000		0.000
8/28/2008	241	16.6	7.421	7.421	0.393	0.000		0.000
8/29/2008	242	13.8	6.169	6.169	0.327	0.000		0.000
8/30/2008	243	13.5	6.035	6.035	0.320	0.000		0.000
8/31/2008	244	15.7	7.019	7.019	0.372	0.000		0.000
9/1/2008	245	20.8	9.298	9.298	0.493	0.000		0.000
9/2/2008	246	17.9	8.002	8.002	0.424	0.000		0.000
9/3/2008	247	17.8	7.957	7.957	0.422	0.000		0.000
9/4/2008	248	16.1	7.197	7.197	0.381	0.000		0.000
9/5/2008	249	16.6	7.421	7.421	0.393	0.000		0.000
9/6/2008	250	15.9	7.108	7.108	0.377	0.000		0.000
9/7/2008	251	13.9	6.214	6.214	0.329	0.000		0.000
9/8/2008	252	15	6.706	6.706	0.355	0.000		0.000
9/9/2008	253	15.5	6.929	6.929	0.367	0.000		0.000
9/10/2008	254	16.4	7.331	7.331	0.389	0.000		0.000
9/11/2008	255	13.3	5.946	5.946	0.315	0.000		0.000
9/12/2008	256	13.1	5.856	5.856	0.310	0.000		0.000
9/13/2008	257	13	5.812	5.812	0.308	0.000		0.000
9/14/2008	258	12.6	5.633	5.633	0.299	0.000		0.000
9/15/2008	259	11.8	5.275	5.275	0.280	0.000		0.000
9/16/2008	260	14.8	6.616	6.616	0.351	0.000		0.000
9/17/2008	261	17.4	7.778	7.778	0.412	0.000		0.000
9/18/2008	262	18.9	8.449	8.449	0.448	0.000		0.000
9/19/2008	263	24.6	10.997	10.997	0.583	0.000		0.000
9/20/2008	264	19.3	8.628	8.628	0.457	0.000		0.000
9/21/2008	265	15.4	6.884	6.884	0.365	0.000		0.000
9/22/2008	266	19.8	8.851	8.851	0.469	0.000		0.000
9/23/2008	267	15.8	7.063	7.063	0.374	0.000		0.000
9/24/2008	268	15.9	7.108	7.108	0.377	0.000		0.000
9/25/2008	269	16.9	7.555	7.555	0.400	0.000		0.000
9/26/2008	270	16.6	7.421	7.421	0.393	0.000		0.000
9/27/2008	271	14.8	6.616	6.616	0.351	0.000		0.000
9/28/2008	272	12.6	5.633	5.633	0.299	0.000		0.000
9/29/2008	273	13.4	5.990	5.990	0.317	0.000		0.000

Table B-5. Wind Erosion Particulate Matter Factors for Unpaved Roads and Disturbed Mine Areas.

Date	N	u (max gust) (mph)	u^+ (m/s)	u^+_{10} (m/s)	u* (m/s)	P_i (g/m^2)	Weekday Only:	Pi (g/m^2)
9/30/2008	274	12.3	5.499	5.499	0.291	0.000		0.000
10/1/2008	275	16.9	7.555	7.555	0.400	0.000		0.000
10/2/2008	276	19.4	8.673	8.673	0.460	0.000		0.000
10/3/2008	277	24.6	10.997	10.997	0.583	0.000		0.000
10/4/2008	278	20.9	9.343	9.343	0.495	0.000		0.000
10/5/2008	279	16.9	7.555	7.555	0.400	0.000		0.000
10/6/2008	280	14.4	6.437	6.437	0.341	0.000		0.000
10/7/2008	281	15.5	6.929	6.929	0.367	0.000		0.000
10/8/2008	282	16.7	7.466	7.466	0.396	0.000		0.000
10/9/2008	283	21.4	9.567	9.567	0.507	0.000		0.000
10/10/2008	284	32.9	14.708	14.708	0.780	5.463		5.463
10/11/2008	285	32.8	14.663	14.663	0.777	5.360		0.000
10/12/2008	286	22.9	10.237	10.237	0.543	0.000		0.000
10/13/2008	287	20.1	8.986	8.986	0.476	0.000		0.000
10/14/2008	288	17.1	7.644	7.644	0.405	0.000		0.000
10/15/2008	289	14.4	6.437	6.437	0.341	0.000		0.000
10/16/2008	290	18.5	8.270	8.270	0.438	0.000		0.000
10/17/2008	291	14.4	6.437	6.437	0.341	0.000		0.000
10/18/2008	292	14.8	6.616	6.616	0.351	0.000		0.000
10/19/2008	293	12.7	5.677	5.677	0.301	0.000		0.000
10/20/2008	294	14.7	6.571	6.571	0.348	0.000		0.000
10/21/2008	295	16.6	7.421	7.421	0.393	0.000		0.000
10/22/2008	296	23.7	10.595	10.595	0.562	0.000		0.000
10/23/2008	297	11.6	5.186	5.186	0.275	0.000		0.000
10/24/2008	298	14.2	6.348	6.348	0.336	0.000		0.000
10/25/2008	299	12.8	5.722	5.722	0.303	0.000		0.000
10/26/2008	300	10.8	4.828	4.828	0.256	0.000		0.000
10/27/2008	301	11.2	5.007	5.007	0.265	0.000		0.000
10/28/2008	302	9.9	4.426	4.426	0.235	0.000		0.000
10/29/2008	303	11.8	5.275	5.275	0.280	0.000		0.000
10/30/2008	304	73.1	32.679	32.679	1.732	99.515		99.515
10/31/2008	305	36.5	16.317	16.317	0.865	9.596		9.596
11/1/2008	306	39.5	17.658	17.658	0.936	13.684		0.000
11/2/2008	307	24.5	10.952	10.952	0.580	0.000		0.000
11/3/2008	308	34.9	15.602	15.602	0.827	7.655		7.655
11/4/2008	309	22.8	10.193	10.193	0.540	0.000		0.000
11/5/2008	310	16.4	7.331	7.331	0.389	0.000		0.000
11/6/2008	311	15.3	6.840	6.840	0.363	0.000		0.000
11/7/2008	312	16.4	7.331	7.331	0.389	0.000		0.000

Table B-5. Wind Erosion Particulate Matter Factors for Unpaved Roads and Disturbed Mine Areas.

Date	N	u (max gust) (mph)	u^+ (m/s)	u^+_{10} (m/s)	u* (m/s)	P_i (g/m^2)	Weekday Only:	Pi (g/m^2)
11/8/2008	313	38	16.988	16.988	0.900	11.567		0.000
11/9/2008	314	32.6	14.574	14.574	0.772	5.157		0.000
11/10/2008	315	15.9	7.108	7.108	0.377	0.000		0.000
11/11/2008	316	11.6	5.186	5.186	0.275	0.000		0.000
11/12/2008	317	15.2	6.795	6.795	0.360	0.000		0.000
11/13/2008	318	21.2	9.477	9.477	0.502	0.000		0.000
11/14/2008	319	21.8	9.745	9.745	0.517	0.000		0.000
11/15/2008	320	15.7	7.019	7.019	0.372	0.000		0.000
11/16/2008	321	9.6	4.292	4.292	0.227	0.000		0.000
11/17/2008	322	11.1	4.962	4.962	0.263	0.000		0.000
11/18/2008	323	9.5	4.247	4.247	0.225	0.000		0.000
11/19/2008	324	13.4	5.990	5.990	0.317	0.000		0.000
11/20/2008	325	16.6	7.421	7.421	0.393	0.000		0.000
11/21/2008	326	22.5	10.058	10.058	0.533	0.000		0.000
11/22/2008	327	13.6	6.080	6.080	0.322	0.000		0.000
11/23/2008	328	11.8	5.275	5.275	0.280	0.000		0.000
11/24/2008	329	11.7	5.230	5.230	0.277	0.000		0.000
11/25/2008	330	13.4	5.990	5.990	0.317	0.000		0.000
11/26/2008	331	12.9	5.767	5.767	0.306	0.000		0.000
11/27/2008	332	13.5	6.035	6.035	0.320	0.000		0.000
11/28/2008	333	9.3	4.157	4.157	0.220	0.000		0.000
11/29/2008	334	23.4	10.461	10.461	0.554	0.000		0.000
11/30/2008	335	12.2	5.454	5.454	0.289	0.000		0.000
12/1/2008	336	10.5	4.694	4.694	0.249	0.000		0.000
12/2/2008	337	14.5	6.482	6.482	0.344	0.000		0.000
12/3/2008	338	15.2	6.795	6.795	0.360	0.000		0.000
12/4/2008	339	16.5	7.376	7.376	0.391	0.000		0.000
12/5/2008	340	12.3	5.499	5.499	0.291	0.000		0.000
12/6/2008	341	14.7	6.571	6.571	0.348	0.000		0.000
12/7/2008	342	12.2	5.454	5.454	0.289	0.000		0.000
12/8/2008	343	18.9	8.449	8.449	0.448	0.000		0.000
12/9/2008	344	17.3	7.734	7.734	0.410	0.000		0.000
12/10/2008	345	12.1	5.409	5.409	0.287	0.000		0.000
12/11/2008	346	16.1	7.197	7.197	0.381	0.000		0.000
12/12/2008	347	13.2	5.901	5.901	0.313	0.000		0.000
12/13/2008	348	30.5	13.635	13.635	0.723	3.177		0.000
12/14/2008	349	22.1	9.880	9.880	0.524	0.000		0.000
12/15/2008	350	26.8	11.981	11.981	0.635	0.387		0.387
12/16/2008	351	22	9.835	9.835	0.521	0.000		0.000

Table B-5. Wind Erosion Particulate Matter Factors for Unpaved Roads and Disturbed Mine Areas.

Date	N	u (max gust) (mph)	u^+ (m/s)	u^+_{10} (m/s)	u* (m/s)	P_i (g/m^2)	Weekday Only:	Pi (g/m^2)
12/17/2008	352	23.5	10.505	10.505	0.557	0.000		0.000
12/18/2008	353	22	9.835	9.835	0.521	0.000		0.000
12/19/2008	354	21.9	9.790	9.790	0.519	0.000		0.000
12/20/2008	355	13.5	6.035	6.035	0.320	0.000		0.000
12/21/2008	356	23.5	10.505	10.505	0.557	0.000		0.000
12/22/2008	357	25.6	11.444	11.444	0.607	0.000		0.000
12/23/2008	358	16.5	7.376	7.376	0.391	0.000		0.000
12/24/2008	359	38.9	17.390	17.390	0.922	12.820		12.820
12/25/2008	360	40.8	18.239	18.239	0.967	15.638		15.638
12/26/2008	361	26.8	11.981	11.981	0.635	0.387		0.387
12/27/2008	362	12.2	5.454	5.454	0.289	0.000		0.000
12/28/2008	363	12.9	5.767	5.767	0.306	0.000		0.000
12/29/2008	364	18.4	8.226	8.226	0.436	0.000		0.000
12/30/2008	365	16.4	7.331	7.331	0.389	0.000		0.000
12/31/2008	366	10.6	4.739	4.739	0.251	0.000		0.000
		Max u^+ (m/s):	43.899		Sum:	802.213	g/m^2-yr	629.472
		Conversion Factors:	907,185	grams/ton	EF (TSP)=	3.58	ton/acre-yr	2.81
			4,047	m^2/acre	EF (PM_{10})=	1.79	ton/acre-yr	1.40
					EF ($PM_{2.5}$)=	0.27	ton/acre-yr	0.21
						(Every Day)		(Week Days)

Notes:

1. Used max daily gust speed from 2008 met data for u+. Anemometer height at 10m; no height correction to 10m required.
2. Threshold friction velocity (u^*_t) obtained from Table 13.2.5-2 AP-42 (scraper tracks on coal pile): 0.62 m/s
3. Particle size multipliers (k) taken from AP-42 p. 13.2.5-3:

   $PM_{2.5}$ = 0.075

   PM_{10} = 0.5
4. The highest recorded wind gust from the Hanson meteorological station on 7/15/2008 was 98.2 mph at 09:00. This value appears inconsistent with the daily wind gust trends (< 20 mph for all other hours). In addition, there are a number of invalid parameters (e.g. temperature, RH) recorded for hours 09:00 and 10:00 that imply the tower could have been serviced or repaired during that period. Therefore, for the purposes of this analysis, data for 7/15/2008 at 09:00 was invalidated, leaving a maximum wind gust of 16.6 mph at 14:00 for that day.

Table B-6. Permanente Quarry Baseline Off-road Diesel Equipment Activity: 2000 - 2010.

	Equipment					Operating Hours														Baseline Usage[1]	
Category	ID	Manufacturer	Model	Year	HP	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	Sum (Hrs)	Summary Period	Years	Hrs/Year	Hrs/Day
Bore/Drill Rigs[2]	874-014	Ingersoll Rand	DM50	1989	525	1,219.0	721.0	611.5	1,010.0	895.0	474.5	--	--	--	--	--	4,931.0	2000-2007	8	616.4	2.2
	874-015	Ingersoll Rand	LM100	1994	115	68.0	36.0	106.0	14.0	--	--	--	--	--	--	--	224.0	2000-2007	8	28.0	0.1
	874-016	Driltech	DK45	1999	450	2,073.5	2,295.5	2,556.0	1,958.5	2,309.5	2,108.5	1,679.0	446.0	29.0	--	--	15,426.5	2000-2007	8	1,928.3	6.8
Crawler Tractors	842-030	Caterpillar	D10N	1995	520	2,870.0	2,174.0	426.0	--	--	--	--	--	--	--	--	5,470.0	2000-2010	11	497.3	1.8
	842-032	Caterpillar	D10R	1997	570	2,770.0	3,358.5	3,686.0	2,656.5	3,040.5	3,045.5	823.0	--	--	--	--	19,380.0	2000-2010	11	1,761.8	6.2
	842-033	Caterpillar	D10R	1999	570	4,024.0	4,666.5	3,870.0	3,927.5	4,432.0	3,069.5	958.0	1,657.0	892.5	682.0	--	28,179.0	2000-2010	11	2,561.7	9.0
	842-034	Caterpillar	D10N	1995	520	--	--	1,835.0	2,439.0	3,386.0	2,891.5	797.5	--	--	--	--	11,349.0	2000-2010	11	1,031.7	3.6
	842-035	Caterpillar	D10T	2005	580	--	--	--	--	--	572.0	2,677.0	1,460.0	929.0	1,375.3	1,623.5	8,636.8	2000-2010	11	785.2	2.8
	842-036	Caterpillar	D10T	2005	580	--	--	--	--	--	416.0	2,262.5	1,360.5	782.0	1,105.0	1,284.3	7,210.3	2000-2010	11	655.5	2.3
Excavators	844-006	Link Belt	LS-5800	1995	300	--	--	--	259.0	340.0	70.5	--	--	--	--	--	669.5	2003-2005	3	223.2	0.8
Graders	845-009	Caterpillar	16G	1995	275	1,875.5	1,374.5	991.0	1,128.5	1,558.5	1,254.0	1,396.0	1,039.0	612.0	1,042.0	796.5	13,067.5	2000-2010	11	1,188.0	4.2
Off-Highway Trucks																					
150-ton Trucks	858-063	Caterpillar	785	1992	1290	4,424.0	4,237.0	5,098.0	4,848.0	5,032.5	4,060.0	2,661.0	--	--	--	--	30,360.5	2000-2010	11	2,760.0	9.7
	858-064	Caterpillar	785B	1993	1290	5,408.0	4,856.5	4,328.0	5,025.0	5,607.5	4,089.5	2,951.5	2,792.5	2,162.0	2,157.0	1,049.4	40,426.9	2000-2010	11	3,675.2	12.9
	858-065	Caterpillar	785B	1995	1290	5,412.0	5,355.0	5,168.0	4,646.0	5,852.5	4,928.5	2,434.5	2,425.0	1,493.0	--	--	37,714.5	2000-2010	11	3,428.6	12.1
	858-066	Caterpillar	785B	1995	1290	4,824.5	3,872.0	5,345.5	4,750.5	5,334.0	4,941.0	2,751.0	2,090.0	2,271.5	1,979.0	--	38,159.0	2000-2010	11	3,469.0	12.2
	858-067	Caterpillar	785B	1996	1290	5,102.0	4,928.5	4,609.5	5,140.5	5,547.0	4,745.0	3,076.0	2,501.0	2,389.0	2,568.0	442.2	41,048.7	2000-2010	11	3,731.7	13.1
100-ton Trucks[3]	858-070	Caterpillar	777C	1996	870	2,006.0	2,657.0	1,478.5	2,151.0	3,154.5	2,234.5	1,084.5	303.0	57.0	--	354.4	15,480.4	2000-2010	11	1,407.3	5.0
	858-071	Caterpillar	777D	2000	938	--	3,692.5	2,043.0	2,879.5	3,786.0	3,039.0	1,407.5	619.5	300.0	359.0	994.1	19,120.1	2000-2010	11	1,738.2	6.1
	858-077	Caterpillar	777D	2005	938	--	--	--	--	--	2,226.0	2,424.5	1,502.5	717.0	601.0	945.0	8,416.0	2000-2010	11	765.1	2.7
	858-078	Caterpillar	777D	2005	938	--	--	--	--	--	1,771.5	2,394.0	1,584.0	896.0	1,385.0	2,541.9	10,572.4	2000-2010	11	961.1	3.4
	858-079	Caterpillar	777D	2006	938	--	--	--	--	--	--	306.0	1,596.0	978.0	1,566.0	3,272.7	7,718.7	2000-2010	11	701.7	2.5
	858-080	Caterpillar	777F	2007	938	--	--	--	--	--	--	--	215.0	735.0	773.0	1,564.6	3,287.6	2000-2010	11	298.9	1.1
60-ton Truck	827-037	Caterpillar	773B	1994	650	3,968.0	3,255.0	3,303.0	3,259.0	3,398.5	3,239.5	2,027.5	2,554.0	857.0	246.0	54.5	26,162.0	2000-2010	11	2,378.4	8.4
40-ton Trucks[4]	858-074	Caterpillar	740	2003	415	--	--	--	--	1,957.2	1,957.2	1,957.2	1,957.2	1,957.2	1,957.2	1,408.0	13,151.0	2004-2010	7	1,878.7	6.6
	858-075	Caterpillar	740	2003	415	--	--	--	--	2,185.3	2,185.3	2,185.3	2,185.3	2,185.3	2,185.3	2,024.0	15,136.0	2004-2010	7	2,162.3	7.6
	858-076	Caterpillar	740	2003	415	--	--	--	--	1,915.3	1,915.3	1,915.3	1,915.3	1,915.3	1,915.3	2,431.0	13,923.0	2004-2010	7	1,989.0	7.0
Rubber Tired Dozers[5,6]	841-005	Caterpillar	824C	1995	315	1,114.5	1,272.5	1,047.0	1,309.0	1,361.0	1,231.0	790.0	325.0	167.0	821.0	947.4	10,385.4	2000-2010	11	962.3	3.4
	Rental	Caterpillar	824C	1995	315	199.5	--	--	--	--	--	--	--	--	--	--	199.5	2000-2010	11	--	--
Rubber Tired Loaders[7]	843-064	Caterpillar	992D	1995	710	4,022.0	3,325.5	4,650.5	4,227.5	3,877.5	3,763.5	1,341.5	--	--	--	--	25,208.0	2000-2010	11	2,291.6	8.1
	843-067	Caterpillar	992D	1996	710	3,411.0	3,784.5	3,995.5	3,857.0	4,922.0	4,523.5	1,560.5	266.0	136.0	352.0	457.9	27,265.9	2000-2010	11	2,478.7	8.7
	843-072	Komatsu	WA-900	1999	897	4,311.5	4,413.0	3,453.5	3,719.0	4,083.5	3,514.0	729.5	418.0	--	--	--	24,642.0	2000-2010	11	2,240.2	7.9
	843-080	Caterpillar	992G	2005	800	--	--	--	--	--	418.0	3,195.0	2,313.0	1,427.5	1,693.0	1,275.5	10,322.0	2000-2010	11	938.4	3.3
	843-081	Caterpillar	992G	2006	800	--	--	--	--	--	--	685.0	2,365.0	1,255.5	1,638.0	2,350.3	8,293.8	2000-2010	11	754.0	2.7
	843-082	Caterpillar	992G	2007	800	--	--	--	--	--	--	--	791.0	1,551.0	1,595.0	1,812.1	5,749.1	2000-2010	11	522.6	1.8
Water Trucks	827-045	Caterpillar	773E	2003	671	--	--	--	--	--	--	--	--	--	2,205.0	2,253.7	4,458.7	2009-2010	2	2,229.3	7.8
Portable Light Towers[8]	725-039	Allmand	ML 695	1999	10.7																
	725-040	Allmand	ML 695	1999	10.7																
	725-041	Allmand	ML 695	2002	10.7																
	725-042	Allmand	ML 695	2002	10.7																
	725-043	Allmand	ML 695	2002	10.7																
	725-044	Allmand	ML 695	2002	10.7																
	725-045	Allmand	ML 695	2002	10.7																
	725-046	Allmand	ML 695	2003	10.7																
	725-047	Allmand	ML 695	2003	10.7																
Totals:			Average:	2002	10.7															2,272.0	8.0

Notes:
1. Baseline usage hours/year based on identified number of years in summary period. Baseline usage hours/day assumes the following average quarry operating schedule (2000-2010):
   284 days per year
2. Bore/drill rigs are summarized for the years 2000-2007, since the quarry switched to use of a private drilling contractor in 2008; contractor records are not available.
3. Caterpillar 777D truck, ID 858-071, in service 1/18/2001 - vehicle assumed to be 2000 model (Tier 1).
4. Hours reported for the Cat-740 trucks for 2004-2009 are total vehicle operating hours as of the end of 2009. Source: Lehigh Southwest Cement Company, January 2010. These hours are allocated uniformly over each vehicle's six-year operating life from 2004-2009.
5. Caterpillar rubber tired dozer, ID 841-005, in service 2/1996 - vehicle assumed to be 1995 model (Tier 0).
6. Information for rental rubber tired dozer used in 2000 is assumed to be the same as the 841-005 rubber tired dozer.
7. Komatsu WA-900 rubber tired loader, ID 843-072, in service 1/17/2000 - vehicle assumed to be 1999 model (Tier 0).
8. Two portable light towers are assumed to operate for four hours each quarry operating day over the baseline period.

Table B-7. Permanente Quarry Baseline On-road Off-site Motor Vehicle Activity Data.

Employee Data.

Year	Employees[1] Rock Plant	Min Agg Plant	Quarry	Total
2000	28	3	40	71
2001	29	3	39	71
2002	29	3	39	71
2003	28	3	42	73
2004	19	3	42	64
2005	21	1	39	61
2006	22	--	36	58
2007	22	--	26	48
2008	23	--	28	51
2009	20	--	28	48
2010	20	--	28	48
Average	24	3	35	62

Employee Commute Trips:[2] 5.046 (one-way - two-way trips reflected in calculations)

Baseline Fuel Use Activity Data.

	Gasoline				Diesel				Total Trips			
	Facility Fuel Use	Allocated To[4]			Facility Fuel Use	Allocated To[5]						
Year	(gal/yr)[3]	Quarry (gal/yr)	Rock Plant (gal/yr)	Min. Agg. Plt (gal/yr)	(gal/yr)[3]	Quarry (gal/yr)	Rock Plant (gal/yr)	Min. Agg. Plt (gal/yr)	Tot. Facil. (trips/yr)	Quarry (trips/yr)	Rock Plant (trips/yr)	Min. Agg. (trips/yr)
2000	34,994				1,309,701							
2001	37,942				1,291,835							
2002	39,454				1,287,842							
2003	40,336				1,260,178							
2004	42,241				1,428,160							
2005	38,446				1,413,613							
2006	28,130				1,014,203							
2007	20,745				920,124							
2008	19,161				663,584							
2009	20,271				593,784							
2010	25,179				567,743							
Average	31,536	12,615	1,577	-	1,068,252	822,554	128,190	-				
Transport Trucks (/yr)	5.26	2.10	0.26	-	178.04	137.09	21.37	-	183	139	22	-

Assumed fuel transport trip distance: 10 (one-way)

Notes:

1. Source: employee data provided by Lehigh Southwest Cement Company, January 2010 (2000 - 2009) and July 2011(2010).
2. Source: EMFAC2007 data for Santa Clara County.
3. Source: gasoline and diesel fuel consumption data provided by Lehigh Southwest Cement Company, January 2010 (2000 - 2009), and July 2011 (2010).
4. Assumes an allocation of 40% of gasoline use to the quarry, 5% to the rock plant, and 0% to the mineral aggregate plant for the period from 2000 - 2010. Source: Lehigh Southwest Cement Company, January 2010.
5. Assumes an allocation of 77% of diesel use to the quarry, 12% to the rock plant, and 0% to the mineral aggregate plant for the period from 2000 - 2010. Source: Lehigh Southwest Cement Company, January 2010.

Appendix C

Proposed Project Emission Calculations

Proposed Project Emission Calculations.

Table	Activity
	Summary Tables
C-1	Annual Criteria Pollutant Emissions
C-2	Daily Criteria Pollutant Emissions
C-3	Annual Toxic Air Contaminant Emissions
C-4	Hourly Toxic Air Contaminant Emissions
C-5	Annual Greenhouse Gas Emissions
	Quarry Operations
C-6	Drilling
C-6, C-7	Blasting
C-8	Bulldozing, Scraping & Grading
C-9	Material Handling
C-10	Dust Entrainment – Unpaved Roads
C-11	Wind Erosion – Unpaved Roads
C-11	Wind Erosion – Active Quarry Areas
C-12	Toxic Air Contaminants
	Waste Rock Storage/Infill Areas
C-13	Material Handling
C-14	Overland Conveyor System
C-15	Dust Entrainment – Unpaved Roads
C-16	Wind Erosion – Unpaved Roads
C-16	Wind Erosion – Active Storage/Infill Areas
C-17	Toxic Air Contaminants
	Fuel Storage and Dispensing
C-18	Fuel Storage
C-19	Fuel Dispensing
	Combustion Sources
C-20	Portable Diesel Welders
C-21a – C-21b	Off-road Diesel Equipment
C-22	On-road On-site Motor Vehicles
C-23	On-road Off-site Motor Vehicles
C-24	On-road Dust Entrainment
	Indirect Greenhouse Gas Sources
C-25	Electrical Power Use
	Emission Factors
C-26	Combustion Sources – Off-road Diesel Equipment
C-27	Combustion Sources – On-road Motor Vehicles

Table C-1. Annual Criteria Pollutant Emissions Summary Table.

Proposed Project Phase 1 Criteria Pollutants - Annual Emissions (tons/yr).

Component	PM_{10}	$PM_{2.5}$	CO	NOx	ROG	SOx
North Quarry						
Drilling	3.36	3.36	--	--	--	--
Blasting	0.52	0.03	94.09	23.87	--	2.81
Bulldozing, Scraping & Grading	0.96	0.14	--	--	--	--
Material Handling	5.78	0.87	--	--	--	--
Dust Entrainment - Unpaved Roads	39.41	3.94	--	--	--	--
Wind Erosion - Unpaved Roads	5.82	0.87	--	--	--	--
Wind Erosion - Active Areas	84.72	12.71	--	--	--	--
Subtotal - North Quarry:	140.56	21.92	94.09	23.87	--	2.81
Waste Rock Storage/Infill Areas						
Material Handling	3.11	0.47	--	--	--	--
Overland Conveyor System	--	--	--	--	--	--
Dust Entrainment - Unpaved Roads	59.73	5.97	--	--	--	--
Wind Erosion - Unpaved Roads	3.94	0.59	--	--	--	--
Wind Erosion - Active Areas	16.24	2.44	--	--	--	--
Subtotal - Waste Rock Storage/Infill:	83.02	9.47	--	--	--	--
Fuel Storage and Dispensing						
Fuel Storage	--	--	--	--	0.05	--
Fuel Dispensing	--	--	--	--	0.03	--
Subtotal - Fuel Storage/Dispensing:	--	--	--	--	0.08	--
Combustion Sources						
Portable Diesel Welders	0.01	0.01	0.02	0.11	0.01	0.01
Off-road Diesel Equipment	12.58	11.61	127.00	277.13	18.14	0.20
On-road On-site Vehicles	0.01	0.00	0.52	0.07	0.05	0.00
On-road Off-site Vehicles	0.01	0.01	0.53	0.14	0.06	0.00
Dust Entrainment - Paved Roads	0.42	0.06	--	--	--	--
Subtotal - Combustion Sources:	13.03	11.70	128.07	277.45	18.26	0.21
Totals (ton/yr):	236.61	43.08	222.17	301.32	18.34	3.02

Table C-1. Annual Criteria Pollutant Emissions Summary Table.

Proposed Project Phase 2 Criteria Pollutants - Annual Emissions (tons/yr).

Component	PM_{10}	$PM_{2.5}$	CO	NOx	ROG	SOx
North Quarry						
Drilling	--	--	--	--	--	--
Blasting	--	--	--	--	--	--
Bulldozing, Scraping & Grading	1.26	0.19	--	--	--	--
Material Handling	5.71	0.86	--	--	--	--
Dust Entrainment - Unpaved Roads	8.56	0.86	--	--	--	--
Wind Erosion - Unpaved Roads	5.82	0.87	--	--	--	--
Wind Erosion - Active Areas	77.45	11.62	--	--	--	--
Subtotal - North Quarry:	98.81	14.39	--	--	--	--
Waste Rock Storage/Infill Areas						
Material Handling	5.75	0.86	--	--	--	--
Overland Conveyor System	10.14	2.08	--	--	--	--
Dust Entrainment - Unpaved Roads	44.35	4.44	--	--	--	--
Wind Erosion - Unpaved Roads	11.95	1.79	--	--	--	--
Wind Erosion - Active Areas	113.83	17.07	--	--	--	--
Subtotal - Waste Rock Storage/Infill:	186.02	26.24	--	--	--	--
Fuel Storage and Dispensing						
Fuel Storage	--	--	--	--	0.04	--
Fuel Dispensing	--	--	--	--	0.01	--
Subtotal - Fuel Storage/Dispensing:	--	--	--	--	0.05	--
Combustion Sources						
Portable Diesel Welders	0.01	0.01	0.02	0.10	0.01	0.01
Off-road Diesel Equipment	4.97	4.59	38.28	124.16	8.18	0.11
On-road On-site Vehicles	0.01	0.00	0.43	0.06	0.04	0.00
On-road Off-site Vehicles	0.06	0.05	0.81	1.42	0.14	0.00
Dust Entrainment - Paved Roads	0.62	0.09	--	--	--	--
Subtotal - Combustion Sources:	5.67	4.74	39.54	125.74	8.37	0.12
Totals (ton/yr):	290.49	45.38	39.54	125.74	8.42	0.12

Table C-2. Daily Criteria Pollutant Emissions Summary Table.

Proposed Project Phase 1 Criteria Pollutants - Daily Emissions (pounds/day).

Component	PM_{10}	$PM_{2.5}$	CO	NOx	ROG	SOx
North Quarry						
Drilling	22.37	22.37	--	--	--	--
Blasting	5.70	0.33	1,033.97	262.35	--	30.86
Bulldozing, Scraping & Grading	6.37	0.96	--	--	--	--
Material Handling	38.52	5.78	--	--	--	--
Dust Entrainment - Unpaved Roads	262.75	26.27	--	--	--	--
Wind Erosion - Unpaved Roads	38.83	5.82	--	--	--	--
Wind Erosion - Active Areas	564.80	84.72	--	--	--	--
Subtotal - North Quarry:	939.34	146.25	1,033.97	262.35	--	30.86
Waste Rock Storage/Infill Areas						
Material Handling	20.74	3.11	--	--	--	--
Overland Conveyor System	--	--				
Dust Entrainment - Unpaved Roads	398.22	39.82	--	--	--	--
Wind Erosion - Unpaved Roads	26.26	3.94	--	--	--	--
Wind Erosion - Active Areas	108.26	16.24	--	--	--	--
Subtotal - Waste Rock Storage/Infill:	553.47	63.11	--	--	--	--
Fuel Storage and Dispensing						
Fuel Storage	--	--	--	--	0.33	--
Fuel Dispensing	--	--	--	--	0.20	--
Subtotal - Fuel Storage/Dispensing:	--	--	--	--	0.53	--
Combustion Sources						
Portable Diesel Welders	0.05	0.05	0.15	0.71	0.06	0.05
Off-road Diesel Equipment	84.32	77.82	849.61	1,859.77	121.64	1.37
On-road On-site Vehicles	0.04	0.03	3.58	0.45	0.32	0.01
On-road Off-site Vehicles	0.06	0.04	3.60	0.95	0.43	0.01
Dust Entrainment - Paved Roads	2.92	0.44	--	--	--	--
Subtotal - Combustion Sources:	87.40	78.38	856.95	1,861.88	122.44	1.43
Totals (pounds/day):	1,580.21	287.74	1,890.92	2,124.24	122.97	32.30

Table C-2. Daily Criteria Pollutant Emissions Summary Table.

Proposed Project Phase 2 Criteria Pollutants - Daily Emissions (pounds/day).

Component	PM_{10}	$PM_{2.5}$	CO	NOx	ROG	SOx
North Quarry						
Drilling	--	--	--	--	--	--
Blasting	--	--	--	--	--	--
Bulldozing, Scraping & Grading	8.40	1.26	--	--	--	--
Material Handling	38.10	5.71	--	--	--	--
Dust Entrainment - Unpaved Roads	57.07	5.71	--	--	--	--
Wind Erosion - Unpaved Roads	38.83	5.82	--	--	--	--
Wind Erosion - Active Areas	516.32	77.45	--	--	--	--
Subtotal - North Quarry:	658.72	95.95	--	--	--	--
Waste Rock Storage/Infill Areas						
Material Handling	38.32	5.75	--	--	--	--
Overland Conveyor System	67.62	13.84	--	--	--	--
Dust Entrainment - Unpaved Roads	295.67	29.57	--	--	--	--
Wind Erosion - Unpaved Roads	79.65	11.95	--	--	--	--
Wind Erosion - Active Areas	758.86	113.83	--	--	--	--
Subtotal - Waste Rock Storage/Infill:	1,240.12	174.93	--	--	--	--
Fuel Storage and Dispensing						
Fuel Storage	--	--	--	--	0.27	--
Fuel Dispensing	--	--	--	--	0.06	--
Subtotal - Fuel Storage/Dispensing:	--	--	--	--	0.33	--
Combustion Sources						
Portable Diesel Welders	0.05	0.05	0.14	0.66	0.05	0.04
Off-road Diesel Equipment	37.65	34.75	284.72	946.62	62.56	0.84
On-road On-site Vehicles	0.04	0.03	2.95	0.37	0.26	0.01
On-road Off-site Vehicles	0.40	0.33	5.58	9.68	0.98	0.02
Dust Entrainment - Paved Roads	4.30	0.65	--	--	--	--
Subtotal - Combustion Sources:	42.44	35.80	293.39	957.34	63.85	0.91
Totals (pounds/day):	1,941.28	306.68	293.39	957.34	64.18	0.91

Table C-3. Annual Toxic Air Contaminant (TAC) Emissions Summary Table.

Proposed Project Phase 1 Toxic Air Contaminants - Annual Emissions (lb/yr).

Component	Diesel PM	Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Cobalt	Copper	Lead	Mercury	Molyb-denum	Nickel	Selenium	Silver	Thallium	Vanadium	Zinc	Hexavalent Chromium	Crystalline Silica
North Quarry																				
Drilling	--	0.02	0.01	5.23	0.01	0.01	0.16	0.04	0.09	0.01	0.00	0.02	0.15	0.02	0.01	0.01	0.13	0.17	0.00	24.91
Blasting	--	0.00	0.00	0.81	0.00	0.00	0.02	0.01	0.01	0.00	0.00	0.00	0.02	0.00	0.00	0.00	0.02	0.03	0.00	3.85
Bulldozing, Scraping & Grading	--	0.00	0.00	1.49	0.00	0.00	0.05	0.01	0.03	0.00	0.00	0.00	0.04	0.00	0.00	0.00	0.04	0.05	0.00	7.10
Material Handling	--	0.03	0.01	9.01	0.01	0.01	0.28	0.07	0.16	0.01	0.00	0.03	0.27	0.03	0.01	0.01	0.22	0.29	0.00	42.91
Dust Entrainment - Unpaved Roads	--	0.20	0.10	78.82	0.06	0.10	3.23	0.77	1.97	0.18	0.01	0.20	4.26	0.20	0.10	0.10	6.54	2.68	0.15	559.59
Wind Erosion - Unpaved Roads	--	0.03	0.01	11.65	0.01	0.01	0.48	0.11	0.29	0.03	0.00	0.03	0.63	0.03	0.01	0.01	0.97	0.40	0.02	82.70
Wind Erosion - Active Areas	--	0.42	0.21	132.16	0.13	0.21	4.07	1.08	2.37	0.21	0.03	0.42	3.90	0.42	0.21	0.21	3.22	4.24	0.02	629.10
Subtotal - North Quarry:	--	0.70	0.35	239.19	0.21	0.35	8.29	2.11	4.93	0.45	0.05	0.70	9.27	0.70	0.35	0.35	11.13	7.84	0.19	1,350.16
Waste Rock Storage/Infill Areas																				
Material Handling	--	0.02	0.01	4.85	0.00	0.01	0.15	0.04	0.09	0.01	0.00	0.02	0.14	0.02	0.01	0.01	0.12	0.16	0.00	23.10
Overland Conveyor System	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Dust Entrainment - Unpaved Roads	--	0.30	0.15	119.46	0.09	0.15	4.90	1.17	2.99	0.27	0.02	0.30	6.45	0.30	0.15	0.15	9.92	4.06	0.23	848.11
Wind Erosion - Unpaved Roads	--	0.02	0.01	7.88	0.01	0.01	0.32	0.08	0.20	0.02	0.00	0.02	0.43	0.02	0.01	0.01	0.65	0.27	0.01	55.92
Wind Erosion - Active Areas	--	0.08	0.04	25.33	0.02	0.04	0.78	0.21	0.45	0.04	0.01	0.08	0.75	0.08	0.04	0.04	0.62	0.81	0.00	120.58
Subtotal - Waste Rock Storage/Infill:	--	0.42	0.21	157.53	0.12	0.21	6.15	1.50	3.73	0.34	0.03	0.42	7.77	0.42	0.21	0.21	11.30	5.30	0.25	1,047.71
Fuel Storage and Dispensing																				
Fuel Storage	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Fuel Dispensing	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Subtotal - Fuel Storage/Dispensing:	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Combustion Sources																				
Portable Diesel Welders	15.09	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Off-road Diesel Equipment	25,167.71	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
On-road On-site Vehicles	0.03	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
On-road Off-site Vehicles	6.64	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Subtotal - Combustion Sources:	25,189.48	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Totals (lb/yr):	25,189.48	1.12	0.56	396.71	0.34	0.56	14.43	3.60	8.66	0.79	0.08	1.12	17.04	1.12	0.56	0.56	22.44	13.14	0.44	2,397.87

Table C-3. Annual Toxic Air Contaminant (TAC) Emissions Summary Table.

Proposed Project Phase 2 Toxic Air Contaminants - Annual Emissions (lb/yr).

Component	Diesel PM	Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Cobalt	Copper	Lead	Mercury	Molyb-denum	Nickel	Selenium	Silver	Thallium	Vanadium	Zinc	Hexavalent Chromium	Crystalline Silica
North Quarry																				
Drilling	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Blasting	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Bulldozing, Scraping & Grading	--	0.01	0.00	1.97	0.00	0.00	0.06	0.02	0.04	0.00	0.00	0.01	0.06	0.01	0.00	0.00	0.05	0.06	0.00	9.36
Material Handling	--	0.03	0.01	8.92	0.01	0.01	0.27	0.07	0.16	0.01	0.00	0.03	0.26	0.03	0.01	0.01	0.22	0.29	0.00	42.44
Dust Entrainment - Unpaved Roads	--	0.04	0.02	17.12	0.01	0.02	0.70	0.17	0.43	0.04	0.00	0.04	0.92	0.04	0.02	0.02	1.42	0.58	0.03	121.54
Wind Erosion - Unpaved Roads	--	0.03	0.01	11.65	0.01	0.01	0.48	0.11	0.29	0.03	0.00	0.03	0.63	0.03	0.01	0.01	0.97	0.40	0.02	82.70
Wind Erosion - Active Areas	--	0.39	0.19	120.82	0.12	0.19	3.72	0.99	2.17	0.19	0.03	0.39	3.56	0.39	0.19	0.19	2.94	3.87	0.02	575.10
Subtotal - North Quarry:	--	0.49	0.25	160.47	0.15	0.25	5.23	1.36	3.08	0.28	0.04	0.49	5.44	0.49	0.25	0.25	5.60	5.20	0.07	831.13
Waste Rock Storage/Infill Areas																				
Material Handling	--	0.03	0.01	8.97	0.01	0.01	0.28	0.07	0.16	0.01	0.00	0.03	0.26	0.03	0.01	0.01	0.22	0.29	0.00	42.68
Overland Conveyor System	--	0.05	0.03	15.82	0.02	0.03	0.49	0.13	0.28	0.03	0.00	0.05	0.47	0.05	0.03	0.03	0.39	0.51	0.00	75.31
Dust Entrainment - Unpaved Roads	--	0.22	0.11	88.70	0.07	0.11	3.64	0.87	2.22	0.20	0.01	0.22	4.79	0.22	0.11	0.11	7.36	3.02	0.17	629.71
Wind Erosion - Unpaved Roads	--	0.06	0.03	23.90	0.02	0.03	0.98	0.23	0.60	0.05	0.00	0.06	1.29	0.06	0.03	0.03	1.98	0.81	0.05	169.64
Wind Erosion - Active Areas	--	0.57	0.28	177.57	0.17	0.28	5.46	1.46	3.19	0.28	0.05	0.57	5.24	0.57	0.28	0.28	4.33	5.69	0.02	845.25
Subtotal - Waste Rock Storage/Infill:	--	0.93	0.47	314.96	0.28	0.47	10.84	2.76	6.45	0.58	0.07	0.93	12.05	0.93	0.47	0.47	14.27	10.31	0.24	1,762.60
Fuel Storage and Dispensing																				
Fuel Storage	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Fuel Dispensing	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Subtotal - Fuel Storage/Dispensing:	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Combustion Sources																				
Portable Diesel Welders	14.15	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Off-road Diesel Equipment	9,949.05	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
On-road On-site Vehicles	0.03	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
On-road Off-site Vehicles	97.50	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Subtotal - Combustion Sources:	10,060.72	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Totals (lb/yr):	10,060.72	1.42	0.71	475.43	0.43	0.71	16.07	4.13	9.53	0.86	0.11	1.42	17.48	1.42	0.71	0.71	19.87	15.51	0.31	2,593.73

Table C-4. Hourly Toxic Air Contaminant (TAC) Emissions Summary Table.

Proposed Project Phase 1 Toxic Air Contaminants - Hourly Emissions (lb/hr).

Component	Diesel PM	Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Cobalt	Copper	Lead	Mercury	Molyb-denum	Nickel	Selenium	Silver	Thallium	Vanadium	Zinc	Hexavalent Chromium	Crystalline Silica
North Quarry																				
Drilling	--	2.33E-06	1.16E-06	7.27E-04	6.99E-07	1.16E-06	2.24E-05	5.96E-06	1.30E-05	1.16E-06	1.86E-07	2.33E-06	2.14E-05	2.33E-06	1.16E-06	1.16E-06	1.77E-05	2.33E-05	9.32E-08	3.46E-03
Blasting	--	1.43E-05	7.13E-06	4.45E-03	4.28E-06	7.13E-06	1.37E-04	3.65E-05	7.98E-05	7.13E-06	1.14E-06	1.43E-05	1.31E-04	1.43E-05	7.13E-06	7.13E-06	1.08E-04	1.43E-04	5.70E-07	2.12E-02
Bulldozing, Scraping & Grading	--	6.64E-07	3.32E-07	2.07E-04	1.99E-07	3.32E-07	6.37E-06	1.70E-06	3.72E-06	3.32E-07	5.31E-08	6.64E-07	6.11E-06	6.64E-07	3.32E-07	3.32E-07	5.04E-06	6.64E-06	2.65E-08	9.86E-04
Material Handling	--	4.01E-06	2.01E-06	1.25E-03	1.20E-06	2.01E-06	3.85E-05	1.03E-05	2.25E-05	2.01E-06	3.21E-07	4.01E-06	3.69E-05	4.01E-06	2.01E-06	2.01E-06	3.05E-05	4.01E-05	1.61E-07	5.96E-03
Dust Entrainment - Unpaved Roads	--	2.74E-05	1.37E-05	1.09E-02	8.21E-06	1.37E-05	4.49E-04	1.07E-04	2.74E-04	2.52E-05	1.53E-06	2.74E-05	5.91E-04	2.74E-05	1.37E-05	1.37E-05	9.09E-04	3.72E-04	2.08E-05	7.77E-02
Wind Erosion - Unpaved Roads	--	4.04E-06	2.02E-06	1.62E-03	1.21E-06	2.02E-06	6.63E-05	1.59E-05	4.04E-05	3.72E-06	2.27E-07	4.04E-06	8.74E-05	4.04E-06	2.02E-06	2.02E-06	1.34E-04	5.50E-05	3.07E-06	1.15E-02
Wind Erosion - Active Areas	--	5.88E-05	2.94E-05	1.84E-02	1.77E-05	2.94E-05	5.65E-04	1.51E-04	3.29E-04	2.94E-05	4.71E-06	5.88E-05	5.41E-04	5.88E-05	2.94E-05	2.94E-05	4.47E-04	5.88E-04	2.35E-06	8.74E-02
Subtotal - North Quarry:	--	1.12E-04	5.58E-05	3.76E-02	3.35E-05	5.58E-05	1.28E-03	3.28E-04	7.63E-04	6.89E-05	8.17E-06	1.12E-04	1.42E-03	1.12E-04	5.58E-05	5.58E-05	1.65E-03	1.23E-03	2.71E-05	2.08E-01
Waste Rock Storage/Infill Areas																				
Material Handling	--	2.16E-06	1.08E-06	6.74E-04	6.48E-07	1.08E-06	2.07E-05	5.53E-06	1.21E-05	1.08E-06	1.73E-07	2.16E-06	1.99E-05	2.16E-06	1.08E-06	1.08E-06	1.64E-05	2.16E-05	8.64E-08	3.21E-03
Overland Conveyor System	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Dust Entrainment - Unpaved Roads	--	4.15E-05	2.07E-05	1.66E-02	1.24E-05	2.07E-05	6.80E-04	1.63E-04	4.15E-04	3.82E-05	2.32E-06	4.15E-05	8.96E-04	4.15E-05	2.07E-05	2.07E-05	1.38E-03	5.64E-04	3.15E-05	1.18E-01
Wind Erosion - Unpaved Roads	--	2.74E-06	1.37E-06	1.09E-03	8.21E-07	1.37E-06	4.49E-05	1.07E-05	2.74E-05	2.52E-06	1.53E-07	2.74E-06	5.91E-05	2.74E-06	1.37E-06	1.37E-06	9.08E-05	3.72E-05	2.08E-06	7.77E-03
Wind Erosion - Active Areas	--	1.13E-05	5.64E-06	3.52E-03	3.38E-06	5.64E-06	1.08E-04	2.89E-05	6.32E-05	5.64E-06	9.02E-07	1.13E-05	1.04E-04	1.13E-05	5.64E-06	5.64E-06	8.57E-05	1.13E-04	4.51E-07	1.67E-02
Subtotal - Waste Rock Storage/Infill:	--	5.77E-05	2.88E-05	2.19E-02	1.73E-05	2.88E-05	8.54E-04	2.08E-04	5.17E-04	4.74E-05	3.55E-06	5.77E-05	1.08E-03	5.77E-05	2.88E-05	2.88E-05	1.57E-03	7.36E-04	3.41E-05	1.46E-01
Fuel Storage and Dispensing																				
Fuel Storage	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Fuel Dispensing	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Subtotal - Fuel Storage/Dispensing:	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Combustion Sources																				
Portable Diesel Welders	2.10E-03	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Off-road Diesel Equipment	6.69E+00	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
On-road On-site Vehicles	4.73E-06	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
On-road Off-site Vehicles	9.23E-04	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Subtotal - Combustion Sources:	6.69E+00	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Totals (lb/hr):	6.69E+00	1.69E-04	8.46E-05	5.94E-02	5.07E-05	8.46E-05	2.14E-03	5.36E-04	1.28E-03	1.16E-04	1.17E-05	1.69E-04	2.49E-03	1.69E-04	8.46E-05	8.46E-05	3.22E-03	1.96E-03	6.12E-05	3.54E-01

Table C-4. Hourly Toxic Air Contaminant (TAC) Emissions Summary Table.

Proposed Project Phase 2 Toxic Air Contaminants - Hourly Emissions (lb/hr).

Component	Diesel PM	Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Cobalt	Copper	Lead	Mercury	Molyb-denum	Nickel	Selenium	Silver	Thallium	Vanadium	Zinc	Hexavalent Chromium	Crystalline Silica
North Quarry																				
Drilling	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Blasting	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Bulldozing, Scraping & Grading	--	8.75E-07	4.38E-07	2.73E-04	2.63E-07	4.38E-07	8.40E-06	2.24E-06	4.90E-06	4.38E-07	7.00E-08	8.75E-07	8.05E-06	8.75E-07	4.38E-07	4.38E-07	6.65E-06	8.75E-06	3.50E-08	1.30E-03
Material Handling	--	3.97E-06	1.98E-06	1.24E-03	1.19E-06	1.98E-06	3.81E-05	1.02E-05	2.22E-05	1.98E-06	3.17E-07	3.97E-06	3.65E-05	3.97E-06	1.98E-06	1.98E-06	3.02E-05	3.97E-05	1.59E-07	5.89E-03
Dust Entrainment - Unpaved Roads	--	5.94E-06	2.97E-06	2.38E-03	1.78E-06	2.97E-06	9.75E-05	2.33E-05	5.94E-05	5.47E-06	3.33E-07	5.94E-06	1.28E-04	5.94E-06	2.97E-06	2.97E-06	1.97E-04	8.08E-05	4.52E-06	1.69E-02
Wind Erosion - Unpaved Roads	--	4.04E-06	2.02E-06	1.62E-03	1.21E-06	2.02E-06	6.63E-05	1.59E-05	4.04E-05	3.72E-06	2.27E-07	4.04E-06	8.74E-05	4.04E-06	2.02E-06	2.02E-06	1.34E-04	5.50E-05	3.07E-06	1.15E-02
Wind Erosion - Active Areas	--	5.38E-05	2.69E-05	1.68E-02	1.61E-05	2.69E-05	5.16E-04	1.38E-04	3.01E-04	2.69E-05	4.30E-06	5.38E-05	4.95E-04	5.38E-05	2.69E-05	2.69E-05	4.09E-04	5.38E-04	2.15E-06	7.99E-02
Subtotal - North Quarry:	--	6.86E-05	3.43E-05	2.23E-02	2.06E-05	3.43E-05	7.27E-04	1.89E-04	4.28E-04	3.85E-05	5.25E-06	6.86E-05	7.55E-04	6.86E-05	3.43E-05	3.43E-05	7.77E-04	7.22E-04	9.94E-06	1.15E-01
Waste Rock Storage/Infill Areas																				
Material Handling	--	3.99E-06	2.00E-06	1.25E-03	1.20E-06	2.00E-06	3.83E-05	1.02E-05	2.24E-05	2.00E-06	3.19E-07	3.99E-06	3.67E-05	3.99E-06	2.00E-06	2.00E-06	3.03E-05	3.99E-05	1.60E-07	5.93E-03
Overland Conveyor System	--	7.04E-06	3.52E-06	2.20E-03	2.11E-06	3.52E-06	6.76E-05	1.80E-05	3.94E-05	3.52E-06	5.63E-07	7.04E-06	6.48E-05	7.04E-06	3.52E-06	3.52E-06	5.35E-05	7.04E-05	2.82E-07	1.05E-02
Dust Entrainment - Unpaved Roads	--	3.08E-05	1.54E-05	1.23E-02	9.24E-06	1.54E-05	5.05E-04	1.21E-04	3.08E-04	2.83E-05	1.72E-06	3.08E-05	6.65E-04	3.08E-05	1.54E-05	1.54E-05	1.02E-03	4.19E-04	2.34E-05	8.75E-02
Wind Erosion - Unpaved Roads	--	8.30E-06	4.15E-06	3.32E-03	2.49E-06	4.15E-06	1.36E-04	3.25E-05	8.30E-05	7.63E-06	4.65E-07	8.30E-06	1.79E-04	8.30E-06	4.15E-06	4.15E-06	2.75E-04	1.13E-04	6.31E-06	2.36E-02
Wind Erosion - Active Areas	--	7.90E-05	3.95E-05	2.47E-02	2.37E-05	3.95E-05	7.59E-04	2.02E-04	4.43E-04	3.95E-05	6.32E-06	7.90E-05	7.27E-04	7.90E-05	3.95E-05	3.95E-05	6.01E-04	7.90E-04	3.16E-06	1.17E-01
Subtotal - Waste Rock Storage/Infill:	--	1.29E-04	6.46E-05	4.37E-02	3.88E-05	6.46E-05	1.51E-03	3.84E-04	8.95E-04	8.10E-05	9.40E-06	1.29E-04	1.67E-03	1.29E-04	6.46E-05	6.46E-05	1.98E-03	1.43E-03	3.33E-05	2.45E-01
Fuel Storage and Dispensing																				
Fuel Storage	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Fuel Dispensing	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Subtotal - Fuel Storage/Dispensing:	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Combustion Sources																				
Portable Diesel Welders	1.96E-03	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Off-road Diesel Equipment	8.35E+00	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
On-road On-site Vehicles	3.90E-06	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
On-road Off-site Vehicles	1.35E-02	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Subtotal - Combustion Sources:	8.37E+00	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Totals (lb/hr):	8.37E+00	1.98E-04	9.89E-05	6.60E-02	5.93E-05	9.89E-05	2.23E-03	5.73E-04	1.32E-03	1.20E-04	1.46E-05	1.98E-04	2.43E-03	1.98E-04	9.89E-05	9.89E-05	2.76E-03	2.15E-03	4.33E-05	3.60E-01

Table C-5. Annual Greenhouse Gas (GHG) Emissions Summary Table.

Proposed Project Phase 1 Greenhouse Gases - Annual Emissions (metric tons/yr).

Component	CO_2	CH_4	N_2O	CO_2e
North Quarry				
Drilling	--	--	--	--
Blasting	424.11	--	--	424.11
Bulldozing, Scraping & Grading	--	--	--	--
Material Handling	--	--	--	--
Dust Entrainment - Unpaved Roads	--	--	--	--
Wind Erosion - Unpaved Roads	--	--	--	--
Wind Erosion - Active Areas	--	--	--	--
Subtotal - North Quarry:	424.11	--	--	424.11
Waste Rock Storage/Infill Areas				
Material Handling	--	--	--	--
Overland Conveyor System	--	--	--	--
Dust Entrainment - Unpaved Roads	--	--	--	--
Wind Erosion - Unpaved Roads	--	--	--	--
Wind Erosion - Active Areas	--	--	--	--
Subtotal - Waste Rock Storage/Infill:	--	--	--	--
Fuel Storage and Dispensing				
Fuel Storage	--	--	--	--
Fuel Dispensing	--	--	--	--
Subtotal - Fuel Storage/Dispensing:	--	--	--	--
Combustion Sources				
Portable Diesel Welders	4.44	0.00	0.00	4.48
Off-road Diesel Equipment	19,430.78	1.09	0.48	19,602.15
On-road On-site Vehicles	80.44	0.01	0.00	81.17
On-road Off-site Vehicles	69.09	0.00	0.00	69.74
Subtotal - Combustion Sources:	19,584.76	1.10	0.48	19,757.55
Indirect GHG Emissions				
Electricity Use	578.05	0.02	0.01	580.19
Totals (metric tons/yr):	20,586.92	1.13	0.49	20,761.85

Table C-5. Annual Greenhouse Gas (GHG) Emissions Summary Table.

Proposed Project Phase 2 Greenhouse Gases - Annual Emissions (metric tons/yr).

Component	CO_2	CH_4	N_2O	CO_2e
North Quarry				
Drilling	--	--	--	--
Blasting	--	--	--	--
Bulldozing, Scraping & Grading	--	--	--	--
Material Handling	--	--	--	--
Dust Entrainment - Unpaved Roads	--	--	--	--
Wind Erosion - Unpaved Roads	--	--	--	--
Wind Erosion - Active Areas	--	--	--	--
Subtotal - North Quarry:	--	--	--	--
Waste Rock Storage/Infill Areas				
Material Handling	--	--	--	--
Overland Conveyor System	--	--	--	--
Dust Entrainment - Unpaved Roads	--	--	--	--
Wind Erosion - Unpaved Roads	--	--	--	--
Wind Erosion - Active Areas	--	--	--	--
Subtotal - Waste Rock Storage/Infill:	--	--	--	--
Fuel Storage and Dispensing				
Fuel Storage	--	--	--	--
Fuel Dispensing	--	--	--	--
Subtotal - Fuel Storage/Dispensing:	--	--	--	--
Combustion Sources				
Portable Diesel Welders	4.17	0.00	0.00	4.20
Off-road Diesel Equipment	10,258.51	0.58	0.25	10,348.98
On-road On-site Vehicles	66.25	0.00	0.00	66.85
On-road Off-site Vehicles	239.45	0.01	0.01	241.94
Subtotal - Combustion Sources:	10,568.37	0.59	0.26	10,661.97
Indirect GHG Emissions				
Electricity Use	8,294.90	0.34	0.08	8,325.66
Totals (metric tons/yr):	18,863.28	0.93	0.34	18,987.63

Table C-6. Proposed Project Quarry Operations - Drilling and Blasting.

Drilling.

Project Phase	Emission Factor Reference	Emission Factors PM$_{10}$	Emission Factors PM$_{2.5}$	Annual Activity[1]	Control Efficiency[2]	PM$_{10}$ Emissions[3,4] (ton/yr)	PM$_{10}$ Emissions[3,4] (lb/day)	PM$_{10}$ Emissions[3,4] (lb/hr)	PM$_{2.5}$ Emissions[3,4] (ton/yr)	PM$_{2.5}$ Emissions[3,4] (lb/day)	PM$_{2.5}$ Emissions[3,4] (lb/hr)
1	MDAQMD Guidance, VI.A	0.68 lb/hole	0.68 lb/hole	9,868 holes/yr	0%	3.36	22.37	0.93	3.36	22.37	0.93
2				0 holes/yr		--	--	--	--	--	--

Blasting.

Project Phase	Emission Factor Reference	Emission Factors PM$_{10}$	Emission Factors PM$_{2.5}$	Annual Activity[1]	Control Efficiency	PM$_{10}$ Emissions (ton/yr)	PM$_{10}$ Emissions (lb/day)	PM$_{10}$ Emissions (lb/hr)	PM$_{2.5}$ Emissions (ton/yr)	PM$_{2.5}$ Emissions (lb/day)	PM$_{2.5}$ Emissions (lb/hr)
1	MDAQMD Guidance, VI.B	5.70 lb/blast	0.33 lb/blast	182 blasts/yr	0%	0.52	5.70	5.70	0.03	0.33	0.33
2				0 blasts/yr		--	--	--	--	--	--

Notes:
1. Annual activity reflects activity necessary to support maximum anticipated production of LS-Cement, LS-Aggregate, and Waste Rock during each of the project phases. Data provided by Lehigh Southwest Cement Cement Company, July 2011.
2. Assumed Control: None
3. Daily and hourly emission rates reflect the following operating schedules:

Drilling	Phase 1	Phase 2
Hours/Day	24	24
Days/Week	6	6
Weeks/Year	50	50
Blasting	**Phase 1**	**Phase 2**
Weeks/Year	50	50
Max Blasts/Day	1	0
Max Blasts/Hour	1	0

4. Conversion factors:
   2,000 lb = 1 ton

Blasting Emission Factor.[1]

Data Input	Data Reference	Symbol	Value	Unit
Area Shifted per Blast	Calculated[2]	A	783	ft^2
PM$_{10}$ size multiplier	MDAQMD Guidance (Em. Inventory Form)	k	0.52	--
PM$_{2.5}$ size multiplier	MDAQMD Guidance (Em. Inventory Form)	k	0.03	--
Blasting Emission Factor	*MDAQMD Guidance, VI.B*	*Ef*	*Calculated*	*lb/blast*

$$Ef = k * 0.0005 * A^{1.5}$$

Notes:
1. AP-42 Chapter 11.19.2, Crushed Stone Processing and Pulverized Mineral Processing, indicates that AP-42 Chapter 11.9, Western Surface Coal Mining, should not be used to estimate particulate matter emissions from blasting in stone quarries. Therefore, the approach outlined in *Emissions Inventory Guidance Mineral Handling and Processing Industries*, Mojave Desert Air Quality Management District, April 2000 (MDAQMD Guidance), sections VI.A and VI.B, was used instead.
2. Area shifted per blast calculated based on maximum production, blasting, explosives, blast pattern, and related data provided by Lehigh Southwest Cement Company for the proposed project, July 2011.

Table C-7. Proposed Project Quarry Operations - Blasting Explosives.

Project Phase	Emission Factor Reference	Emission Factors				Explosives Used[3]	Control Efficiency[4]	CO Emissions[5,6]		NOx Emissions[5,6]		SOx Emissions[5,6]		CO_2 Emissions[5,6]	
		CO	NOx	SOx	CO_2			(ton/yr)	(lb/day)	(ton/yr)	(lb/day)	(ton/yr)	(lb/day)	(tonne/yr)	(lb/day)
1	AP-42 Chap. 13.3 (CO, NOx, SOx), AGO Factors & Methods Sec. 2.3 (CO_2)[1]	67.00 lb/ton	17.00 lb/ton	2.00 lb/ton	0.151 tonne/ton	2,809 tons/yr	0%	94.09	1,033.97	23.87	262.35	2.81	30.86	424.11	5,137.46
2						0 tons/yr		--	--	--	--	--	--	--	--

Notes:

1. Sources for emission factors associated with use of ANFO (ammonium nitrate/fuel oil):
   - CO, NOx, and SOx: U.S. AP-42 Chapter 13.3 (Explosives Detonation)
   - CO_2: *AGO Factors and Methods Workbook for Use in Australian Greenhouse Emissions Reporting*, Australian Greenhouse Office, December 2006, Section 2.3 (Explosives).
2. CO_2 emission factor reported as 0.167 tonne CO_2/tonne ANFO, equivalent to 0.151 tonne CO_2/ton ANFO, assuming 1 tonne/1,000 kg, 0.45359 kg/lb, and 2,000 lbs/short ton, or ton.
3. Annual activity reflects activity necessary to support maximum anticipated production of LS-Cement, LS-Aggregate, and Waste Rock during each of the project phases. Data provided by Lehigh Southwest Cement Cement Company, July 2011.
4. Assumed Control: None
5. Daily and hourly emission rates reflect the following operating schedules:

Blasting	Phase 1	Phase 2
Weeks/Year	50	50
Blasts/Week	3.6	0.0
Max Blasts/Day	1	0

6. Conversion factors:
   2,000 lb = 1 ton
   1,000 kg = 1 tonne
   0.45359 kg = 1 pound

Table C-8. Proposed Project Quarry Operations - Bulldozing, Scraping, and Grading.

Project Phase	Emission Factor Reference	Emission Factors		Annual Activity[1]	Control Efficiency[2]	PM_{10} Emissions[3,4]			$PM_{2.5}$ Emissions[3,4]		
		PM_{10}	$PM_{2.5}$			(ton/yr)	(lb/day)	(lb/hr)	(ton/yr)	(lb/day)	(lb/hr)
1	MDAQMD Guidance, Sec. VI.D	1.24E-01 lb/hr	1.86E-02 lb/hr	15,374 hrs/yr	0%	0.96	6.37	0.27	0.14	0.96	0.04
2				20,276 hrs/yr		1.26	8.40	0.35	0.19	1.26	0.05

Notes:
1. Annual activity reflects the maximum total operating hours for bulldozers and graders observed during each phase of the project, as documented in Appendix D.
2. Assumed Control: None
3. Daily and hourly emission rates reflect the following operating schedule:

Schedule	Phase 1	Phase 2
Hours/Day	24	24
Days/Week	6	6
Weeks/Year	50	50

4. Conversion factors:
   2,000 lb = 1 ton

Bulldozing, Scraping, and Grading Emission Factor.

Data Input	Data Reference	Symbol	Value	Unit
Moisture Content	AP-42 Table 13.2.4-1 (Various Limestone Products)	M	2.1	%
Silt Content, Limestone	MDAQMD Guidance, Sec. VI.D (Stockpile Table 2)	s	0.5	%
PM_{10} size multiplier	MDAQMD Guidance, Sec. VI.D	k	0.36	--
$PM_{2.5}$ size multiplier	WRAP AP-42 Fugitive Dust $PM_{2.5}/PM_{10}$ Ratios[1]	k	0.054	--
Bulldozing, Scraping, Grading Factor	*MDAQMD Guidance, Sec. VI.D*	*Ef*	*Calculated*	*lb/hr*

$$E_f = 2.76 \times k \times \frac{s^{1.5}}{M^{1.4}}$$

Notes:
1. Source: *Background Document for Revisions to Fine Fraction Ratios Used for AP-42 Fugitive Dust Emission Factors* (prepared for Western Governors' Association Western Regional Air Partnership (WRAP)), Midwest Research Institute, November 1, 2006, Table 1 (Proposed Particle Size Ratios for AP-42).

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Table C-9. Proposed Project Quarry Operations - Material Handling.

Summary - Material Handling.

Project Phase	Emission Factor Reference	Emission Factors PM_{10}	Emission Factors $PM_{2.5}$	Annual Process Rate	Transfer Points	Control Efficiency	PM_{10} Emissions (ton/yr)	PM_{10} Emissions (lb/day)	PM_{10} Emissions (lb/hr)	$PM_{2.5}$ Emissions (ton/yr)	$PM_{2.5}$ Emissions (lb/day)	$PM_{2.5}$ Emissions (lb/hr)
1	MDAQMD Guidance, Sec. VI.E,						5.78	38.52	1.61	0.87	5.78	0.24
2	AP-42 13.2.4.3, Eqn 1						5.71	38.10	1.59	0.86	5.71	0.24

LS-Cement, LS-Aggregate, and Waste Rock Handling at North Quarry.

Project Phase	Emission Factor Reference	Emission Factors PM_{10}	Emission Factors $PM_{2.5}$	Annual Process Rate[1]	Transfer Points	Control Efficiency[4]	PM_{10} Emissions[5,6] (ton/yr)	PM_{10} Emissions[5,6] (lb/day)	PM_{10} Emissions[5,6] (lb/hr)	$PM_{2.5}$ Emissions[5,6] (ton/yr)	$PM_{2.5}$ Emissions[5,6] (lb/day)	$PM_{2.5}$ Emissions[5,6] (lb/hr)
1	MDAQMD Guidance, Sec. VI.E,	1.15E-03 lb/ton	1.73E-04 lb/ton	10,031,085 tons/yr	1	0%	5.78	38.52	1.61	0.87	5.78	0.24
2	AP-42 13.2.4.3, Eqn 1			9,920,854 tons/yr	1		5.71	38.10	1.59	0.86	5.71	0.24

Topsoil Handling at North Quarry - From Outside North Quarry.

Project Phase	Emission Factor Reference	Emission Factors PM_{10}	Emission Factors $PM_{2.5}$	Annual Process Rate[2]	Transfer Points	Control Efficiency[4]	PM_{10} Emissions[5,6] (ton/yr)	PM_{10} Emissions[5,6] (lb/day)	PM_{10} Emissions[5,6] (lb/hr)	$PM_{2.5}$ Emissions[5,6] (ton/yr)	$PM_{2.5}$ Emissions[5,6] (lb/day)	$PM_{2.5}$ Emissions[5,6] (lb/hr)
1	MDAQMD Guidance, Sec. VI.E,	1.15E-03 lb/ton	1.73E-04 lb/ton	0 tons/yr	1	0%	--	--	--	--	--	--
2	AP-42 13.2.4.3, Eqn 1			0 tons/yr	1		--	--	--	--	--	--

Topsoil Handling at North Quarry - Concurrent Reclamation.

Project Phase	Emission Factor Reference	Emission Factors PM_{10}	Emission Factors $PM_{2.5}$	Annual Process Rate[3]	Transfer Points	Control Efficiency[4]	PM_{10} Emissions[5,6] (ton/yr)	PM_{10} Emissions[5,6] (lb/day)	PM_{10} Emissions[5,6] (lb/hr)	$PM_{2.5}$ Emissions[5,6] (ton/yr)	$PM_{2.5}$ Emissions[5,6] (lb/day)	$PM_{2.5}$ Emissions[5,6] (lb/hr)
1	MDAQMD Guidance, Sec. VI.E,	1.15E-03 lb/ton	1.73E-04 lb/ton	0 tons/yr	2	0%	--	--	--	--	--	--
2	AP-42 13.2.4.3, Eqn 1			0 tons/yr	2		--	--	--	--	--	--

Notes:
1. Annual process rates reflect maximum anticipated production of LS-Cement, LS-Aggregate, and Waste Rock during each of the project phases. Data provided by Lehigh Southwest Cement Company, July 2011.
2. Annual process rates reflect maximum anticipated storage and return of topsoil during each of the project phases. Data provided by Lehigh Southwest Cement Company, July 2011.
3. Annual process rates reflect maximum anticipated excavation and use of topsoil for concurrent reclamation during each of the project phases. Data provided by Lehigh Southwest Cement Company, July 2011.
4. Assumed Control: None
5. Daily and hourly emission rates reflect the following operating schedule:

Schedule	Phase 1	Phase 2
Hours/Day	24	24
Days/Week	6	6
Weeks/Year	50	50

6. Conversion factors:
   2,000 lb = 1 ton

Material Handling Emission Factor.

Data Input	Data Reference	Symbol	Value	Unit
Moisture Content	AP-42 Table 13.2.4-1 (Various Limestone Products)	M	2.1	%
Mean wind speed	Mean 2008 wind speed for Lehigh Station	U	5.27	mph
PM_{10} size multiplier	MDAQMD Guidance, Sec. VI.E	k	0.36	--
$PM_{2.5}$ size multiplier	WRAP AP-42 Fugitive Dust $PM_{2.5}$/PM_{10} Ratios[1]	k	0.054	--
Material Handling Emission Factor	*MDAQMD Guidance, Sec. VI.E, AP-42 13.2.4.3, Eqn 1*	*Ef*	*Calculated*	*lb/ton*

$$Ef = k \times 0.0032 \times \frac{\left(\frac{U}{5}\right)^{1.3}}{\left(\frac{M}{2}\right)^{1.4}}$$

Notes:
1. AP-42 Sec. 13.2.4.3 provides a PM_{10} size multiplier of 0.35 and a $PM_{2.5}$ size multiplier of 0.0053.

Table C-10. Proposed Project Quarry Operations - Unpaved Road Dust Entrainment.

Project Phase	Emission Factor Reference	Emission Factors		Annual Activity[1]	Control Efficiency[2]	PM_{10} Emissions[3,4]			$PM_{2.5}$ Emissions[3,4]		
		PM_{10}	$PM_{2.5}$			(ton/yr)	(lb/day)	(lb/hr)	(ton/yr)	(lb/day)	(lb/hr)
1	AP-42 13.2.2, Eqn 1a	1.75E+00 lb/mile	1.75E-01 lb/mile	180,487 miles/yr	75%	39.41	262.75	10.95	3.94	26.27	1.09
2				39,200 miles/yr		8.56	57.07	2.38	0.86	5.71	0.24

Notes:
1. Annual activity reflects activity necessary to support maximum anticipated production of LS-Cement, LS-Aggregate, and Waste Rock during each of the project phases. Data provided by Lehigh Southwest Cement Cement Company, August 2011.
2. Assumed Control: 75% control associated with watering of unpaved roads.
3. Daily and hourly emission rates reflect the following operating schedule:

Schedule	Phase 1	Phase 2
Hours/Day	24	24
Days/Week	6	6
Weeks/Year	50	50

4. Conversion factors:
   2,000 lb = 1 ton

Unpaved Road Dust Entrainment Emission Factor.

Data Input	Data Reference	Symbol	Value	Unit
Surface Material Silt Content	2008 CEIR, Table B-8	s	2.7	%
Average Vehicle Weight	Caterpillar Performance Handbook, MDV weight	W	83.1	tons
PM_{10} Size Multiplier	AP-42 13.2.2-2	k	1.5	lb/mile
$PM_{2.5}$ Size Multiplier	AP-42 13.2.2-2	k	0.15	lb/mile
Empirical Constants	AP-42 13.2.2-2	a	0.9	--
	AP-42 13.2.2-2	b	0.45	--
Dust Entrainment Emission Factor	*AP-42 13.2.2, Eqn 1a*	*Ef*	*Calculated*	*lb/mile*

$$E_f = k\left(\frac{s}{12}\right)^a \left(\frac{W}{3}\right)^b$$

Table C-11. Proposed Project Quarry Operations - Wind Erosion.

Unpaved Roads.

Project Phase	Emission Factor Reference	Emission Factors PM_{10}	Emission Factors $PM_{2.5}$	Annual Activity[1]	Control Efficiency[4]	PM_{10} Emissions[5,6] (ton/yr)	PM_{10} Emissions[5,6] (lb/day)	PM_{10} Emissions[5,6] (lb/hr)	$PM_{2.5}$ Emissions[5,6] (ton/yr)	$PM_{2.5}$ Emissions[5,6] (lb/day)	$PM_{2.5}$ Emissions[5,6] (lb/hr)
1	AP-42 13.2.5, Eqn 2	1.79E+00 ton/acre-yr	2.68E-01 ton/acre-yr	13.02 acres/yr	75%	5.82	38.83	1.62	0.87	5.82	0.24
2				13.02 acres/yr		5.82	38.83	1.62	0.87	5.82	0.24

Summary - Active Quarry Areas.

Project Phase	Emission Factor Reference	Emission Factors PM_{10}	Emission Factors $PM_{2.5}$	Annual Activity	Control Efficiency	PM_{10} Emissions (ton/yr)	PM_{10} Emissions (lb/day)	PM_{10} Emissions (lb/hr)	$PM_{2.5}$ Emissions (ton/yr)	$PM_{2.5}$ Emissions (lb/day)	$PM_{2.5}$ Emissions (lb/hr)
1	AP-42 13.2.5, Eqn 2			94.70 acres/yr		84.72	564.80	23.53	12.71	84.72	3.53
2				129.02 acres/yr		77.45	516.32	21.51	11.62	77.45	3.23

Active Areas - Quarry Operations.

Project Phase	Emission Factor Reference	Emission Factors PM_{10}	Emission Factors $PM_{2.5}$	Annual Activity[2]	Control Efficiency[4]	PM_{10} Emissions[5,6] (ton/yr)	PM_{10} Emissions[5,6] (lb/day)	PM_{10} Emissions[5,6] (lb/hr)	$PM_{2.5}$ Emissions[5,6] (ton/yr)	$PM_{2.5}$ Emissions[5,6] (lb/day)	$PM_{2.5}$ Emissions[5,6] (lb/hr)
1	AP-42 13.2.5, Eqn 2	1.79E+00 ton/acre-yr	2.68E-01 ton/acre-yr	94.70 acres/yr	50%	84.72	564.80	23.53	12.71	84.72	3.53
2				64.51 acres/yr		57.71	384.75	16.03	8.66	57.71	2.40

Active Areas - Topsoil Removal and Reclamation.

Project Phase	Emission Factor Reference	Emission Factors PM_{10}	Emission Factors $PM_{2.5}$	Annual Activity[3]	Control Efficiency[4]	PM_{10} Emissions[5,6] (ton/yr)	PM_{10} Emissions[5,6] (lb/day)	PM_{10} Emissions[5,6] (lb/hr)	$PM_{2.5}$ Emissions[5,6] (ton/yr)	$PM_{2.5}$ Emissions[5,6] (lb/day)	$PM_{2.5}$ Emissions[5,6] (lb/hr)
1	AP-42 13.2.5, Eqn 2	6.12E-01 ton/acre-yr	9.18E-02 ton/acre-yr	0.00 acres/yr	50%	--	--	--	--	--	--
2				64.51 acres/yr		19.74	131.57	5.48	2.96	19.74	0.82

Notes:

1. Annual activity reflects roads necessary to support maximum anticipated production during each of the project phases. Data provided by Lehigh Southwest Cement Cement Company, July 2011.
2. Annual activity reflects maximum quarry operating and backfill areas during each of the project phases. Data provided by Lehigh Southwest Cement Company, July 2011.
3. Annual activity reflects maximum quarry topsoil removal and reclamation areas during each of the project phases. Data provided by Lehigh Southwest Cement Company, July 2011.
4. Assumed Control: 75% control associated with watering of unpaved roads; 50% control associated with watering of active areas consistent with fugitive dust plan submitted to the BAAQMD in 2010.
5. Daily and hourly emission rates reflect the following operating schedule:

Schedule	Phase 1	Phase 2
Hours/Day	24	24
Days/Week	6	6
Weeks/Year	50	50

6. Conversion factors:
   2,000 lb = 1 ton

Wind Erosion Emission Factor.

Data Input	Data Reference	Symbol	Value	Unit
Erosion Potential per disturbance	AP-42 13.2.5, Eqn 3	P_i	Calculated	g/m^2
Friction Velocity per disturbance	AP-42 13.2.5, Eqn 4	u*	Calculated	m/s
Threshold Friction Velocity:		u^*_t		
Quarry Operations/Roads	AP-42 Table 13.2.5-2 (scraper tracks on coal pile)		0.62	m/s
Topsoil Removal/Reclamation	AP-42 Table 13.2.5-2 (overburden)		1.02	m/s
Fastest mile wind speed per disturbance at 10 meters	Daily maximum wind gust data from Lehigh Permanente Meteorological Station for 2008	u^+_{10}	Varies	m/s
Disturbances	Lehigh Permanente wind gust data	N	Daily (366)	--
PM_{10} Size Multiplier	AP-42 13.2.2-2	k	0.5	--
$PM_{2.5}$ Size Multiplier	AP-42 13.2.2-2	k	0.075	--
Wind Erosion Emission Factor	*AP-42 13.2.5, Eqn 2*	*Ef*	*Calculated*	*$g/(m^2\text{-yr})$*

Eqn 3 $P = 58(u^* - u_t)^2 + 25(u^* - u_t)$

Eqn 4 $u^* = 0.053u_{10}$

Eqn 2 $E_f = k\sum_{i=1}^{N} P_i$

Table C-12. Proposed Project Quarry Operations - Toxic Air Contaminants.

Annual Toxic Air Contaminant Emissions (pounds/year).

Phase	Component	Annual PM_{10} (tons/year)	Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Cobalt	Copper	Lead	Mercury	Molyb-denum	Nickel	Selenium	Silver	Thallium	Vanadium	Zinc	Hexavalent Chromium	Crystalline Silica
	Overburden TAC Emission Factor (mg TAC /kg PM):		2.5	1.25	780	0.75	1.25	24	6.4	14	1.25	0.2	2.5	23	2.5	1.25	1.25	19	25	0.1	3712.8
	Unpaved Roads TAC Emission Factor (mg TAC/kg PM):		2.5	1.25	1000	0.75	1.25	41	9.8	25	2.3	0.14	2.5	54	2.5	1.25	1.25	83	34	1.9	7099.2
			Annual Toxic Air Contaminant Emissions (pounds/year)																		
1	Drilling	3.36	1.68E-02	8.39E-03	5.23E+00	5.03E-03	8.39E-03	1.61E-01	4.29E-02	9.39E-02	8.39E-03	1.34E-03	1.68E-02	1.54E-01	1.68E-02	8.39E-03	8.39E-03	1.27E-01	1.68E-01	6.71E-04	2.49E+01
1	Blasting	0.52	2.59E-03	1.30E-03	8.09E-01	7.78E-04	1.30E-03	2.49E-02	6.64E-03	1.45E-02	1.30E-03	2.08E-04	2.59E-03	2.39E-02	2.59E-03	1.30E-03	1.30E-03	1.97E-02	2.59E-02	1.04E-04	3.85E+00
1	Bulldozing, Scraping, and Grading	0.96	4.78E-03	2.39E-03	1.49E+00	1.43E-03	2.39E-03	4.59E-02	1.22E-02	2.68E-02	2.39E-03	3.82E-04	4.78E-03	4.40E-02	4.78E-03	2.39E-03	2.39E-03	3.63E-02	4.78E-02	1.91E-04	7.10E+00
1	Material Handling	5.78	2.89E-02	1.44E-02	9.01E+00	8.67E-03	1.44E-02	2.77E-01	7.40E-02	1.62E-01	1.44E-02	2.31E-03	2.89E-02	2.66E-01	2.89E-02	1.44E-02	1.44E-02	2.20E-01	2.89E-01	1.16E-03	4.29E+01
1	Dust Entrainment-Unpaved Roads	39.41	1.97E-01	9.85E-02	7.88E+01	5.91E-02	9.85E-02	3.23E+00	7.72E-01	1.97E+00	1.81E-01	1.10E-02	1.97E-01	4.26E+00	1.97E-01	9.85E-02	9.85E-02	6.54E+00	2.68E+00	1.50E-01	5.60E+02
1	Wind Erosion-Unpaved Roads	5.82	2.91E-02	1.46E-02	1.16E+01	8.74E-03	1.46E-02	4.78E-01	1.14E-01	2.91E-01	2.68E-02	1.63E-03	2.91E-02	6.29E-01	2.91E-02	1.46E-02	1.46E-02	9.67E-01	3.96E-01	2.21E-02	8.27E+01
1	Wind Erosion-Active Areas	84.72	4.24E-01	2.12E-01	1.32E+02	1.27E-01	2.12E-01	4.07E+00	1.08E+00	2.37E+00	2.12E-01	3.39E-02	4.24E-01	3.90E+00	4.24E-01	2.12E-01	2.12E-01	3.22E+00	4.24E+00	1.69E-02	6.29E+02
1	Total - Phase 1	140.56	7.03E-01	3.51E-01	2.39E+02	2.11E-01	3.51E-01	8.29E+00	2.11E+00	4.93E+00	4.46E-01	5.08E-02	7.03E-01	9.27E+00	7.03E-01	3.51E-01	3.51E-01	1.11E+01	7.84E+00	1.91E-01	1.35E+03
2	Drilling	0.00	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2	Blasting	0.00	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2	Bulldozing, Scraping, and Grading	1.26	6.30E-03	3.15E-03	1.97E+00	1.89E-03	3.15E-03	6.05E-02	1.61E-02	3.53E-02	3.15E-03	5.04E-04	6.30E-03	5.80E-02	6.30E-03	3.15E-03	3.15E-03	4.79E-02	6.30E-02	2.52E-04	9.36E+00
2	Material Handling	5.71	2.86E-02	1.43E-02	8.92E+00	8.57E-03	1.43E-02	2.74E-01	7.31E-02	1.60E-01	1.43E-02	2.29E-03	2.86E-02	2.63E-01	2.86E-02	1.43E-02	1.43E-02	2.17E-01	2.86E-01	1.14E-03	4.24E+01
2	Dust Entrainment-Unpaved Roads	8.56	4.28E-02	2.14E-02	1.71E+01	1.28E-02	2.14E-02	7.02E-01	1.68E-01	4.28E-01	3.94E-02	2.40E-03	4.28E-02	9.24E-01	4.28E-02	2.14E-02	2.14E-02	1.42E+00	5.82E-01	3.25E-02	1.22E+02
2	Wind Erosion-Unpaved Roads	5.82	2.91E-02	1.46E-02	1.16E+01	8.74E-03	1.46E-02	4.78E-01	1.14E-01	2.91E-01	2.68E-02	1.63E-03	2.91E-02	6.29E-01	2.91E-02	1.46E-02	1.46E-02	9.67E-01	3.96E-01	2.21E-02	8.27E+01
2	Wind Erosion-Active Areas	77.45	3.87E-01	1.94E-01	1.21E+02	1.16E-01	1.94E-01	3.72E+00	9.91E-01	2.17E+00	1.94E-01	3.10E-02	3.87E-01	3.56E+00	3.87E-01	1.94E-01	1.94E-01	2.94E+00	3.87E+00	1.55E-02	5.75E+02
2	Total - Phase 2	98.81	4.94E-01	2.47E-01	1.60E+02	1.48E-01	2.47E-01	5.23E+00	1.36E+00	3.08E+00	2.77E-01	3.78E-02	4.94E-01	5.44E+00	4.94E-01	2.47E-01	2.47E-01	5.60E+00	5.20E+00	7.15E-02	8.31E+02

Hourly Toxic Air Contaminant Emissions (pounds/hour).

Phase	Component	Hourly PM_{10} (pounds/hr)	Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Cobalt	Copper	Lead	Mercury	Molyb-denum	Nickel	Selenium	Silver	Thallium	Vanadium	Zinc	Hexavalent Chromium	Crystalline Silica
	Overburden TAC Emission Factor (mg TAC /kg PM):		2.5	1.25	780	0.75	1.25	24	6.4	14	1.25	0.2	2.5	23	2.5	1.25	1.25	19	25	0.1	3712.8
	Unpaved Roads TAC Emission Factor (mg TAC/kg PM):		2.5	1.25	1000	0.75	1.25	41	9.8	25	2.3	0.14	2.5	54	2.5	1.25	1.25	83	34	1.9	7099.2
			Hourly Toxic Air Contaminant Emissions (pounds/hour)																		
1	Drilling	0.93	2.33E-06	1.16E-06	7.27E-04	6.99E-07	1.16E-06	2.24E-05	5.96E-06	1.30E-05	1.16E-06	1.86E-07	2.33E-06	2.14E-05	2.33E-06	1.16E-06	1.16E-06	1.77E-05	2.33E-05	9.32E-08	3.46E-03
1	Blasting	5.70	1.43E-05	7.13E-06	4.45E-03	4.28E-06	7.13E-06	1.37E-04	3.65E-05	7.98E-05	7.13E-06	1.14E-06	1.43E-05	1.31E-04	1.43E-05	7.13E-06	7.13E-06	1.08E-04	1.43E-04	5.70E-07	2.12E-02
1	Bulldozing, Scraping, and Grading	0.27	6.64E-07	3.32E-07	2.07E-04	1.99E-07	3.32E-07	6.37E-06	1.70E-06	3.72E-06	3.32E-07	5.31E-08	6.64E-07	6.11E-06	6.64E-07	3.32E-07	3.32E-07	5.04E-06	6.64E-06	2.65E-08	9.86E-04
1	Material Handling	1.61	4.01E-06	2.01E-06	1.25E-03	1.20E-06	2.01E-06	3.85E-05	1.03E-05	2.25E-05	2.01E-06	3.21E-07	4.01E-06	3.69E-05	4.01E-06	2.01E-06	2.01E-06	3.05E-05	4.01E-05	1.61E-07	5.96E-03
1	Dust Entrainment-Unpaved Roads	10.95	2.74E-05	1.37E-05	1.09E-02	8.21E-06	1.37E-05	4.49E-04	1.07E-04	2.74E-04	2.52E-05	1.53E-06	2.74E-05	5.91E-04	2.74E-05	1.37E-05	1.37E-05	9.09E-04	3.72E-04	2.08E-05	7.77E-02
1	Wind Erosion-Unpaved Roads	1.62	4.04E-06	2.02E-06	1.62E-03	1.21E-06	2.02E-06	6.63E-05	1.59E-05	4.04E-05	3.72E-06	2.27E-07	4.04E-06	8.74E-05	4.04E-06	2.02E-06	2.02E-06	1.34E-04	5.50E-05	3.07E-06	1.15E-02
1	Wind Erosion-Active Areas	23.53	5.88E-05	2.94E-05	1.84E-02	1.77E-05	2.94E-05	5.65E-04	1.51E-04	3.29E-04	2.94E-05	4.71E-06	5.88E-05	5.41E-04	5.88E-05	2.94E-05	2.94E-05	4.47E-04	5.88E-04	2.35E-06	8.74E-02
1	Total - Phase 1	44.60	1.12E-04	5.58E-05	3.76E-02	3.35E-05	5.58E-05	1.28E-03	3.28E-04	7.63E-04	6.89E-05	8.17E-06	1.12E-04	1.42E-03	1.12E-04	5.58E-05	5.58E-05	1.65E-03	1.23E-03	2.71E-05	2.08E-01
2	Drilling	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2	Blasting	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
2	Bulldozing, Scraping, and Grading	0.35	8.75E-07	4.38E-07	2.73E-04	2.63E-07	4.38E-07	8.40E-06	2.24E-06	4.90E-06	4.38E-07	7.00E-08	8.75E-07	8.05E-06	8.75E-07	4.38E-07	4.38E-07	6.65E-06	8.75E-06	3.50E-08	1.30E-03
2	Material Handling	1.59	3.97E-06	1.98E-06	1.24E-03	1.19E-06	1.98E-06	3.81E-05	1.02E-05	2.22E-05	1.98E-06	3.17E-07	3.97E-06	3.65E-05	3.97E-06	1.98E-06	1.98E-06	3.02E-05	3.97E-05	1.59E-07	5.89E-03
2	Dust Entrainment-Unpaved Roads	2.38	5.94E-06	2.97E-06	2.38E-03	1.78E-06	2.97E-06	9.75E-05	2.33E-05	5.94E-05	5.47E-06	3.33E-07	5.94E-06	1.28E-04	5.94E-06	2.97E-06	2.97E-06	1.97E-04	8.08E-05	4.52E-06	1.69E-02
2	Wind Erosion-Unpaved Roads	1.62	4.04E-06	2.02E-06	1.62E-03	1.21E-06	2.02E-06	6.63E-05	1.59E-05	4.04E-05	3.72E-06	2.27E-07	4.04E-06	8.74E-05	4.04E-06	2.02E-06	2.02E-06	1.34E-04	5.50E-05	3.07E-06	1.15E-02
2	Wind Erosion-Active Areas	21.51	5.38E-05	2.69E-05	1.68E-02	1.61E-05	2.69E-05	5.16E-04	1.38E-04	3.01E-04	2.69E-05	4.30E-06	5.38E-05	4.95E-04	5.38E-05	2.69E-05	2.69E-05	4.09E-04	5.38E-04	2.15E-06	7.99E-02
2	Total - Phase 2	27.45	6.86E-05	3.43E-05	2.23E-02	2.06E-05	3.43E-05	7.27E-04	1.89E-04	4.28E-04	3.85E-05	5.25E-06	6.86E-05	7.55E-04	6.86E-05	3.43E-05	3.43E-05	7.77E-04	7.22E-04	9.94E-06	1.15E-01

Notes:

1. TAC emission factors obtained from sampling performed 11/20/2008 analyzed via EPA Methods 3060/7199 and 6020/7471A. Note, non-detect (ND) results were assumed to be 1/2 the detection limit. See Table 5A of 2008 CEIR.
2. Conversion Factors:
   2,000 lb/ton
   1,000,000 mg/kg

Table C-13. Proposed Project Waste Rock Storage/Infill Operations - Material Handling.

Summary - Material Handling.

Project Phase	Emission Factor Reference	Emission Factors PM$_{10}$	Emission Factors PM$_{2.5}$	Annual Process Rate	Transfer Points	Control Efficiency	PM$_{10}$ Emissions (ton/yr)	PM$_{10}$ Emissions (lb/day)	PM$_{10}$ Emissions (lb/hr)	PM$_{2.5}$ Emissions (ton/yr)	PM$_{2.5}$ Emissions (lb/day)	PM$_{2.5}$ Emissions (lb/hr)
1	MDAQMD Guidance, Sec. VI.E,						3.11	20.74	0.86	0.47	3.11	0.13
2	AP-42 13.2.4.3, Eqn 1						5.75	38.32	1.60	0.86	5.75	0.24

Waste Rock Handling at Material Storage Areas.

Project Phase	Emission Factor Reference	Emission Factors PM$_{10}$	Emission Factors PM$_{2.5}$	Annual Process Rate[1]	Transfer Points	Control Efficiency[5]	PM$_{10}$ Emissions[6,7] (ton/yr)	PM$_{10}$ Emissions[6,7] (lb/day)	PM$_{10}$ Emissions[6,7] (lb/hr)	PM$_{2.5}$ Emissions[6,7] (ton/yr)	PM$_{2.5}$ Emissions[6,7] (lb/day)	PM$_{2.5}$ Emissions[6,7] (lb/hr)
1	MDAQMD Guidance, Sec. VI.E,	1.15E-03 lb/ton	1.73E-04 lb/ton	4,850,195 tons/yr	1	0%	2.79	18.63	0.78	0.42	2.79	0.12
2	AP-42 13.2.4.3, Eqn 1			9,920,854 tons/yr	1		5.71	38.10	1.59	0.86	5.71	0.24

Aggregate Fines Handling at Material Storage Areas.

Project Phase	Emission Factor Reference	Emission Factors PM$_{10}$	Emission Factors PM$_{2.5}$	Annual Process Rate[2]	Transfer Points	Control Efficiency[5]	PM$_{10}$ Emissions[6,7] (ton/yr)	PM$_{10}$ Emissions[6,7] (lb/day)	PM$_{10}$ Emissions[6,7] (lb/hr)	PM$_{2.5}$ Emissions[6,7] (ton/yr)	PM$_{2.5}$ Emissions[6,7] (lb/day)	PM$_{2.5}$ Emissions[6,7] (lb/hr)
1	MDAQMD Guidance, Sec. VI.E,	1.15E-03 lb/ton	1.73E-04 lb/ton	551,159 tons/yr	1	0%	0.32	2.12	0.09	0.05	0.32	0.01
2	AP-42 13.2.4.3, Eqn 1			0 tons/yr	1		--	--	--	--	--	--

Topsoil Handling at Material Storage Areas - To/From Onsite Storage.

Project Phase	Emission Factor Reference	Emission Factors PM$_{10}$	Emission Factors PM$_{2.5}$	Annual Process Rate[3]	Transfer Points	Control Efficiency[5]	PM$_{10}$ Emissions[6,7] (ton/yr)	PM$_{10}$ Emissions[6,7] (lb/day)	PM$_{10}$ Emissions[6,7] (lb/hr)	PM$_{2.5}$ Emissions[6,7] (ton/yr)	PM$_{2.5}$ Emissions[6,7] (lb/day)	PM$_{2.5}$ Emissions[6,7] (lb/hr)
1	MDAQMD Guidance, Sec. VI.E,	1.15E-03 lb/ton	1.73E-04 lb/ton	0 tons/yr	1	0%	--	--	--	--	--	--
2	AP-42 13.2.4.3, Eqn 1			22,046 tons/yr	1		0.01	0.08	0.00	0.00	0.01	0.00

Topsoil Handling at Material Storage Areas - Concurrent Reclamation.

Project Phase	Emission Factor Reference	Emission Factors PM$_{10}$	Emission Factors PM$_{2.5}$	Annual Process Rate[4]	Transfer Points	Control Efficiency[5]	PM$_{10}$ Emissions[6,7] (ton/yr)	PM$_{10}$ Emissions[6,7] (lb/day)	PM$_{10}$ Emissions[6,7] (lb/hr)	PM$_{2.5}$ Emissions[6,7] (ton/yr)	PM$_{2.5}$ Emissions[6,7] (lb/day)	PM$_{2.5}$ Emissions[6,7] (lb/hr)
1	MDAQMD Guidance, Sec. VI.E,	1.15E-03 lb/ton	1.73E-04 lb/ton	0 tons/yr	2	0%	--	--	--	--	--	--
2	AP-42 13.2.4.3, Eqn 1			17,637 tons/yr	2		0.02	0.14	0.01	0.00	0.02	0.00

Notes:

1. Annual process rates reflect maximum anticipated excavation of waste rock during each of the project phases. Data provided by Lehigh Southwest Cement Company, July 2011. From 2023 to 2025, mulched green waste will be added to the overland conveyor system waste rock feed, and is added to the above process rate.
2. Annual process rates reflect disposal of aggregate fines in material storage areas. Data provided by Lehigh Southwest Cement Company, July 2011.
3. Annual process rates reflect maximum anticipated onsite storage and use of topsoil for reclamation of the material storage areas during each of the project phases. Data provided by Lehigh Southwest Cement Company, July 2011.
4. Annual process rates reflect maximum anticipated excavation and concurrent use of topsoil for reclamation during each of the project phases. Data provided by Lehigh Southwest Cement Company, July 2011.
5. Assumed Control: None
6. Daily and hourly emission rates reflect the following operating schedule:

Schedule	Phase 1	Phase 2
Hours/Day	24	24
Days/Week	6	6
Weeks/Year	50	50

7. Conversion factors:
   2,000 lb = 1 ton

Material Handling Emission Factor.

Data Input	Data Reference	Symbol	Value	Unit
Moisture Content	AP-42 Table 13.2.4-1 (Various Limestone Products)	M	2.1	%
Mean wind speed	Mean 2008 wind speed for Lehigh Station	U	5.27	mph
PM$_{10}$ size multiplier	MDAQMD Guidance, Sec. VI.E	k	0.36	--
PM$_{2.5}$ size multiplier	WRAP AP-42 Fugitive Dust PM$_{2.5}$/PM$_{10}$ Ratios[1]	k	0.054	--
Material Handling Emission Factor	*MDAQMD Guidance, Sec. VI.E, AP-42 13.2.4.3, Eqn 1*	*Ef*	*Calculated*	*lb/ton*

$$Ef = k \times 0.0032 \times \frac{\left(\frac{U}{5}\right)^{1.3}}{\left(\frac{M}{2}\right)^{1.4}}$$

Notes:

1. AP-42 Sec. 13.2.4.3 provides a PM$_{10}$ size multiplier of 0.35 and a PM$_{2.5}$ size multiplier of 0.0053.

Table C-14. Proposed Project Waste Rock Storage/Infill Operations - Overland Conveyor System.

Project	Component		Process Rate	Transfer Points		Screens		Component Emission Factors		PM_{10} Emissions			$PM_{2.5}$ Emissions		
Phase	Count	Description	(tons/year)	Uncontrolled	Controlled	Uncontrolled	Controlled	PM_{10} (lb/ton)	$PM_{2.5}$ (lb/ton)	tons/year	pounds/day	pounds/hour	tons/year	pounds/day	pounds/hour
1	--	Heavy Duty Conveyor (7 ft width)	--	--	--	--	--	--	--	--	--	--	--	--	--
	--	Mobile Grizzly Screen	--	--	--	--	--	--	--	--	--	--	--	--	--
	--	Portable Conveyors (4 ft X 125 ft)	--	--	--	--	--	--	--	--	--	--	--	--	--
	--	Overland Conveyor System	--	--	--	--	--	--	--	--	--	--	--	--	--
	--	Telestacker (4 ft X 190 ft max.)	--	--	--	--	--	--	--	--	--	--	--	--	--
		Totals:								--	--	--	--	--	--
2	1	Heavy Duty Conveyor (7 ft width)	9,941,854	--	1	--	--	4.60E-05	1.30E-05	0.23	1.52	0.06	0.06	0.43	0.02
	1	Mobile Grizzly Screen	9,941,854	--	1	--	1	7.86E-04	6.30E-05	3.91	26.05	1.09	0.31	2.09	0.09
	31	Portable Conveyors (4 ft X 125 ft)	7,461,640	--	31	--	--	1.43E-03	4.03E-04	5.32	35.47	1.48	1.50	10.02	0.42
	1	Overland Conveyor System	7,461,640	--	3	--	--	1.38E-04	3.90E-05	0.51	3.43	0.14	0.15	0.97	0.04
	1	Telestacker (4 ft X 190 ft max.)	7,461,640	--	1	--	--	4.60E-05	1.30E-05	0.17	1.14	0.05	0.05	0.32	0.01
		Totals:								10.14	67.62	2.82	2.08	13.84	0.58

Emission Factors.[4]

Component	PM_{10}	$PM_{2.5}$[5]	Units
Transfer Points, Uncontrolled	0.0011	0.0003171	lb/ton
Transfer Points, Controlled	0.000046	0.000013	lb/ton
Screening, Uncontrolled	0.0087	0.0005952	lb/ton
Screening, Controlled	0.00074	0.00005	lb/ton
Crushing, Uncontrolled	0.0024	0.0004484	lb/ton
Crushing, Controlled	0.00054	0.0001	lb/ton

Notes:

1. Source for process rate information: Lehigh Southwest Cement Company, July 2011. It is estimated that 25% of the waste rock to be transported from the WMSA to the North Quarry during Phase 2 will be transported by truck, and 75% by an electrically-powered overland conveyor system. From 2023 to 2025, mulched green waste will be added to the overland conveyor system waste rock feed, and is added to the above process rate.
2. During Phase 2, a maximum of 31 portable 4-foot by 125-foot conveyors will be used to transport material to and from the fixed overland conveyor system: 27 in the WMSA area (Grizzly outfeed to the overland conveyor system), and 4 in the North Quarry area (overland conveyor to the 190-foot telecaster for infill into the North Quarry).
3. The heavy duty conveyor, the telecaster, and each portable conveyor is assumed to have one transfer point. The Grizzly is assumed to have one transfer point in addition to the screen. The overland conveyor system is expected to have two segments from 2021-2023 and three segments from 2024-2025, each segment with a transfer point.
4. Source for emission factors: AP-42, Table 11.19.2-2.
5. Uncontrolled $PM_{2.5}$ emission factors were back-calculated from controlled $PM_{2.5}$ emission factors assuming the same control efficiencies as listed for PM_{10} in AP-42 Section 11.19.2.2.
6. Daily and hourly emission rates reflect the following operating schedule:

Schedule	Phase 1	Phase 2
Hours/Day	24	24
Days/Week	6	6
Weeks/Year	50	50

7. Conversion factors:
   2,000 lb = 1 ton

Table C-15. Proposed Project Waste Rock Storage/Infill Operations - Unpaved Road Dust Entrainment.

Project Phase	Emission Factor Reference	Emission Factors		Annual Activity[1]	Control Efficiency[2]	PM_{10} Emissions[3,4]			$PM_{2.5}$ Emissions[3,4]		
		PM_{10}	$PM_{2.5}$			(ton/yr)	(lb/day)	(lb/hr)	(ton/yr)	(lb/day)	(lb/hr)
1	AP-42 13.2.2, Eqn 1a	1.75E+00 lb/mile	1.75E-01 lb/mile	273,545 miles/yr	75%	59.73	398.22	16.59	5.97	39.82	1.66
2				203,105 miles/yr		44.35	295.67	12.32	4.44	29.57	1.23

Notes:

1. Annual activity reflects activity necessary to support maximum anticipated production of LS-Cement, LS-Aggregate, and Waste Rock during each of the project phases. Data provided by Lehigh Southwest Cement Cement Company, August 2011.
2. Assumed Control: 75% control associated with watering of unpaved roads.
3. Daily and hourly emission rates reflect the following operating schedule:

Schedule	Phase 1	Phase 2
Hours/Day	24	24
Days/Week	6	6
Weeks/Year	50	50

3. Conversion factors:
   2,000 lb = 1 ton

Unpaved Road Dust Entrainment Emission Factor.

Data Input	Data Reference	Symbol	Value	Unit
Surface Material Silt Content	2008 CEIR, Table B-8	s	2.7	%
Average Vehicle Weight	Caterpillar Performance Handbook, MDV weight	W	83.1	tons
PM_{10} Size Multiplier	AP-42 13.2.2-2	k	1.5	lb/mile
$PM_{2.5}$ Size Multiplier	AP-42 13.2.2-2	k	0.15	lb/mile
Empirical Constants	AP-42 13.2.2-2	a	0.9	--
	AP-42 13.2.2-2	b	0.45	--
Dust Entrainment Emission Factor	*AP-42 13.2.2, Eqn 1a*	*Ef*	*Calculated*	*lb/mile*

$$E_f = k\left(\frac{s}{12}\right)^a \left(\frac{W}{3}\right)^b$$

Table C-16. Proposed Project Waste Rock Storage/Infill Operations - Wind Erosion.

Unpaved Roads.

Project Phase	Emission Factor Reference	Emission Factors		Annual Activity[1]	Control Efficiency[4]	PM_{10} Emissions[5,6]			$PM_{2.5}$ Emissions[5,6]		
		PM_{10}	$PM_{2.5}$			(ton/yr)	(lb/day)	(lb/hr)	(ton/yr)	(lb/day)	(lb/hr)
1	AP-42 13.2.5, Eqn 2	1.79E+00 ton/acre-yr	2.68E-01 ton/acre-yr	8.80 acres/yr	75%	3.94	26.26	1.09	0.59	3.94	0.16
2				26.71 acres/yr		11.95	79.65	3.32	1.79	11.95	0.50

Summary - Active Storage/Infill Areas.

Project Phase	Emission Factor Reference	Emission Factors		Annual Activity	Control Efficiency	PM_{10} Emissions			$PM_{2.5}$ Emissions		
		PM_{10}	$PM_{2.5}$			(ton/yr)	(lb/day)	(lb/hr)	(ton/yr)	(lb/day)	(lb/hr)
1	AP-42 13.2.5, Eqn 2			30.99 acres/yr		16.24	108.26	4.51	2.44	16.24	0.68
2				189.62 acres/yr		113.83	758.86	31.62	17.07	113.83	4.74

Active Areas - Storage/Infill Operations.

Project Phase	Emission Factor Reference	Emission Factors		Annual Activity[2]	Control Efficiency[4]	PM_{10} Emissions[5,6]			$PM_{2.5}$ Emissions[5,6]		
		PM_{10}	$PM_{2.5}$			(ton/yr)	(lb/day)	(lb/hr)	(ton/yr)	(lb/day)	(lb/hr)
1	AP-42 13.2.5, Eqn 2	1.79E+00 ton/acre-yr	2.68E-01 ton/acre-yr	11.48 acres/yr	50%	10.27	68.46	2.85	1.54	10.27	0.43
2				94.81 acres/yr		84.82	565.49	23.56	12.72	84.82	3.53

Active Areas - Topsoil Removal and Reclamation.

Project Phase	Emission Factor Reference	Emission Factors		Annual Activity[3]	Control Efficiency[4]	PM_{10} Emissions[5,6]			$PM_{2.5}$ Emissions[5,6]		
		PM_{10}	$PM_{2.5}$			(ton/yr)	(lb/day)	(lb/hr)	(ton/yr)	(lb/day)	(lb/hr)
1	AP-42 13.2.5, Eqn 2	6.12E-01 ton/acre-yr	9.18E-02 ton/acre-yr	19.51 acres/yr	50%	5.97	39.80	1.66	0.90	5.97	0.25
2				94.81 acres/yr		29.01	193.37	8.06	4.35	29.01	1.21

Notes:
1. Annual activity reflects roads necessary to support maximum anticipated activity during each of the project phases. Data provided by Lehigh Southwest Cement Cement Company, July 2011.
2. Annual activity reflects maximum waste storage/infill operating and backfill areas during each of the project phases. Data provided by Lehigh Southwest Cement Company, July 2011.
3. Annual activity reflects maximum quarry topsoil removal and reclamation areas during each of the project phases. Data provided by Lehigh Southwest Cement Company, July 2011.
4. Assumed Control: 75% control associated with watering of unpaved roads; 50% control associated with watering of active areas consistent with fugitive dust plan submitted to the BAAQMD in 2010.
5. Daily and hourly emission rates reflect the following operating schedule:

Schedule	Phase 1	Phase 2
Hours/Day	24	24
Days/Week	6	6
Weeks/Year	50	50

6. Conversion factors:
   2,000 lb = 1 ton

Wind Erosion Emission Factor.

Data Input	Data Reference	Symbol	Value	Unit
Erosion Potential per disturbance	AP-42 13.2.5, Eqn 3	P_i	Calculated	g/m^2
Friction Velocity per disturbance	AP-42 13.2.5, Eqn 4	u*	Calculated	m/s
Threshold Friction Velocity	AP-42 Table 13.2.5-2 (scraper tracks on coal pile)	u^*_t	0.62	m/s
Quarry Operations/Roads	AP-42 Table 13.2.5-2 (scraper tracks on coal pile)		0.62	m/s
Topsoil Removal/Reclamation	AP-42 Table 13.2.5-2 (overburden)		1.02	m/s
Fastest mile wind speed per disturbance at 10 meters	Daily maximum wind gust data from Lehigh Permanente Meteorological Station for 2008	u^+_{10}	Varies	m/s
Disturbances	Lehigh Permanente wind gust data	N	Daily (366)	--
PM_{10} Size Multiplier	AP-42 13.2.2-2	k	0.5	--
$PM_{2.5}$ Size Multiplier	AP-42 13.2.2-2	k	0.075	--
Wind Erosion Emission Factor	*AP-42 13.2.5, Eqn 2*	*Ef*	*Calculated*	*$g/(m^2$-yr)*

Eqn 3 $P = 58(u^* - u_t)^2 + 25(u^* - u_t)$

Eqn 4 $u^* = 0.053u_{10}$

Eqn 2 $E_f = k \sum_{i=1}^{N} P_i$

Table C-17. Proposed Project Waste Rock Storage/Infill Operations - Toxic Air Contaminants.

Annual Toxic Air Contaminant Emissions (pounds/year).

Phase	Component	Annual PM_{10} (tons/year)	Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Cobalt	Copper	Lead	Mercury	Molyb-denum	Nickel	Selenium	Silver	Thallium	Vanadium	Zinc	Hexavalent Chromium	Crystalline Silica
	Toxic Air Contaminants (TAC):																				
	Overburden TAC Emission Factor (mg TAC /kg PM):		2.5	1.25	780	0.75	1.25	24	6.4	14	1.25	0.2	2.5	23	2.5	1.25	1.25	19	25	0.1	3712.8
	Unpaved Roads TAC Emission Factor (mg TAC/kg PM):		2.5	1.25	1000	0.75	1.25	41	9.8	25	2.3	0.14	2.5	54	2.5	1.25	1.25	83	34	1.9	7099.2
			Annual Toxic Air Contaminant Emissions (pounds/year)																		
1	Material Handling	3.11	1.56E-02	7.78E-03	4.85E+00	4.67E-03	7.78E-03	1.49E-01	3.98E-02	8.71E-02	7.78E-03	1.24E-03	1.56E-02	1.43E-01	1.56E-02	7.78E-03	7.78E-03	1.18E-01	1.56E-01	6.22E-04	2.31E+01
	Overland Conveyor System	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	Dust Entrainment-Unpaved Roads	59.73	2.99E-01	1.49E-01	1.19E+02	8.96E-02	1.49E-01	4.90E+00	1.17E+00	2.99E+00	2.75E-01	1.67E-02	2.99E-01	6.45E+00	2.99E-01	1.49E-01	1.49E-01	9.92E+00	4.06E+00	2.27E-01	8.48E+02
	Wind Erosion-Unpaved Roads	3.94	1.97E-02	9.85E-03	7.88E+00	5.91E-03	9.85E-03	3.23E-01	7.72E-02	1.97E-01	1.81E-02	1.10E-03	1.97E-02	4.25E-01	1.97E-02	9.85E-03	9.85E-03	6.54E-01	2.68E-01	1.50E-02	5.59E+01
	Wind Erosion-Active Areas	16.24	8.12E-02	4.06E-02	2.53E+01	2.44E-02	4.06E-02	7.79E-01	2.08E-01	4.55E-01	4.06E-02	6.50E-03	8.12E-02	7.47E-01	8.12E-02	4.06E-02	4.06E-02	6.17E-01	8.12E-01	3.25E-03	1.21E+02
	Total - Phase 1	83.02	4.15E-01	2.08E-01	1.58E+02	1.25E-01	2.08E-01	6.15E+00	1.50E+00	3.73E+00	3.41E-01	2.56E-02	4.15E-01	7.77E+00	4.15E-01	2.08E-01	2.08E-01	1.13E+01	5.30E+00	2.46E-01	1.05E+03
2	Material Handling	5.75	2.87E-02	1.44E-02	8.97E+00	8.62E-03	1.44E-02	2.76E-01	7.36E-02	1.61E-01	1.44E-02	2.30E-03	2.87E-02	2.64E-01	2.87E-02	1.44E-02	1.44E-02	2.18E-01	2.87E-01	1.15E-03	4.27E+01
	Overland Conveyor System	10.14	5.07E-02	2.54E-02	1.58E+01	1.52E-02	2.54E-02	4.87E-01	1.30E-01	2.84E-01	2.54E-02	4.06E-03	5.07E-02	4.67E-01	5.07E-02	2.54E-02	2.54E-02	3.85E-01	5.07E-01	2.03E-03	7.53E+01
	Dust Entrainment-Unpaved Roads	44.35	2.22E-01	1.11E-01	8.87E+01	6.65E-02	1.11E-01	3.64E+00	8.69E-01	2.22E+00	2.04E-01	1.24E-02	2.22E-01	4.79E+00	2.22E-01	1.11E-01	1.11E-01	7.36E+00	3.02E+00	1.69E-01	6.30E+02
	Wind Erosion-Unpaved Roads	11.95	5.97E-02	2.99E-02	2.39E+01	1.79E-02	2.99E-02	9.80E-01	2.34E-01	5.97E-01	5.50E-02	3.35E-03	5.97E-02	1.29E+00	5.97E-02	2.99E-02	2.99E-02	1.98E+00	8.12E-01	4.54E-02	1.70E+02
	Wind Erosion-Active Areas	113.83	5.69E-01	2.85E-01	1.78E+02	1.71E-01	2.85E-01	5.46E+00	1.46E+00	3.19E+00	2.85E-01	4.55E-02	5.69E-01	5.24E+00	5.69E-01	2.85E-01	2.85E-01	4.33E+00	5.69E+00	2.28E-02	8.45E+02
	Total - Phase 2	186.02	9.30E-01	4.65E-01	3.15E+02	2.79E-01	4.65E-01	1.08E+01	2.76E+00	6.45E+00	5.83E-01	6.77E-02	9.30E-01	1.20E+01	9.30E-01	4.65E-01	4.65E-01	1.43E+01	1.03E+01	2.40E-01	1.76E+03

Hourly Toxic Air Contaminant Emissions (pounds/hour).

Phase	Component	Hourly PM_{10} (pounds/hr)	Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Cobalt	Copper	Lead	Mercury	Molyb-denum	Nickel	Selenium	Silver	Thallium	Vanadium	Zinc	Hexavalent Chromium	Crystalline Silica
	Toxic Air Contaminants (TAC):																				
	Overburden TAC Emission Factor (mg TAC /kg PM):		2.5	1.25	780	0.75	1.25	24	6.4	14	1.25	0.2	2.5	23	2.5	1.25	1.25	19	25	0.1	3712.8
	Unpaved Roads TAC Emission Factor (mg TAC/kg PM):		2.5	1.25	1000	0.75	1.25	41	9.8	25	2.3	0.14	2.5	54	2.5	1.25	1.25	83	34	1.9	7099.2
			Hourly Toxic Air Contaminant Emissions (pounds/hour)																		
1	Material Handling	0.86	2.16E-06	1.08E-06	6.74E-04	6.48E-07	1.08E-06	2.07E-05	5.53E-06	1.21E-05	1.08E-06	1.73E-07	2.16E-06	1.99E-05	2.16E-06	1.08E-06	1.08E-06	1.64E-05	2.16E-05	8.64E-08	3.21E-03
	Overland Conveyor System	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	Dust Entrainment-Unpaved Roads	16.59	4.15E-05	2.07E-05	1.66E-02	1.24E-05	2.07E-05	6.80E-04	1.63E-04	4.15E-04	3.82E-05	2.32E-06	4.15E-05	8.96E-04	4.15E-05	2.07E-05	2.07E-05	1.38E-03	5.64E-04	3.15E-05	1.18E-01
	Wind Erosion-Unpaved Roads	1.09	2.74E-06	1.37E-06	1.09E-03	8.21E-07	1.37E-06	4.49E-05	1.07E-05	2.74E-05	2.52E-06	1.53E-07	2.74E-06	5.91E-05	2.74E-06	1.37E-06	1.37E-06	9.08E-05	3.72E-05	2.08E-06	7.77E-03
	Wind Erosion-Active Areas	4.51	1.13E-05	5.64E-06	3.52E-03	3.38E-06	5.64E-06	1.08E-04	2.89E-05	6.32E-05	5.64E-06	9.02E-07	1.13E-05	1.04E-04	1.13E-05	5.64E-06	5.64E-06	8.57E-05	1.13E-04	4.51E-07	1.67E-02
	Total - Phase 1	23.06	5.77E-05	2.88E-05	2.19E-02	1.73E-05	2.88E-05	8.54E-04	2.08E-04	5.17E-04	4.74E-05	3.55E-06	5.77E-05	1.08E-03	5.77E-05	2.88E-05	2.88E-05	1.57E-03	7.36E-04	3.41E-05	1.46E-01
2	Material Handling	1.60	3.99E-06	2.00E-06	1.25E-03	1.20E-06	2.00E-06	3.83E-05	1.02E-05	2.24E-05	2.00E-06	3.19E-07	3.99E-06	3.67E-05	3.99E-06	2.00E-06	2.00E-06	3.03E-05	3.99E-05	1.60E-07	5.93E-03
	Overland Conveyor System	2.82	7.04E-06	3.52E-06	2.20E-03	2.11E-06	3.52E-06	6.76E-05	1.80E-05	3.94E-05	3.52E-06	5.63E-07	7.04E-06	6.48E-05	7.04E-06	3.52E-06	3.52E-06	5.35E-05	7.04E-05	2.82E-07	1.05E-02
	Dust Entrainment-Unpaved Roads	12.32	3.08E-05	1.54E-05	1.23E-02	9.24E-06	1.54E-05	5.05E-04	1.21E-04	3.08E-04	2.83E-05	1.72E-06	3.08E-05	6.65E-04	3.08E-05	1.54E-05	1.54E-05	1.02E-03	4.19E-04	2.34E-05	8.75E-02
	Wind Erosion-Unpaved Roads	3.32	8.30E-06	4.15E-06	3.32E-03	2.49E-06	4.15E-06	1.36E-04	3.25E-05	8.30E-05	7.63E-06	4.65E-07	8.30E-06	1.79E-04	8.30E-06	4.15E-06	4.15E-06	2.75E-04	1.13E-04	6.31E-06	2.36E-02
	Wind Erosion-Active Areas	31.62	7.90E-05	3.95E-05	2.47E-02	2.37E-05	3.95E-05	7.59E-04	2.02E-04	4.43E-04	3.95E-05	6.32E-06	7.90E-05	7.27E-04	7.90E-05	3.95E-05	3.95E-05	6.01E-04	7.90E-04	3.16E-06	1.17E-01
	Total - Phase 2	51.67	1.29E-04	6.46E-05	4.37E-02	3.88E-05	6.46E-05	1.51E-03	3.84E-04	8.95E-04	8.10E-05	9.40E-06	1.29E-04	1.67E-03	1.29E-04	6.46E-05	6.46E-05	1.98E-03	1.43E-03	3.33E-05	2.45E-01

Notes:

1. TAC emission factors obtained from sampling performed 11/20/2008 analyzed via EPA Methods 3060/7199 and 6020/7471A. Note, non-detect (ND) results were assumed to be 1/2 the detection limit. See Table 5A of 2008 CEIR.
2. Conversion Factors:
   2,000 lb/ton
   1,000,000 mg/kg

Table C-18. Proposed Project Fuel Storage and Dispensing - Fuel Storage.

Criteria Pollutant Emissions[1].

Project Phase	Component	Throughput[2]	Working Loss (lb/yr)	Breathing Loss (lb/yr)	Total ROC Emissions (ton/yr)	Total ROC Emissions (lb/day)	Total ROC Emissions (lb/hr)
1	Diesel Storage - AST	2,080,248 gal/yr	22.41	8.15	0.015	1.02E-01	4.24E-03
	Gasoline Storage - UST	7,933 gal/yr	67.50	0.00	0.034	2.25E-01	9.38E-03
	Total - Phase 1				0.049	0.327	0.014
2	Diesel Storage - AST	540,188 gal/yr	13.02	8.15	0.011	7.06E-02	2.94E-03
	Gasoline Storage - UST	6,533 gal/yr	59.06	0.00	0.030	1.97E-01	8.20E-03
	Total - Phase 2				0.040	0.267	0.011

Toxic Air Contaminant (TAC) Emissions[1].

Project Phase	Component	Hexane (-n) (lb/yr)	Hexane (-n) (lb/hr)	Benzene (lb/yr)	Benzene (lb/hr)	Toluene (lb/yr)	Toluene (lb/hr)	Ethylbenzene (lb/yr)	Ethylbenzene (lb/hr)	Xylene (-m) (lb/yr)	Xylene (-m) (lb/hr)	1,2,4-Trimethylbenzene (lb/yr)	1,2,4-Trimethylbenzene (lb/hr)
1	Diesel Storage - AST	0.01	0.00	0.06	0.00	0.71	0.00	0.10	0.00	1.77	0.00	1.42	0.00
	Gasoline Storage - UST	0.35	0.00	0.39	0.00	0.43	0.00	0.03	0.00	0.12	0.00	0.01	0.00
	Total - Phase 1	0.36	0.00	0.45	0.00	1.14	0.00	0.13	0.00	1.89	0.00	1.43	0.00
2	Diesel Storage - AST	0.01	0.00	0.05	0.00	0.49	0.00	0.07	0.00	1.23	0.00	0.98	0.00
	Gasoline Storage - UST	0.31	0.00	0.34	0.00	0.37	0.00	0.02	0.00	0.10	0.00	0.01	0.00
	Total - Phase 2	0.32	0.00	0.39	0.00	0.86	0.00	0.09	0.00	1.33	0.00	0.99	0.00

Notes:
1. Emissions calculated using the U.S. Environmental Protection Agency's TANKS model Version 4.0.9d, the indicated throughput values, and tank parameters as presented below.
2. Diesel throughputs based on scheduling information and equipment specifications provided by Lehigh Southwest Cement Company, August 2011. Gasoline throughputs throughput based on estimated in-plant vehicle use, mileage accruals, and fuel economy for the project phases.
3. Assumed operating schedule:

Operating Schedule	Phase 1	Phase 2
Hours/Day	24	24
Days/Week	6	6
Weeks/Year	50	50

4. Conversion factor:
2,000 lb = 1 ton
5. Emission calculation data inputs:

Parameter	Diesel - AST	Gasoline - UST
Capacity	20,000 gal	10,000 gal
Length	34.5 ft	25 ft
Diameter	10 ft	8.33 ft
Condition	Good	N/A

Table C-19. Proposed Project Fuel Storage and Dispensing - Fuel Dispensing.

Criteria Emissions.

Project Phase	Component	EF Reference	ROC Emission Factor	Throughput[1]	Total ROC Emissions (ton/yr)	Total ROC Emissions (lb/day)	Total ROC Emissions (lb/hr)
1	Diesel Dispensing	SCAQMD [2]	0.000028 lb/gal	2,080,248 gal/yr	0.029	1.94E-01	8.09E-03
	Gasoline Dispensing	ARB [3]	0.00038 lb/gal	7,933 gal/yr	0.002	1.00E-02	4.19E-04
	Total - Phase 1				0.031	0.204	0.009
2	Diesel Dispensing			540,188 gal/yr	0.008	5.04E-02	2.10E-03
	Gasoline Dispensing			6,533 gal/yr	0.001	8.28E-03	3.45E-04
	Total - Phase 2				0.009	0.059	0.002

Toxic Air Contaminant (TAC) Emissions.

Project Phase	Component	EF Reference	Hexane (-n) (lb/yr)	Hexane (-n) (lb/hr)	Benzene (lb/yr)	Benzene (lb/hr)	Toluene (lb/yr)	Toluene (lb/hr)	Ethylbenzene (lb/yr)	Ethylbenzene (lb/hr)	Xylene (-m) (lb/yr)	Xylene (-m) (lb/hr)	1,2,4-Trimethylbenzene (lb/yr)	1,2,4-Trimethylbenzene (lb/hr)
1	Diesel Dispensing	TANKs 4.0.9d	0.00	0.00	0.00	0.00	0.02	0.00	0.01	0.00	0.17	0.00	0.58	0.00
	Gasoline Dispensing	TANKs 4.0.9d	0.03	0.00	0.05	0.00	0.21	0.00	0.04	0.00	0.21	0.00	0.08	0.00
	Total - Phase 1		0.03	0.00	0.05	0.00	0.23	0.00	0.05	0.00	0.38	0.00	0.66	0.00
2	Diesel Dispensing		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.00	0.15	0.00
	Gasoline Dispensing		0.02	0.00	0.04	0.00	0.17	0.00	0.03	0.00	0.17	0.00	0.06	0.00
	Total - Phase 2		0.02	0.00	0.04	0.00	0.18	0.00	0.04	0.00	0.22	0.00	0.21	0.00

Notes:

1. Diesel throughputs based on scheduling information and equipment specifications provided by Lehigh Southwest Cement Company, August 2011. Gasoline throughputs based on estimated in-plant vehicle use, mileage accruals, and fuel economy for the project phases.
2. Diesel emission factor of 0.028 pound ROC/1,000 gallons based on the South Coast Air Quality Management District's "Supplemental Instructions for Liquid Organic Storage Tanks and References," June 2005, available at http://www.aqmd.gov/webappl/Help/AER/0405_LiquidOrganicStorageTank.pdf.
3. Gasoline dispensing emission factor of 0.38 pound ROC/1,000 gallons based on the California Air Resources Board's "Vapor Recovery Certification Procedure CP-201: Certification Procedure for Vapor Recovery Systems at Gasoline Dispensing Facilities," amended May 25, 2006, available at http://www.arb.ca.gov/regact/pvvapor06/pvvapor06.htm. ROC assumed to equal HC.
4. Assumed operating schedule:

Operating Schedule	Phase 1	Phase 2
Hours/Day	24	24
Days/Week	6	6
Weeks/Year	50	50

5. Conversion factor:
   2,000 lb = 1 ton
6. TAC fractions were obtained from the US EPA TANKS Model (v 4.0.9d) emission specificiation profiles, as follows:

Parameter	Diesel Fractions	Gasoline Fractions
Hexane (-n)	0.0000	0.0100
Benzene	0.0000	0.0180
Toluene	0.0003	0.0700
Ethylbenzene	0.0001	0.0140
Xylene (-m)	0.0029	0.0700
1,2,4-Trimethylbenzene	0.0100	0.0250

Table C-20. Proposed Project Combustion Sources - Portable Diesel-Fueled Welders.

Criteria Pollutant and Greenhouse Gas (GHG) Emissions.

Project Phase	Usage (hr/yr)	Vehicle HP	PM_{10} (ton/yr)	PM_{10} (lb/day)	$PM_{2.5}$ (ton/yr)	$PM_{2.5}$ (lb/day)	CO (ton/yr)	CO (lb/day)	NOx (ton/yr)	NOx (lb/day)	ROG (ton/yr)	ROG (lb/day)	SOx (ton/yr)	SOx (lb/day)	CO_2 (tonne/yr)	CO_2 (lb/day)	CH_4 (tonne/yr)	CH_4 (lb/day)	N_2O (tonne/yr)	N_2O (lb/day)	CO_2e (tonne/yr)	CO_2e (lb/day)
1	305	50	0.01	0.05	0.01	0.05	0.02	0.15	0.11	0.71	0.01	0.06	0.01	0.05	4.44	32.66	0.00	0.00	0.00	0.00	4.48	33.0
2	286	50	0.01	0.05	0.01	0.05	0.02	0.14	0.10	0.66	0.01	0.05	0.01	0.04	4.17	30.61	0.00	0.00	0.00	0.00	4.20	30.9

Toxic Air Contaminant (TAC) Emissions:

Project Phase	Usage (hr/yr)	Vehicle HP	Diesel PM (lb/year)	Diesel PM (lb/hour)	1,3-Butadiene (lb/year)	1,3-Butadiene (lb/hour)	Acetaldehyde (lb/year)	Acetaldehyde (lb/hour)	Acrolein (lb/year)	Acrolein (lb/hour)	Benzene (lb/year)	Benzene (lb/hour)	Formalde (lb/year)	Formalde (lb/hour)	PAHs (lb/year)	PAHs (lb/hour)	Propylene (lb/year)	Propylene (lb/hour)	Toluene (lb/year)	Toluene (lb/hour)	Xylenes (lb/year)	Xylenes (lb/hour)
1	305	50	15.09	0.00	0.00	0.00	0.05	0.00	0.01	0.00	0.06	0.00	0.07	0.00	0.01	0.00	0.15	0.00	0.02	0.00	0.02	0.00
2	286	50	14.15	0.00	0.00	0.00	0.04	0.00	0.01	0.00	0.05	0.00	0.07	0.00	0.01	0.00	0.15	0.00	0.02	0.00	0.02	0.00

Applicable Emission Factors.

Vehicle Type	Ave. HP - All Phases	Emission Factor Units	Criteria Pollutant Emission Factors[1] PM_{10}	$PM_{2.5}$	CO	NOx	ROG	SOx	GHG Emission Factors[2,3] CO_2	CH_4	N_2O	TAC Emission Factors[1,4] Diesel PM	1,3-Butadiene	Acetaldehyde	Acrolein	Benzene	Formaldehyde	PAHs	Propylene	Toluene	Xylenes
Diesel Welders	50	lb/MMBtu	--	--	--	--	--	--	--	--	--	--	3.91E-05	7.67E-04	9.25E-05	9.33E-04	1.18E-03	1.68E-04	2.58E-03	4.09E-04	2.85E-04
		lb/hp-hr	2.20E-03	2.20E-03	6.68E-03	3.10E-02	2.51E-03	2.05E-03	1.43E+00	8.16E-05	3.66E-05	2.20E-03	3.42E-07	6.71E-06	8.09E-07	8.16E-06	1.03E-05	1.47E-06	2.26E-05	3.58E-06	2.49E-06

Notes:

1. Criteria and TAC emission factors are based on AP-42, Chapter 3.3, Gasoline and Diesel Industrial Engines, Table 3.3-1.
2. GHG factors in grams/gallon are from the Climate Registry, *General Reporting Protocol* Version 1.1 (May 2008), Tables 13.1 (U.S. Default CO_2 Emission Factors for Transport Fuels) and 13.6 (Default CH_4 and N_2O Emission Factors Factors for Non-Highway Vehicles - factors for diesel-fueled construction vehicles.)
   To convert factors in grams/gallon to pounds/bhp-hr, the following equations were employed:
   CO_2 = 10,150 grams CO_2/gallon * (1 gallon diesel/7.05 lb) * (0.45 lb diesel/bhp-hr BSFC) * (1 lb/453.59 grams) = 1.43 pounds CO_2/bhp-hr
   CH_4 = 0.58 grams CH_4/gallon * (1 gallon diesel/7.05 lb) * (0.45 lb diesel/bhp-hr BSFC) * (1 lb/453.59 grams) = 8.16 X 10^{-5} pound CH_4/bhp-hr
   N_2O = 0.26 grams N_2O/gallon * (1 gallon diesel/7.05 lb) * (0.45 lb diesel/bhp-hr BSFC) * (1 lb/453.59 grams) = 3.66 X 10^{-5} pound N_2O/bhp-hr
3. CO_2 equivalent emissions (CO_2e) calculated based on the global warming potentials in the IPCC's *Second Assessment Report* (SAR, 1996), as presented in the Climate Registry *General Reporting Protocol* (op cit.), Table B.1. $CO_2e = 1 * CO_2 + 21 * CH_4 + 310 * N_2O$.
4. TAC emission factors converted from lb/MMBtu assuming 137,000 Btu/gallon diesel, 0.45 lb diesel/bhp-hr brake-specific fuel consumption (BSFC), and 7.05 lb/gallon diesel.
5. Conversion factors:

453.59 grams/pound	0.45 lb/hp-hr BSFC (from Offroad2007)	7.05 lb/gal diesel (from AP-42)
2,000 pounds/ton	137,000 Btu/gallon (from AP-42)	ROG = TOC
1,000,000 grams/metric ton	1,000,000 Btu/MMBtu	

6. Assumed operating schedule:

Schedule	Phase 1	Phase 2
Hours/Day	24	24
Days/Week	6	6
Weeks/Year	50	50

Activity Data.

Vehicle Type	Load Factor[1]	Phase 1 Avg HP[2]	Phase 1 Hrs/Yr	Phase 2 Avg HP	Phase 2 Hrs/Yr	Phase 3 Avg HP	Phase 3 Hrs/Yr	Phase 4 Avg HP	Phase 4 Hrs/Yr	Phase 5 Avg HP	Phase 5 Hrs/Yr
Diesel Welders	45%	50	305	50	286	50	0	50	0	50	0

Notes:

1. Load factor derived from California Air Resources Board's OFFROAD2007 model (version dated December 15, 2006), "equip.csv" data file, available at http://www.arb.ca.gov/msei/offroad/offroad.htm.
2. Average horsepower based on welding activity associated with quarry operations for 2000-2010 baseline period: 42.6 average horsepower for diesel welders, and 12.6 average horsepower for gasoline welders. Given that more than 90% of welder use was associated with diesel welders, an average horsepower rating of 50 HP is assumed, and all welders are assumed to be diesel.
3. Average operating hours/year based on welding activity associated with quarry operations for 2000-2010 baseline period, scaled to reflect the difference in maximum total production for each phase and production during the baseline period.

Table C-21a. Proposed Project Combustion Sources - Off-Road Diesel Equipment (Phase 1).

Phase 1 Emissions - Annual (Tons per Year).

Equipment	Model	Model Year	Horse-power	Hours per Year	Load Factor	Emissions (tons/year) THC	ROG	CO	NOx	PM	PM_{10}	$PM_{2.5}$	SO_2	Emissions (metric tons/year) CO_2	CH_4	N_2O	CO_2e
Bore/Drill Rigs	DM45	2009	600	4,057.5	0.75	0.62	0.52	2.14	9.57	0.31	0.31	0.29	0.01	1,037.64	0.06	0.03	1,046.79
Crawler Tractors	D11T	2009	850	--	0.64	--	--	--	--	--	--	--	--	--	--	--	--
	D11T	2009	850	--	0.64	--	--	--	--	--	--	--	--	--	--	--	--
	D11T	2009	850	--	0.64	--	--	--	--	--	--	--	--	--	--	--	--
	D10R	1999	570	3,324.0	0.64	1.29	1.08	4.47	13.10	0.83	0.83	0.77	0.01	689.12	0.04	0.02	695.20
	D10T	2005	580	3,324.0	0.64	0.55	0.46	1.55	6.78	0.24	0.24	0.23	0.01	701.21	0.04	0.02	707.39
	D10T	2005	580	3,324.0	0.64	0.55	0.46	1.55	6.78	0.24	0.24	0.23	0.01	701.21	0.04	0.02	707.39
(with disc)	D8T	2009	310	--	0.64	--	--	--	--	--	--	--	--	--	--	--	--
Excavators	345D	2009	380	664.8	0.57	0.05	0.04	0.17	0.70	0.02	0.02	0.02	0.00	81.83	0.00	0.00	82.55
Graders	16G	1995	275	1,952.9	0.61	0.35	0.29	1.21	3.54	0.22	0.22	0.21	0.00	186.17	0.01	0.00	187.81
	16M	2009	297	1,952.9	0.61	0.12	0.10	0.42	1.73	0.06	0.06	0.06	0.00	201.06	0.01	0.00	202.84
Off-Highway Trucks																	
150-ton Trucks	785B	1993	1290	4,267.2	0.57	4.12	3.45	47.88	45.64	3.00	3.00	2.77	0.02	1,783.16	0.10	0.04	1,798.88
100-ton Trucks	777C	1996	870	4,393.2	0.57	2.86	2.40	33.25	31.69	2.08	2.08	1.92	0.01	1,238.10	0.07	0.03	1,249.02
	777D	2000	938	4,393.2	0.57	2.11	1.77	8.65	25.38	1.05	1.05	0.97	0.01	1,334.87	0.08	0.03	1,346.65
	777D	2005	938	4,393.2	0.57	1.18	0.99	2.95	19.41	0.64	0.64	0.59	0.01	1,334.87	0.08	0.03	1,346.65
	777D	2005	938	4,393.2	0.57	1.18	0.99	2.95	19.41	0.64	0.64	0.59	0.01	1,334.87	0.08	0.03	1,346.65
	777D	2006	938	4,393.2	0.57	1.10	0.92	2.95	15.10	0.51	0.51	0.47	0.01	1,334.87	0.08	0.03	1,346.65
	777F	2007	938	4,393.2	0.57	1.05	0.88	2.95	13.64	0.47	0.47	0.44	0.01	1,334.87	0.08	0.03	1,346.65
	777F	2009	938	4,393.2	0.57	0.80	0.67	2.76	12.31	0.40	0.40	0.37	0.01	1,334.87	0.08	0.03	1,346.65
	777F	2009	938	4,393.2	0.57	0.80	0.67	2.76	12.31	0.40	0.40	0.37	0.01	1,334.87	0.08	0.03	1,346.65
40-ton Trucks	740	2003	415	1,929.0	0.57	0.20	0.17	0.57	2.65	0.09	0.09	0.08	0.00	259.32	0.01	0.01	261.61
	740	2003	415	1,929.0	0.57	0.20	0.17	0.57	2.65	0.09	0.09	0.08	0.00	259.32	0.01	0.01	261.61
	740	2003	415	1,929.0	0.57	0.20	0.17	0.57	2.65	0.09	0.09	0.08	0.00	259.32	0.01	0.01	261.61
Rubber Tired Dozers	824C	1995	315	1,246.5	0.59	0.25	0.21	0.85	2.50	0.16	0.16	0.15	0.00	131.65	0.01	0.00	132.81
Rubber Tired Loaders	992G	2005	800	2,669.9	0.54	0.58	0.48	1.45	9.53	0.31	0.31	0.29	0.01	655.47	0.04	0.02	661.25
	992G	2006	800	2,669.9	0.54	0.54	0.45	1.45	7.41	0.25	0.25	0.23	0.01	655.47	0.04	0.02	661.25
	992G	2007	800	2,669.9	0.54	0.52	0.43	1.45	6.70	0.23	0.23	0.21	0.01	655.47	0.04	0.02	661.25
	988H	2009	501	1,101.9	0.54	0.10	0.09	0.35	1.56	0.05	0.05	0.05	0.00	169.42	0.01	0.00	170.91
Water Trucks	773E	2003	671	2,493.0	0.20	0.15	0.13	0.42	1.94	0.07	0.07	0.06	0.00	190.13	0.01	0.00	191.81
	773F	2009	703	2,493.0	0.20	0.12	0.10	0.41	1.84	0.06	0.06	0.06	0.00	199.20	0.01	0.00	200.95
Contractor Lowboy Truck	Paystar 5600	2009	360	--	0.57	--	--	--	--	--	--	--	--	--	--	--	--
Hydroseeder Truck	Paystar 5600	2009	360	--	0.20	--	--	--	--	--	--	--	--	--	--	--	--
Hydroseeder Pump	T330	2009	115	--	0.50	--	--	--	--	--	--	--	--	--	--	--	--
Portable Light Towers	ML 695	2002	10.7	7,200.0	0.74	0.07	0.06	0.31	0.59	0.04	0.04	0.03	0.00	32.40	0.00	0.00	32.68
Total Off-Road Equipment Emissions:				86,344.3		21.64	18.14	127.00	277.13	12.58	12.58	11.61	0.20	19,430.78	1.09	0.48	19,602.15
Diesel PM Emissions:											12.58						

Conversion Factors:
453.59 grams/pound
2,000 pounds/ton
1,000,000 grams/metric ton

Table C-21a. Proposed Project Combustion Sources - Off-Road Diesel Equipment (Phase 1).

Phase 1 Emissions - Daily (Pounds per Day).

Equipment	Model	Model Year	Horse-power	Hours per Day	Load Factor	Emissions (pounds/day) THC	ROG	CO	NOx	PM	PM_{10}	$PM_{2.5}$	SO_2	CO_2	CH_4	N_2O	CO_2e
Bore/Drill Rigs	DM45	2009	600	13.5	0.75	4.14	3.47	14.30	63.80	2.10	2.10	1.94	0.07	7,625.37	0.43	0.19	7,692.62
Crawler Tractors	D11T	2009	850	--	0.64	--	--	--	--	--	--	--	--	--	--	--	--
	D11T	2009	850	--	0.64	--	--	--	--	--	--	--	--	--	--	--	--
	D11T	2009	850	--	0.64	--	--	--	--	--	--	--	--	--	--	--	--
	D10R	1999	570	11.1	0.64	8.59	7.20	29.78	87.35	5.55	5.55	5.12	0.05	5,064.18	0.29	0.12	5,108.84
	D10T	2005	580	11.1	0.64	3.66	3.06	10.32	45.22	1.63	1.63	1.50	0.05	5,153.02	0.29	0.13	5,198.47
	D10T	2005	580	11.1	0.64	3.66	3.06	10.32	45.22	1.63	1.63	1.50	0.05	5,153.02	0.29	0.13	5,198.47
(with disc)	D8T	2009	310	--	0.64	--	--	--	--	--	--	--	--	--	--	--	--
Excavators	345D	2009	380	8.0	0.57	1.15	0.96	4.07	16.90	0.59	0.59	0.54	0.02	2,171.01	0.12	0.05	2,190.16
Graders	16G	1995	275	6.5	0.61	2.32	1.95	8.05	23.60	1.50	1.50	1.38	0.01	1,368.12	0.08	0.03	1,380.19
	16M	2009	297	6.5	0.61	0.78	0.65	2.77	11.50	0.40	0.40	0.37	0.01	1,477.57	0.08	0.04	1,490.60
Off-Highway Trucks																	
150-ton Trucks	785B	1993	1290	14.2	0.57	27.48	23.03	319.22	304.28	20.00	20.00	18.45	0.12	13,104.02	0.74	0.32	13,219.59
100-ton Trucks	777C	1996	870	14.6	0.57	19.08	15.99	221.64	211.27	13.88	13.88	12.81	0.09	9,098.54	0.51	0.22	9,178.78
	777D	2000	938	14.6	0.57	14.06	11.78	57.69	169.20	6.98	6.98	6.44	0.09	9,809.69	0.55	0.24	9,896.20
	777D	2005	938	14.6	0.57	7.84	6.57	19.65	129.43	4.24	4.24	3.91	0.09	9,809.69	0.55	0.24	9,896.20
	777D	2005	938	14.6	0.57	7.84	6.57	19.65	129.43	4.24	4.24	3.91	0.09	9,809.69	0.55	0.24	9,896.20
	777D	2006	938	14.6	0.57	7.32	6.13	19.65	100.65	3.42	3.42	3.16	0.09	9,809.69	0.55	0.24	9,896.20
	777F	2007	938	14.6	0.57	7.02	5.88	19.65	90.94	3.15	3.15	2.91	0.09	9,809.69	0.55	0.24	9,896.20
	777F	2009	938	14.6	0.57	5.33	4.47	18.39	82.07	2.70	2.70	2.49	0.09	9,809.69	0.55	0.24	9,896.20
	777F	2009	938	14.6	0.57	5.33	4.47	18.39	82.07	2.70	2.70	2.49	0.09	9,809.69	0.55	0.24	9,896.20
40-ton Trucks	740	2003	415	6.4	0.57	1.36	1.14	3.82	17.67	0.61	0.61	0.56	0.02	1,905.70	0.11	0.05	1,922.51
	740	2003	415	6.4	0.57	1.36	1.14	3.82	17.67	0.61	0.61	0.56	0.02	1,905.70	0.11	0.05	1,922.51
	740	2003	415	6.4	0.57	1.36	1.14	3.82	17.67	0.61	0.61	0.56	0.02	1,905.70	0.11	0.05	1,922.51
Rubber Tired Dozers	824C	1995	315	4.2	0.59	1.64	1.38	5.69	16.69	1.06	1.06	0.98	0.01	967.49	0.05	0.02	976.03
Rubber Tired Loaders	992G	2005	800	8.9	0.54	3.85	3.23	9.65	63.55	2.08	2.08	1.92	0.05	4,816.92	0.27	0.12	4,859.40
	992G	2006	800	8.9	0.54	3.59	3.01	9.65	49.42	1.68	1.68	1.55	0.05	4,816.92	0.27	0.12	4,859.40
	992G	2007	800	8.9	0.54	3.44	2.89	9.65	44.66	1.55	1.55	1.43	0.05	4,816.92	0.27	0.12	4,859.40
	988H	2009	501	3.7	0.54	0.68	0.57	2.33	10.42	0.34	0.34	0.32	0.01	1,245.00	0.07	0.03	1,255.98
Water Trucks	773E	2003	671	8.3	0.20	1.00	0.84	2.80	12.95	0.45	0.45	0.41	0.01	1,397.23	0.08	0.03	1,409.55
	773F	2009	703	8.3	0.20	0.80	0.67	2.74	12.25	0.40	0.40	0.37	0.01	1,463.86	0.08	0.04	1,476.77
Contractor Lowboy Truck	Paystar 5600	2009	360	--	0.57	--	--	--	--	--	--	--	--	--	--	--	--
Hydroseeder Truck	Paystar 5600	2009	360	--	0.20	--	--	--	--	--	--	--	--	--	--	--	--
Hydroseeder Pump	T330	2009	115	--	0.50	--	--	--	--	--	--	--	--	--	--	--	--
Portable Light Towers	ML 695	2002	10.7	24.0	0.74	0.44	0.37	2.09	3.92	0.24	0.24	0.22	0.00	238.09	0.01	0.01	240.19
Total Off-Road Equipment Emissions:				293.6		145.12	121.64	849.61	1,859.77	84.32	84.32	77.82	1.37	144,362.21	8.13	3.56	145,635.38
Diesel PM Emissions:	(pounds/day)										84.32						
	(pounds/hour)										6.69						

Conversion Factors:
453.59 grams/pound
12.6 hp-hour weighted hours/day (Phase 1)

Table C-21a. Proposed Project Combustion Sources - Off-Road Diesel Equipment (Phase 1).

Phase 1 Off-Road Equipment Emission Factors (Grams/Horsepower-hour).

		Model	Horse-	Calculation	Cumulative	Emission Factors (grams/horsepower-hour)										
Equipment	Model	Year	power	Year	Hours	THC	ROG	CO	NOx	PM	PM_{10}	$PM_{2.5}$	SO_2	CO_2	CH_4	N_2O
Bore/Drill Rigs	DM45	2009	600	2013	8000	0.309	0.259	1.066	4.755	0.156	0.156	0.144	0.0054	568.3	0.032	0.014
Crawler Tractors	D11T	2009	850	2013	8000	0.309	0.259	1.066	4.755	0.156	0.156	0.144	0.0054	568.3	0.032	0.014
	D11T	2009	850	2013	8000	0.309	0.259	1.066	4.755	0.156	0.156	0.144	0.0054	568.3	0.032	0.014
	D11T	2009	850	2013	8000	0.309	0.259	1.066	4.755	0.156	0.156	0.144	0.0054	568.3	0.032	0.014
	D10R	1999	570	2013	12000	0.964	0.808	3.342	9.802	0.622	0.622	0.574	0.0054	568.3	0.032	0.014
	D10T	2005	580	2013	12000	0.403	0.338	1.138	4.987	0.179	0.179	0.166	0.0054	568.3	0.032	0.014
	D10T	2005	580	2013	12000	0.403	0.338	1.138	4.987	0.179	0.179	0.166	0.0054	568.3	0.032	0.014
(with disc)	D8T	2009	310	2013	8000	0.300	0.251	1.066	4.424	0.154	0.154	0.142	0.0054	568.3	0.032	0.014
Excavators	345D	2009	380	2013	8000	0.300	0.251	1.066	4.424	0.154	0.154	0.142	0.0054	568.3	0.032	0.014
Graders	16G	1995	275	2013	12000	0.964	0.808	3.342	9.802	0.622	0.622	0.574	0.0054	568.3	0.032	0.014
	16M	2009	297	2013	8000	0.300	0.251	1.066	4.424	0.154	0.154	0.142	0.0054	568.3	0.032	0.014
Off-Highway Trucks																
150-ton Trucks	785B	1993	1290	2013	12000	1.192	0.999	13.844	13.196	0.867	0.867	0.800	0.0054	568.3	0.032	0.014
100-ton Trucks	777C	1996	870	2013	12000	1.192	0.999	13.844	13.196	0.867	0.867	0.800	0.0054	568.3	0.032	0.014
	777D	2000	938	2013	12000	0.814	0.683	3.342	9.802	0.404	0.404	0.373	0.0054	568.3	0.032	0.014
	777D	2005	938	2013	12000	0.454	0.381	1.138	7.498	0.246	0.246	0.227	0.0054	568.3	0.032	0.014
	777D	2005	938	2013	12000	0.454	0.381	1.138	7.498	0.246	0.246	0.227	0.0054	568.3	0.032	0.014
	777D	2006	938	2013	12000	0.424	0.355	1.138	5.831	0.198	0.198	0.183	0.0054	568.3	0.032	0.014
	777F	2007	938	2013	12000	0.406	0.341	1.138	5.268	0.182	0.182	0.168	0.0054	568.3	0.032	0.014
	777F	2009	938	2013	8000	0.309	0.259	1.066	4.755	0.156	0.156	0.144	0.0054	568.3	0.032	0.014
	777F	2009	938	2013	8000	0.309	0.259	1.066	4.755	0.156	0.156	0.144	0.0054	568.3	0.032	0.014
40-ton Trucks	740	2003	415	2013	12000	0.406	0.341	1.138	5.268	0.182	0.182	0.168	0.0054	568.3	0.032	0.014
	740	2003	415	2013	12000	0.406	0.341	1.138	5.268	0.182	0.182	0.168	0.0054	568.3	0.032	0.014
	740	2003	415	2013	12000	0.406	0.341	1.138	5.268	0.182	0.182	0.168	0.0054	568.3	0.032	0.014
Rubber Tired Dozers	824C	1995	315	2013	12000	0.964	0.808	3.342	9.802	0.622	0.622	0.574	0.0054	568.3	0.032	0.014
Rubber Tired Loaders	992G	2005	800	2013	12000	0.454	0.381	1.138	7.498	0.246	0.246	0.227	0.0054	568.3	0.032	0.014
	992G	2006	800	2013	12000	0.424	0.355	1.138	5.831	0.198	0.198	0.183	0.0054	568.3	0.032	0.014
	992G	2007	800	2013	12000	0.406	0.341	1.138	5.268	0.182	0.182	0.168	0.0054	568.3	0.032	0.014
	988H	2009	501	2013	8000	0.309	0.259	1.066	4.755	0.156	0.156	0.144	0.0054	568.3	0.032	0.014
Water Trucks	773E	2003	671	2013	12000	0.406	0.341	1.138	5.268	0.182	0.182	0.168	0.0054	568.3	0.032	0.014
	773F	2009	703	2013	8000	0.309	0.259	1.066	4.755	0.156	0.156	0.144	0.0054	568.3	0.032	0.014
Contractor Lowboy Truck	Paystar 5600	2009	360	2013	8000	0.300	0.251	1.066	4.424	0.154	0.154	0.142	0.0054	568.3	0.032	0.014
Hydroseeder Truck	Paystar 5600	2009	360	2013	8000	0.300	0.251	1.066	4.424	0.154	0.154	0.142	0.0054	568.3	0.032	0.014
Hydroseeder Pump	T330	2009	115	2013	8000	0.407	0.341	3.747	5.606	0.381	0.381	0.351	0.0054	568.3	0.032	0.014
Portable Light Towers	ML 695	2002	10.7	2013	12000	1.050	0.880	5.000	9.350	0.570	0.570	0.526	0.0054	568.3	0.032	0.014

Notes:

1. Per the document, *Overview: OFFROAD Model*, California Air Resources Board, November 2006 (available at www.arb.ca.gov/msei/offroad/offroad.htm), THC, CO, NOx, PM, and CO_2 emission factors are determined by the following equation:

   EF = ZH + dr * CHrs, where

   EF = emission factor, in grams per hoursepower-hour (g/bhp-hr)

   ZH = zero-hour emission rate or when the equipment is new (g/bhp-hr)

   dr = deterioration rate or the increase in ZH emissions as the equipment is used (g/bhp-hr^2)

   CHrs = cumulative hours or total number of hours accumulated on the equipment
2. Values utilized in the above emission factor table for ZH and dr are derived from *Offroad2007* (Version 2.0.1.2), California Air Resources Board, December 15, 2006, data from emfac.csv data file, lines 41-149 (default exhaust emission factors for off-road diesel equipment for which specific factors are not provided.)
3. ROG = 83.82% THC, PM10 = 100% PM, and PM2.5 = 92.29% PM. Source: *2008 Estimated Annual Average Emissions – Statewide*, California Air Resources Board, data for Off-Road Equipment, sorted for diesel-fueled vehicles, available at http://www.arb.ca.gov/ei/emissiondata.htm (accessed February 25, 2011).

Table C-21a. Proposed Project Combustion Sources - Off-Road Diesel Equipment (Phase 1).

4. Per the document, *Overview: OFFROAD Model* (op cit.) and the OFFROAD2007 emfac.csv file, the SO_2 emission factor is based on fuel sulfur content and brake-specific fuel consumption. Per *Title 13 California Code of Regulations* sec. 2281 (Sulfur Content of Fuel), as of June 2006 diesel sulfur content in diesel fuel is limited to 15 parts per million. Per the October 2010 CARB Staff Report (op cit.), CARB staff used BSFC values from EPA's NONROAD emissions model, as documented in the report, *Exhaust and Crankcase Emission Factors for Nonroad Engine Modeling – Compression-Ignition* (EPA Report No. EPA420-P-04-009/NR-009C), U.S. Environmental Protection Agency, April 2004. Table A2 of the EPA report (pages A5-A8) documents that for diesel engines up to 100 hp, a brake specific fuel consumption (BSFC) value of 0.408 lb/hp-hr is used. For diesel engines larger than 100 hp, a BSFC value of 0.367 lb/hp-hr is used. The above factors assume a BSFC value of 0.4 lb/hp-hr. The SO_2 emission factor is calculated as follows:

   EF_{SO2} = (Parts S in fuel/million) * (MW_{SO2}/MW_S) * BSFC (lb/hp-hr) * 453.6 g/lb

   = (15 parts S/million) * (64 g/g-mole SO_2/32 g/g-mole S) * 0.4 lb/hp-hr * 453.6 g/lb

   = 0.0054 g SO_2/hp-hr

5. CH_4 and N_2O factors in grams/gallon are from the Climate Registry, *General Reporting Protocol* Version 1.1 (May 2008), Table 13.6 (Default CH_4 and N_2O Emission Factors for Non-Highway Vehicles), factors for diesel-fueled construction vehicles. To convert CH_4 and N_2O factors in g/gallon to g/bhp, the following equations were employed:

   CH_4 = 0.58 g CH_4/gallon * (1 gallon/137,000 Btu) * 7,500 Btu/bhp-hr = 0.032 g CH_4/bhp-hr, and

   N_2O = 0.26 g N_2O/gallon * (1 gallon/137,000 Btu) * 7,500 Btu/bhp-hr = 0.014 g N_2O/bhp-hr.

   Source for the higher heating value of 137,000 Btu/gallon for diesel and the brake specific fuel combustion factor of 7,500 Btu/bhp-hr: Santa Barbara County Air Pollution Control District, *Piston IC Engine Technical Reference Document* (November 1, 2002), Tables 5 (Default Fuel Properties) and 6 (Default Engine Specifications - diesel turbocharged engines), available at http://www.sbcapcd.org/eng/spice/sbcapcdicerefdoc.pdf.

6. CO_2 equivalent emissions (CO_2e) calculated based on the global warming potentials in the IPCC's *Second Assessment Report* (SAR, 1996), as presented in the Climate Registry *General Reporting Protocol* (op cit.), Table B.1. $CO_2e = 1 * CO_2 + 21 * CH_4 + 310 * N_2O$.

7. Cumulative hours for each equipment item assumes that each item accumulates 2,000 hours of operation each year. Per the document, *Staff Report: Initial Statement of Reasons for Proposed Rulemaking – Proposed Amendments to the Regulation for In-use Off-road Diesel-fueled Fleets and the Off-road Large Spark-ignition Fleet Requirements,* California Air Resources Board, October 2010, Appendix D (OSM and Summary of Off-road Emissions Inventory Update), pages D-27 to D-28, CARB staff now assumes emission factors deteriorate only up to a maximum of 12,000 hours.

8. Annual and daily activity data based on information provided by Lehigh Southwest Cement Company, August 2011, as documented in Appendix D.

9. Equipment load factors from *Offroad2007* (Version 2.0.1.2), op cit. The hydroseeder truck is assumed to have the same load profile (0.20) as a water truck. The hydroseeder pump is assigned a 0.50 load factor applicable to diesel sprayers. The light towers are assigned a 0.74 load factor applicable to diesel generator sets.

Table C-21b. Proposed Project Combustion Sources - Off-Road Diesel Equipment (Phase 2).

Phase 2 Emissions - Annual (Tons per Year).

		Model	Horse-	Hours	Load	Emissions (tons/year)								Emissions (metric tons/year)			
Equipment	Model	Year	power	per Year	Factor	THC	ROG	CO	NOx	PM	PM_{10}	$PM_{2.5}$	SO_2	CO_2	CH_4	N_2O	CO_2e
Bore/Drill Rigs	DM45	2009	600	--	0.75	--	--	--	--	--	--	--	--	--	--	--	--
Crawler Tractors	D11T	2009	850	4,155.0	0.64	1.00	0.84	2.84	12.43	0.45	0.45	0.41	0.01	1,284.54	0.07	0.03	1,295.87
	D11T	2009	850	4,155.0	0.64	1.00	0.84	2.84	12.43	0.45	0.45	0.41	0.01	1,284.54	0.07	0.03	1,295.87
	D11T	2009	850	4,155.0	0.64	1.00	0.84	2.84	12.43	0.45	0.45	0.41	0.01	1,284.54	0.07	0.03	1,295.87
	D10R	1999	570	--	0.64	--	--	--	--	--	--	--	--	--	--	--	--
	D10T	2005	580	--	0.64	--	--	--	--	--	--	--	--	--	--	--	--
	D10T	2005	580	--	0.64	--	--	--	--	--	--	--	--	--	--	--	--
(with disc)	D8T	2009	310	914.1	0.64	0.08	0.07	0.23	0.93	0.04	0.04	0.03	0.00	103.07	0.01	0.00	103.97
Excavators	345D	2009	380	498.6	0.57	0.05	0.04	0.14	0.55	0.02	0.02	0.02	0.00	61.37	0.00	0.00	61.92
Graders	16G	1995	275	1,267.3	0.61	0.23	0.19	0.78	2.30	0.15	0.15	0.13	0.00	120.81	0.01	0.00	121.88
	16M	2009	297	1,267.3	0.61	0.10	0.08	0.29	1.17	0.04	0.04	0.04	0.00	130.48	0.01	0.00	131.63
Off-Highway Trucks				--													
150-ton Trucks	785B	1993	1290	--	0.57	--	--	--	--	--	--	--	--	--	--	--	--
100-ton Trucks	777C	1996	870	1,687.5	0.57	1.10	0.92	12.77	12.17	0.80	0.80	0.74	0.00	475.57	0.03	0.01	479.77
	777D	2000	938	1,687.5	0.57	0.81	0.68	3.32	9.75	0.40	0.40	0.37	0.01	512.74	0.03	0.01	517.26
	777D	2005	938	1,687.5	0.57	0.45	0.38	1.13	7.46	0.24	0.24	0.23	0.01	512.74	0.03	0.01	517.26
	777D	2005	938	1,687.5	0.57	0.45	0.38	1.13	7.46	0.24	0.24	0.23	0.01	512.74	0.03	0.01	517.26
	777D	2006	938	1,687.5	0.57	0.42	0.35	1.13	5.80	0.20	0.20	0.18	0.01	512.74	0.03	0.01	517.26
	777F	2007	938	1,687.5	0.57	0.40	0.34	1.13	5.24	0.18	0.18	0.17	0.01	512.74	0.03	0.01	517.26
	777F	2009	938	1,687.5	0.57	0.40	0.34	1.13	4.96	0.18	0.18	0.16	0.01	512.74	0.03	0.01	517.26
	777F	2009	938	1,687.5	0.57	0.40	0.34	1.13	4.96	0.18	0.18	0.16	0.01	512.74	0.03	0.01	517.26
40-ton Trucks	740	2003	415	83.1	0.57	0.01	0.01	0.02	0.11	0.00	0.00	0.00	0.00	11.17	0.00	0.00	11.27
	740	2003	415	83.1	0.57	0.01	0.01	0.02	0.11	0.00	0.00	0.00	0.00	11.17	0.00	0.00	11.27
	740	2003	415	83.1	0.57	0.01	0.01	0.02	0.11	0.00	0.00	0.00	0.00	11.17	0.00	0.00	11.27
Rubber Tired Dozers	824C	1995	315	2,077.5	0.59	0.41	0.34	1.42	4.17	0.26	0.26	0.24	0.00	219.42	0.01	0.01	221.36
Rubber Tired Loaders	992G	2005	800	1,800.0	0.54	0.39	0.33	0.98	6.43	0.21	0.21	0.19	0.00	441.91	0.02	0.01	445.81
	992G	2006	800	1,800.0	0.54	0.36	0.30	0.98	5.00	0.17	0.17	0.16	0.00	441.91	0.02	0.01	445.81
	992G	2007	800	1,800.0	0.54	0.35	0.29	0.98	4.52	0.16	0.16	0.14	0.00	441.91	0.02	0.01	445.81
	988H	2009	501	415.5	0.54	0.05	0.04	0.14	0.62	0.02	0.02	0.02	0.00	63.88	0.00	0.00	64.45
Water Trucks	773E	2003	671	1,558.1	0.20	0.09	0.08	0.26	1.21	0.04	0.04	0.04	0.00	118.83	0.01	0.00	119.88
	773F	2009	703	1,558.1	0.20	0.10	0.08	0.27	1.20	0.04	0.04	0.04	0.00	124.50	0.01	0.00	125.60
Contractor Lowboy Truck	Paystar 5600	2009	360	--	0.57	--	--	--	--	--	--	--	--	--	--	--	--
Hydroseeder Truck	Paystar 5600	2009	360	83.1	0.20	0.00	0.00	0.01	0.03	0.00	0.00	0.00	0.00	3.40	0.00	0.00	3.43
Hydroseeder Pump	T330	2009	115	83.1	0.50	0.00	0.00	0.02	0.03	0.00	0.00	0.00	0.00	2.72	0.00	0.00	2.74
Portable Light Towers	ML 695	2002	10.7	7,200.0	0.74	0.07	0.06	0.31	0.59	0.04	0.04	0.03	0.00	32.40	0.00	0.00	32.68
Total Off-Road Equipment Emissions:				48,537.0		9.76	8.18	38.28	124.16	4.97	4.97	4.59	0.11	10,258.51	0.58	0.25	10,348.98
Diesel PM Emissions:											4.97						

Conversion Factors:
453.59 grams/pound
2,000 pounds/ton
1,000,000 grams/metric ton

Table C-21b. Proposed Project Combustion Sources - Off-Road Diesel Equipment (Phase 2).

Phase 2 Emissions - Daily (Pounds per Day).

		Model	Horse-	Hours	Load	Emissions (pounds/day)											
Equipment	Model	Year	power	per Day	Factor	THC	ROG	CO	NOx	PM	PM_{10}	$PM_{2.5}$	SO_2	CO_2	CH_4	N_2O	CO_2e
Bore/Drill Rigs	DM45	2009	600	--	0.75	--	--	--	--	--	--	--	--	--	--	--	--
Crawler Tractors	D11T	2009	850	13.9	0.64	6.70	5.61	18.91	82.84	2.98	2.98	2.75	0.09	9,439.80	0.53	0.23	9,523.05
	D11T	2009	850	13.9	0.64	6.70	5.61	18.91	82.84	2.98	2.98	2.75	0.09	9,439.80	0.53	0.23	9,523.05
	D11T	2009	850	13.9	0.64	6.70	5.61	18.91	82.84	2.98	2.98	2.75	0.09	9,439.80	0.53	0.23	9,523.05
	D10R	1999	570	--	0.64	--	--	--	--	--	--	--	--	--	--	--	--
	D10T	2005	580	--	0.64	--	--	--	--	--	--	--	--	--	--	--	--
	D10T	2005	580	--	0.64	--	--	--	--	--	--	--	--	--	--	--	--
(with disc)	D8T	2009	310	8.0	0.64	1.40	1.17	3.98	16.22	0.62	0.62	0.57	0.02	1,988.59	0.11	0.05	2,006.13
Excavators	345D	2009	380	8.0	0.57	1.53	1.28	4.35	17.71	0.67	0.67	0.62	0.02	2,171.01	0.12	0.05	2,190.16
Graders	16G	1995	275	4.2	0.61	1.51	1.26	5.22	15.31	0.97	0.97	0.90	0.01	887.82	0.05	0.02	895.65
	16M	2009	297	4.2	0.61	0.67	0.57	1.92	7.82	0.30	0.30	0.27	0.01	958.85	0.05	0.02	967.31
Off-Highway Trucks																	
150-ton Trucks	785B	1993	1290	--	0.57	--	--	--	--	--	--	--	--	--	--	--	--
100-ton Trucks	777C	1996	870	5.6	0.57	7.33	6.14	85.14	81.15	5.33	5.33	4.92	0.03	3,494.87	0.20	0.09	3,525.69
	777D	2000	938	5.6	0.57	5.40	4.53	22.16	64.99	2.68	2.68	2.47	0.04	3,768.03	0.21	0.09	3,801.26
	777D	2005	938	5.6	0.57	3.01	2.53	7.55	49.71	1.63	1.63	1.50	0.04	3,768.03	0.21	0.09	3,801.26
	777D	2005	938	5.6	0.57	3.01	2.53	7.55	49.71	1.63	1.63	1.50	0.04	3,768.03	0.21	0.09	3,801.26
	777D	2006	938	5.6	0.57	2.81	2.36	7.55	38.66	1.31	1.31	1.21	0.04	3,768.03	0.21	0.09	3,801.26
	777F	2007	938	5.6	0.57	2.69	2.26	7.55	34.93	1.21	1.21	1.12	0.04	3,768.03	0.21	0.09	3,801.26
	777F	2009	938	5.6	0.57	2.67	2.24	7.55	33.07	1.19	1.19	1.10	0.04	3,768.03	0.21	0.09	3,801.26
	777F	2009	938	5.6	0.57	2.67	2.24	7.55	33.07	1.19	1.19	1.10	0.04	3,768.03	0.21	0.09	3,801.26
40-ton Trucks	740	2003	415	8.0	0.57	1.70	1.42	4.75	21.98	0.76	0.76	0.70	0.02	2,370.98	0.13	0.06	2,391.89
	740	2003	415	8.0	0.57	1.70	1.42	4.75	21.98	0.76	0.76	0.70	0.02	2,370.98	0.13	0.06	2,391.89
	740	2003	415	8.0	0.57	1.70	1.42	4.75	21.98	0.76	0.76	0.70	0.02	2,370.98	0.13	0.06	2,391.89
Rubber Tired Dozers	824C	1995	315	6.9	0.59	2.74	2.29	9.48	27.81	1.77	1.77	1.63	0.02	1,612.49	0.09	0.04	1,626.71
Rubber Tired Loaders	992G	2005	800	6.0	0.54	2.60	2.18	6.51	42.85	1.40	1.40	1.29	0.03	3,247.50	0.18	0.08	3,276.14
	992G	2006	800	6.0	0.54	2.42	2.03	6.51	33.32	1.13	1.13	1.04	0.03	3,247.50	0.18	0.08	3,276.14
	992G	2007	800	6.0	0.54	2.32	1.95	6.51	30.11	1.04	1.04	0.96	0.03	3,247.50	0.18	0.08	3,276.14
	988H	2009	501	8.0	0.54	1.92	1.61	5.43	23.80	0.86	0.86	0.79	0.03	2,711.66	0.15	0.07	2,735.58
Water Trucks	773E	2003	671	5.2	0.20	0.62	0.52	1.75	8.10	0.28	0.28	0.26	0.01	873.27	0.05	0.02	880.97
	773F	2009	703	5.2	0.20	0.65	0.54	1.83	8.03	0.29	0.29	0.27	0.01	914.91	0.05	0.02	922.98
Contractor Lowboy Truck	Paystar 5600	2009	360	--	0.57	--	--	--	--	--	--	--	--	--	--	--	--
Hydroseeder Truck	Paystar 5600	2009	360	8.0	0.20	0.51	0.43	1.45	5.89	0.22	0.22	0.21	0.01	721.67	0.04	0.02	728.03
Hydroseeder Pump	T330	2009	115	8.0	0.50	0.52	0.44	4.13	5.99	0.46	0.46	0.42	0.01	576.33	0.03	0.01	581.41
Portable Light Towers	ML 695	2002	10.7	24.0	0.74	0.44	0.37	2.09	3.92	0.24	0.24	0.22	0.00	238.09	0.01	0.01	240.19
Total Off-Road Equipment Emissions:				218.3		74.64	62.56	284.72	946.62	37.65	37.65	34.75	0.84	88,700.61	4.99	2.19	89,482.89
Diesel PM Emissions:	(pounds/day)										37.65						
	(pounds/hour)										8.35						

Conversion Factors:

453.59 grams/pound

4.5 hp-hour weighted hours/day (Phase 2)

Table C-21b. Proposed Project Combustion Sources - Off-Road Diesel Equipment (Phase 2).

Phase 2 Off-Road Equipment Emission Factors (Grams/Horsepower-hour).

		Model	Horse-	Calculation	Cumulative	Emission Factors (grams/horsepower-hour)										
Equipment	Model	Year	power	Year	Hours	THC	ROG	CO	NOx	PM	PM_{10}	$PM_{2.5}$	SO_2	CO_2	CH_4	N_2O
Bore/Drill Rigs	DM45	2009	600	2023	12000	0.403	0.338	1.138	4.987	0.179	0.179	0.166	0.0054	568.3	0.032	0.014
Crawler Tractors	D11T	2009	850	2023	12000	0.403	0.338	1.138	4.987	0.179	0.179	0.166	0.0054	568.3	0.032	0.014
	D11T	2009	850	2023	12000	0.403	0.338	1.138	4.987	0.179	0.179	0.166	0.0054	568.3	0.032	0.014
	D11T	2009	850	2023	12000	0.403	0.338	1.138	4.987	0.179	0.179	0.166	0.0054	568.3	0.032	0.014
	D10R	1999	570	2023	12000	0.964	0.808	3.342	9.802	0.622	0.622	0.574	0.0054	568.3	0.032	0.014
	D10T	2005	580	2023	12000	0.403	0.338	1.138	4.987	0.179	0.179	0.166	0.0054	568.3	0.032	0.014
	D10T	2005	580	2023	12000	0.403	0.338	1.138	4.987	0.179	0.179	0.166	0.0054	568.3	0.032	0.014
(with disc)	D8T	2009	310	2023	12000	0.400	0.335	1.138	4.636	0.177	0.177	0.163	0.0054	568.3	0.032	0.014
Excavators	345D	2009	380	2023	12000	0.400	0.335	1.138	4.636	0.177	0.177	0.163	0.0054	568.3	0.032	0.014
Graders	16G	1995	275	2023	12000	0.964	0.808	3.342	9.802	0.622	0.622	0.574	0.0054	568.3	0.032	0.014
	16M	2009	297	2023	12000	0.400	0.335	1.138	4.636	0.177	0.177	0.163	0.0054	568.3	0.032	0.014
Off-Highway Trucks																
150-ton Trucks	785B	1993	1290	2023	12000	1.192	0.999	13.844	13.196	0.867	0.867	0.800	0.0054	568.3	0.032	0.014
100-ton Trucks	777C	1996	870	2023	12000	1.192	0.999	13.844	13.196	0.867	0.867	0.800	0.0054	568.3	0.032	0.014
	777D	2000	938	2023	12000	0.814	0.683	3.342	9.802	0.404	0.404	0.373	0.0054	568.3	0.032	0.014
	777D	2005	938	2023	12000	0.454	0.381	1.138	7.498	0.246	0.246	0.227	0.0054	568.3	0.032	0.014
	777D	2005	938	2023	12000	0.454	0.381	1.138	7.498	0.246	0.246	0.227	0.0054	568.3	0.032	0.014
	777D	2006	938	2023	12000	0.424	0.355	1.138	5.831	0.198	0.198	0.183	0.0054	568.3	0.032	0.014
	777F	2007	938	2023	12000	0.406	0.341	1.138	5.268	0.182	0.182	0.168	0.0054	568.3	0.032	0.014
	777F	2009	938	2023	12000	0.403	0.338	1.138	4.987	0.179	0.179	0.166	0.0054	568.3	0.032	0.014
	777F	2009	938	2023	12000	0.403	0.338	1.138	4.987	0.179	0.179	0.166	0.0054	568.3	0.032	0.014
40-ton Trucks	740	2003	415	2023	12000	0.406	0.341	1.138	5.268	0.182	0.182	0.168	0.0054	568.3	0.032	0.014
	740	2003	415	2023	12000	0.406	0.341	1.138	5.268	0.182	0.182	0.168	0.0054	568.3	0.032	0.014
	740	2003	415	2023	12000	0.406	0.341	1.138	5.268	0.182	0.182	0.168	0.0054	568.3	0.032	0.014
Rubber Tired Dozers	824C	1995	315	2023	12000	0.964	0.808	3.342	9.802	0.622	0.622	0.574	0.0054	568.3	0.032	0.014
Rubber Tired Loaders	992G	2005	800	2023	12000	0.454	0.381	1.138	7.498	0.246	0.246	0.227	0.0054	568.3	0.032	0.014
	992G	2006	800	2023	12000	0.424	0.355	1.138	5.831	0.198	0.198	0.183	0.0054	568.3	0.032	0.014
	992G	2007	800	2023	12000	0.406	0.341	1.138	5.268	0.182	0.182	0.168	0.0054	568.3	0.032	0.014
	988H	2009	501	2023	12000	0.403	0.338	1.138	4.987	0.179	0.179	0.166	0.0054	568.3	0.032	0.014
Water Trucks	773E	2003	671	2023	12000	0.406	0.341	1.138	5.268	0.182	0.182	0.168	0.0054	568.3	0.032	0.014
	773F	2009	703	2023	12000	0.403	0.338	1.138	4.987	0.179	0.179	0.166	0.0054	568.3	0.032	0.014
Contractor Lowboy Truck	Paystar 5600	2009	360	2023	12000	0.400	0.335	1.138	4.636	0.177	0.177	0.163	0.0054	568.3	0.032	0.014
Hydroseeder Truck	Paystar 5600	2009	360	2023	12000	0.400	0.335	1.138	4.636	0.177	0.177	0.163	0.0054	568.3	0.032	0.014
Hydroseeder Pump	T330	2009	115	2023	12000	0.515	0.432	4.075	5.904	0.451	0.451	0.416	0.0054	568.3	0.032	0.014
Portable Light Towers	ML 695	2002	10.7	2023	12000	1.050	0.880	5.000	9.350	0.570	0.570	0.526	0.0054	568.3	0.032	0.014

Notes:

1. Per the document, *Overview: OFFROAD Model* , California Air Resources Board, November 2006 (available at www.arb.ca.gov/msei/offroad/offroad.htm), THC, CO, NOx, PM, and CO_2 emission factors are determined by the following equation:
   EF = ZH + dr * CHrs, where
   EF = emission factor, in grams per hoursepower-hour (g/bhp-hr)
   ZH = zero-hour emission rate or when the equipment is new (g/bhp-hr)
   dr = deterioration rate or the increase in ZH emissions as the equipment is used (g/bhp-hr^2)
   CHrs = cumulative hours or total number of hours accumulated on the equipment
2. Values utilized in the above emission factor table for ZH and dr are derived from *Offroad2007* (Version 2.0.1.2), California Air Resources Board, December 15, 2006, data from emfac.csv data file, lines 41-149 (default exhaust emission factors for off-road diesel equipment for which specific factors are not provided.)
3. ROG = 83.82% THC, PM10 = 100% PM, and PM2.5 = 92.29% PM. Source: *2008 Estimated Annual Average Emissions – Statewide*, California Air Resources Board, data for Off-Road Equipment, sorted for diesel-fueled vehicles, available at http://www.arb.ca.gov/ei/emissiondata.htm (accessed February 25, 2011).

Table C-21b. Proposed Project Combustion Sources - Off-Road Diesel Equipment (Phase 2).

4. Per the document, *Overview: OFFROAD Model* (op cit.) and the OFFROAD2007 emfac.csv file, the SO_2 emission factor is based on fuel sulfur content and brake-specific fuel consumption. Per *Title 13 California Code of Regulations* sec. 2281 (Sulfur Content of Fuel), as of June 2006 diesel sulfur content in diesel fuel is limited to 15 parts per million. Per the October 2010 CARB Staff Report (op cit.), CARB staff used BSFC values from EPA's NONROAD emissions model, as documented in the report, *Exhaust and Crankcase Emission Factors for Nonroad Engine Modeling – Compression-Ignition* (EPA Report No. EPA420-P-04-009/NR-009C), U.S. Environmental Protection Agency, April 2004. Table A2 of the EPA report (pages A5-A8) documents that for diesel engines up to 100 hp, a brake specific fuel consumption (BSFC) value of 0.408 lb/hp-hr is used. For diesel engines larger than 100 hp, a BSFC value of 0.367 lb/hp-hr is used. The above factors assume a BSFC value of 0.4 lb/hp-hr. The SO_2 emission factor is calculated as follows:

EF_{SO2} = (Parts S in fuel/million) * (MW_{SO2}/MW_S) * BSFC (lb/hp-hr) * 453.6 g/lb
= (15 parts S/million) * (64 g/g-mole SO_2/32 g/g-mole S) * 0.4 lb/hp-hr * 453.6 g/lb
= 0.0054 g SO_2/hp-hr

5. CH_4 and N_2O factors in grams/gallon are from the Climate Registry, *General Reporting Protocol* Version 1.1 (May 2008), Table 13.6 (Default CH_4 and N_2O Emission Factors for Non-Highway Vehicles), factors for diesel-fueled construction vehicles. To convert CH_4 and N_2O factors in g/gallon to g/bhp, the following equations were employed:

CH_4 = 0.58 g CH_4/gallon * (1 gallon/137,000 Btu) * 7,500 Btu/bhp-hr = 0.032 g CH_4/bhp-hr, and
N_2O = 0.26 g N_2O/gallon * (1 gallon/137,000 Btu) * 7,500 Btu/bhp-hr = 0.014 g N_2O/bhp-hr.

Source for the higher heating value of 137,000 Btu/gallon for diesel and the brake specific fuel combustion factor of 7,500 Btu/bhp-hr: Santa Barbara County Air Pollution Control District, *Piston IC Engine Technical Reference Document* (November 1, 2002), Tables 5 (Default Fuel Properties) and 6 (Default Engine Specifications - diesel turbocharged engines), available at http://www.sbcapcd.org/eng/spice/sbcapcdicerefdoc.pdf.

6. CO_2 equivalent emissions (CO_2e) calculated based on the global warming potentials in the IPCC's *Second Assessment Report* (SAR, 1996), as presented in the Climate Registry *General Reporting Protocol* (op cit.), Table B.1. $CO_2e = 1 * CO_2 + 21 * CH_4 + 310 * N_2O$.
7. Cumulative hours for each equipment item assumes that each item accumulates 2,000 hours of operation each year. Per the document, *Staff Report: Initial Statement of Reasons for Proposed Rulemaking – Proposed Amendments to the Regulation for In-use Off-road Diesel-fueled Fleets and the Off-road Large Spark-ignition Fleet Requirements,* California Air Resources Board, October 2010, Appendix D (OSM and Summary of Off-road Emissions Inventory Update), pages D-27 to D-28, CARB staff now assumes emission factors deteriorate only up to a maximum of 12,000 hours.
8. Annual and daily activity data based on information provided by Lehigh Southwest Cement Company, August 2011, as documented in Appendix D.
9. Equipment load factors from *Offroad2007* (Version 2.0.1.2), op cit. The hydroseeder truck is assumed to have the same load profile (0.20) as a water truck. The hydroseeder pump is assigned a 0.50 load factor applicable to diesel sprayers. The light towers are assigned a 0.74 load factor applicable to diesel generator sets.

Table C-22. Proposed Project Combustion Sources - On-road On-site Vehicles.

Project Phase	Activity[1]	PM_{10}		$PM_{2.5}$		CO		NOx		ROG		SOx		Diesel PM		CO_2		CH_4		N_2O		CO_2e[4]	
	(mi/yr)	(ton/yr)	(lb/day)	(ton/yr)	(lb/day)	(ton/yr)	(lb/day)	(ton/yr)	(lb/day)	(ton/yr)	(lb/day)	(ton/yr)	(lb/day)	(lb/yr)	(lb/hr)	(tonne/yr)	(lb/day)	(tonne/yr)	(lb/day)	(tonne/yr)	(lb/day)	(tonne/yr)	(lb/day)
1	119,000	0.01	0.04	0.00	0.03	0.52	3.58	0.07	0.45	0.05	0.32	0.00	0.01	0.03	0.00	80.44	591.17	0.01	0.04	0.00	0.01	81.17	596.52
2	98,000	0.01	0.04	0.00	0.03	0.43	2.95	0.06	0.37	0.04	0.26	0.00	0.01	0.03	0.00	66.25	486.84	0.00	0.03	0.00	0.01	66.85	491.25

Notes:

1. Activity data based on estimated number of vehicles and mileage necessary to support maximum anticipated production during each of the project phases, as documented in Appendix D.
2. Assumed operating schedule:

Schedule	Phase 1	Phase 2
Hours/Day	24	24
Days/Week	6	6
Weeks/Year	50	50

3. Conversion factors:
   2,000 lb/ton
   0.45359 kg/lb
   1,000 kg/metric ton
4. CO_2 equivalent emissions (CO_2e) calculated based on the global warming potentials in the IPCC's Second Assessment Report (SAR, 1996), as presented in the CCAR General Reporting Protocol (op cit.), Table C.1. $CO_2e = 1 * CO_2$, $21 * CH_4$, and $310 * N_2O$.

2012 On-road Emission Factors for Santa Clara County - Other than Entrained Road Dust (units: pounds/mile)[1].

Vehicle Type	Time Period	PM_{10}	$PM_{2.5}$	CO	NOx	ROG	SOx	Diesel PM	CO_2	CH_4	N_2O
Medium Duty	Annual	0.00011157	0.00007773	0.00881505	0.00117603	0.00077339	0.00001445	0.00000029	1.49033217	0.00009458	0.00003717
Vehicles (MDVs)[2]	Daily/Hourly	0.00011157	0.00007773	0.00901903	0.00114280	0.00079595	0.00001575	0.00000029	1.49033217	0.00009458	0.00003717

Notes:

1. Emission factors for on-road motor vehicles were derived from California Air Resources Board's EMFAC2007 (version 2.3) model daily seasonal emissions inventories (summer, winter, and annual average) for vehicles in Santa Clara County. First year of operation is assumed to be 2012.
2. Medium duty vehicles.

Table C-23. Proposed Project Combustion Sources - On-road Off-site Vehicles (Other Than Entrained Road Dust).

Project Phase	Trip Type	Activity[1] (mi/yr)	PM_{10} (ton/yr)	PM_{10} (lb/day)	$PM_{2.5}$ (ton/yr)	$PM_{2.5}$ (lb/day)	CO (ton/yr)	CO (lb/day)	NOx (ton/yr)	NOx (lb/day)	ROG (ton/yr)	ROG (lb/day)	SOx (ton/yr)	SOx (lb/day)	Diesel PM (lb/yr)	Diesel PM (lb/hr)	CO_2 (tonne/yr)	CO_2 (lb/day)	CH_4 (tonne/yr)	CH_4 (lb/day)	N_2O (tonne/yr)	N_2O (lb/day)	CO_2e[4] (tonne/yr)	CO_2e[4] (lb/day)
1	Fuel Transport	6,961	0.00	0.03	0.00	0.02	0.03	0.20	0.09	0.64	0.01	0.05	0.00	0.00	6.57	0.00	13.22	97.13	0.00	0.00	0.00	0.00	13.36	98.17
	Green Waste Transport	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	Employee Commute	123,628	0.01	0.04	0.00	0.02	0.50	3.41	0.05	0.31	0.05	0.38	0.00	0.00	0.08	0.00	55.87	410.56	0.00	0.03	0.00	0.01	56.38	414.33
	Total - Phase 1	130,589	0.01	0.06	0.01	0.04	0.53	3.60	0.14	0.95	0.06	0.43	0.00	0.01	6.64	0.00	69.09	507.69	0.00	0.03	0.00	0.01	69.74	512.49
2	Fuel Transport	1,822	0.00	0.01	0.00	0.01	0.01	0.05	0.02	0.17	0.00	0.01	0.00	0.00	1.72	0.00	3.46	25.43	0.00	0.00	0.00	0.00	3.50	25.70
	Green Waste Transport	101,460	0.06	0.37	0.05	0.31	0.42	2.89	1.36	9.28	0.10	0.67	0.00	0.01	95.72	0.01	192.66	1,415.83	0.00	0.03	0.01	0.05	194.72	1,430.93
	Employee Commute	95,875	0.00	0.03	0.00	0.02	0.39	2.64	0.04	0.24	0.04	0.30	0.00	0.00	0.06	0.00	43.33	318.39	0.00	0.02	0.00	0.01	43.72	321.31
	Total - Phase 2	199,158	0.06	0.40	0.05	0.33	0.81	5.58	1.42	9.68	0.14	0.98	0.00	0.02	97.50	0.01	239.45	1,759.66	0.01	0.06	0.01	0.06	241.94	1,777.94

Notes:
1. Activity data based on estimated number of vehicles and mileage necessary to support maximum anticipated production during each of the project phases, as documented in Appendix D.
2. Mulched green waste transport includes both on- and off-site travel; calculations for total travel presented here since the vast majority of activity occurs off-site.
3. Assumed operating schedule:

Schedule	Phase 1	Phase 2
Hours/Day	24	24
Days/Week	6	6
Weeks/Year	50	50

4. Conversion factors:
   2,000 lb/ton
   0.45359 kg/lb
   1,000 kg/metric ton
5. CO_2 equivalent emissions (CO_2e) calculated based on the global warming potentials in the IPCC's Second Assessment Report (SAR, 1996), as presented in the CCAR *General Reporting Protocol* (op cit.), Table C.1. $CO_2e = 1 * CO_2 + 21 * CH_4 + 310 * N_2O$.

2012 On-road Emission Factors for Santa Clara County - Other than Entrained Road Dust (units: pounds/mile) [1].

Vehicle Type	Time Period	PM_{10}	$PM_{2.5}$	CO	NOx	ROG	SOx	Diesel PM	CO_2	CH_4	N_2O
Fuel Transport	Annual	0.00108499	0.00091443	0.00820033	0.02679915	0.00198780	0.00003997	0.00094340	4.18637274	0.00009233	0.00013772
(HHDT-DSL)[2]	Daily/Hourly	0.00109085	0.00091983	0.00854385	0.02742554	0.00196968	0.00004006	0.00094340	4.18637274	0.00009233	0.00013772
Employee Commute	Annual	0.00008520	0.00005324	0.00805851	0.00077949	0.00086024	0.00000970	0.00000062	0.99627575	0.00007373	0.00002448
(Passenger)[3]	Daily/Hourly	0.00008520	0.00005324	0.00826512	0.00075629	0.00093037	0.00001056	0.00000062	0.99627575	0.00007373	0.00002448

Notes:
1. Emission factors for on-road motor vehicles were derived from California Air Resources Board's EMFAC2007 (version 2.3) model daily seasonal emissions inventories (summer, winter, and annual average) for vehicles in Santa Clara County. First year of operation is assumed to be 2012.
2. Heavy-Heavy Duty Diesel Trucks.
3. Passenger Vehicles.

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Table C-24. Proposed Project Combustion Sources - On-road Dust Entrainment.

Project Phase	Annual Factors PM$_{10}$	Annual Factors PM$_{2.5}$	Daily/Hourly Factors PM$_{10}$	Daily/Hourly Factors PM$_{2.5}$	Annual Activity	Control Efficiency[1]	PM$_{10}$ Emissions[2,3] (ton/yr)	PM$_{10}$ Emissions[2,3] (lb/day)	PM$_{10}$ Emissions[2,3] (lb/hr)	PM$_{2.5}$ Emissions[2,3] (ton/yr)	PM$_{2.5}$ Emissions[2,3] (lb/day)	PM$_{2.5}$ Emissions[2,3] (lb/hr)
1	0.0064 lb/mi	0.0010 lb/mi	0.0067 lb/mi	0.0010 lb/mi	130,589 miles/yr	0%	0.42	2.92	0.12	0.06	0.44	0.02
2	(AP-42 Sec. 13.2.1, Eqn 2)		(AP-42 Sec. 13.2.1, Eqn 1)		192,198 miles/yr		0.62	4.30	0.18	0.09	0.65	0.03

Notes:
1. Assumed Control: None
2. Daily and hourly emission rates reflect the following operating schedule:

Schedule	Phase 1	Phase 2
Hours/Day	24	24
Days/Week	6	6
Weeks/Year	50	50

3. Conversion factors:
   2,000 lb = 1 ton

Emission Factors.

Road Type	PM$_{10}$ k factor (lb/VMT)	sL[2] (g/m^2)	W[3] (tons)	C (lb/VMT)	P[4]	N	PM$_{2.5}$/PM$_{10}$ Ratio[5]	VMT Fraction by Road Type[6]	PM$_{10}$ Factors (lb/VMT) Daily & Hourly	PM$_{10}$ Factors (lb/VMT) Annual	PM$_{2.5}$ Factors (lb/VMT) Daily & Hourly	PM$_{2.5}$ Factors (lb/VMT) Annual
Freeway	0.016	0.02	9.7	0.00047	62	365	15%	0.471	0.004	0.004	0.0006	0.0006
Major	0.016	0.035	9.7	0.00047	62	365	15%	0.407	0.006	0.006	0.0009	0.0009
Collector	0.016	0.035	9.7	0.00047	62	365	15%	0.055	0.006	0.006	0.0009	0.0009
Local	0.016	0.32	9.7	0.00047	62	365	15%	0.067	0.028	0.027	0.0042	0.0040
Composite Emission Factors (assuming Santa Clara County VMT fractions by road type)								1.000	0.0067	0.0064	0.0010	0.0010

Notes:
1. AP-42 Sec. 13.2.1 (Paved Roads, Eqn 1) provides the following equation to estimate entrained paved road dust emissions:

$$E = k\left(\frac{sL}{2}\right)^{0.65}\left(\frac{W}{3}\right)^{1.5} - C$$

where: E = particulate emission factor (grams/vehicle miles traveled, or lb/VMT),
k = particle size multiplier for particle size range and units of interest, 0.016 lb/VMT for PM$_{10}$
sL = road surface silt loading (grams per square meter, or g/m^2)
W = average weight (tons) of the vehicles traveling the road, and
C = emission factor for 1980's vehicle fleet exhaust, brake wear and tire wear (0.00047 lb/VMT for TSP and PM$_{10}$).

For long-term emissions (annual, seasonal, or monthly) AP-42 Sec. 13.2.1, Eqn 2 suggests that a precipitation correction factor can be applied as follows:

$$E_{ext} = \left[k\left(\frac{sL}{2}\right)^{0.65}\left(\frac{W}{3}\right)^{1.5} - C\right]\left(1 - \frac{P}{4N}\right)$$

where: E_{ext} = annual or other long-term particulate emission factor (grams/vehicle miles traveled, or g/VMT),
P = number of “wet” days with at least 0.254 mm (0.01 in) of precipitation during the averaging period, and
N = number of days in the averaging period (e.g., 365 for annual, 91 for seasonal, 30 for monthly).

Note that per AP-42 Sec. 13.2.1, emissions calculated for the fleet average only, not individual trip or weight classes.

2. Source: California Air Resources Board, Entrained Dust from Paved Road Travel: Emission Estimation Methodology Background Document, July 2, 1997, Table 3

Table C-24. Proposed Project Combustion Sources - On-road Dust Entrainment.

(California Default Paved Road Silt Loading Values) - silt loading for local and collector road types, available at http://www.arb.ca.gov/ei/areasrc/arbmiscprocpaverddst.htm.

3. Average vehicle weight (W) for on-road offsite fleet derived below.
4. Number of days with precipitation at least 0.254 mm (0.01 in) from the University of Utah at http://www.met.utah.edu/jhorel/html/wx/climate/daysrain.html, data for San Francisco Airport (62 days/year).
5. The California Air Resources Board's "Almanac Emission Projection Data by EIC", 2009 (available at http://www.arb.ca.gov/ei/emissiondata.htm - Areawide Sources - Paved Road Dust), assumes a $PM_{2.5}/PM_{10}$ ratio of 15%.
6. Source: California Air Resources Board, Emissions Inventory Methodology Section 7.9: Entrained Paved Road Dust-Paved Road Travel, July 1997, Table 2 (1993 Roadway Travel Fractions and VMT Estimates for California Entrained Paved Road Dust Emission Estimates).

Activity Data - Fuel Transport and Employe Commute Vehicles.

	Fuel Transport Trucks			Mulched Green Waste Transport Trucks			Employee Commute Vehicles			Totals		
Project Phase	Miles/ Year[1]	Ave. Veh. Wgt (tons)[2]	Annual Ton-Miles[3]	Miles/ Year[1]	Ave. Veh. Wgt (tons)[2]	Annual Ton-Miles[3]	Miles/ Year[1]	Ave. Veh. Wgt (tons)[2]	Annual Ton-Miles[3]	Ton-Miles	Miles	Ave. Veh. Wgt (tons)
1	6,961	27.5	191,417	0	25.0	0	123,628	2.4	296,708	488,125	130,589	3.7
2	1,822	27.5	50,116	94,500	25.0	2,362,500	95,875	2.4	230,100	2,642,716	192,198	13.8
Total - All Phases										3,130,841	322,787	9.7

Notes:
1. Derivation of miles for each vehicle type documented previously.
2. On-road fuel transport trucks assumed to be 40 tons loaded and 15 tons unloaded (average weight of 27.5 tons). Source for average employee commute vehicle weight: California Air Resources Board, Emissions Inventory Methodology Section 7.9 (op cit.), Table 3 (Silt Loadings and Emission Factors for California Entrained Paved Road Dust Estimates), average vehicle weight for Santa Clara County (2.4 tons).
3. Used to calculate average vehicle weight for total fleet.

Table C-25. Proposed Project Indirect Greenhouse Gas Emissions - Electrical Power Use.

Project Phase	Use	Annual Activity	Annual Electric Power Use Metric	Annual Electric Power Use (kW-hr)	GHG Emission Factors (lb/MW-hr)[5] CO_2	CH_4	N_2O	Indirect GHG Emissions (MT/yr)[6] CO_2	CH_4	N_2O	CO_2e[8]
1	Quarry Dewatering[1]	6,720 hours/year	274.6 kilowatts (kW)	1,845,043							
	Purchased Water (Dust Suppression)[2]	0 million gal/yr	3,500 kW-hr/million gal	--							
	Overland Conveyor System[3]	0 hours/year	3,674.1 kilowatts (kW)	--							
	Quarry Office[4]	1,800 square feet	14.6 kW-hr/sq ft-yr	26,280							
	Total - Phase 1			1,871,323	681.01	0.02829	0.00623	578.05	0.02	0.01	580.19
2	Quarry Dewatering	0 hours/year	274.6 kilowatts (kW)	--							
	Purchased Water (Dust Suppression)	107 million gal/yr	3,500 kW-hr/million gal	373,653							
	Overland Conveyor System	7,200 hours/year	3,674.1 kilowatts (kW)	26,453,160							
	Quarry Office	1,800 square feet	14.6 kW-hr/sq ft-yr	26,280							
	Total - Phase 2			26,853,093	681.01	0.02829	0.00623	8,294.90	0.34	0.08	8,325.66

Notes:

1. Current quarry dewatering system, powered by two 300 HP electric powered motors, is rated at 2,000 gallons per minute (gpm) but typically runs at 1,860 gpm. Each motor draws on average 33 amps at 4,160 volts. The dewatering system operates on average 24 hours/day, 7 days/week, 40 weeks/year. Assume that the quarry dewatering system will continue to operate at its present level through Phase 1. From the start of Phase 2, the quarry dewatering system is expected to no longer be operational since extraction operations from the quarry will have ceased.
2. For periods when a quarry dewatering system is operational, assume that water used for dust suppression is drawn from the quarry dewatering system; no purchased water is needed during these periods. For times when purchased water is needed, the quantity of purchased water is the total of water used by the water trucks and water needed to control emissions from the overland conveyor system. Water used by water trucks is calculated assuming a water flow rate of 400 gallons/minute and 60 minutes/hour for each water truck operating hour. Water used for overland conveyor system dust control is calculated assuming a water flow rate of 2 gallons/minute, 60 minutes/hour, and 7,200 hours/year (3 shifts for 300 operating days) for each material transfer point and screen. The water-energy proxy value of 3,500 kW-hr per million gallons is derived from *Refining Estimates of Water-Related Energy Use in California* (Report No.CEC-500-2006-118), California Energy Commission, December 2006, page 2 (Northern California outdoor uses).
3. The Overland Conveyor System will utilize the following electric motors: heavy duty conveyor (1-500 HP); portable conveyors (up to 31-75 HP); overland conveyor (up to 4-500 HP); and telestacker (1-100 HP). This totals 4,925 in maximum electrical motor capacity. Assuming 746 watts/HP, this is equivalent to 3,674.1 kilowatts (kW). The Overland Conveyor System is assumed to operate 24 hours/day, 6 days/week, 50 weeks/year (7,200 hours/year) during Phase 2.
4. The quarry office measures 30 feet by 60 feet. The Electricity Energy Intensity (EEI) value of 14.6 kW-hr/square foot-year is derived from *the 2003 Commercial Buildings Energy Consumption Survey (CBECS): 2003 Detailed Tables* , U.S. Department of Energy - Energy Information Agency, Table C19 (Electricity Consumption and Conditional Energy Intensity by Census Division for Non-Mall Buildings, Part 3), data for office buildings, Pacific Census Division, available at:
   www.eia.doe.gov/emeu/cbecs/cbecs2003/detailed_tables_2003/detailed_tables_2003.html.
5. Source: U.S. Department of Energy, *Emissions & Generation Resource Integrated Database (eGRID)* , eGRID2010 Version 1.1, May 2011, available at http://www.epa.gov/cleanenergy/energy-resources/egrid/index.html - 2007 Summary Table 1 ("Year 2007 eGRID Subregion Emissions - Greenhouse Gases"), data for Western Electricity Coordinating Council (WECC) California (CAMX) Subregion.
6. CO_2 equivalent emissions (CO_2e) calculated based on the global warming potentials in the IPCC's *Second Assessment Report* (SAR, 1996), as presented in the Climate Registry's *General Reporting Protocol* , Version 1.1 (May 2008), Table B.1. $CO_2e = 1 * CO_2 + 21 * CH_4 + 310 * N_2O$.
7. Conversion factors:
   1,000 kW-hr/MW-hr
   0.45359 kilograms/pound
   1,000 kilograms/metric ton (MT)

Table C-26. Proposed Project Combustion Sources - Emission Zero Hour and Deterioration Rate Emission Factors for Off-Road Diesel Equipment.

Fuel	Min HP	Max HP	Year	THCzh	THCdr	THCunits	COzh	COdr	COunits	NOXzh	NOXdr	NOXunits	PMzh	PMdr	PMunits	CO2zh	CO2dr	CO2units
D	1	15	1994	1.5	0.00E+00	G/HP-HR	5	0.00E+00	G/HP-HR	10	0.00E+00	G/HP-HR	1	0.00E+00	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	1	15	1999	1.05	0.00E+00	G/HP-HR	5	0.00E+00	G/HP-HR	9.35	0.00E+00	G/HP-HR	0.57	0.00E+00	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	1	15	2004	0.68	0.00E+00	G/HP-HR	3.47	0.00E+00	G/HP-HR	6.08	0.00E+00	G/HP-HR	0.47	0.00E+00	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	1	15	2007	0.49	0.00E+00	G/HP-HR	3.47	0.00E+00	G/HP-HR	4.37	0.00E+00	G/HP-HR	0.38	0.00E+00	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	1	15	2040	0.49	0.00E+00	G/HP-HR	3.47	0.00E+00	G/HP-HR	4.37	0.00E+00	G/HP-HR	0.19	0.00E+00	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	16	25	1994	1.84	0.00E+00	G/HP-HR	5	0.00E+00	G/HP-HR	6.92	0.00E+00	G/HP-HR	0.76	0.00E+00	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	16	25	1999	0.9	0.00E+00	G/HP-HR	5	0.00E+00	G/HP-HR	6.92	0.00E+00	G/HP-HR	0.57	0.00E+00	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	16	25	2004	0.64	0.00E+00	G/HP-HR	2.34	0.00E+00	G/HP-HR	5.79	0.00E+00	G/HP-HR	0.38	0.00E+00	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	16	25	2007	0.57	0.00E+00	G/HP-HR	2.34	0.00E+00	G/HP-HR	4.57	0.00E+00	G/HP-HR	0.38	0.00E+00	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	16	25	2040	0.57	0.00E+00	G/HP-HR	2.34	0.00E+00	G/HP-HR	4.57	0.00E+00	G/HP-HR	0.19	0.00E+00	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	26	50	1987	1.84	2.35E-04	G/HP-HR	5	5.13E-04	G/HP-HR	7	1.05E-04	G/HP-HR	0.76	5.89E-05	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	26	50	1998	1.8	2.30E-04	G/HP-HR	5	5.13E-04	G/HP-HR	6.9	1.04E-04	G/HP-HR	0.76	5.89E-05	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	26	50	2003	1.45	1.85E-04	G/HP-HR	4.1	4.20E-04	G/HP-HR	5.55	1.03E-04	G/HP-HR	0.6	4.65E-05	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	26	50	2004	0.64	9.80E-05	G/HP-HR	3.27	3.34E-04	G/HP-HR	5.1	9.33E-05	G/HP-HR	0.43	3.36E-05	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	26	50	2005	0.37	6.90E-05	G/HP-HR	3	3.05E-04	G/HP-HR	4.95	9.67E-05	G/HP-HR	0.38	2.93E-05	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	26	50	2007	0.24	5.45E-05	G/HP-HR	2.86	2.90E-04	G/HP-HR	4.88	9.83E-05	G/HP-HR	0.35	2.72E-05	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	26	50	2012	0.1	4.00E-05	G/HP-HR	2.72	2.76E-04	G/HP-HR	4.8	1.00E-04	G/HP-HR	0.16	1.20E-05	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	26	50	2040	0.1	4.00E-05	G/HP-HR	2.72	2.76E-04	G/HP-HR	2.9	6.00E-05	G/HP-HR	0.01	1.20E-06	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	51	120	1987	1.44	6.66E-05	G/HP-HR	4.8	1.27E-04	G/HP-HR	13	3.01E-04	G/HP-HR	0.84	6.11E-05	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	51	120	1997	0.99	4.58E-05	G/HP-HR	3.49	9.23E-05	G/HP-HR	8.75	2.02E-04	G/HP-HR	0.69	5.02E-05	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	51	120	2003	0.99	4.58E-05	G/HP-HR	3.49	9.23E-05	G/HP-HR	6.9	1.60E-04	G/HP-HR	0.69	5.02E-05	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	51	120	2004	0.46	3.33E-05	G/HP-HR	3.23	8.55E-05	G/HP-HR	5.64	1.03E-04	G/HP-HR	0.39	2.85E-05	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	51	120	2005	0.28	2.92E-05	G/HP-HR	3.14	8.33E-05	G/HP-HR	5.22	8.40E-05	G/HP-HR	0.29	2.12E-05	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	51	120	2007	0.19	2.71E-05	G/HP-HR	3.09	8.21E-05	G/HP-HR	5.01	7.45E-05	G/HP-HR	0.24	1.76E-05	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	51	120	2011	0.1	2.50E-05	G/HP-HR	3.05	8.10E-05	G/HP-HR	2.89	3.80E-05	G/HP-HR	0.2	8.58E-06	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	51	120	2012	0.09	2.31E-05	G/HP-HR	3.05	8.10E-05	G/HP-HR	2.53	3.38E-05	G/HP-HR	0.07	4.30E-06	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	51	120	2014	0.09	2.31E-05	G/HP-HR	3.05	8.10E-05	G/HP-HR	2.53	3.38E-05	G/HP-HR	0.01	1.04E-06	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	51	120	2040	0.07	1.74E-05	G/HP-HR	3.05	8.10E-05	G/HP-HR	1.4	1.88E-05	G/HP-HR	0.01	1.04E-06	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	121	175	1969	1.32	6.11E-05	G/HP-HR	4.4	1.16E-04	G/HP-HR	14	3.24E-04	G/HP-HR	0.77	5.60E-05	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	121	175	1971	1.1	5.09E-05	G/HP-HR	4.4	1.16E-04	G/HP-HR	13	3.01E-04	G/HP-HR	0.66	4.80E-05	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	121	175	1979	1	4.63E-05	G/HP-HR	4.4	1.16E-04	G/HP-HR	12	2.78E-04	G/HP-HR	0.55	4.00E-05	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	121	175	1984	0.94	4.35E-05	G/HP-HR	4.3	1.14E-04	G/HP-HR	11	2.54E-04	G/HP-HR	0.55	4.00E-05	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	121	175	1987	0.88	4.07E-05	G/HP-HR	4.2	1.11E-04	G/HP-HR	11	2.54E-04	G/HP-HR	0.55	4.00E-05	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	121	175	1996	0.68	3.15E-05	G/HP-HR	2.7	7.14E-05	G/HP-HR	8.17	1.89E-04	G/HP-HR	0.38	2.76E-05	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	121	175	2002	0.68	3.15E-05	G/HP-HR	2.7	7.14E-05	G/HP-HR	6.9	1.60E-04	G/HP-HR	0.38	2.76E-05	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	121	175	2003	0.33	2.79E-05	G/HP-HR	2.7	7.14E-05	G/HP-HR	5.26	9.64E-05	G/HP-HR	0.24	1.70E-05	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	121	175	2004	0.22	2.63E-05	G/HP-HR	2.7	7.14E-05	G/HP-HR	4.72	7.52E-05	G/HP-HR	0.19	1.35E-05	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	121	175	2006	0.16	2.57E-05	G/HP-HR	2.7	7.14E-05	G/HP-HR	4.44	6.46E-05	G/HP-HR	0.16	1.18E-05	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	121	175	2011	0.1	2.50E-05	G/HP-HR	2.7	7.14E-05	G/HP-HR	2.45	3.20E-05	G/HP-HR	0.14	1.00E-05	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	121	175	2014	0.09	2.17E-05	G/HP-HR	2.7	7.14E-05	G/HP-HR	2.27	2.88E-05	G/HP-HR	0.01	5.00E-07	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	121	175	2040	0.05	1.17E-05	G/HP-HR	2.7	7.14E-05	G/HP-HR	0.27	3.75E-06	G/HP-HR	0.01	5.00E-07	G/HP-HR	568.3	0.00E+00	G/HP-HR

Table C-26. Proposed Project Combustion Sources - Emission Zero Hour and Deterioration Rate Emission Factors for Off-Road Diesel Equipment.

Fuel	Min HP	Max HP	Year	THCzh	THCdr	THCunits	COzh	COdr	COunits	NOXzh	NOXdr	NOXunits	PMzh	PMdr	PMunits	CO2zh	CO2dr	CO2units
D	176	250	1969	1.32	6.11E-05	G/HP-HR	4.4	1.16E-04	G/HP-HR	14	3.24E-04	G/HP-HR	0.77	5.60E-05	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	176	250	1971	1.1	5.09E-05	G/HP-HR	4.4	1.16E-04	G/HP-HR	13	3.01E-04	G/HP-HR	0.66	4.80E-05	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	176	250	1979	1	4.63E-05	G/HP-HR	4.4	1.16E-04	G/HP-HR	12	2.78E-04	G/HP-HR	0.55	4.00E-05	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	176	250	1984	0.94	4.35E-05	G/HP-HR	4.3	1.14E-04	G/HP-HR	11	2.54E-04	G/HP-HR	0.55	4.00E-05	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	176	250	1987	0.88	4.07E-05	G/HP-HR	4.2	1.11E-04	G/HP-HR	11	2.54E-04	G/HP-HR	0.55	4.00E-05	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	176	250	1995	0.68	3.15E-05	G/HP-HR	2.7	7.14E-05	G/HP-HR	8.17	1.89E-04	G/HP-HR	0.38	2.76E-05	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	176	250	2002	0.32	1.48E-05	G/HP-HR	0.92	2.43E-05	G/HP-HR	6.25	1.45E-04	G/HP-HR	0.15	7.96E-06	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	176	250	2003	0.19	2.09E-05	G/HP-HR	0.92	2.43E-05	G/HP-HR	5	9.05E-05	G/HP-HR	0.12	6.51E-06	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	176	250	2004	0.14	2.30E-05	G/HP-HR	0.92	2.43E-05	G/HP-HR	4.58	7.23E-05	G/HP-HR	0.11	6.03E-06	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	176	250	2006	0.12	2.40E-05	G/HP-HR	0.92	2.43E-05	G/HP-HR	4.38	6.33E-05	G/HP-HR	0.11	5.79E-06	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	176	250	2010	0.1	2.50E-05	G/HP-HR	0.92	2.43E-05	G/HP-HR	2.45	3.18E-05	G/HP-HR	0.11	5.59E-06	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	176	250	2013	0.07	1.83E-05	G/HP-HR	0.92	2.43E-05	G/HP-HR	1.36	1.75E-05	G/HP-HR	0.01	3.75E-07	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	176	250	2040	0.05	1.17E-05	G/HP-HR	0.92	2.43E-05	G/HP-HR	0.27	3.75E-06	G/HP-HR	0.01	3.75E-07	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	251	500	1969	1.26	4.39E-05	G/HP-HR	4.2	8.32E-04	G/HP-HR	14	2.33E-04	G/HP-HR	0.74	3.93E-05	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	251	500	1971	1.05	3.66E-05	G/HP-HR	4.2	8.32E-04	G/HP-HR	13	2.16E-04	G/HP-HR	0.63	3.34E-05	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	251	500	1979	0.95	3.31E-05	G/HP-HR	4.2	8.32E-04	G/HP-HR	12	2.00E-04	G/HP-HR	0.53	2.81E-05	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	251	500	1984	0.9	3.14E-05	G/HP-HR	4.2	8.32E-04	G/HP-HR	11	1.83E-04	G/HP-HR	0.53	2.81E-05	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	251	500	1987	0.84	2.93E-05	G/HP-HR	4.1	8.12E-04	G/HP-HR	11	1.83E-04	G/HP-HR	0.53	2.81E-05	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	251	500	1995	0.68	2.37E-05	G/HP-HR	2.7	5.35E-05	G/HP-HR	8.17	1.36E-04	G/HP-HR	0.38	2.02E-05	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	251	500	2000	0.32	1.12E-05	G/HP-HR	0.92	1.82E-05	G/HP-HR	6.25	1.04E-04	G/HP-HR	0.15	7.96E-06	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	251	500	2001	0.19	1.95E-05	G/HP-HR	0.92	1.82E-05	G/HP-HR	4.95	7.34E-05	G/HP-HR	0.12	6.51E-06	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	251	500	2002	0.14	2.22E-05	G/HP-HR	0.92	1.82E-05	G/HP-HR	4.51	6.32E-05	G/HP-HR	0.11	6.03E-06	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	251	500	2004	0.12	2.36E-05	G/HP-HR	0.92	1.82E-05	G/HP-HR	4.29	5.81E-05	G/HP-HR	0.11	5.79E-06	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	251	500	2005	0.1	2.50E-05	G/HP-HR	0.92	1.82E-05	G/HP-HR	4	5.30E-05	G/HP-HR	0.11	5.55E-06	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	251	500	2010	0.1	2.50E-05	G/HP-HR	0.92	1.82E-05	G/HP-HR	2.45	3.18E-05	G/HP-HR	0.11	5.55E-06	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	251	500	2013	0.07	1.83E-05	G/HP-HR	0.92	1.82E-05	G/HP-HR	1.36	1.75E-05	G/HP-HR	0.01	3.75E-07	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	251	500	2040	0.05	1.17E-05	G/HP-HR	0.92	1.82E-05	G/HP-HR	0.27	3.75E-06	G/HP-HR	0.01	3.75E-07	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	501	750	1969	1.26	4.39E-05	G/HP-HR	4.2	8.32E-04	G/HP-HR	14	2.33E-04	G/HP-HR	0.74	3.93E-05	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	501	750	1971	1.05	3.66E-05	G/HP-HR	4.2	8.32E-04	G/HP-HR	13	2.16E-04	G/HP-HR	0.63	3.34E-05	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	501	750	1979	0.95	3.31E-05	G/HP-HR	4.2	8.32E-04	G/HP-HR	12	2.00E-04	G/HP-HR	0.53	2.81E-05	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	501	750	1984	0.9	3.14E-05	G/HP-HR	4.2	8.32E-04	G/HP-HR	11	1.83E-04	G/HP-HR	0.53	2.81E-05	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	501	750	1987	0.84	2.93E-05	G/HP-HR	4.1	8.12E-04	G/HP-HR	11	1.83E-04	G/HP-HR	0.53	2.81E-05	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	501	750	1995	0.68	2.37E-05	G/HP-HR	2.7	5.35E-05	G/HP-HR	8.17	1.36E-04	G/HP-HR	0.38	2.02E-05	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	501	750	2001	0.32	1.12E-05	G/HP-HR	0.92	1.82E-05	G/HP-HR	6.25	1.04E-04	G/HP-HR	0.15	7.96E-06	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	501	750	2002	0.19	1.95E-05	G/HP-HR	0.92	1.82E-05	G/HP-HR	4.95	7.34E-05	G/HP-HR	0.12	6.51E-06	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	501	750	2003	0.14	2.22E-05	G/HP-HR	0.92	1.82E-05	G/HP-HR	4.51	6.32E-05	G/HP-HR	0.11	6.03E-06	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	501	750	2005	0.12	2.36E-05	G/HP-HR	0.92	1.82E-05	G/HP-HR	4.29	5.81E-05	G/HP-HR	0.11	5.79E-06	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	501	750	2010	0.1	2.50E-05	G/HP-HR	0.92	1.82E-05	G/HP-HR	2.45	3.18E-05	G/HP-HR	0.11	5.55E-06	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	501	750	2013	0.07	1.83E-05	G/HP-HR	0.92	1.82E-05	G/HP-HR	1.36	1.75E-05	G/HP-HR	0.01	3.75E-07	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	501	750	2040	0.05	1.17E-05	G/HP-HR	0.92	1.82E-05	G/HP-HR	0.27	3.75E-06	G/HP-HR	0.01	3.75E-07	G/HP-HR	568.3	0.00E+00	G/HP-HR

Table C-26. Proposed Project Combustion Sources - Emission Zero Hour and Deterioration Rate Emission Factors for Off-Road Diesel Equipment.

Fuel	Min HP	Max HP	Year	THCzh	THCdr	THCunits	COzh	COdr	COunits	NOXzh	NOXdr	NOXunits	PMzh	PMdr	PMunits	CO2zh	CO2dr	CO2units
D	751	1000	1969	1.26	4.39E-05	G/HP-HR	4.2	8.32E-04	G/HP-HR	14	2.33E-04	G/HP-HR	0.74	3.93E-05	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	751	1000	1971	1.05	3.66E-05	G/HP-HR	4.2	8.32E-04	G/HP-HR	13	2.16E-04	G/HP-HR	0.63	3.34E-05	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	751	1000	1979	0.95	3.31E-05	G/HP-HR	4.2	8.32E-04	G/HP-HR	12	2.00E-04	G/HP-HR	0.53	2.81E-05	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	751	1000	1984	0.9	3.14E-05	G/HP-HR	4.2	8.32E-04	G/HP-HR	11	1.83E-04	G/HP-HR	0.53	2.81E-05	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	751	1000	1987	0.84	2.93E-05	G/HP-HR	4.1	8.12E-04	G/HP-HR	11	1.83E-04	G/HP-HR	0.53	2.81E-05	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	751	1000	1999	0.68	1.12E-05	G/HP-HR	2.7	5.35E-05	G/HP-HR	8.17	1.36E-04	G/HP-HR	0.38	2.02E-06	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	751	1000	2005	0.32	1.12E-05	G/HP-HR	0.92	1.82E-05	G/HP-HR	6.25	1.04E-04	G/HP-HR	0.15	7.96E-06	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	751	1000	2006	0.19	1.95E-05	G/HP-HR	0.92	1.82E-05	G/HP-HR	4.95	7.34E-05	G/HP-HR	0.12	6.51E-06	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	751	1000	2007	0.14	2.22E-05	G/HP-HR	0.92	1.82E-05	G/HP-HR	4.51	6.32E-05	G/HP-HR	0.11	6.03E-06	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	751	1000	2009	0.12	2.36E-05	G/HP-HR	0.92	1.82E-05	G/HP-HR	4.29	5.81E-05	G/HP-HR	0.11	5.79E-06	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	751	1000	2010	0.1	2.50E-05	G/HP-HR	0.92	1.82E-05	G/HP-HR	4.08	5.30E-05	G/HP-HR	0.11	5.55E-06	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	751	1000	2014	0.07	1.83E-05	G/HP-HR	0.92	1.82E-05	G/HP-HR	2.36	3.00E-05	G/HP-HR	0.06	2.50E-06	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	751	1000	2040	0.05	1.17E-05	G/HP-HR	0.92	1.82E-05	G/HP-HR	2.36	3.00E-05	G/HP-HR	0.02	1.00E-06	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	1001	9999	1969	1.26	4.39E-05	G/HP-HR	4.2	8.32E-04	G/HP-HR	14	2.33E-04	G/HP-HR	0.74	3.93E-05	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	1001	9999	1971	1.05	3.66E-05	G/HP-HR	4.2	8.32E-04	G/HP-HR	13	2.16E-04	G/HP-HR	0.63	3.34E-05	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	1001	9999	1979	0.95	3.31E-05	G/HP-HR	4.2	8.32E-04	G/HP-HR	12	2.00E-04	G/HP-HR	0.53	2.81E-05	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	1001	9999	1984	0.9	3.14E-05	G/HP-HR	4.2	8.32E-04	G/HP-HR	11	1.83E-04	G/HP-HR	0.53	2.81E-05	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	1001	9999	1987	0.84	2.93E-05	G/HP-HR	4.1	8.12E-04	G/HP-HR	11	1.83E-04	G/HP-HR	0.53	2.81E-05	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	1001	9999	1999	0.68	1.12E-05	G/HP-HR	2.7	5.35E-05	G/HP-HR	8.17	1.36E-04	G/HP-HR	0.38	2.02E-06	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	1001	9999	2005	0.32	1.12E-05	G/HP-HR	0.92	1.82E-05	G/HP-HR	6.25	1.04E-04	G/HP-HR	0.15	7.96E-06	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	1001	9999	2006	0.19	1.95E-05	G/HP-HR	0.92	1.82E-05	G/HP-HR	4.95	7.34E-05	G/HP-HR	0.12	6.51E-06	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	1001	9999	2007	0.14	2.22E-05	G/HP-HR	0.92	1.82E-05	G/HP-HR	4.51	6.32E-05	G/HP-HR	0.11	6.03E-06	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	1001	9999	2009	0.12	2.36E-05	G/HP-HR	0.92	1.82E-05	G/HP-HR	4.29	5.81E-05	G/HP-HR	0.11	5.79E-06	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	1001	9999	2010	0.1	2.50E-05	G/HP-HR	0.92	1.82E-05	G/HP-HR	4.08	5.30E-05	G/HP-HR	0.11	5.55E-06	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	1001	9999	2014	0.1	2.50E-05	G/HP-HR	0.92	1.82E-05	G/HP-HR	2.36	3.00E-05	G/HP-HR	0.06	2.50E-06	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	1001	9999	2040	0.05	1.17E-05	G/HP-HR	0.92	1.82E-05	G/HP-HR	2.36	3.00E-05	G/HP-HR	0.02	1.00E-06	G/HP-HR	568.3	0.00E+00	G/HP-HR

Notes:
1. The above factors are derived from *Offroad2007* (Version 2.0.1.2), California Air Resources Board, December 15, 2006, data from emfac.csv data file, lines 41-149 (default exhaust emission factors for off-road diesel equipment for which specific factors are not provided).
2. The above factors are consistent with the factors used by CARB staff to estimate off-road diesel equipment emissions, as documented in *Staff Report: Initial Statement of Reasons for Proposed Rulemaking – Proposed Amendments to the Regulation for In-use Off-road Diesel-fueled Fleets and the Off-road Large Spark-ignition Fleet Requirements*, California Air Resources Board, October 2010, Appendix D (OSM and Summary of Off-road Emissions Inventory Update), Attachment D (Diesel Emission Factors (g/bhp-hr)).

Table C-27. Proposed Project Combustion Sources - Emission Factors for On-road Motor Vehicles.

Emission Factors for 2012.[1]

		Annual Emission Factors[2]			Daily/Hourly Emission Factors[3]		
Parameter	Units	Heavy-heavy Duty Trucks - Diesel[4]	Passenger Vehicles[5]	Medium Duty Vehicles[6]	Heavy-heavy Duty Trucks - Diesel[4]	Passenger Vehicles[5]	Medium Duty Vehicles[6]
Criteria Pollutants[7]							
CO	lb/mile	0.00820033	0.00805851	0.00881505	0.00854385 (Win)	0.00826512 (Win)	0.00901903 (Win)
NOx	lb/mile	0.02679915	0.00077949	0.00117603	0.02742554 (Sum)	0.00075629 (Sum)	0.00114280 (Sum)
ROG	lb/mile	0.00198780	0.00086024	0.00077339	0.00196968 (Sum)	0.00093037 (Sum)	0.00079595 (Sum)
SOx	lb/mile	0.00003997	0.00000970	0.00001445	0.00004006 (Sum)	0.00001056 (Sum)	0.00001575 (Sum)
PM_{10}	lb/mile	0.00108499	0.00008520	0.00011157	0.00109085 (Win)	0.00008520 (Win)	0.00011157 (Win)
$PM_{2.5}$	lb/mile	0.00091443	0.00005324	0.00007773	0.00091983 (Win)	0.00005324 (Win)	0.00007773 (Win)
Diesel Particulates[8]							
DPM_{10}	lb/mile	0.00094340	0.00000062	0.00000029	0.00094340 (Ann)	0.00000062 (Ann)	0.00000029 (Ann)
$DPM_{2.5}$	lb/mile	0.00086793	0.00000057	0.00000026	0.00086793 (Ann)	0.00000057 (Ann)	0.00000026 (Ann)
Greenhouse Gases[9]							
CO_2	lb/mile	4.18637274	0.99627575	1.49033217	4.18637274 (Ann)	0.99627575 (Ann)	1.49033217 (Ann)
CH_4	lb/mile	0.00009233	0.00007373	0.00009458	0.00009233 (Ann)	0.00007373 (Ann)	0.00009458 (Ann)
N_2O	lb/mile	0.00013772	0.00002448	0.00003717	0.00013772 (Ann)	0.00002448 (Ann)	0.00003717 (Ann)
EMFAC Trips[10]							
Trip Distance	mi/trip	32.540	5.046	5.672	32.540 (Ann)	5.046 (Ann)	5.672 (Ann)

Notes:

1. Emission factors for on-road motor vehicles were derived from California Air Resources Board's EMFAC2007 (version 2.3) model daily seasonal emissions inventories (summer, winter, and annual average) for vehicles in Santa Clara County.
2. Source: EMFAC2007 model 2012 annual average emission inventory for Santa Clara County.
3. Source: EMFAC2007 model 2012 seasonal average emission inventories for Santa Clara County, as follows: a) emission factors for diesel particulates and greenhouse gases, as well as average trip distances, are based on annual average data; b) emission factors for NOx and ROG (both ozone precursors) are based on summer season data since peak ozone levels are typically observed in the summer; c) emission factors for the remaining pollutants (CO, SOx, PM_{10}, and $PM_{2.5}$) are based on peak emission rates observed between the winter and summer seasons. Note that "(Ann)" indicates that a factor is based on annual average data, "(Sum)" indicates that a factor is based on summer season data, and that "(Win)" indicates that a factor is based on winter season data.
4. Includes the following vehicle class: Heavy-Heavy-Duty Trucks (33,001 to 60,000 pounds) - diesel-fueled vehicles only.
5. Includes the following vehicle classes: Light Duty Autos, Light Duty Trucks, & Medium Duty Vehicles (8,500 pounds curb weight and under).
6. Includes the following vehicle class: Medium Duty Vehicles (5,751 to 8,500 pounds curb weight).
7. Criteria pollutant emission factors include total emissions for each pollutant. In addition to exhaust emissions, ROG factors include diurnal, hot soak, running loss, and resting loss emissions, and PM_{10} and $PM_{2.5}$ factors include emissions from brake wear and tire wear.
8. Diesel particulate emission factors include only exhaust PM emissions from diesel vehicles. For calculation purposes, DPM_{10} (diesel particulates sized 10 microns and smaller) is used to represent diesel particulate matter (DPM).
9. Greenhouse gas emission factors for carbon dioxide (CO_2) and methane (CH_4) based on EMFAC2007 exhaust emissions for each compound. Factors for nitrous oxide (N_2O) are based on the California Air Resources Board's methodology described in *California's 1990-2004 Greenhouse Gas Emissions Emissions Inventory and 1990 Emissions Level: Technical Support Document*, May 2009, pp 28-29 (available at http://www.arb.ca.gov/cc/inventory/doc/doc.htm). For diesel vehicles, N_2O emissions are based on an ARB-observed N_2O emission rate per gallon of diesel fuel. For gasoline vehicles, N_2O emissions are based on a linear correlation of N_2O emissions to NOx exhaust emissions.
10. Based on EMFAC2007 emission inventories for Santa Clara County.

Appendix D

Proposed Project Supporting Documentation

Proposed Project Supporting Documentation.

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Table D-1. Identification of Peak Activity by Project Phase for Proposed Project.

Category	Annual Activity Indicator	Project Component	Phase 1									Phase 2				
			2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Bulldozing, Scraping, and Grading	Hours per Year	Proposed Project	15,124	15,124	15,374	14,736	14,543	12,354	12,465	12,664	12,465	16,911	17,077	17,991	20,276	19,944
		Permanente Creek Reclamation Area	16	--	--	--	--	--	--	--	--	--	--	--	--	32
		Total:	15,140	15,124	15,374	14,736	14,543	12,354	12,465	12,664	12,465	16,911	17,077	17,991	20,276	19,976
Material Handling	Total Production + Topsoil Movements (Tonnes per Year)	Proposed Project	9,600,000	9,325,000	9,325,000	8,000,000	7,950,000	6,218,000	6,200,000	6,210,000	5,200,000	9,046,000	9,017,000	9,055,051	9,034,051	9,034,051
		Permanente Creek Reclamation Area	8,000	--	--	--	--	--	--	--	--	--	--	--	--	1,600
		Total:	9,608,000	9,325,000	9,325,000	8,000,000	7,950,000	6,218,000	6,200,000	6,210,000	5,200,000	9,046,000	9,017,000	9,055,051	9,034,051	9,035,651
Unpaved Road Dust Entrain-ment	Total Miles per Year Associated With Haul Truck Transport	Proposed Project	335,032	331,237	290,080	309,610	270,080	200,621	210,636	228,181	222,590	137,490	111,234	94,459	77,647	37,435
		Permanente Creek Reclamation Area	76	--	--	--	--	--	--	--	--	--	--	--	--	76
		Total:	335,108	331,237	290,080	309,610	270,080	200,621	210,636	228,181	222,590	137,490	111,234	94,459	77,647	37,511
Wind Erosion - Disturbed Areas	Topsoil Removal, Operating, Back-fill, and Reclaimed Areas (Acres/Year)	Proposed Project	114	118	114	126	111	119	101	119	101	96	237	255	316	319
		Permanente Creek Reclamation Area	0.03	--	--	--	--	--	--	--	--	--	--	--	--	0.03
		Total:	114	118	114	126	111	119	101	119	101	96	237	255	316	319
Off-Road Diesel Equipment	Thousand Hp-Hours per Year	Proposed Project	57,144	60,984	57,060	52,837	47,681	37,625	39,431	42,594	40,278	31,764	31,555	31,885	28,953	27,337
		Permanente Creek Reclamation Area	61	--	--	--	--	--	--	--	--					34
		Total:	57,205	60,984	57,060	52,837	47,681	37,625	39,431	42,594	40,278	31,764	31,555	31,885	28,953	27,371

Notes:

1. Data for each year derived from applicable source data as documented in Appendices D and E, *Air Quality Technical Analysis*, November 22, 2011, except as noted below.
2. Unpaved road dust entrainment mileage is calculated based on quarry production, waste rock (less that transported by conveyor), aggregate fines, and topsoil tranported each year, multiplied by the corresponding trip length for each year (based on expected trip origin and destination). Trip length data provided by Lehigh Southwest Cement Company, July 2011.
3. Distrubed acres/year is based on quarry operating and reclaimed areas and waste rock operating, reclaimed, and topsoil removal areas for each year provided by Lehigh Southwest Cement Company, July 2011. Disturbed areas associated with unpaved roads is not assumed to vary each year within each project phase, and is therefore not reflected in the above table.
4. Disturbed area wind erosion for Permanente Creek Reclamation Area activities is expected to occur on only seven days in Phase 1 (Areas 3 and 5) and seven days in Phase 2 (Areas 1 and 2). Since disturbed areas are expressed in acres/year for the proposed RPA, Permanente Creek Reclamation Area disturbed area data is converted to average annual acres disturbed per year by multiplying average daily disturbed areas by 7 days and dividing by 365 days per year.

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Table D-2. Quarry Production by Phase and by Year.

Peak Quarry Production by Phase (units: short tons, or tons).

Phase	Peak Year	LS - Cement	LS - Aggregate	Waste Rock (Truck)	Waste Rock (Conveyor)	Aggregate Fines	Topsoil Movements: WMSA Stockpiled	WMSA Used	EMSA Stockpiled	EMSA Used	EMSA Concurrent	Total Movements	Mulched Green Waste	Total Production[4]
1	2	3	4	5	6	7	10	11	12	13	14	15	16	
1	2012	2,425,098	2,755,793	4,850,195	--	551,159	--	--	--	--	--	--	--	10,582,244
2	2023	--	--	2,480,213	7,440,640	--	--	11,023	--	11,023	17,637	39,683	21,000	9,920,854

Quarry Production by Phase and by Year (units: metric tons, or tonnes).

Phase	Year	LS - Cement	LS - Aggregate	Waste Rock (Truck)	Waste Rock (Conveyor)	Aggregate Fines	Excavation Source	Waste Destination	Topsoil Movements: WMSA Stockpiled	WMSA Used	EMSA Stockpiled	EMSA Used	EMSA Concurrent	Total Topsoil Movements	Mulched Green Waste	Total Production[4]	Total Production+ Movements
Baseline	2000-2010	1,504,970	1,092,290	2,213,420	--	196,612	--	--	40,000	--	--	--	--	40,000	--	5,007,292	5,047,292
1	2012	2,200,000	2,500,000	4,400,000	--	500,000	Quarry	EMSA/West Wall	--	--	--	--	--	--	--	9,600,000	9,600,000
1	2013	2,200,000	2,500,000	4,125,000	--	500,000	Quarry	EMSA/West Wall	--	--	--	--	--	--	--	9,325,000	9,325,000
1	2014	2,200,000	2,500,000	4,125,000	--	500,000	Quarry	EMSA/West Wall	--	--	--	--	--	--	--	9,325,000	9,325,000
1	2015	2,200,000	2,500,000	2,750,000	--	500,000	Quarry	EMSA/West Wall	--	--	40,000	10,000	--	50,000	--	7,950,000	8,000,000
1	2016	2,200,000	2,500,000	2,750,000	--	500,000	Quarry	EMSA/West Wall	--	--	--	--	--	--	--	7,950,000	7,950,000
1	2017	2,200,000	2,500,000	1,000,000	--	500,000	Quarry	EMSA/West Wall	--	--	--	--	18,000	18,000	--	6,200,000	6,218,000
1	2018	2,200,000	2,500,000	1,000,000	--	500,000	Quarry	EMSA/West Wall	--	--	--	--	--	--	--	6,200,000	6,200,000
1	2019	2,200,000	2,500,000	1,000,000	--	500,000	Quarry	EMSA/West Wall	--	--	--	10,000	--	10,000	--	6,200,000	6,210,000
1	2020	2,200,000	2,500,000	--	--	500,000	Quarry	EMSA/West Wall	--	--	--	--	--	--	--	5,200,000	5,200,000
2	2021	--	--	2,250,000	6,750,000	--	WMSA	North Quarry	--	--	--	10,000	36,000	46,000	--	9,000,000	9,046,000
2	2022	--	--	2,250,000	6,750,000	--	WMSA	North Quarry	--	--	--	--	17,000	17,000	--	9,000,000	9,017,000
2	2023	--	--	2,250,000	6,750,000	--	WMSA	North Quarry	--	10,000	--	10,000	16,000	36,000	19,051	9,000,000	9,055,051
2	2024	--	--	2,250,000	6,750,000	--	WMSA	North Quarry	--	15,000	--	--	--	15,000	19,051	9,000,000	9,034,051
2	2025	--	--	2,250,000	6,750,000	--	WMSA	North Quarry	--	15,000	--	--	--	15,000	19,051	9,000,000	9,034,051
TOTALS:		19,800,000	22,500,000	32,400,000	33,750,000	4,500,000			40,000	40,000	40,000	40,000	87,000	247,000	57,152	112,950,000	113,214,152

Notes:
1. Quarry production data based on maximum quarry production data provided by Lehigh Southwest Cement Company, July 2011.
2. Peak quarry production by phase is based on the year in which the maximum quarry production in conjunction with total topsoil movement occurs.
3. Conversion factors:
   1.10232 short ton/metric ton.
4. Total production reflects the sum of LS-Cement, LS-Aggregate, Waste Rock, and Aggregate Fines.
5. Estimates of muched green waste movements provided by Lehigh Southwest Cement Company, November 2011 are converted from short tons to metric tons, and added to the sum of Total Production + Movements.

Assumed Operating Schedule.

Schedule	Phase 1	Phase 2
Hours/Day	24	24
Days/Week	6	6
Weeks/Year	50	50

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Table D-3. Drilling and Blasting Activity.

Activity	Phase 1	Phase 2
Blasts:		
Maximum Production (tonnes/year)[1]	9,100,000	--
Tonnes/Blast[1]	50,000	50,000
Blasts/Year[2]	182	--
Holes Drilled:		
Hole Depth (feet/hole)[1]	53	53
Tonnes/Foot Drilled[1]	17.4	17.4
Holes Drilled/Year[2]	9,868	--
Explosives Used:		
Powder Factor[1] (grams explosive/tonne blasted rock)	280	280
Tonnes Explosive/Year[1,3]	2,548	--
Tons Explosive/Year[4]	2,809	--
Area Shifted per Blast:		
Blast Pattern (holes)[1]	4	4
Average Blast Patterns/Blast[2]	13.55	--
Area Shifted per Pattern (ft^2)[1]	289	289
Area Shifted per Blast (ft^2)[2]	3,917	--

Notes:
1. Maximum production, blasting, explosives, blast pattern, and related data reflect maximum anticipated activity in during each of the project phases. Data provided by Lehigh Southwest Cement Company, July 2011.
2. Calculated based on preceding data.
3. Explosive used: ANFO (ammonium nitrate/fuel oil).
4. (1 short ton) * (2,000 lb/short ton) * (0.45359 kg/lb) * (1 metric ton/1,000 kg) = 1.10232 short ton/metric ton.

Drilling and Blasting Schedule.

Activity	Phase 1	Phase 2
Drilling:		
Hours/Day	24	24
Days/Week	6	6
Weeks/Year	50	50
Blasting:		
Weeks/Year	50	50
Blasts/Week	3.6	0.0
Blast Days/Week	5	5
Max Blasts/Day	1	0
Max Blasts/Hour	1	0

Table D-4. Average Wind Speed Data for Lehigh Permanente Meteorological Station for 2008.

Date	Average Wind Speed (mph)	Date	Average Wind Speed (mph)	Date	Average Wind Speed (mph)
1/1/2008	3.43	3/1/2008	7.08	5/1/2008	5.14
1/2/2008	4.23	3/2/2008	9.24	5/2/2008	4.03
1/3/2008	14.26	3/3/2008	6.49	5/3/2008	4.55
1/4/2008	15.77	3/4/2008	5.28	5/4/2008	5.61
1/5/2008	7.02	3/5/2008	4.53	5/5/2008	4.38
1/6/2008	5.14	3/6/2008	4.80	5/6/2008	5.01
1/7/2008	3.99	3/7/2008	4.35	5/7/2008	5.78
1/8/2008	8.40	3/8/2008	4.44	5/8/2008	4.18
1/9/2008	3.56	3/9/2008	4.11	5/9/2008	4.69
1/10/2008	2.56	3/10/2008	4.55	5/10/2008	4.03
1/11/2008	3.71	3/11/2008	3.83	5/11/2008	4.98
1/12/2008	3.62	3/12/2008	4.52	5/12/2008	5.05
1/13/2008	5.06	3/13/2008	5.15	5/13/2008	4.70
1/14/2008	3.31	3/14/2008	5.10	5/14/2008	4.80
1/15/2008	4.55	3/15/2008	6.98	5/15/2008	6.17
1/16/2008	8.83	3/16/2008	10.62	5/16/2008	5.47
1/17/2008	7.71	3/17/2008	6.38	5/17/2008	4.33
1/18/2008	6.02	3/18/2008	3.85	5/18/2008	3.82
1/19/2008	4.29	3/19/2008	4.55	5/19/2008	4.04
1/20/2008	5.28	3/20/2008	5.13	5/20/2008	6.81
1/21/2008	5.26	3/21/2008	5.99	5/21/2008	7.34
1/22/2008	3.78	3/22/2008	4.57	5/22/2008	8.90
1/23/2008	3.24	3/23/2008	3.83	5/23/2008	7.29
1/24/2008	9.32	3/24/2008	4.63	5/24/2008	6.58
1/25/2008	10.45	3/25/2008	4.53	5/25/2008	6.67
1/26/2008	9.48	3/26/2008	6.81	5/26/2008	5.70
1/27/2008	12.06	3/27/2008	6.80	5/27/2008	6.63
1/28/2008	6.07	3/28/2008	4.92	5/28/2008	5.30
1/29/2008	6.11	3/29/2008	5.19	5/29/2008	6.69
1/30/2008	5.54	3/30/2008	7.05	5/30/2008	5.98
1/31/2008	5.97	3/31/2008	5.53	5/31/2008	5.60
2/1/2008	5.23	4/1/2008	4.67	6/1/2008	5.36
2/2/2008	7.42	4/2/2008	3.48	6/2/2008	5.17
2/3/2008	10.40	4/3/2008	4.35	6/3/2008	5.35
2/4/2008	9.48	4/4/2008	5.34	6/4/2008	5.56
2/5/2008	5.87	4/5/2008	4.95	6/5/2008	5.39
2/6/2008	4.56	4/6/2008	5.84	6/6/2008	5.70
2/7/2008	3.66	4/7/2008	5.44	6/7/2008	4.98
2/8/2008	5.71	4/8/2008	6.27	6/8/2008	4.26
2/9/2008	6.42	4/9/2008	4.63	6/9/2008	4.30
2/10/2008	4.43	4/10/2008	4.68	6/10/2008	6.70
2/11/2008	4.80	4/11/2008	6.03	6/11/2008	7.94
2/12/2008	4.36	4/12/2008	5.63	6/12/2008	5.12
2/13/2008	7.55	4/13/2008	5.33	6/13/2008	4.29
2/14/2008	10.02	4/14/2008	6.65	6/14/2008	4.25
2/15/2008	4.54	4/15/2008	6.58	6/15/2008	4.13
2/16/2008	3.61	4/16/2008	5.06	6/16/2008	4.59
2/17/2008	3.21	4/17/2008	4.16	6/17/2008	5.38
2/18/2008	3.86	4/18/2008	4.33	6/18/2008	4.76
2/19/2008	4.28	4/19/2008	7.89	6/19/2008	5.28
2/20/2008	3.78	4/20/2008	7.13	6/20/2008	4.96
2/21/2008	9.57	4/21/2008	5.95	6/21/2008	5.69
2/22/2008	4.35	4/22/2008	6.15	6/22/2008	4.22
2/23/2008	8.30	4/23/2008	5.83	6/23/2008	4.17
2/24/2008	9.46	4/24/2008	5.64	6/24/2008	4.05
2/25/2008	5.45	4/25/2008	5.34	6/25/2008	4.35
2/26/2008	5.49	4/26/2008	4.66	6/26/2008	3.67
2/27/2008	4.40	4/27/2008	5.11	6/27/2008	4.30
2/28/2008	3.98	4/28/2008	4.67	6/28/2008	4.88
2/29/2008	3.53	4/29/2008	8.63	6/29/2008	4.67
		4/30/2008	7.44	6/30/2008	4.77

Table D-4. Average Wind Speed Data for Lehigh Permanente Meteorological Station for 2008.

Date	Average Wind Speed (mph)	Date	Average Wind Speed (mph)	Date	Average Wind Speed (mph)
7/1/2008	4.30	9/1/2008	6.43	11/1/2008	10.98
7/2/2008	4.14	9/2/2008	6.02	11/2/2008	5.13
7/3/2008	4.76	9/3/2008	4.99	11/3/2008	7.78
7/4/2008	4.89	9/4/2008	5.33	11/4/2008	6.70
7/5/2008	4.96	9/5/2008	4.80	11/5/2008	6.00
7/6/2008	4.02	9/6/2008	4.22	11/6/2008	6.12
7/7/2008	4.11	9/7/2008	4.10	11/7/2008	7.46
7/8/2008	4.27	9/8/2008	4.33	11/8/2008	4.83
7/9/2008	3.33	9/9/2008	4.51	11/9/2008	8.00
7/10/2008	3.84	9/10/2008	4.13	11/10/2008	4.07
7/11/2008	4.35	9/11/2008	3.85	11/11/2008	3.88
7/12/2008	4.76	9/12/2008	4.35	11/12/2008	3.67
7/13/2008	4.61	9/13/2008	4.05	11/13/2008	7.73
7/14/2008	4.82	9/14/2008	4.08	11/14/2008	7.25
7/15/2008	5.25	9/15/2008	3.58	11/15/2008	6.86
7/16/2008	4.52	9/16/2008	4.23	11/16/2008	3.68
7/17/2008	4.32	9/17/2008	5.85	11/17/2008	3.34
7/18/2008	4.14	9/18/2008	6.28	11/18/2008	2.92
7/19/2008	4.03	9/19/2008	6.55	11/19/2008	3.43
7/20/2008	5.30	9/20/2008	5.07	11/20/2008	4.78
7/21/2008	4.99	9/21/2008	4.38	11/21/2008	6.57
7/22/2008	4.53	9/22/2008	5.19	11/22/2008	3.81
7/23/2008	3.71	9/23/2008	5.50	11/23/2008	3.92
7/24/2008	3.84	9/24/2008	4.86	11/24/2008	3.81
7/25/2008	3.72	9/25/2008	3.99	11/25/2008	4.06
7/26/2008	4.73	9/26/2008	4.10	11/26/2008	3.53
7/27/2008	4.14	9/27/2008	3.54	11/27/2008	3.68
7/28/2008	4.61	9/28/2008	3.62	11/28/2008	3.90
7/29/2008	4.79	9/29/2008	3.89	11/29/2008	7.78
7/30/2008	4.03	9/30/2008	3.43	11/30/2008	3.27
7/31/2008	3.89	10/1/2008	3.70	12/1/2008	2.95
8/1/2008	4.08	10/2/2008	4.34	12/2/2008	4.48
8/2/2008	4.60	10/3/2008	5.90	12/3/2008	4.36
8/3/2008	4.05	10/4/2008	4.41	12/4/2008	5.46
8/4/2008	4.28	10/5/2008	4.15	12/5/2008	4.17
8/5/2008	4.37	10/6/2008	4.19	12/6/2008	3.82
8/6/2008	4.14	10/7/2008	3.83	12/7/2008	3.58
8/7/2008	4.64	10/8/2008	4.35	12/8/2008	5.18
8/8/2008	5.14	10/9/2008	5.79	12/9/2008	4.80
8/9/2008	5.08	10/10/2008	9.29	12/10/2008	4.52
8/10/2008	4.50	10/11/2008	11.24	12/11/2008	3.90
8/11/2008	3.79	10/12/2008	9.96	12/12/2008	3.62
8/12/2008	3.75	10/13/2008	6.40	12/13/2008	7.41
8/13/2008	3.54	10/14/2008	5.13	12/14/2008	5.75
8/14/2008	3.62	10/15/2008	5.09	12/15/2008	6.14
8/15/2008	3.58	10/16/2008	6.12	12/16/2008	7.04
8/16/2008	4.34	10/17/2008	4.98	12/17/2008	7.23
8/17/2008	4.72	10/18/2008	3.98	12/18/2008	6.21
8/18/2008	4.68	10/19/2008	3.75	12/19/2008	5.48
8/19/2008	4.94	10/20/2008	3.90	12/20/2008	5.28
8/20/2008	4.68	10/21/2008	5.23	12/21/2008	4.50
8/21/2008	4.43	10/22/2008	8.11	12/22/2008	5.70
8/22/2008	4.16	10/23/2008	5.30	12/23/2008	3.59
8/23/2008	4.44	10/24/2008	6.17	12/24/2008	11.40
8/24/2008	4.00	10/25/2008	5.30	12/25/2008	11.80
8/25/2008	4.47	10/26/2008	2.86	12/26/2008	7.07
8/26/2008	5.07	10/27/2008	3.09	12/27/2008	3.75
8/27/2008	5.33	10/28/2008	2.92	12/28/2008	5.23
8/28/2008	4.76	10/29/2008	2.92	12/29/2008	5.76
8/29/2008	3.91	10/30/2008	6.46	12/30/2008	4.91
8/30/2008	3.80	10/31/2008	10.70	12/31/2008	2.91
8/31/2008	4.34				
Average of Daily Averages:					5.272

Table D-5. Unpaved Roads (Data for Dust Entrainment from Unpaved Roads).

Operating Schedule	Phase 1	Phase 2
Hours/Day	24	24
Days/Week	6	6
Weeks/Year	50	50

Summary.

	Phase 1		Phase 2		Totals-All Phases	
Project Phase/Detail	Miles/Year	Ave. Weight	Miles/Year	Ave. Weight	Miles/Year	Ave. Weight
North Quarry Operation						
100-ton Trucks	109,087		--		109,087	
150-ton Trucks	--		--		--	
In-Plant Vehicles	71,400		39,200		110,600	
Total - North Quarry	180,487		39,200		219,687	
Waste Rock Storage/Infill						
20-ton Trucks (Green Waste)	--		6,960		6,960	
40-ton Trucks	58,962		522		59,484	
100-ton Trucks	137,868		136,823		274,691	
150-ton Trucks	29,115		--		29,115	
In-Plant Vehicles	47,600		58,800		106,400	
Total - Waste Storage/Infill	273,545		203,105		476,650	
Fleet Totals						
20-ton Trucks (Green Waste)	--	25.0	6,960	25.0	6,960	25.0
40-ton Trucks	58,962	55.4	522	55.4	59,484	55.4
100-ton Trucks	246,955	125.2	136,823	125.2	383,778	125.2
150-ton Trucks	29,115	196.9	--	196.9	29,115	196.9
In-Plant Vehicles	119,000	3.0	98,000	3.0	217,000	3.0
Total/Composite	454,032	88.7	242,305	72.7	696,337	83.1

Notes:
1. Based on production, road length, and equipment use data provided by Lehigh Southwest Cement Company, May 2010.
2. Derivation of average vehicle weight (in tons) is presented below.

Table D-5. Unpaved Roads (Data for Dust Entrainment from Unpaved Roads).

Derivation of Average Vehicle Weights.

	40-ton Off-highway Truck[1]	100-ton Off-highway Truck[1]	150-ton Off-highway Truck[1]	20-ton On-highway Truck[2]	In-Plant Vehicles[3]
Nominal Rated Load (tons)	40.0	100.0	150.0	20.0	--
Normal Haul Weight (tons)[4]	35.0	90.0	142.0	20.0	--
Empty Weight (tons)	37.9	80.2	125.9	15.0	--
Full Weight (tons)	72.9	170.2	267.9	35.0	--
Average Weight	55.4	125.2	196.9	25.0	3.0

Notes:

1. Data for Off-highway Trucks from "Caterpillar Performance Handbook," No. 41 (January 2011):
   - Caterpillar 740B Articulated Truck: operating weight (empty) of 75,824 pounds.
   - Caterpillar 777F Construction/Mining Truck: operating machine weight of 160,360 pounds.
   - Caterpillar 785D Construction/Mining Truck: operating machine weight of 251,812 pounds.
2. On-road mulched green waste transport trucks assumed to be 35 tons loaded and 15 tons unloaded (average weight of 25 tons).
3. Since vehicles can range from 5,500 to 6,600 pounds curb weight, an average weight of 6,000 pounds (3.0 tons) was used.
4. Source for normal haul weights for off-highway quarry trucks: Lehigh Southwest Cement Company, January 2010.
5. Assumed Allocation of In-Plant Vehicle Mileage to Proposed Project Areas.

Project Area	Phase 1	Phase 2
Percent Allocation:		
North Quarry	60%	40%
Waste Rock Storage/Infill	40%	60%
Total Miles - allocated to:	119,000	98,000
North Quarry	71,400	39,200
Waste Rock Storage/Infill	47,600	58,800

Table D-6. Off-Highway Truck Trips and Miles Traveled (Data for Entrained Road Dust Calculations).

Operating Schedule	Phase 1	Phase 2
Hours/Day	24	24
Days/Week	6	6
Weeks/Year	50	50

Summary.

Project Phase/Detail	LS-Cement and LS-Aggregate		Waste Rock		Aggregate Fines	Topsoil EMSA/WMSA	Mulched Green Waste
	100-ton Trucks[2,4]	150-ton Trucks[3,4]	100-ton Trucks	150-ton Trucks	40-ton Trucks[5]	40-ton Trucks[5]	20-ton Trucks
Truck Data							
Normal Haul Weight (Tons)[6]	90	142	90	142	35	35	20
Normal Haul Weight (Tonnes)[7]	81.6	128.8	81.6	128.8	31.8	31.8	18.1
Phase 1							
Throughput (Tonnes/Year)[8]	4,700,000	--	3,300,000	1,100,000	500,000	--	--
Trips/Year	57,598.0	--	40,441.2	8,540.4	15,723.3	--	--
Linear Feet/Trip (one-way)	5,000	5,000	9,000	9,000	9,900	--	--
Miles/Trip (round trip)	1.89	1.89	3.41	3.41	3.75	--	--
Miles/Year	109,087	--	137,868	29,115	58,962	--	--
Phase 2							
Throughput (Tonnes/Year)	--	--	2,250,000	--	--	36,000	19,051
Trips/Year	--	--	27,573.5	--	--	1,132.1	1,050.0
Linear Feet/Trip (one-way)	--	--	13,100	13,100	--	1,217	17,500
Miles/Trip (round trip)	--	--	4.96	4.96	--	0.46	6.63
Miles/Year	--	--	136,823	--	--	522	6,960

Notes:
1. Throughput and one-way trip length based on production and road length data provided by Lehigh Southwest Cement Company, July 2011.
2. 100-ton trucks are used to haul all of the limestone (LS-Cement and LS-Aggregate) during Phase 1 and 75% of the waste rock during Phase 1.
3. 150-ton trucks are used to haul none of the limestone and 25% of the waste rock during Phase 1.
4. During the peak years of Phase 2, it is assumed that 100-ton trucks will haul 25% of the total waste rock to be transported from the WMSA to the North Quarry, with 75% of the waste rock transported by an overland conveyor system. 150-ton trucks are not expected to be used during Phase 2.
5. 40-ton trucks are used to haul fines and topsoil.
6. Source of normal haul weight data for off-highway quarry trucks: Lehigh Southwest Cement Company, January 2010. Source of normal haul weight for mulched green waste trucks (on-highway trucks traveling on-site): Lehigh Southwest Cement Company, November 2011.
7. Normal haul weight converted from short tons (tons) to metric tons (tonnes) assuming 2,000 lb/ton, 0.45359 kg/lb, and 1 tonne/1,000 kg, or: 1.10232 short ton/metric ton.
8. Throuhput data for each phase is based on the year in which the maximum sum of production, soil, fines, and green waste transport occurs.

Table D-7. Wind Erosion Data - Unpaved Roads and Active Areas.

Operating Schedule	Phase 1	Phase 2
Hours/Day	24	24
Days/Week	6	6
Weeks/Year	50	50

Mine Area	Phase 1	Phase 2
North Quarry:		
Unpaved Road Length (ft)	7,090	7,090
Average Unpaved Road Width (ft)	80	80
Unpaved Roads (acre)	13	13
Topsoil Removal (acre)	--	--
Operating Area (acre)	95	65
Backfill (acre)	--	--
Reclaimed (acre)	--	65
Total Active Areas (acre)	95	129
Waste Storage		
Unpaved Road Length (ft)	8,160	17,900
Unpaved Road Width (ft)	47	65
Unpaved Roads (acre)	9	27
Topsoil Removal (acre)	6	--
Operating Area (acre)	11	95
Reclaimed (acre)	14	95
Total Active Areas (acre)	31	190
Total Unpaved Roads (acres)	22	40
Total Active Areas (acres)	126	319

Notes:

1. Active unpaved road acreage based on project phasing maps provided by Lehigh Southwest Cement Company in February 2010 and July 2011. (See separate documentation on unpaved roads-wind erosion.) Conversion from square feet to acres assumes 43,560 square feet/acre.
2. Data on active areas based on active area data provided by Lehigh Southwest Cement Company, July 2011. Data for each phase is based on the year in which the maximum sum of all active areas occurs.

Table D-8. Unpaved Roads (Data for Wind Erosion from Unpaved Roads).

Operating Schedule	Phase 1	Phase 2
Hours/Day	24	24
Days/Week	6	6
Weeks/Year	50	50

Permanente Quarry Unpaved Road Lengths[1].

Unpaved Road	Associated With	Ave. Road Width (feet)	Road Lengths (linear feet) Phase 1	Phase 2
Road Into North Quarry	North Quarry	80	3,450	3,450
Top of North Quarry to Primary Crusher	North Quarry	80	1,740	1,740
Road to Quarry Yard[2]	North Quarry	80	1,900	1,900
Primary Crusher to EMSA	Waste Rock	60	4,680	4,680
Rock Plant to EMSA Road	Waste Rock	30	3,480	3,480
WMSA to Top of North Quarry	Waste Rock	80	--	9,740
Total Unpaved Roads			15,250	24,990

Notes:

1. Unpaved road lengths and widths based on project phasing maps provided by Lehigh Southwest Cement Company in July 2011 and February 2010. This information is used to estimate wind erosion associated with unpaved roads. (Dust entrainment associated with unpaved roads is based on truck trips associated with quarry production.)
2. This portion of the Permanente Quarry unpaved road system is actively used during all phases, but is not otherwise allocated to another unpaved road segment.

Table D-9. Wind Erosion Particulate Matter Emission Factors - Quarry, Waste Storage/Infill, Unpaved Roads.

Date	N	u (max gust) (mph)	u^+ (m/s)	u^+_{10} (m/s)	u* (m/s)	P_i (g/m^2)	Weekday Only	Pi (g/m^2)
1/1/2008	1	12.5	5.588	5.588	0.296	0.000		0.000
1/2/2008	2	19.5	8.717	8.717	0.462	0.000		0.000
1/3/2008	3	45.5	20.340	20.340	1.078	23.619		23.619
1/4/2008	4	67.6	30.220	30.220	1.602	80.433		80.433
1/5/2008	5	33.9	15.155	15.155	0.803	6.526		0.000
1/6/2008	6	17.8	7.957	7.957	0.422	0.000		0.000
1/7/2008	7	13	5.812	5.812	0.308	0.000		0.000
1/8/2008	8	43.1	19.267	19.267	1.021	19.364		19.364
1/9/2008	9	10.4	4.649	4.649	0.246	0.000		0.000
1/10/2008	10	12.7	5.677	5.677	0.301	0.000		0.000
1/11/2008	11	12.3	5.499	5.499	0.291	0.000		0.000
1/12/2008	12	14	6.259	6.259	0.332	0.000		0.000
1/13/2008	13	18.5	8.270	8.270	0.438	0.000		0.000
1/14/2008	14	10.8	4.828	4.828	0.256	0.000		0.000
1/15/2008	15	14	6.259	6.259	0.332	0.000		0.000
1/16/2008	16	28.6	12.785	12.785	0.678	1.633		1.633
1/17/2008	17	25.8	11.534	11.534	0.611	0.000		0.000
1/18/2008	18	16.5	7.376	7.376	0.391	0.000		0.000
1/19/2008	19	11.5	5.141	5.141	0.272	0.000		0.000
1/20/2008	20	24	10.729	10.729	0.569	0.000		0.000
1/21/2008	21	16.3	7.287	7.287	0.386	0.000		0.000
1/22/2008	22	14.2	6.348	6.348	0.336	0.000		0.000
1/23/2008	23	11.4	5.096	5.096	0.270	0.000		0.000
1/24/2008	24	25.2	11.265	11.265	0.597	0.000		0.000
1/25/2008	25	31.1	13.903	13.903	0.737	3.713		3.713
1/26/2008	26	27.1	12.115	12.115	0.642	0.580		0.000
1/27/2008	27	55	24.587	24.587	1.303	44.144		0.000
1/28/2008	28	22.5	10.058	10.058	0.533	0.000		0.000
1/29/2008	29	25.6	11.444	11.444	0.607	0.000		0.000
1/30/2008	30	19.4	8.673	8.673	0.460	0.000		0.000
1/31/2008	31	30	13.411	13.411	0.711	2.748		2.748
2/1/2008	32	15.8	7.063	7.063	0.374	0.000		0.000
2/2/2008	33	36.7	16.406	16.406	0.870	9.850		0.000
2/3/2008	34	32.8	14.663	14.663	0.777	5.360		0.000
2/4/2008	35	27.6	12.338	12.338	0.654	0.915		0.915
2/5/2008	36	19.4	8.673	8.673	0.460	0.000		0.000
2/6/2008	37	15	6.706	6.706	0.355	0.000		0.000
2/7/2008	38	15.4	6.884	6.884	0.365	0.000		0.000
2/8/2008	39	15.1	6.750	6.750	0.358	0.000		0.000

Table D-9. Wind Erosion Particulate Matter Emission Factors - Quarry, Waste Storage/Infill, Unpaved Roads.

Date	N	u (max gust) (mph)	u^+ (m/s)	u^+_{10} (m/s)	u* (m/s)	P_i (g/m^2)	Weekday Only	Pi (g/m^2)
2/9/2008	40	15.9	7.108	7.108	0.377	0.000		0.000
2/10/2008	41	14.2	6.348	6.348	0.336	0.000		0.000
2/11/2008	42	15.4	6.884	6.884	0.365	0.000		0.000
2/12/2008	43	13.3	5.946	5.946	0.315	0.000		0.000
2/13/2008	44	34.3	15.333	15.333	0.813	6.970		6.970
2/14/2008	45	29.9	13.366	13.366	0.708	2.664		2.664
2/15/2008	46	15.2	6.795	6.795	0.360	0.000		0.000
2/16/2008	47	12.2	5.454	5.454	0.289	0.000		0.000
2/17/2008	48	11.4	5.096	5.096	0.270	0.000		0.000
2/18/2008	49	11.2	5.007	5.007	0.265	0.000		0.000
2/19/2008	50	13.9	6.214	6.214	0.329	0.000		0.000
2/20/2008	51	17.2	7.689	7.689	0.408	0.000		0.000
2/21/2008	52	33.2	14.842	14.842	0.787	5.775		5.775
2/22/2008	53	16.1	7.197	7.197	0.381	0.000		0.000
2/23/2008	54	37.9	16.943	16.943	0.898	11.431		0.000
2/24/2008	55	47.1	21.056	21.056	1.116	26.664		0.000
2/25/2008	56	13	5.812	5.812	0.308	0.000		0.000
2/26/2008	57	12.7	5.677	5.677	0.301	0.000		0.000
2/27/2008	58	14	6.259	6.259	0.332	0.000		0.000
2/28/2008	59	14.2	6.348	6.348	0.336	0.000		0.000
2/29/2008	60	19.1	8.538	8.538	0.453	0.000		0.000
3/1/2008	61	29	12.964	12.964	0.687	1.939		0.000
3/2/2008	62	30.7	13.724	13.724	0.727	3.353		0.000
3/3/2008	63	14.6	6.527	6.527	0.346	0.000		0.000
3/4/2008	64	17.4	7.778	7.778	0.412	0.000		0.000
3/5/2008	65	13	5.812	5.812	0.308	0.000		0.000
3/6/2008	66	15.4	6.884	6.884	0.365	0.000		0.000
3/7/2008	67	17.6	7.868	7.868	0.417	0.000		0.000
3/8/2008	68	20.1	8.986	8.986	0.476	0.000		0.000
3/9/2008	69	13	5.812	5.812	0.308	0.000		0.000
3/10/2008	70	17.5	7.823	7.823	0.415	0.000		0.000
3/11/2008	71	98.2	43.899	43.899	2.327	211.603		211.603
3/12/2008	72	15.8	7.063	7.063	0.374	0.000		0.000
3/13/2008	73	25.9	11.578	11.578	0.614	0.000		0.000
3/14/2008	74	20.7	9.254	9.254	0.490	0.000		0.000
3/15/2008	75	29.3	13.098	13.098	0.694	2.175		0.000
3/16/2008	76	31.4	14.037	14.037	0.744	3.990		0.000
3/17/2008	77	24.3	10.863	10.863	0.576	0.000		0.000
3/18/2008	78	15.6	6.974	6.974	0.370	0.000		0.000

Table D-9. Wind Erosion Particulate Matter Emission Factors - Quarry, Waste Storage/Infill, Unpaved Roads.

Date	N	u (max gust) (mph)	u^+ (m/s)	u^+_{10} (m/s)	u* (m/s)	P_i (g/m^2)	Weekday Only	Pi (g/m^2)
3/19/2008	79	16.9	7.555	7.555	0.400	0.000		0.000
3/20/2008	80	20.5	9.164	9.164	0.486	0.000		0.000
3/21/2008	81	20.1	8.986	8.986	0.476	0.000		0.000
3/22/2008	82	15.3	6.840	6.840	0.363	0.000		0.000
3/23/2008	83	17.2	7.689	7.689	0.408	0.000		0.000
3/24/2008	84	20.6	9.209	9.209	0.488	0.000		0.000
3/25/2008	85	18.6	8.315	8.315	0.441	0.000		0.000
3/26/2008	86	23.9	10.684	10.684	0.566	0.000		0.000
3/27/2008	87	25.2	11.265	11.265	0.597	0.000		0.000
3/28/2008	88	19.2	8.583	8.583	0.455	0.000		0.000
3/29/2008	89	28.5	12.741	12.741	0.675	1.558		0.000
3/30/2008	90	38.1	17.032	17.032	0.903	11.703		0.000
3/31/2008	91	14.3	6.393	6.393	0.339	0.000		0.000
4/1/2008	92	18.9	8.449	8.449	0.448	0.000		0.000
4/2/2008	93	12.3	5.499	5.499	0.291	0.000		0.000
4/3/2008	94	16.5	7.376	7.376	0.391	0.000		0.000
4/4/2008	95	20.8	9.298	9.298	0.493	0.000		0.000
4/5/2008	96	17.9	8.002	8.002	0.424	0.000		0.000
4/6/2008	97	22.8	10.193	10.193	0.540	0.000		0.000
4/7/2008	98	20.8	9.298	9.298	0.493	0.000		0.000
4/8/2008	99	23.6	10.550	10.550	0.559	0.000		0.000
4/9/2008	100	19.1	8.538	8.538	0.453	0.000		0.000
4/10/2008	101	16.8	7.510	7.510	0.398	0.000		0.000
4/11/2008	102	18.1	8.091	8.091	0.429	0.000		0.000
4/12/2008	103	13.8	6.169	6.169	0.327	0.000		0.000
4/13/2008	104	17.2	7.689	7.689	0.408	0.000		0.000
4/14/2008	105	26.6	11.891	11.891	0.630	0.262		0.262
4/15/2008	106	25.9	11.578	11.578	0.614	0.000		0.000
4/16/2008	107	17.6	7.868	7.868	0.417	0.000		0.000
4/17/2008	108	15.3	6.840	6.840	0.363	0.000		0.000
4/18/2008	109	16	7.153	7.153	0.379	0.000		0.000
4/19/2008	110	31.2	13.948	13.948	0.739	3.805		0.000
4/20/2008	111	20.2	9.030	9.030	0.479	0.000		0.000
4/21/2008	112	22.6	10.103	10.103	0.535	0.000		0.000
4/22/2008	113	22	9.835	9.835	0.521	0.000		0.000
4/23/2008	114	20.8	9.298	9.298	0.493	0.000		0.000
4/24/2008	115	17.1	7.644	7.644	0.405	0.000		0.000
4/25/2008	116	18.9	8.449	8.449	0.448	0.000		0.000
4/26/2008	117	18.8	8.404	8.404	0.445	0.000		0.000

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Table D-9. Wind Erosion Particulate Matter Emission Factors - Quarry, Waste Storage/Infill, Unpaved Roads.

Date	N	u (max gust) (mph)	u^+ (m/s)	u^+_{10} (m/s)	u* (m/s)	P_i (g/m^2)	Weekday Only	Pi (g/m^2)
4/27/2008	118	21.2	9.477	9.477	0.502	0.000		0.000
4/28/2008	119	17.3	7.734	7.734	0.410	0.000		0.000
4/29/2008	120	72.2	32.276	32.276	1.711	96.257		96.257
4/30/2008	121	22.9	10.237	10.237	0.543	0.000		0.000
5/1/2008	122	18.4	8.226	8.226	0.436	0.000		0.000
5/2/2008	123	14.6	6.527	6.527	0.346	0.000		0.000
5/3/2008	124	19.2	8.583	8.583	0.455	0.000		0.000
5/4/2008	125	26.5	11.847	11.847	0.628	0.200		0.000
5/5/2008	126	16.3	7.287	7.287	0.386	0.000		0.000
5/6/2008	127	15.5	6.929	6.929	0.367	0.000		0.000
5/7/2008	128	26.8	11.981	11.981	0.635	0.387		0.387
5/8/2008	129	16.5	7.376	7.376	0.391	0.000		0.000
5/9/2008	130	15.8	7.063	7.063	0.374	0.000		0.000
5/10/2008	131	14.7	6.571	6.571	0.348	0.000		0.000
5/11/2008	132	20.3	9.075	9.075	0.481	0.000		0.000
5/12/2008	133	23.9	10.684	10.684	0.566	0.000		0.000
5/13/2008	134	20.4	9.120	9.120	0.483	0.000		0.000
5/14/2008	135	17.4	7.778	7.778	0.412	0.000		0.000
5/15/2008	136	17.8	7.957	7.957	0.422	0.000		0.000
5/16/2008	137	17.9	8.002	8.002	0.424	0.000		0.000
5/17/2008	138	15.2	6.795	6.795	0.360	0.000		0.000
5/18/2008	139	14.7	6.571	6.571	0.348	0.000		0.000
5/19/2008	140	14	6.259	6.259	0.332	0.000		0.000
5/20/2008	141	34.3	15.333	15.333	0.813	6.970		6.970
5/21/2008	142	26.9	12.025	12.025	0.637	0.451		0.451
5/22/2008	143	36	16.093	16.093	0.853	8.971		8.971
5/23/2008	144	30.1	13.456	13.456	0.713	2.832		2.832
5/24/2008	145	24.2	10.818	10.818	0.573	0.000		0.000
5/25/2008	146	27	12.070	12.070	0.640	0.515		0.000
5/26/2008	147	21.5	9.611	9.611	0.509	0.000		0.000
5/27/2008	148	27.1	12.115	12.115	0.642	0.580		0.580
5/28/2008	149	25.7	11.489	11.489	0.609	0.000		0.000
5/29/2008	150	28.9	12.919	12.919	0.685	1.861		1.861
5/30/2008	151	17.2	7.689	7.689	0.408	0.000		0.000
5/31/2008	152	17.6	7.868	7.868	0.417	0.000		0.000
6/1/2008	153	24.7	11.042	11.042	0.585	0.000		0.000
6/2/2008	154	17.6	7.868	7.868	0.417	0.000		0.000
6/3/2008	155	23.2	10.371	10.371	0.550	0.000		0.000
6/4/2008	156	26.1	11.668	11.668	0.618	0.000		0.000

Table D-9. Wind Erosion Particulate Matter Emission Factors - Quarry, Waste Storage/Infill, Unpaved Roads.

Date	N	u (max gust) (mph)	u^+ (m/s)	u^+_{10} (m/s)	u* (m/s)	P_i (g/m^2)	Weekday Only	Pi (g/m^2)
6/5/2008	157	21.4	9.567	9.567	0.507	0.000		0.000
6/6/2008	158	22.6	10.103	10.103	0.535	0.000		0.000
6/7/2008	159	18.6	8.315	8.315	0.441	0.000		0.000
6/8/2008	160	19.1	8.538	8.538	0.453	0.000		0.000
6/9/2008	161	17.6	7.868	7.868	0.417	0.000		0.000
6/10/2008	162	22.6	10.103	10.103	0.535	0.000		0.000
6/11/2008	163	21.7	9.701	9.701	0.514	0.000		0.000
6/12/2008	164	19.9	8.896	8.896	0.471	0.000		0.000
6/13/2008	165	14.6	6.527	6.527	0.346	0.000		0.000
6/14/2008	166	13.9	6.214	6.214	0.329	0.000		0.000
6/15/2008	167	14.9	6.661	6.661	0.353	0.000		0.000
6/16/2008	168	12.9	5.767	5.767	0.306	0.000		0.000
6/17/2008	169	22.5	10.058	10.058	0.533	0.000		0.000
6/18/2008	170	16.6	7.421	7.421	0.393	0.000		0.000
6/19/2008	171	20.2	9.030	9.030	0.479	0.000		0.000
6/20/2008	172	17.4	7.778	7.778	0.412	0.000		0.000
6/21/2008	173	23.9	10.684	10.684	0.566	0.000		0.000
6/22/2008	174	15.6	6.974	6.974	0.370	0.000		0.000
6/23/2008	175	15.2	6.795	6.795	0.360	0.000		0.000
6/24/2008	176	15.5	6.929	6.929	0.367	0.000		0.000
6/25/2008	177	14.7	6.571	6.571	0.348	0.000		0.000
6/26/2008	178	12.6	5.633	5.633	0.299	0.000		0.000
6/27/2008	179	16.2	7.242	7.242	0.384	0.000		0.000
6/28/2008	180	15.4	6.884	6.884	0.365	0.000		0.000
6/29/2008	181	16.8	7.510	7.510	0.398	0.000		0.000
6/30/2008	182	15.1	6.750	6.750	0.358	0.000		0.000
7/1/2008	183	13.7	6.124	6.124	0.325	0.000		0.000
7/2/2008	184	14.9	6.661	6.661	0.353	0.000		0.000
7/3/2008	185	20.4	9.120	9.120	0.483	0.000		0.000
7/4/2008	186	17.7	7.913	7.913	0.419	0.000		0.000
7/5/2008	187	19.9	8.896	8.896	0.471	0.000		0.000
7/6/2008	188	13.7	6.124	6.124	0.325	0.000		0.000
7/7/2008	189	16.3	7.287	7.287	0.386	0.000		0.000
7/8/2008	190	15.4	6.884	6.884	0.365	0.000		0.000
7/9/2008	191	13.5	6.035	6.035	0.320	0.000		0.000
7/10/2008	192	13.9	6.214	6.214	0.329	0.000		0.000
7/11/2008	193	15.2	6.795	6.795	0.360	0.000		0.000
7/12/2008	194	16.3	7.287	7.287	0.386	0.000		0.000
7/13/2008	195	16.7	7.466	7.466	0.396	0.000		0.000

Table D-9. Wind Erosion Particulate Matter Emission Factors - Quarry, Waste Storage/Infill, Unpaved Roads.

Date	N	u (max gust) (mph)	u^+ (m/s)	u^+_{10} (m/s)	u* (m/s)	P_i (g/m^2)	Weekday Only	Pi (g/m^2)
7/14/2008	196	16.2	7.242	7.242	0.384	0.000		0.000
7/15/2008	197	16.6	7.421	7.421	0.393	0.000		0.000
7/16/2008	198	13.8	6.169	6.169	0.327	0.000		0.000
7/17/2008	199	16.4	7.331	7.331	0.389	0.000		0.000
7/18/2008	200	12.7	5.677	5.677	0.301	0.000		0.000
7/19/2008	201	14	6.259	6.259	0.332	0.000		0.000
7/20/2008	202	16.4	7.331	7.331	0.389	0.000		0.000
7/21/2008	203	15.3	6.840	6.840	0.363	0.000		0.000
7/22/2008	204	14.9	6.661	6.661	0.353	0.000		0.000
7/23/2008	205	14.3	6.393	6.393	0.339	0.000		0.000
7/24/2008	206	15.3	6.840	6.840	0.363	0.000		0.000
7/25/2008	207	16.6	7.421	7.421	0.393	0.000		0.000
7/26/2008	208	19.6	8.762	8.762	0.464	0.000		0.000
7/27/2008	209	17.1	7.644	7.644	0.405	0.000		0.000
7/28/2008	210	15.9	7.108	7.108	0.377	0.000		0.000
7/29/2008	211	18	8.047	8.047	0.426	0.000		0.000
7/30/2008	212	15.7	7.019	7.019	0.372	0.000		0.000
7/31/2008	213	15.3	6.840	6.840	0.363	0.000		0.000
8/1/2008	214	15.1	6.750	6.750	0.358	0.000		0.000
8/2/2008	215	21.3	9.522	9.522	0.505	0.000		0.000
8/3/2008	216	14.8	6.616	6.616	0.351	0.000		0.000
8/4/2008	217	13.8	6.169	6.169	0.327	0.000		0.000
8/5/2008	218	12.4	5.543	5.543	0.294	0.000		0.000
8/6/2008	219	14.4	6.437	6.437	0.341	0.000		0.000
8/7/2008	220	15.1	6.750	6.750	0.358	0.000		0.000
8/8/2008	221	18.3	8.181	8.181	0.434	0.000		0.000
8/9/2008	222	16.6	7.421	7.421	0.393	0.000		0.000
8/10/2008	223	17.8	7.957	7.957	0.422	0.000		0.000
8/11/2008	224	15.3	6.840	6.840	0.363	0.000		0.000
8/12/2008	225	12.8	5.722	5.722	0.303	0.000		0.000
8/13/2008	226	13.5	6.035	6.035	0.320	0.000		0.000
8/14/2008	227	12.3	5.499	5.499	0.291	0.000		0.000
8/15/2008	228	12.7	5.677	5.677	0.301	0.000		0.000
8/16/2008	229	14.8	6.616	6.616	0.351	0.000		0.000
8/17/2008	230	15.2	6.795	6.795	0.360	0.000		0.000
8/18/2008	231	17.3	7.734	7.734	0.410	0.000		0.000
8/19/2008	232	20.6	9.209	9.209	0.488	0.000		0.000
8/20/2008	233	17.7	7.913	7.913	0.419	0.000		0.000
8/21/2008	234	17	7.600	7.600	0.403	0.000		0.000

Table D-9. Wind Erosion Particulate Matter Emission Factors - Quarry, Waste Storage/Infill, Unpaved Roads.

Date	N	u (max gust) (mph)	u^+ (m/s)	u^+_{10} (m/s)	u* (m/s)	P_i (g/m^2)	Weekday Only	Pi (g/m^2)
8/22/2008	235	15.5	6.929	6.929	0.367	0.000		0.000
8/23/2008	236	15.2	6.795	6.795	0.360	0.000		0.000
8/24/2008	237	14	6.259	6.259	0.332	0.000		0.000
8/25/2008	238	17	7.600	7.600	0.403	0.000		0.000
8/26/2008	239	17	7.600	7.600	0.403	0.000		0.000
8/27/2008	240	18.6	8.315	8.315	0.441	0.000		0.000
8/28/2008	241	16.6	7.421	7.421	0.393	0.000		0.000
8/29/2008	242	13.8	6.169	6.169	0.327	0.000		0.000
8/30/2008	243	13.5	6.035	6.035	0.320	0.000		0.000
8/31/2008	244	15.7	7.019	7.019	0.372	0.000		0.000
9/1/2008	245	20.8	9.298	9.298	0.493	0.000		0.000
9/2/2008	246	17.9	8.002	8.002	0.424	0.000		0.000
9/3/2008	247	17.8	7.957	7.957	0.422	0.000		0.000
9/4/2008	248	16.1	7.197	7.197	0.381	0.000		0.000
9/5/2008	249	16.6	7.421	7.421	0.393	0.000		0.000
9/6/2008	250	15.9	7.108	7.108	0.377	0.000		0.000
9/7/2008	251	13.9	6.214	6.214	0.329	0.000		0.000
9/8/2008	252	15	6.706	6.706	0.355	0.000		0.000
9/9/2008	253	15.5	6.929	6.929	0.367	0.000		0.000
9/10/2008	254	16.4	7.331	7.331	0.389	0.000		0.000
9/11/2008	255	13.3	5.946	5.946	0.315	0.000		0.000
9/12/2008	256	13.1	5.856	5.856	0.310	0.000		0.000
9/13/2008	257	13	5.812	5.812	0.308	0.000		0.000
9/14/2008	258	12.6	5.633	5.633	0.299	0.000		0.000
9/15/2008	259	11.8	5.275	5.275	0.280	0.000		0.000
9/16/2008	260	14.8	6.616	6.616	0.351	0.000		0.000
9/17/2008	261	17.4	7.778	7.778	0.412	0.000		0.000
9/18/2008	262	18.9	8.449	8.449	0.448	0.000		0.000
9/19/2008	263	24.6	10.997	10.997	0.583	0.000		0.000
9/20/2008	264	19.3	8.628	8.628	0.457	0.000		0.000
9/21/2008	265	15.4	6.884	6.884	0.365	0.000		0.000
9/22/2008	266	19.8	8.851	8.851	0.469	0.000		0.000
9/23/2008	267	15.8	7.063	7.063	0.374	0.000		0.000
9/24/2008	268	15.9	7.108	7.108	0.377	0.000		0.000
9/25/2008	269	16.9	7.555	7.555	0.400	0.000		0.000
9/26/2008	270	16.6	7.421	7.421	0.393	0.000		0.000
9/27/2008	271	14.8	6.616	6.616	0.351	0.000		0.000
9/28/2008	272	12.6	5.633	5.633	0.299	0.000		0.000
9/29/2008	273	13.4	5.990	5.990	0.317	0.000		0.000

Table D-9. Wind Erosion Particulate Matter Emission Factors - Quarry, Waste Storage/Infill, Unpaved Roads.

Date	N	u (max gust) (mph)	u^+ (m/s)	u^+_{10} (m/s)	u* (m/s)	P_i (g/m^2)	Weekday Only	Pi (g/m^2)
9/30/2008	274	12.3	5.499	5.499	0.291	0.000		0.000
10/1/2008	275	16.9	7.555	7.555	0.400	0.000		0.000
10/2/2008	276	19.4	8.673	8.673	0.460	0.000		0.000
10/3/2008	277	24.6	10.997	10.997	0.583	0.000		0.000
10/4/2008	278	20.9	9.343	9.343	0.495	0.000		0.000
10/5/2008	279	16.9	7.555	7.555	0.400	0.000		0.000
10/6/2008	280	14.4	6.437	6.437	0.341	0.000		0.000
10/7/2008	281	15.5	6.929	6.929	0.367	0.000		0.000
10/8/2008	282	16.7	7.466	7.466	0.396	0.000		0.000
10/9/2008	283	21.4	9.567	9.567	0.507	0.000		0.000
10/10/2008	284	32.9	14.708	14.708	0.780	5.463		5.463
10/11/2008	285	32.8	14.663	14.663	0.777	5.360		0.000
10/12/2008	286	22.9	10.237	10.237	0.543	0.000		0.000
10/13/2008	287	20.1	8.986	8.986	0.476	0.000		0.000
10/14/2008	288	17.1	7.644	7.644	0.405	0.000		0.000
10/15/2008	289	14.4	6.437	6.437	0.341	0.000		0.000
10/16/2008	290	18.5	8.270	8.270	0.438	0.000		0.000
10/17/2008	291	14.4	6.437	6.437	0.341	0.000		0.000
10/18/2008	292	14.8	6.616	6.616	0.351	0.000		0.000
10/19/2008	293	12.7	5.677	5.677	0.301	0.000		0.000
10/20/2008	294	14.7	6.571	6.571	0.348	0.000		0.000
10/21/2008	295	16.6	7.421	7.421	0.393	0.000		0.000
10/22/2008	296	23.7	10.595	10.595	0.562	0.000		0.000
10/23/2008	297	11.6	5.186	5.186	0.275	0.000		0.000
10/24/2008	298	14.2	6.348	6.348	0.336	0.000		0.000
10/25/2008	299	12.8	5.722	5.722	0.303	0.000		0.000
10/26/2008	300	10.8	4.828	4.828	0.256	0.000		0.000
10/27/2008	301	11.2	5.007	5.007	0.265	0.000		0.000
10/28/2008	302	9.9	4.426	4.426	0.235	0.000		0.000
10/29/2008	303	11.8	5.275	5.275	0.280	0.000		0.000
10/30/2008	304	73.1	32.679	32.679	1.732	99.515		99.515
10/31/2008	305	36.5	16.317	16.317	0.865	9.596		9.596
11/1/2008	306	39.5	17.658	17.658	0.936	13.684		0.000
11/2/2008	307	24.5	10.952	10.952	0.580	0.000		0.000
11/3/2008	308	34.9	15.602	15.602	0.827	7.655		7.655
11/4/2008	309	22.8	10.193	10.193	0.540	0.000		0.000
11/5/2008	310	16.4	7.331	7.331	0.389	0.000		0.000
11/6/2008	311	15.3	6.840	6.840	0.363	0.000		0.000
11/7/2008	312	16.4	7.331	7.331	0.389	0.000		0.000

Table D-9. Wind Erosion Particulate Matter Emission Factors - Quarry, Waste Storage/Infill, Unpaved Roads.

Date	N	u (max gust) (mph)	u^+ (m/s)	u^+_{10} (m/s)	u* (m/s)	P_i (g/m^2)	Weekday Only	Pi (g/m^2)
11/8/2008	313	38	16.988	16.988	0.900	11.567		0.000
11/9/2008	314	32.6	14.574	14.574	0.772	5.157		0.000
11/10/2008	315	15.9	7.108	7.108	0.377	0.000		0.000
11/11/2008	316	11.6	5.186	5.186	0.275	0.000		0.000
11/12/2008	317	15.2	6.795	6.795	0.360	0.000		0.000
11/13/2008	318	21.2	9.477	9.477	0.502	0.000		0.000
11/14/2008	319	21.8	9.745	9.745	0.517	0.000		0.000
11/15/2008	320	15.7	7.019	7.019	0.372	0.000		0.000
11/16/2008	321	9.6	4.292	4.292	0.227	0.000		0.000
11/17/2008	322	11.1	4.962	4.962	0.263	0.000		0.000
11/18/2008	323	9.5	4.247	4.247	0.225	0.000		0.000
11/19/2008	324	13.4	5.990	5.990	0.317	0.000		0.000
11/20/2008	325	16.6	7.421	7.421	0.393	0.000		0.000
11/21/2008	326	22.5	10.058	10.058	0.533	0.000		0.000
11/22/2008	327	13.6	6.080	6.080	0.322	0.000		0.000
11/23/2008	328	11.8	5.275	5.275	0.280	0.000		0.000
11/24/2008	329	11.7	5.230	5.230	0.277	0.000		0.000
11/25/2008	330	13.4	5.990	5.990	0.317	0.000		0.000
11/26/2008	331	12.9	5.767	5.767	0.306	0.000		0.000
11/27/2008	332	13.5	6.035	6.035	0.320	0.000		0.000
11/28/2008	333	9.3	4.157	4.157	0.220	0.000		0.000
11/29/2008	334	23.4	10.461	10.461	0.554	0.000		0.000
11/30/2008	335	12.2	5.454	5.454	0.289	0.000		0.000
12/1/2008	336	10.5	4.694	4.694	0.249	0.000		0.000
12/2/2008	337	14.5	6.482	6.482	0.344	0.000		0.000
12/3/2008	338	15.2	6.795	6.795	0.360	0.000		0.000
12/4/2008	339	16.5	7.376	7.376	0.391	0.000		0.000
12/5/2008	340	12.3	5.499	5.499	0.291	0.000		0.000
12/6/2008	341	14.7	6.571	6.571	0.348	0.000		0.000
12/7/2008	342	12.2	5.454	5.454	0.289	0.000		0.000
12/8/2008	343	18.9	8.449	8.449	0.448	0.000		0.000
12/9/2008	344	17.3	7.734	7.734	0.410	0.000		0.000
12/10/2008	345	12.1	5.409	5.409	0.287	0.000		0.000
12/11/2008	346	16.1	7.197	7.197	0.381	0.000		0.000
12/12/2008	347	13.2	5.901	5.901	0.313	0.000		0.000
12/13/2008	348	30.5	13.635	13.635	0.723	3.177		0.000
12/14/2008	349	22.1	9.880	9.880	0.524	0.000		0.000
12/15/2008	350	26.8	11.981	11.981	0.635	0.387		0.387
12/16/2008	351	22	9.835	9.835	0.521	0.000		0.000

Table D-9. Wind Erosion Particulate Matter Emission Factors - Quarry, Waste Storage/Infill, Unpaved Roads.

Date	N	u (max gust) (mph)	u^+ (m/s)	u^+_{10} (m/s)	u^* (m/s)	P_i (g/m^2)	Weekday Only	Pi (g/m^2)
12/17/2008	352	23.5	10.505	10.505	0.557	0.000		0.000
12/18/2008	353	22	9.835	9.835	0.521	0.000		0.000
12/19/2008	354	21.9	9.790	9.790	0.519	0.000		0.000
12/20/2008	355	13.5	6.035	6.035	0.320	0.000		0.000
12/21/2008	356	23.5	10.505	10.505	0.557	0.000		0.000
12/22/2008	357	25.6	11.444	11.444	0.607	0.000		0.000
12/23/2008	358	16.5	7.376	7.376	0.391	0.000		0.000
12/24/2008	359	38.9	17.390	17.390	0.922	12.820		12.820
12/25/2008	360	40.8	18.239	18.239	0.967	15.638		15.638
12/26/2008	361	26.8	11.981	11.981	0.635	0.387		0.387
12/27/2008	362	12.2	5.454	5.454	0.289	0.000		0.000
12/28/2008	363	12.9	5.767	5.767	0.306	0.000		0.000
12/29/2008	364	18.4	8.226	8.226	0.436	0.000		0.000
12/30/2008	365	16.4	7.331	7.331	0.389	0.000		0.000
12/31/2008	366	10.6	4.739	4.739	0.251	0.000		0.000
		Max u^+ (m/s):	43.899		Sum:	802.213	g/m2*yr	629.472
		Conversion Factors:	907,185	grams/ton	Ef (TSP) =	3.58	ton/acre*yr	2.81
			4,047	m^2/acre	Ef (PM_{10}) =	1.79	ton/acre*yr	1.40
					EF ($PM_{2.5}$) =	0.27	ton/acre*yr	0.21
						(Every Day)		(Week Days)

<u>Notes:</u>

1. Used max daily gust speed from 2008 met data for u+. Anemometer height at 10m; no height correction to 10m required.
2. Threshold friction velocity (u^*_t) obtained from Table 13.2.5-2 AP-42 (scraper tracks on coal pile): 0.62 m/s
3. Particle size multipliers (k) taken from AP-42 p. 13.2.5-3:
   $PM_{2.5}$ = 0.075
   PM_{10} = 0.5
4. The highest recorded wind gust from the Hanson meteorological station on 7/15/2008 was 98.2 mph at 09:00. This value appears inconsistent with the daily wind gust trends (< 20 mph for all other hours). In addition, there are a number of invalid parameters (e.g. temperature, RH) recorded for hours 09:00 and 10:00 that imply the tower could have been serviced or repaired during that period. Therefore, for the purposes of this analysis, data for 7/15/2008 at 09:00 was invalidated, leaving a maximum wind gust of 16.6 mph at 14:00 for that day.

Table D-10. Wind Erosion Particulate Matter Emission Factors - Topsoil Removal/Storage and Reclamation.

Date	N	u (max gust) (mph)	u^+ (m/s)	u^+_{10} (m/s)	u* (m/s)	P_i (g/m^2)	Weekday Only:	Pi (g/m^2)
1/1/2008	1	12.5	5.588	5.588	0.296	0.000		0.000
1/2/2008	2	19.5	8.717	8.717	0.462	0.000		0.000
1/3/2008	3	45.5	20.340	20.340	1.078	1.646		1.646
1/4/2008	4	67.6	30.220	30.220	1.602	34.164		34.164
1/5/2008	5	33.9	15.155	15.155	0.803	0.000		0.000
1/6/2008	6	17.8	7.957	7.957	0.422	0.000		0.000
1/7/2008	7	13	5.812	5.812	0.308	0.000		0.000
1/8/2008	8	43.1	19.267	19.267	1.021	0.029		0.029
1/9/2008	9	10.4	4.649	4.649	0.246	0.000		0.000
1/10/2008	10	12.7	5.677	5.677	0.301	0.000		0.000
1/11/2008	11	12.3	5.499	5.499	0.291	0.000		0.000
1/12/2008	12	14	6.259	6.259	0.332	0.000		0.000
1/13/2008	13	18.5	8.270	8.270	0.438	0.000		0.000
1/14/2008	14	10.8	4.828	4.828	0.256	0.000		0.000
1/15/2008	15	14	6.259	6.259	0.332	0.000		0.000
1/16/2008	16	28.6	12.785	12.785	0.678	0.000		0.000
1/17/2008	17	25.8	11.534	11.534	0.611	0.000		0.000
1/18/2008	18	16.5	7.376	7.376	0.391	0.000		0.000
1/19/2008	19	11.5	5.141	5.141	0.272	0.000		0.000
1/20/2008	20	24	10.729	10.729	0.569	0.000		0.000
1/21/2008	21	16.3	7.287	7.287	0.386	0.000		0.000
1/22/2008	22	14.2	6.348	6.348	0.336	0.000		0.000
1/23/2008	23	11.4	5.096	5.096	0.270	0.000		0.000
1/24/2008	24	25.2	11.265	11.265	0.597	0.000		0.000
1/25/2008	25	31.1	13.903	13.903	0.737	0.000		0.000
1/26/2008	26	27.1	12.115	12.115	0.642	0.000		0.000
1/27/2008	27	55	24.587	24.587	1.303	11.727		0.000
1/28/2008	28	22.5	10.058	10.058	0.533	0.000		0.000
1/29/2008	29	25.6	11.444	11.444	0.607	0.000		0.000
1/30/2008	30	19.4	8.673	8.673	0.460	0.000		0.000
1/31/2008	31	30	13.411	13.411	0.711	0.000		0.000
2/1/2008	32	15.8	7.063	7.063	0.374	0.000		0.000
2/2/2008	33	36.7	16.406	16.406	0.870	0.000		0.000
2/3/2008	34	32.8	14.663	14.663	0.777	0.000		0.000
2/4/2008	35	27.6	12.338	12.338	0.654	0.000		0.000
2/5/2008	36	19.4	8.673	8.673	0.460	0.000		0.000
2/6/2008	37	15	6.706	6.706	0.355	0.000		0.000
2/7/2008	38	15.4	6.884	6.884	0.365	0.000		0.000
2/8/2008	39	15.1	6.750	6.750	0.358	0.000		0.000

Table D-10. Wind Erosion Particulate Matter Emission Factors - Topsoil Removal/Storage and Reclamation.

Date	N	u (max gust) (mph)	u^+ (m/s)	u^+_{10} (m/s)	u* (m/s)	P_i (g/m^2)	Weekday Only:	Pi (g/m^2)
2/9/2008	40	15.9	7.108	7.108	0.377	0.000		0.000
2/10/2008	41	14.2	6.348	6.348	0.336	0.000		0.000
2/11/2008	42	15.4	6.884	6.884	0.365	0.000		0.000
2/12/2008	43	13.3	5.946	5.946	0.315	0.000		0.000
2/13/2008	44	34.3	15.333	15.333	0.813	0.000		0.000
2/14/2008	45	29.9	13.366	13.366	0.708	0.000		0.000
2/15/2008	46	15.2	6.795	6.795	0.360	0.000		0.000
2/16/2008	47	12.2	5.454	5.454	0.289	0.000		0.000
2/17/2008	48	11.4	5.096	5.096	0.270	0.000		0.000
2/18/2008	49	11.2	5.007	5.007	0.265	0.000		0.000
2/19/2008	50	13.9	6.214	6.214	0.329	0.000		0.000
2/20/2008	51	17.2	7.689	7.689	0.408	0.000		0.000
2/21/2008	52	33.2	14.842	14.842	0.787	0.000		0.000
2/22/2008	53	16.1	7.197	7.197	0.381	0.000		0.000
2/23/2008	54	37.9	16.943	16.943	0.898	0.000		0.000
2/24/2008	55	47.1	21.056	21.056	1.116	2.933		0.000
2/25/2008	56	13	5.812	5.812	0.308	0.000		0.000
2/26/2008	57	12.7	5.677	5.677	0.301	0.000		0.000
2/27/2008	58	14	6.259	6.259	0.332	0.000		0.000
2/28/2008	59	14.2	6.348	6.348	0.336	0.000		0.000
2/29/2008	60	19.1	8.538	8.538	0.453	0.000		0.000
3/1/2008	61	29	12.964	12.964	0.687	0.000		0.000
3/2/2008	62	30.7	13.724	13.724	0.727	0.000		0.000
3/3/2008	63	14.6	6.527	6.527	0.346	0.000		0.000
3/4/2008	64	17.4	7.778	7.778	0.412	0.000		0.000
3/5/2008	65	13	5.812	5.812	0.308	0.000		0.000
3/6/2008	66	15.4	6.884	6.884	0.365	0.000		0.000
3/7/2008	67	17.6	7.868	7.868	0.417	0.000		0.000
3/8/2008	68	20.1	8.986	8.986	0.476	0.000		0.000
3/9/2008	69	13	5.812	5.812	0.308	0.000		0.000
3/10/2008	70	17.5	7.823	7.823	0.415	0.000		0.000
3/11/2008	71	98.2	43.899	43.899	2.327	131.694		131.694
3/12/2008	72	15.8	7.063	7.063	0.374	0.000		0.000
3/13/2008	73	25.9	11.578	11.578	0.614	0.000		0.000
3/14/2008	74	20.7	9.254	9.254	0.490	0.000		0.000
3/15/2008	75	29.3	13.098	13.098	0.694	0.000		0.000
3/16/2008	76	31.4	14.037	14.037	0.744	0.000		0.000
3/17/2008	77	24.3	10.863	10.863	0.576	0.000		0.000
3/18/2008	78	15.6	6.974	6.974	0.370	0.000		0.000

Table D-10. Wind Erosion Particulate Matter Emission Factors - Topsoil Removal/Storage and Reclamation.

Date	N	u (max gust) (mph)	u^+ (m/s)	u^+_{10} (m/s)	u* (m/s)	P_i (g/m^2)	Weekday Only:	Pi (g/m^2)
3/19/2008	79	16.9	7.555	7.555	0.400	0.000		0.000
3/20/2008	80	20.5	9.164	9.164	0.486	0.000		0.000
3/21/2008	81	20.1	8.986	8.986	0.476	0.000		0.000
3/22/2008	82	15.3	6.840	6.840	0.363	0.000		0.000
3/23/2008	83	17.2	7.689	7.689	0.408	0.000		0.000
3/24/2008	84	20.6	9.209	9.209	0.488	0.000		0.000
3/25/2008	85	18.6	8.315	8.315	0.441	0.000		0.000
3/26/2008	86	23.9	10.684	10.684	0.566	0.000		0.000
3/27/2008	87	25.2	11.265	11.265	0.597	0.000		0.000
3/28/2008	88	19.2	8.583	8.583	0.455	0.000		0.000
3/29/2008	89	28.5	12.741	12.741	0.675	0.000		0.000
3/30/2008	90	38.1	17.032	17.032	0.903	0.000		0.000
3/31/2008	91	14.3	6.393	6.393	0.339	0.000		0.000
4/1/2008	92	18.9	8.449	8.449	0.448	0.000		0.000
4/2/2008	93	12.3	5.499	5.499	0.291	0.000		0.000
4/3/2008	94	16.5	7.376	7.376	0.391	0.000		0.000
4/4/2008	95	20.8	9.298	9.298	0.493	0.000		0.000
4/5/2008	96	17.9	8.002	8.002	0.424	0.000		0.000
4/6/2008	97	22.8	10.193	10.193	0.540	0.000		0.000
4/7/2008	98	20.8	9.298	9.298	0.493	0.000		0.000
4/8/2008	99	23.6	10.550	10.550	0.559	0.000		0.000
4/9/2008	100	19.1	8.538	8.538	0.453	0.000		0.000
4/10/2008	101	16.8	7.510	7.510	0.398	0.000		0.000
4/11/2008	102	18.1	8.091	8.091	0.429	0.000		0.000
4/12/2008	103	13.8	6.169	6.169	0.327	0.000		0.000
4/13/2008	104	17.2	7.689	7.689	0.408	0.000		0.000
4/14/2008	105	26.6	11.891	11.891	0.630	0.000		0.000
4/15/2008	106	25.9	11.578	11.578	0.614	0.000		0.000
4/16/2008	107	17.6	7.868	7.868	0.417	0.000		0.000
4/17/2008	108	15.3	6.840	6.840	0.363	0.000		0.000
4/18/2008	109	16	7.153	7.153	0.379	0.000		0.000
4/19/2008	110	31.2	13.948	13.948	0.739	0.000		0.000
4/20/2008	111	20.2	9.030	9.030	0.479	0.000		0.000
4/21/2008	112	22.6	10.103	10.103	0.535	0.000		0.000
4/22/2008	113	22	9.835	9.835	0.521	0.000		0.000
4/23/2008	114	20.8	9.298	9.298	0.493	0.000		0.000
4/24/2008	115	17.1	7.644	7.644	0.405	0.000		0.000
4/25/2008	116	18.9	8.449	8.449	0.448	0.000		0.000
4/26/2008	117	18.8	8.404	8.404	0.445	0.000		0.000

Table D-10. Wind Erosion Particulate Matter Emission Factors - Topsoil Removal/Storage and Reclamation.

Date	N	u (max gust) (mph)	u^+ (m/s)	u^+_{10} (m/s)	u* (m/s)	P_i (g/m^2)	Weekday Only:	Pi (g/m^2)
4/27/2008	118	21.2	9.477	9.477	0.502	0.000		0.000
4/28/2008	119	17.3	7.734	7.734	0.410	0.000		0.000
4/29/2008	120	72.2	32.276	32.276	1.711	44.931		44.931
4/30/2008	121	22.9	10.237	10.237	0.543	0.000		0.000
5/1/2008	122	18.4	8.226	8.226	0.436	0.000		0.000
5/2/2008	123	14.6	6.527	6.527	0.346	0.000		0.000
5/3/2008	124	19.2	8.583	8.583	0.455	0.000		0.000
5/4/2008	125	26.5	11.847	11.847	0.628	0.000		0.000
5/5/2008	126	16.3	7.287	7.287	0.386	0.000		0.000
5/6/2008	127	15.5	6.929	6.929	0.367	0.000		0.000
5/7/2008	128	26.8	11.981	11.981	0.635	0.000		0.000
5/8/2008	129	16.5	7.376	7.376	0.391	0.000		0.000
5/9/2008	130	15.8	7.063	7.063	0.374	0.000		0.000
5/10/2008	131	14.7	6.571	6.571	0.348	0.000		0.000
5/11/2008	132	20.3	9.075	9.075	0.481	0.000		0.000
5/12/2008	133	23.9	10.684	10.684	0.566	0.000		0.000
5/13/2008	134	20.4	9.120	9.120	0.483	0.000		0.000
5/14/2008	135	17.4	7.778	7.778	0.412	0.000		0.000
5/15/2008	136	17.8	7.957	7.957	0.422	0.000		0.000
5/16/2008	137	17.9	8.002	8.002	0.424	0.000		0.000
5/17/2008	138	15.2	6.795	6.795	0.360	0.000		0.000
5/18/2008	139	14.7	6.571	6.571	0.348	0.000		0.000
5/19/2008	140	14	6.259	6.259	0.332	0.000		0.000
5/20/2008	141	34.3	15.333	15.333	0.813	0.000		0.000
5/21/2008	142	26.9	12.025	12.025	0.637	0.000		0.000
5/22/2008	143	36	16.093	16.093	0.853	0.000		0.000
5/23/2008	144	30.1	13.456	13.456	0.713	0.000		0.000
5/24/2008	145	24.2	10.818	10.818	0.573	0.000		0.000
5/25/2008	146	27	12.070	12.070	0.640	0.000		0.000
5/26/2008	147	21.5	9.611	9.611	0.509	0.000		0.000
5/27/2008	148	27.1	12.115	12.115	0.642	0.000		0.000
5/28/2008	149	25.7	11.489	11.489	0.609	0.000		0.000
5/29/2008	150	28.9	12.919	12.919	0.685	0.000		0.000
5/30/2008	151	17.2	7.689	7.689	0.408	0.000		0.000
5/31/2008	152	17.6	7.868	7.868	0.417	0.000		0.000
6/1/2008	153	24.7	11.042	11.042	0.585	0.000		0.000
6/2/2008	154	17.6	7.868	7.868	0.417	0.000		0.000
6/3/2008	155	23.2	10.371	10.371	0.550	0.000		0.000
6/4/2008	156	26.1	11.668	11.668	0.618	0.000		0.000

Table D-10. Wind Erosion Particulate Matter Emission Factors - Topsoil Removal/Storage and Reclamation.

Date	N	u (max gust) (mph)	u^+ (m/s)	u^+_{10} (m/s)	u* (m/s)	P_i (g/m^2)	Weekday Only:	Pi (g/m^2)
6/5/2008	157	21.4	9.567	9.567	0.507	0.000		0.000
6/6/2008	158	22.6	10.103	10.103	0.535	0.000		0.000
6/7/2008	159	18.6	8.315	8.315	0.441	0.000		0.000
6/8/2008	160	19.1	8.538	8.538	0.453	0.000		0.000
6/9/2008	161	17.6	7.868	7.868	0.417	0.000		0.000
6/10/2008	162	22.6	10.103	10.103	0.535	0.000		0.000
6/11/2008	163	21.7	9.701	9.701	0.514	0.000		0.000
6/12/2008	164	19.9	8.896	8.896	0.471	0.000		0.000
6/13/2008	165	14.6	6.527	6.527	0.346	0.000		0.000
6/14/2008	166	13.9	6.214	6.214	0.329	0.000		0.000
6/15/2008	167	14.9	6.661	6.661	0.353	0.000		0.000
6/16/2008	168	12.9	5.767	5.767	0.306	0.000		0.000
6/17/2008	169	22.5	10.058	10.058	0.533	0.000		0.000
6/18/2008	170	16.6	7.421	7.421	0.393	0.000		0.000
6/19/2008	171	20.2	9.030	9.030	0.479	0.000		0.000
6/20/2008	172	17.4	7.778	7.778	0.412	0.000		0.000
6/21/2008	173	23.9	10.684	10.684	0.566	0.000		0.000
6/22/2008	174	15.6	6.974	6.974	0.370	0.000		0.000
6/23/2008	175	15.2	6.795	6.795	0.360	0.000		0.000
6/24/2008	176	15.5	6.929	6.929	0.367	0.000		0.000
6/25/2008	177	14.7	6.571	6.571	0.348	0.000		0.000
6/26/2008	178	12.6	5.633	5.633	0.299	0.000		0.000
6/27/2008	179	16.2	7.242	7.242	0.384	0.000		0.000
6/28/2008	180	15.4	6.884	6.884	0.365	0.000		0.000
6/29/2008	181	16.8	7.510	7.510	0.398	0.000		0.000
6/30/2008	182	15.1	6.750	6.750	0.358	0.000		0.000
7/1/2008	183	13.7	6.124	6.124	0.325	0.000		0.000
7/2/2008	184	14.9	6.661	6.661	0.353	0.000		0.000
7/3/2008	185	20.4	9.120	9.120	0.483	0.000		0.000
7/4/2008	186	17.7	7.913	7.913	0.419	0.000		0.000
7/5/2008	187	19.9	8.896	8.896	0.471	0.000		0.000
7/6/2008	188	13.7	6.124	6.124	0.325	0.000		0.000
7/7/2008	189	16.3	7.287	7.287	0.386	0.000		0.000
7/8/2008	190	15.4	6.884	6.884	0.365	0.000		0.000
7/9/2008	191	13.5	6.035	6.035	0.320	0.000		0.000
7/10/2008	192	13.9	6.214	6.214	0.329	0.000		0.000
7/11/2008	193	15.2	6.795	6.795	0.360	0.000		0.000
7/12/2008	194	16.3	7.287	7.287	0.386	0.000		0.000
7/13/2008	195	16.7	7.466	7.466	0.396	0.000		0.000

Table D-10. Wind Erosion Particulate Matter Emission Factors - Topsoil Removal/Storage and Reclamation.

Date	N	u (max gust) (mph)	u^+ (m/s)	u^+_{10} (m/s)	u* (m/s)	P_i (g/m^2)	Weekday Only:	Pi (g/m^2)
7/14/2008	196	16.2	7.242	7.242	0.384	0.000		0.000
7/15/2008	197	16.6	7.421	7.421	0.393	0.000		0.000
7/16/2008	198	13.8	6.169	6.169	0.327	0.000		0.000
7/17/2008	199	16.4	7.331	7.331	0.389	0.000		0.000
7/18/2008	200	12.7	5.677	5.677	0.301	0.000		0.000
7/19/2008	201	14	6.259	6.259	0.332	0.000		0.000
7/20/2008	202	16.4	7.331	7.331	0.389	0.000		0.000
7/21/2008	203	15.3	6.840	6.840	0.363	0.000		0.000
7/22/2008	204	14.9	6.661	6.661	0.353	0.000		0.000
7/23/2008	205	14.3	6.393	6.393	0.339	0.000		0.000
7/24/2008	206	15.3	6.840	6.840	0.363	0.000		0.000
7/25/2008	207	16.6	7.421	7.421	0.393	0.000		0.000
7/26/2008	208	19.6	8.762	8.762	0.464	0.000		0.000
7/27/2008	209	17.1	7.644	7.644	0.405	0.000		0.000
7/28/2008	210	15.9	7.108	7.108	0.377	0.000		0.000
7/29/2008	211	18	8.047	8.047	0.426	0.000		0.000
7/30/2008	212	15.7	7.019	7.019	0.372	0.000		0.000
7/31/2008	213	15.3	6.840	6.840	0.363	0.000		0.000
8/1/2008	214	15.1	6.750	6.750	0.358	0.000		0.000
8/2/2008	215	21.3	9.522	9.522	0.505	0.000		0.000
8/3/2008	216	14.8	6.616	6.616	0.351	0.000		0.000
8/4/2008	217	13.8	6.169	6.169	0.327	0.000		0.000
8/5/2008	218	12.4	5.543	5.543	0.294	0.000		0.000
8/6/2008	219	14.4	6.437	6.437	0.341	0.000		0.000
8/7/2008	220	15.1	6.750	6.750	0.358	0.000		0.000
8/8/2008	221	18.3	8.181	8.181	0.434	0.000		0.000
8/9/2008	222	16.6	7.421	7.421	0.393	0.000		0.000
8/10/2008	223	17.8	7.957	7.957	0.422	0.000		0.000
8/11/2008	224	15.3	6.840	6.840	0.363	0.000		0.000
8/12/2008	225	12.8	5.722	5.722	0.303	0.000		0.000
8/13/2008	226	13.5	6.035	6.035	0.320	0.000		0.000
8/14/2008	227	12.3	5.499	5.499	0.291	0.000		0.000
8/15/2008	228	12.7	5.677	5.677	0.301	0.000		0.000
8/16/2008	229	14.8	6.616	6.616	0.351	0.000		0.000
8/17/2008	230	15.2	6.795	6.795	0.360	0.000		0.000
8/18/2008	231	17.3	7.734	7.734	0.410	0.000		0.000
8/19/2008	232	20.6	9.209	9.209	0.488	0.000		0.000
8/20/2008	233	17.7	7.913	7.913	0.419	0.000		0.000
8/21/2008	234	17	7.600	7.600	0.403	0.000		0.000

Table D-10. Wind Erosion Particulate Matter Emission Factors - Topsoil Removal/Storage and Reclamation.

Date	N	u (max gust) (mph)	u^+ (m/s)	u^+_{10} (m/s)	u* (m/s)	P_i (g/m^2)	Weekday Only:	Pi (g/m^2)
8/22/2008	235	15.5	6.929	6.929	0.367	0.000		0.000
8/23/2008	236	15.2	6.795	6.795	0.360	0.000		0.000
8/24/2008	237	14	6.259	6.259	0.332	0.000		0.000
8/25/2008	238	17	7.600	7.600	0.403	0.000		0.000
8/26/2008	239	17	7.600	7.600	0.403	0.000		0.000
8/27/2008	240	18.6	8.315	8.315	0.441	0.000		0.000
8/28/2008	241	16.6	7.421	7.421	0.393	0.000		0.000
8/29/2008	242	13.8	6.169	6.169	0.327	0.000		0.000
8/30/2008	243	13.5	6.035	6.035	0.320	0.000		0.000
8/31/2008	244	15.7	7.019	7.019	0.372	0.000		0.000
9/1/2008	245	20.8	9.298	9.298	0.493	0.000		0.000
9/2/2008	246	17.9	8.002	8.002	0.424	0.000		0.000
9/3/2008	247	17.8	7.957	7.957	0.422	0.000		0.000
9/4/2008	248	16.1	7.197	7.197	0.381	0.000		0.000
9/5/2008	249	16.6	7.421	7.421	0.393	0.000		0.000
9/6/2008	250	15.9	7.108	7.108	0.377	0.000		0.000
9/7/2008	251	13.9	6.214	6.214	0.329	0.000		0.000
9/8/2008	252	15	6.706	6.706	0.355	0.000		0.000
9/9/2008	253	15.5	6.929	6.929	0.367	0.000		0.000
9/10/2008	254	16.4	7.331	7.331	0.389	0.000		0.000
9/11/2008	255	13.3	5.946	5.946	0.315	0.000		0.000
9/12/2008	256	13.1	5.856	5.856	0.310	0.000		0.000
9/13/2008	257	13	5.812	5.812	0.308	0.000		0.000
9/14/2008	258	12.6	5.633	5.633	0.299	0.000		0.000
9/15/2008	259	11.8	5.275	5.275	0.280	0.000		0.000
9/16/2008	260	14.8	6.616	6.616	0.351	0.000		0.000
9/17/2008	261	17.4	7.778	7.778	0.412	0.000		0.000
9/18/2008	262	18.9	8.449	8.449	0.448	0.000		0.000
9/19/2008	263	24.6	10.997	10.997	0.583	0.000		0.000
9/20/2008	264	19.3	8.628	8.628	0.457	0.000		0.000
9/21/2008	265	15.4	6.884	6.884	0.365	0.000		0.000
9/22/2008	266	19.8	8.851	8.851	0.469	0.000		0.000
9/23/2008	267	15.8	7.063	7.063	0.374	0.000		0.000
9/24/2008	268	15.9	7.108	7.108	0.377	0.000		0.000
9/25/2008	269	16.9	7.555	7.555	0.400	0.000		0.000
9/26/2008	270	16.6	7.421	7.421	0.393	0.000		0.000
9/27/2008	271	14.8	6.616	6.616	0.351	0.000		0.000
9/28/2008	272	12.6	5.633	5.633	0.299	0.000		0.000
9/29/2008	273	13.4	5.990	5.990	0.317	0.000		0.000

Table D-10. Wind Erosion Particulate Matter Emission Factors - Topsoil Removal/Storage and Reclamation.

Date	N	u (max gust) (mph)	u^+ (m/s)	u^+_{10} (m/s)	u* (m/s)	P_i (g/m^2)	Weekday Only:	Pi (g/m^2)
9/30/2008	274	12.3	5.499	5.499	0.291	0.000		0.000
10/1/2008	275	16.9	7.555	7.555	0.400	0.000		0.000
10/2/2008	276	19.4	8.673	8.673	0.460	0.000		0.000
10/3/2008	277	24.6	10.997	10.997	0.583	0.000		0.000
10/4/2008	278	20.9	9.343	9.343	0.495	0.000		0.000
10/5/2008	279	16.9	7.555	7.555	0.400	0.000		0.000
10/6/2008	280	14.4	6.437	6.437	0.341	0.000		0.000
10/7/2008	281	15.5	6.929	6.929	0.367	0.000		0.000
10/8/2008	282	16.7	7.466	7.466	0.396	0.000		0.000
10/9/2008	283	21.4	9.567	9.567	0.507	0.000		0.000
10/10/2008	284	32.9	14.708	14.708	0.780	0.000		0.000
10/11/2008	285	32.8	14.663	14.663	0.777	0.000		0.000
10/12/2008	286	22.9	10.237	10.237	0.543	0.000		0.000
10/13/2008	287	20.1	8.986	8.986	0.476	0.000		0.000
10/14/2008	288	17.1	7.644	7.644	0.405	0.000		0.000
10/15/2008	289	14.4	6.437	6.437	0.341	0.000		0.000
10/16/2008	290	18.5	8.270	8.270	0.438	0.000		0.000
10/17/2008	291	14.4	6.437	6.437	0.341	0.000		0.000
10/18/2008	292	14.8	6.616	6.616	0.351	0.000		0.000
10/19/2008	293	12.7	5.677	5.677	0.301	0.000		0.000
10/20/2008	294	14.7	6.571	6.571	0.348	0.000		0.000
10/21/2008	295	16.6	7.421	7.421	0.393	0.000		0.000
10/22/2008	296	23.7	10.595	10.595	0.562	0.000		0.000
10/23/2008	297	11.6	5.186	5.186	0.275	0.000		0.000
10/24/2008	298	14.2	6.348	6.348	0.336	0.000		0.000
10/25/2008	299	12.8	5.722	5.722	0.303	0.000		0.000
10/26/2008	300	10.8	4.828	4.828	0.256	0.000		0.000
10/27/2008	301	11.2	5.007	5.007	0.265	0.000		0.000
10/28/2008	302	9.9	4.426	4.426	0.235	0.000		0.000
10/29/2008	303	11.8	5.275	5.275	0.280	0.000		0.000
10/30/2008	304	73.1	32.679	32.679	1.732	47.199		47.199
10/31/2008	305	36.5	16.317	16.317	0.865	0.000		0.000
11/1/2008	306	39.5	17.658	17.658	0.936	0.000		0.000
11/2/2008	307	24.5	10.952	10.952	0.580	0.000		0.000
11/3/2008	308	34.9	15.602	15.602	0.827	0.000		0.000
11/4/2008	309	22.8	10.193	10.193	0.540	0.000		0.000
11/5/2008	310	16.4	7.331	7.331	0.389	0.000		0.000
11/6/2008	311	15.3	6.840	6.840	0.363	0.000		0.000
11/7/2008	312	16.4	7.331	7.331	0.389	0.000		0.000

Table D-10. Wind Erosion Particulate Matter Emission Factors - Topsoil Removal/Storage and Reclamation.

Date	N	u (max gust) (mph)	u^+ (m/s)	u^+_{10} (m/s)	u* (m/s)	P_i (g/m^2)	Weekday Only:	Pi (g/m^2)
11/8/2008	313	38	16.988	16.988	0.900	0.000		0.000
11/9/2008	314	32.6	14.574	14.574	0.772	0.000		0.000
11/10/2008	315	15.9	7.108	7.108	0.377	0.000		0.000
11/11/2008	316	11.6	5.186	5.186	0.275	0.000		0.000
11/12/2008	317	15.2	6.795	6.795	0.360	0.000		0.000
11/13/2008	318	21.2	9.477	9.477	0.502	0.000		0.000
11/14/2008	319	21.8	9.745	9.745	0.517	0.000		0.000
11/15/2008	320	15.7	7.019	7.019	0.372	0.000		0.000
11/16/2008	321	9.6	4.292	4.292	0.227	0.000		0.000
11/17/2008	322	11.1	4.962	4.962	0.263	0.000		0.000
11/18/2008	323	9.5	4.247	4.247	0.225	0.000		0.000
11/19/2008	324	13.4	5.990	5.990	0.317	0.000		0.000
11/20/2008	325	16.6	7.421	7.421	0.393	0.000		0.000
11/21/2008	326	22.5	10.058	10.058	0.533	0.000		0.000
11/22/2008	327	13.6	6.080	6.080	0.322	0.000		0.000
11/23/2008	328	11.8	5.275	5.275	0.280	0.000		0.000
11/24/2008	329	11.7	5.230	5.230	0.277	0.000		0.000
11/25/2008	330	13.4	5.990	5.990	0.317	0.000		0.000
11/26/2008	331	12.9	5.767	5.767	0.306	0.000		0.000
11/27/2008	332	13.5	6.035	6.035	0.320	0.000		0.000
11/28/2008	333	9.3	4.157	4.157	0.220	0.000		0.000
11/29/2008	334	23.4	10.461	10.461	0.554	0.000		0.000
11/30/2008	335	12.2	5.454	5.454	0.289	0.000		0.000
12/1/2008	336	10.5	4.694	4.694	0.249	0.000		0.000
12/2/2008	337	14.5	6.482	6.482	0.344	0.000		0.000
12/3/2008	338	15.2	6.795	6.795	0.360	0.000		0.000
12/4/2008	339	16.5	7.376	7.376	0.391	0.000		0.000
12/5/2008	340	12.3	5.499	5.499	0.291	0.000		0.000
12/6/2008	341	14.7	6.571	6.571	0.348	0.000		0.000
12/7/2008	342	12.2	5.454	5.454	0.289	0.000		0.000
12/8/2008	343	18.9	8.449	8.449	0.448	0.000		0.000
12/9/2008	344	17.3	7.734	7.734	0.410	0.000		0.000
12/10/2008	345	12.1	5.409	5.409	0.287	0.000		0.000
12/11/2008	346	16.1	7.197	7.197	0.381	0.000		0.000
12/12/2008	347	13.2	5.901	5.901	0.313	0.000		0.000
12/13/2008	348	30.5	13.635	13.635	0.723	0.000		0.000
12/14/2008	349	22.1	9.880	9.880	0.524	0.000		0.000
12/15/2008	350	26.8	11.981	11.981	0.635	0.000		0.000
12/16/2008	351	22	9.835	9.835	0.521	0.000		0.000

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Table D-10. Wind Erosion Particulate Matter Emission Factors - Topsoil Removal/Storage and Reclamation.

Date	N	u (max gust) (mph)	u^+ (m/s)	u^+_{10} (m/s)	u* (m/s)	P_i (g/m^2)	Weekday Only:	Pi (g/m^2)
12/17/2008	352	23.5	10.505	10.505	0.557	0.000		0.000
12/18/2008	353	22	9.835	9.835	0.521	0.000		0.000
12/19/2008	354	21.9	9.790	9.790	0.519	0.000		0.000
12/20/2008	355	13.5	6.035	6.035	0.320	0.000		0.000
12/21/2008	356	23.5	10.505	10.505	0.557	0.000		0.000
12/22/2008	357	25.6	11.444	11.444	0.607	0.000		0.000
12/23/2008	358	16.5	7.376	7.376	0.391	0.000		0.000
12/24/2008	359	38.9	17.390	17.390	0.922	0.000		0.000
12/25/2008	360	40.8	18.239	18.239	0.967	0.000		0.000
12/26/2008	361	26.8	11.981	11.981	0.635	0.000		0.000
12/27/2008	362	12.2	5.454	5.454	0.289	0.000		0.000
12/28/2008	363	12.9	5.767	5.767	0.306	0.000		0.000
12/29/2008	364	18.4	8.226	8.226	0.436	0.000		0.000
12/30/2008	365	16.4	7.331	7.331	0.389	0.000		0.000
12/31/2008	366	10.6	4.739	4.739	0.251	0.000		0.000
		Max u^+ (m/s):	43.899		Sum:	274.324	g/m2*yr	259.665
		Conversion Factors:	907,185	grams/ton	Ef (TSP) =	1.22	ton/acre*yr	1.16
			4,047	m^2/acre	Ef (PM_{10}) =	0.61	ton/acre*yr	0.58
					EF ($PM_{2.5}$) =	0.09	ton/acre*yr	0.09
						(Every Day)		(Week Days)

Notes:

1. Used max daily gust speed from 2008 met data for u+. Anemometer height at 10m; no height correction to 10m required.
2. Threshold friction velocity (u^*_t) obtained from Table 13.2.5-2 AP-42 (overburden): 1.02 m/s
3. Particle size multipliers (k) taken from AP-42 p. 13.2.5-3:

   $PM_{2.5}$ = 0.075

   PM_{10} = 0.5
4. The highest recorded wind gust from the Hanson meteorological station on 7/15/2008 was 98.2 mph at 09:00. This value appears inconsistent with the daily wind gust trends (< 20 mph for all other hours). In addition, there are a number of invalid parameters (e.g. temperature, RH) recorded for hours 09:00 and 10:00 that imply the tower could have been serviced or repaired during that period. Therefore, for the purposes of this analysis, data for 7/15/2008 at 09:00 was invalidated, leaving a maximum wind gust of 16.6 mph at 14:00 for that day.

Table D-11. Off-road Diesel Equipment Activity Data (Units: Annual Hours).

Operating Schedule	Phase 1	Phase 2
Hours/Day	24	24
Days/Week	6	6
Weeks/Year	50	50

					Phase 1		Phase 2	
					Peak Year: 2013		Peak Year: 2023	
Category	Manufacturer	Model	Year	HP	Hours/Year	Hours/Day	Hours/Year	Hours/Day
Bore/Drill Rigs	Ingersoll Rand	DM45	2009	600	4,057	13.5	--	--
Crawler Tractors	Caterpillar	D11T	2009	850	--	--	4,155	13.9
	Caterpillar	D11T	2009	850	--	--	4,155	13.9
	Caterpillar	D11T	2009	850	--	--	4,155	13.9
	Caterpillar	D10R	1999	570	3,324	11.1	--	--
	Caterpillar	D10T	2005	580	3,324	11.1	--	--
	Caterpillar	D10T	2005	580	3,324	11.1	--	--
(with disc)	Caterpillar	D8T	2009	310	--	--	914	8.0
Excavators	Caterpillar	345D	2009	380	665	8.0	499	8.0
Graders	Caterpillar	16G	1995	275	1,953	6.5	1,267	4.2
	Caterpillar	16M	2009	297	1,953	6.5	1,267	4.2
Off-Highway Trucks								
150-ton Trucks	Caterpillar	785B	1993	1290	4,267	14.2	--	--
100-ton Trucks	Caterpillar	777C	1996	870	4,393	14.6	1,688	5.6
	Caterpillar	777D	2000	938	4,393	14.6	1,688	5.6
	Caterpillar	777D	2005	938	4,393	14.6	1,688	5.6
	Caterpillar	777D	2005	938	4,393	14.6	1,688	5.6
	Caterpillar	777D	2006	938	4,393	14.6	1,688	5.6
	Caterpillar	777F	2007	938	4,393	14.6	1,688	5.6
	Caterpillar	777F	2009	938	4,393	14.6	1,688	5.6
	Caterpillar	777F	2009	938	4,393	14.6	1,688	5.6
40-ton Trucks	Caterpillar	740	2003	415	1,929	6.4	83	8.0
	Caterpillar	740	2003	415	1,929	6.4	83	8.0
	Caterpillar	740	2003	415	1,929	6.4	83	8.0
Rubber Tired Dozers	Caterpillar	824C	1995	315	1,247	4.2	2,078	6.9
Rubber Tired Loaders	Caterpillar	992G	2005	800	2,670	8.9	1,800	6.0
	Caterpillar	992G	2006	800	2,670	8.9	1,800	6.0
	Caterpillar	992G	2007	800	2,670	8.9	1,800	6.0
	Caterpillar	988H	2009	501	1,102	3.7	416	8.0
Water Trucks	Caterpillar	773E	2003	671	2,493	8.3	1,558	5.2
	Caterpillar	773F	2009	703	2,493	8.3	1,558	5.2
Contractor Lowboy Truck	International	Paystar 5600	2009	360	--	--	--	--
Hydroseeder Truck	International	Paystar 5600	2009	360	--	--	83	8.0
Hydroseeder Pump	Finn	T330	2009	115	--	--	83	8.0
Portable Light Towers	Allmand	ML 695	2002	10.7	7,200	24.0	7,200	24.0
Total Hours:					86,344	293.6	48,537	218.3
Hp-Hour Weighted Hours/Day:						12.6		4.5
Total Thousand Hp-Hours:					60,984		31,885	

Notes:
1. Based on scheduling information and equipment specifications provided by Lehigh Southwest Cement Company, August 2011.
2. Annual hours for each equipment item based on year during which peak total horsepower-hours occurs during each of the project phases. Daily hours for each equipment item calculated from annual hours assuming indicated operating schedule, except for equipment items with non-zero hours below 1,000 hours - which are assumed to operate 8 hours/day if active during the peak year.

Table D-12. Off-road Diesel Equipment Scheduled Hours (Units: Annual Hours).

					Phase 1									Phase 2				
Category	Manufacturer	Model	Year	HP	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Bore/Drill Rigs	Ingersoll Rand	DM45	2009	600	4,184	4,057	4,057	3,425	3,425	2,621	2,621	2,621	2,161	--	--	--	--	--
Crawler Tractors	Caterpillar	D11T	2009	850	--	--	--	--	--	--	--	--	--	4,155	4,155	4,155	4,155	4,155
	Caterpillar	D11T	2009	850	--	--	--	--	--	--	--	--	--	4,155	4,155	4,155	4,155	4,155
	Caterpillar	D11T	2009	850	--	--	--	--	--	--	--	--	--	4,155	4,155	4,155	4,155	4,155
	Caterpillar	D10R	1999	570	3,324	3,324	3,324	3,047	3,047	2,521	2,493	2,493	2,493	--	--	--	--	--
	Caterpillar	D10T	2005	580	3,324	3,324	3,324	3,047	3,047	2,521	2,493	2,493	2,493	--	--	--	--	--
	Caterpillar	D10T	2005	580	3,324	3,324	3,324	3,047	3,047	2,521	2,493	2,493	2,493	--	--	--	--	--
	Caterpillar	D8T	2009	310	--	--	--	27	--	55	--	100	--	42	--	914	997	1,163
Excavators	Caterpillar	345D	2009	380	665	665	665	831	665	416	332	515	332	457	391	499	391	391
Graders	Caterpillar	16G	1995	275	1,953	1,953	2,078	2,119	2,078	1,704	1,662	1,691	1,662	1,309	1,267	1,267	1,330	1,288
	Caterpillar	16M	2009	297	1,953	1,953	2,078	2,119	2,078	1,704	1,662	1,691	1,662	1,309	1,267	1,267	1,330	1,288
Off-Highway Trucks																		
150-ton Trucks	Caterpillar	785B	1993	1290	3,793	4,267	3,556	2,845	2,134	862	948	1,109	--	--	--	--	--	--
100-ton Trucks	Caterpillar	777C	1996	870	3,928	4,393	3,937	3,682	3,093	2,454	2,777	3,187	3,228	1,688	1,688	1,688	1,125	1,000
	Caterpillar	777D	2000	938	3,928	4,393	3,937	3,682	3,093	2,454	2,777	3,187	3,228	1,688	1,688	1,688	1,125	1,000
	Caterpillar	777D	2005	938	3,928	4,393	3,937	3,682	3,093	2,454	2,777	3,187	3,228	1,688	1,688	1,688	1,125	1,000
	Caterpillar	777D	2005	938	3,928	4,393	3,937	3,682	3,093	2,454	2,777	3,187	3,228	1,688	1,688	1,688	1,125	1,000
	Caterpillar	777D	2006	938	3,928	4,393	3,937	3,682	3,093	2,454	2,777	3,187	3,228	1,688	1,688	1,688	1,125	1,000
	Caterpillar	777F	2007	938	3,928	4,393	3,937	3,682	3,093	2,454	2,777	3,187	3,228	1,688	1,688	1,688	1,125	1,000
	Caterpillar	777F	2009	938	3,928	4,393	3,937	3,682	3,093	2,454	2,777	3,187	3,228	1,688	1,688	1,688	1,125	1,000
	Caterpillar	777F	2009	938	3,928	4,393	3,937	3,682	3,093	2,454	2,777	3,187	3,228	1,688	1,688	1,688	1,125	1,000
40-ton Trucks	Caterpillar	740	2003	415	1,929	1,929	2,182	2,401	2,695	2,248	1,761	1,436	1,393	332	111	83	55	139
	Caterpillar	740	2003	415	1,929	1,929	2,182	2,401	2,695	2,248	1,761	1,436	1,393	332	111	83	55	139
	Caterpillar	740	2003	415	1,929	1,929	2,182	2,401	2,695	2,248	1,761	1,436	1,393	332	111	83	55	139
Rubber Tired Dozers	Caterpillar	824C	1995	315	1,247	1,247	1,247	1,330	1,247	1,330	1,662	1,704	1,662	1,787	2,078	2,078	4,155	3,740
Rubber Tired Loaders	Caterpillar	992G	2005	800	2,733	2,670	2,670	2,354	2,354	1,951	1,951	1,990	1,722	1,800	1,800	1,800	1,800	1,600
	Caterpillar	992G	2006	800	2,733	2,670	2,670	2,354	2,354	1,951	1,951	1,990	1,722	1,800	1,800	1,800	1,800	1,600
	Caterpillar	992G	2007	800	2,733	2,670	2,670	2,354	2,354	1,951	1,951	1,990	1,722	1,800	1,800	1,800	1,800	1,600
	Caterpillar	988H	2009	501	1,102	1,102	1,102	1,102	1,102	1,102	1,102	1,102	1,102	416	416	416	416	416
Water Trucks	Caterpillar	773E	2003	671	2,493	2,493	2,493	2,348	2,285	1,911	1,870	1,920	1,870	1,517	1,558	1,558	1,974	1,766
	Caterpillar	773F	2009	703	2,493	2,493	2,493	2,348	2,285	1,911	1,870	1,920	1,870	1,517	1,558	1,558	1,974	1,766
Contractor Lowboy Truck	International	Paystar 5600	2009	360	5	--	--	--	--	--	--	23	--	--	--	--	--	--
Hydroseeder Truck	International	Paystar 5600	2009	360	--	--	--	27	--	55	--	17	--	42	--	83	166	332
Hydroseeder Pump	Finn	T330	2009	115	--	--	--	27	--	55	--	17	--	42	--	83	166	332
Portable Light Towers	Allmand	ML 695	2002	10.7	7,200	7,200	7,200	7,200	7,200	7,200	7,200	7,200	7,200	7,200	7,200	7,200	7,200	7,200
Total Hours:					82,471	86,344	82,991	78,609	73,524	60,716	61,759	64,883	62,169	47,997	47,432	48,537	47,128	45,362
Total Thousand Hp-Hours:					57,144	60,984	57,060	52,837	47,681	37,625	39,431	42,594	40,278	31,764	31,555	31,885	28,953	27,337

Notes:
1. Based on scheduling information and equipment specifications provided by Lehigh Southwest Cement Company, August 2011.
2. Portable light towers are assumed to operate an average of 12 hours each operating day during Phases 1 and 2 (assumed 3 shifts/day).
3. Equipment required to be purchased or contracted in the future are conservatively assumed to be used 2009 model year equipment.
4. Even though the Contractor Lowboy Truck and Hydroseeder Truck are on-road heavy duty trucks, for calculation purposes they are conservatively assumed to be off-road trucks.
5. Assumed efficiency (Operating Hours/Scheduled Hours) for equipment other than drill rigs, contractor lowboy truck, and portable light stands:
83.1%

Table D-13. Portable Internal Combustion Equipment.

Operating Schedule	Phase 1	Phase 2
Hours/Day	24	24
Days/Week	6	6
Weeks/Year	50	50

Summary.

	Load	Phase 1		Phase 2	
Equipment Type	Factor[1]	Avg HP	Hrs/Yr	Avg HP	Hrs/Yr
Diesel Welders	45%	50	305	50	286

Notes:

1. Load factor derived from California Air Resources Board's OFFROAD2007 model (version dated December 15, 2006), “equip.csv” data file, available at http://www.arb.ca.gov/msei/offroad/offroad.htm.
2. Average horsepower based on welding activity associated with quarry operations for 2000-2010 baseline period: 42.6 average horsepower for diesel welders, and 12.6 average horsepower for gasoline welders. Given that more than 90% of welder use was associated with diesel welders, an average horsepower rating of 50 HP is assumed, and all welders are assumed to be diesel.
3. Average operating hours/year based on welding activity associated with quarry operations for 2000-2010 baseline period, scaled to reflect the ratio between maximum production for each phase and production during the baseline period. Baseline welder use:
   145 hours/year for diesel welders
   14 hours/year for gasoline welders

Table D-14. On-road Vehicle Activity.

Operating Schedule	Phase 1	Phase 2
Hours/Day	24	24
Days/Week	6	6
Weeks/Year	50	50

Summary.

Trip Type	Vehicle Type	Phase 1 Number of Vehicles	Phase 1 Miles/Year	Phase 2 Number of Vehicles	Phase 2 Miles/Year
Employee Commute	Passenger	49	123,628	38	95,875
In-plant Vehicles	MDV[1]	17	119,000	14	98,000
Fuel Transport	HDDT[2]	--	6,961	--	1,822
Green Waste Transport (On-Site)	HDDT	--	--	--	6,960
Green Waste Transport (Off-Site)	HDDT	--	--	--	94,500
Total			249,589		297,158

Notes:
1. Medium Duty Vehicle.
2. Heavy-duty Diesel Truck.

Employee Commute Trips.

Project Phase	Maximum Employee Count[1] Salary	Hourly	Contractor	Total	Employees /Vehicle[2]	Work Days/Year	Trip Dist. (Miles)[3]	Miles/ Year
1	4	38	7	49	1	250	5.046	123,628
2	3	32	3	38	1	250	5.046	95,875

Notes:
1. Maximum employee count based on information provided by Lehigh Southwest Cement Company, August 2011.
2. It is assumed that the vehicle occupancy is 1 employee/vehicle and that each employee works an average of 250 days/year.
3. The initial year for operation of the proposed project is assumed to be 2012. As a worst-case assumption for operation of on-road motor vehicles, 2012 is used as the basis for calculating emissions for the proposed project. The one-way trip distance is from EMFAC2007 emissions inventory data for Santa Clara County (2012 data). Total miles/year are based on two-way trips.

In-Plant Vehicles.

Project Phase	In-Plant Vehicles[1]	Ann. Miles/ Vehicle[2]	Miles/ Year	Gasoline Consumption (Miles/Gal)[3]	Gasoline Consumption (Gal/Year)
1	17	7,000	119,000	15	7,933
2	14	7,000	98,000	15	6,533

Table D-14. On-road Vehicle Activity.

Notes:
1. Assumes a ratio of 0.4 in-plant vehicle (0.5-ton and larger pickups and SUVs) per Lehigh employee. This is the same ratio as experienced during facility operations during 2000-2010, with 24 in-plant vehicles for 60 employees.
2. Annual miles traveled per vehicles related to quarry operations. For the 2000-2010 period, the average quarry use per in-plant vehicle was calculated to be 6,600 miles/vehicle. For activities related to the proposed project, this is estimated to be 7,000 miles/vehicle.
3. Source: U.S. Department of Energy and U.S. Environmental Protection Agency, Fuel Economy Guide, for 2005 two- and four-wheel drive Ford F150 pickups (8 cylinder, 4.6 liter engine) and 2005 two- and four-wheel drive Ford Explorer Sports Utility Vehicles (8 cylinder, 4.6 liter engine). Combined city and highway fuel economies range between 16 and 17 miles per gallon. To be conservative, a value of 15 MPG was assumed.

Fuel Transport.

Project Phase	Gasoline Use(Gal)[1]	Diesel Use(Gal)[2]	Total Fuel Use (Gal)	Fuel Capacity (Gal)[3]	Vehicles Trips/Year	Trip Distance (Mi.)[4]	Miles/ Year[4]
1	7,933	2,080,248	2,088,182	6,000	348	10	6,961
2	6,533	540,188	546,721	6,000	91	10	1,822

Notes:
1. Gasoline use derived from the above information, based on estimated in-plant vehicle use, mileage accruals, and fuel economy.
2. Diesel throughput based on scheduling information and equipment specifications provided by Lehigh Southwest Cement Company, August 2011.
3. Effective operating capacity per fuel transport truck assumed to be 6,000 gallons.
4. Trip distance assumed to be 10 miles (one-way). Total miles/year based on two-way trips.

Mulched Green Waste Transport.

Project Phase	Truck Trips	On-Site Transport		Off-Site Transport		Total Miles
		Miles/Trip	Total Miles	Miles/Trip	Total Miles	
1	--	--	--	--	--	--
2	1,050	6.63	6,960	90.00	94,500	101,460

Notes:
1. Mulched green waste truck trips and on-site trip mileage (round trip) derived previously in Table D-6.
2. Mulched green waste truck off-site trip mileage of 90 miles (round trip) assumes the green waste supplier is located 45 miles from the quarry.

Table D-15. Fuel Storage & Dispensing.

Operating Schedule	Phase 1	Phase 2
Hours/Day	24	24
Days/Week	6	6
Weeks/Year	50	50

Fuel Throughput (gallons/year).

	Phase 1 (Gallons/Year)	Phase 2 (Gallons/Year)
Diesel[1]	2,080,248	540,188
Gasoline[2]	7,933	6,533

Notes:
1. Diesel throughputs based on scheduling information and equipment specifications provided by Lehigh Southwest Cement Company, August 2011.
2. Gasoline throughputs based on estimated in-plant vehicle use, mileage accruals, and fuel economy for the proposed project.

Appendix E

Permanente Creek Reclamation Area Emission Calculations

Permanente Creek Reclamation Area Emission Calculations.

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Table E-1. Permanente Creek Reclamation Area - Total Criteria Pollutant Emissions (tons).

Project Phase	Emission Source Category	PM_{10}	$PM_{2.5}$	CO	NOx	ROG	SOx
Phase 1	Bulldozing, Scraping & Grading	0.00	0.00	--	--	--	--
Subareas	Material Handling	0.01	0.00	--	--	--	--
3, 4, 5, 6, & 7	Unpaved Road Dust Entrainment	0.02	0.00	--	--	--	--
(2012)	Wind Erosion - Disturbed Areas	0.05	0.01	--	--	--	--
	Off-Road Diesel Equipment	0.01	0.01	0.04	0.15	0.01	0.00
	Subtotal - Phase 1	0.08	0.02	0.04	0.15	0.01	0.00
Phase 2	Bulldozing, Scraping & Grading	0.00	0.00	--	--	--	--
Subareas	Material Handling	0.00	0.00	--	--	--	--
1 & 2	Unpaved Road Dust Entrainment	0.02	0.00	--	--	--	--
(2025)	Wind Erosion - Disturbed Areas	0.05	0.01	--	--	--	--
	Off-Road Diesel Equipment	0.00	0.00	0.03	0.10	0.01	0.00
	Subtotal - Phase 2	0.07	0.01	0.03	0.10	0.01	0.00

Table E-2. Permanente Creek Reclamation Area - Daily Criteria Pollutant Emissions (pounds/day).

Project Phase	Emission Source Category	PM_{10}	$PM_{2.5}$	CO	NOx	ROG	SOx
Phase 1	Bulldozing, Scraping & Grading	0.99	0.15	--	--	--	--
Subareas	Material Handling	3.88	0.58	--	--	--	--
3, 4, 5, 6, & 7	Unpaved Road Dust Entrainment	6.99	0.70	--	--	--	--
(2012)	Wind Erosion - Disturbed Areas	20.83	3.13	--	--	--	--
	Off-Road Diesel Equipment	1.61	1.48	10.87	48.27	2.68	0.05
	Subtotal - Phase 1	34.30	6.04	10.87	48.27	2.68	0.05
Phase 2	Bulldozing, Scraping & Grading	0.99	0.15	--	--	--	--
Subareas	Material Handling	1.23	0.18	--	--	--	--
1 & 2	Unpaved Road Dust Entrainment	11.06	1.11	--	--	--	--
(2025)	Wind Erosion - Disturbed Areas	28.29	4.24	--	--	--	--
	Off-Road Diesel Equipment	2.23	2.06	14.64	58.41	4.06	0.06
	Subtotal - Phase 2	43.80	7.74	14.64	58.41	4.06	0.06

Table E-3. Permanente Creek Reclamation Area - Total Toxic Air Contaminant Emissions (pounds).

Project Phase	Emission Source Category	Diesel PM	Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Cobalt	Copper	Lead	Mercury	Molyb- denum	Nickel	Selenium	Silver	Thallium	Vanadium	Zinc	Hexavalent Chromium	Crystalline Silica
Phase 1	Bulldozing, Scraping & Grading	--	4.97E-06	2.49E-06	1.55E-03	1.49E-06	2.49E-06	4.77E-05	1.27E-05	2.78E-05	2.59E-06	3.98E-07	4.97E-06	4.58E-05	4.97E-06	2.59E-06	2.59E-06	3.78E-05	4.97E-05	1.99E-07	7.39E-03
Subareas	Material Handling	--	4.61E-05	2.30E-05	1.44E-02	1.38E-05	2.30E-05	4.42E-04	1.18E-04	2.58E-04	2.40E-05	3.69E-06	4.61E-05	4.24E-04	4.61E-05	2.40E-05	2.40E-05	3.50E-04	4.61E-04	1.84E-06	6.84E-02
3, 4, 5, 6, & 7	Unpaved Road Dust Entrainment	--	8.30E-05	4.15E-05	3.32E-02	2.49E-05	4.15E-05	1.36E-03	3.25E-04	8.30E-04	7.63E-05	4.65E-06	8.30E-05	1.79E-03	8.30E-05	4.15E-05	4.15E-05	2.75E-03	1.13E-03	6.31E-05	2.36E-01
(2012)	Wind Erosion - Disturbed Areas	--	2.62E-04	1.31E-04	8.18E-02	7.87E-05	1.31E-04	2.52E-03	6.71E-04	1.47E-03	1.36E-04	2.10E-05	2.62E-04	2.41E-03	2.62E-04	1.36E-04	1.36E-04	1.99E-03	2.62E-03	1.05E-05	3.89E-01
	Off-Road Diesel Equipment	10.70	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	Subtotal - Phase 1	10.70	3.96E-04	1.98E-04	1.31E-01	1.19E-04	1.98E-04	4.37E-03	1.13E-03	2.58E-03	2.39E-04	2.97E-05	3.96E-04	4.67E-03	3.96E-04	2.04E-04	2.04E-04	5.14E-03	4.26E-03	7.56E-05	7.01E-01
Phase 2	Bulldozing, Scraping & Grading	--	9.95E-06	4.97E-06	3.10E-03	2.98E-06	4.97E-06	9.55E-05	2.55E-05	5.57E-05	5.17E-06	7.96E-07	9.95E-06	9.15E-05	9.95E-06	5.17E-06	5.17E-06	7.56E-05	9.95E-05	3.98E-07	1.48E-02
Subareas	Material Handling	--	9.22E-06	4.61E-06	2.88E-03	2.76E-06	4.61E-06	8.85E-05	2.36E-05	5.16E-05	4.79E-06	7.37E-07	9.22E-06	8.48E-05	9.22E-06	4.79E-06	4.79E-06	7.00E-05	9.22E-05	3.69E-07	1.37E-02
1 & 2	Unpaved Road Dust Entrainment	--	8.30E-05	4.15E-05	3.32E-02	2.49E-05	4.15E-05	1.36E-03	3.25E-04	8.30E-04	7.63E-05	4.65E-06	8.30E-05	1.79E-03	8.30E-05	4.15E-05	4.15E-05	2.75E-03	1.13E-03	6.31E-05	2.36E-01
(2025)	Wind Erosion - Disturbed Areas	--	2.28E-04	1.14E-04	7.13E-02	6.85E-05	1.14E-04	2.19E-03	5.85E-04	1.28E-03	1.19E-04	1.83E-05	2.28E-04	2.10E-03	2.28E-04	1.19E-04	1.19E-04	1.74E-03	2.28E-03	9.14E-06	3.39E-01
	Off-Road Diesel Equipment	7.77	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	Subtotal - Phase 2	7.77	3.31E-04	1.65E-04	1.10E-01	9.92E-05	1.65E-04	3.74E-03	9.59E-04	2.22E-03	2.05E-04	2.45E-05	3.31E-04	4.07E-03	3.31E-04	1.70E-04	1.70E-04	4.64E-03	3.60E-03	7.30E-05	6.03E-01

Table E-4. Permanente Creek Reclamation Area - Hourly Toxic Air Contaminant Emissions (pounds/hour).

Project Phase	Emission Source Category	Diesel PM	Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Cobalt	Copper	Lead	Mercury	Molyb- denum	Nickel	Selenium	Silver	Thallium	Vanadium	Zinc	Hexavalent Chromium	Crystalline Silica
Phase 1	Bulldozing, Scraping & Grading	--	3.11E-07	1.55E-07	9.70E-05	9.32E-08	1.55E-07	2.98E-06	7.96E-07	1.74E-06	1.55E-07	2.49E-08	3.11E-07	2.86E-06	3.11E-07	1.55E-07	1.55E-07	2.36E-06	3.11E-06	1.24E-08	4.62E-04
Subareas	Material Handling	--	1.21E-06	6.06E-07	3.78E-04	3.64E-07	6.06E-07	1.16E-05	3.10E-06	6.79E-06	6.06E-07	9.70E-08	1.21E-06	1.12E-05	1.21E-06	6.06E-07	6.06E-07	9.22E-06	1.21E-05	4.85E-08	1.80E-03
3, 4, 5, 6, & 7	Unpaved Road Dust Entrainment	--	2.18E-06	1.09E-06	8.73E-04	6.55E-07	1.09E-06	3.58E-05	8.56E-06	2.18E-05	2.01E-06	1.22E-07	2.18E-06	4.72E-05	2.18E-06	1.09E-06	1.09E-06	7.25E-05	2.97E-05	1.66E-06	6.20E-03
(2012)	Wind Erosion - Disturbed Areas	--	6.51E-06	3.26E-06	2.03E-03	1.95E-06	3.26E-06	6.25E-05	1.67E-05	3.65E-05	3.26E-06	5.21E-07	6.51E-06	5.99E-05	6.51E-06	3.26E-06	3.26E-06	4.95E-05	6.51E-05	2.60E-07	9.67E-03
	Off-Road Diesel Equipment	0.20	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	Subtotal - Phase 1	0.20	1.02E-05	5.11E-06	3.38E-03	3.07E-06	5.11E-06	1.13E-04	2.91E-05	6.68E-05	6.03E-06	7.65E-07	1.02E-05	1.21E-04	1.02E-05	5.11E-06	5.11E-06	1.34E-04	1.10E-04	1.98E-06	1.81E-02
Phase 2	Bulldozing, Scraping & Grading	--	3.11E-07	1.55E-07	9.70E-05	9.32E-08	1.55E-07	2.98E-06	7.96E-07	1.74E-06	1.55E-07	2.49E-08	3.11E-07	2.86E-06	3.11E-07	1.55E-07	1.55E-07	2.36E-06	3.11E-06	1.24E-08	4.62E-04
Subareas	Material Handling	--	3.84E-07	1.92E-07	1.20E-04	1.15E-07	1.92E-07	3.69E-06	9.83E-07	2.15E-06	1.92E-07	3.07E-08	3.84E-07	3.53E-06	3.84E-07	1.92E-07	1.92E-07	2.92E-06	3.84E-06	1.54E-08	5.70E-04
1 & 2	Unpaved Road Dust Entrainment	--	3.46E-06	1.73E-06	1.38E-03	1.04E-06	1.73E-06	5.67E-05	1.36E-05	3.46E-05	3.18E-06	1.94E-07	3.46E-06	7.47E-05	3.46E-06	1.73E-06	1.73E-06	1.15E-04	4.70E-05	2.63E-06	9.82E-03
(2025)	Wind Erosion - Disturbed Areas	--	8.84E-06	4.42E-06	2.76E-03	2.65E-06	4.42E-06	8.49E-05	2.26E-05	4.95E-05	4.42E-06	7.07E-07	8.84E-06	8.13E-05	8.84E-06	4.42E-06	4.42E-06	6.72E-05	8.84E-05	3.54E-07	1.31E-02
	Off-Road Diesel Equipment	0.28	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	Subtotal - Phase 2	0.28	1.30E-05	6.50E-06	4.36E-03	3.90E-06	6.50E-06	1.48E-04	3.80E-05	8.80E-05	7.95E-06	9.56E-07	1.30E-05	1.62E-04	1.30E-05	6.50E-06	6.50E-06	1.87E-04	1.42E-04	3.01E-06	2.40E-02

Table E-5. Permanente Creek Reclamation Area - Greenhouse Gas Emissions (metric tons).

Project Phase	Emission Source Category	CO_2	CH_4	N_2O	CO_2e
Phase 1	Bulldozing, Scraping & Grading	--	--	--	--
Subareas	Material Handling	--	--	--	--
3, 4, 5, 6, & 7	Unpaved Road Dust Entrainment	--	--	--	--
(2012)	Wind Erosion - Disturbed Areas	--	--	--	--
	Off-Road Diesel Equipment	16.56	0.00	0.00	16.70
	Subtotal - Phase 1	16.56	0.00	0.00	16.70
Phase 2	Bulldozing, Scraping & Grading	--	--	--	--
Subareas	Material Handling	--	--	--	--
1 & 2	Unpaved Road Dust Entrainment	--	--	--	--
(2025)	Wind Erosion - Disturbed Areas	--	--	--	--
	Off-Road Diesel Equipment	10.53	0.00	0.00	10.62
	Subtotal - Phase 2	10.53	0.00	0.00	10.62

Table E-6. Identification of Peak Activity by Project Phase for Proposed Project.

Category	Annual Activity Indicator	Project Component	Phase 1									Phase 2				
			2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Bulldozing, Scraping, and Grading	Hours per Year	Proposed Project	15,124	15,124	15,374	14,736	14,543	12,354	12,465	12,664	12,465	16,911	17,077	17,991	20,276	19,944
		Permanente Creek Reclamation Area	16	--	--	--	--	--	--	--	--	--	--	--	--	32
		Total:	15,140	15,124	15,374	14,736	14,543	12,354	12,465	12,664	12,465	16,911	17,077	17,991	20,276	19,976
Material Handling	Total Production + Topsoil Movements (Tonnes per Year)	Proposed Project	9,600,000	9,325,000	9,325,000	8,000,000	7,950,000	6,218,000	6,200,000	6,210,000	5,200,000	9,046,000	9,017,000	9,055,051	9,034,051	9,034,051
		Permanente Creek Reclamation Area	8,000	--	--	--	--	--	--	--	--	--	--	--	--	1,600
		Total:	9,608,000	9,325,000	9,325,000	8,000,000	7,950,000	6,218,000	6,200,000	6,210,000	5,200,000	9,046,000	9,017,000	9,055,051	9,034,051	9,035,651
Unpaved Road Dust Entrain- ment	Total Miles per Year Associated With Haul Truck Transport	Proposed Project	335,032	331,237	290,080	309,610	270,080	200,621	210,636	228,181	222,590	137,490	111,234	94,459	77,647	37,435
		Permanente Creek Reclamation Area	76	--	--	--	--	--	--	--	--	--	--	--	--	76
		Total:	335,108	331,237	290,080	309,610	270,080	200,621	210,636	228,181	222,590	137,490	111,234	94,459	77,647	37,511
Wind Erosion - Disturbed Areas	Topsoil Removal, Operating, Back- fill, and Reclaimed Areas (Acres/Year)	Proposed Project	114	118	114	126	111	119	101	119	101	96	237	255	316	319
		Permanente Creek Reclamation Area	0.03	--	--	--	--	--	--	--	--	--	--	--	--	0.03
		Total:	114	118	114	126	111	119	101	119	101	96	237	255	316	319
Off-Road Diesel Equipment	Thousand Hp-Hours per Year	Proposed Project	57,144	60,984	57,060	52,837	47,681	37,625	39,431	42,594	40,278	31,764	31,555	31,885	28,953	27,337
		Permanente Creek Reclamation Area	61	--	--	--	--	--	--	--	--					34
		Total:	57,205	60,984	57,060	52,837	47,681	37,625	39,431	42,594	40,278	31,764	31,555	31,885	28,953	27,371

Notes:
1. Data for each year derived from applicable source data as documented in Appendices D and E, *Air Quality Technical Analysis*, except as noted below.
2. Unpaved road dust entrainment mileage is calculated based on quarry production, waste rock (less that transported by conveyor), aggregate fines, and topsoil tranported each year, multiplied by the corresponding trip length for each year (based on expected trip origin and destination). Trip length data provided by Lehigh Southwest Cement Company, July 2011.
3. Distrubed acres/year is based on quarry operating and reclaimed areas and waste rock operating, reclaimed, and topsoil removal areas for each year provided by Lehigh Southwest Cement Company, July 2011. Disturbed areas associated with unpaved roads is not assumed to vary each year within each project phase, and is therefore not reflected in the above table.
4. Disturbed area wind erosion from Permanente Creek Reclamation Area activities is expected to occur on only seven days in Phase 1 (Subareas 3 and 5) and seven days in Phase 2 (Subareas 1 and 2). Since disturbed areas are expressed in acres/year for the proposed RPA, Permanente Creek Reclamation Area disturbance activity is converted to average annual acres disturbed per year by multiplying average daily disturbed areas by 7 days and dividing by 365 days per year.

Table E-7. Permanente Creek Reclamation Area - Bulldozing, Scraping & Grading.

Project Phase	Emission Factor Reference	Emission Factors PM_{10}	Emission Factors $PM_{2.5}$	Activity		Control Efficiency	PM_{10} Emissions (tons/yr)	PM_{10} Emissions (lb/day)	PM_{10} Emissions (lb/hr)	$PM_{2.5}$ Emissions (tons/yr)	$PM_{2.5}$ Emissions (lb/day)	$PM_{2.5}$ Emissions (lb/hr)
1	MDAQMD Guidance, Sec. VI.D	1.24E-01 lb/hr	1.86E-02 lb/hr	16 hours/year	8 hours/day	0%	0.00	0.99	0.12	0.00	0.15	0.02
2				32 hours/year	8 hours/day		0.00	0.99	0.12	0.00	0.15	0.02

Notes:
1. Activity based on Assumed Activity Data (documented separately).
2. Assumed Control: None
3. Conversion factors:
   2,000 lb = 1 ton
   8 hours/day

Bulldozing, Scraping, and Grading Emission Factor.

Data Input	Data Reference	Symbol	Value	Unit
Moisture Content	AP-42 Table 13.2.4-1 (Various Limestone Products)	M	2.1	%
Silt Content, Limestone	MDAQMD Guidance, Sec. VI.D (Stockpile Table 2)	s	0.5	%
PM_{10} size multiplier	MDAQMD Guidance, Sec. VI.D	k	0.36	--
$PM_{2.5}$ size multiplier	WRAP AP-42 Fugitive Dust $PM_{2.5}$/PM_{10} Ratios[1]	k	0.054	--
Bulldozing, Scraping, Grading Factor	*MDAQMD Guidance, Sec. VI.D*	*Ef*	*Calculated*	*lb/hr*

$$E_f = 2.76 \times k \times \frac{s^{1.5}}{M^{1.4}}$$

Notes:
1. Source: *Background Document for Revisions to Fine Fraction Ratios Used for AP-42 Fugitive Dust Emission Factors* (prepared for Western Governors' Association Western Regional Air Partnership (WRAP)), Midwest Research Institute, November 1, 2006, Table 1 (Proposed Particle Size Ratios for AP-42).

Table E-8. Permanente Creek Reclamation Area - Material Handling.

Project Phase	Emission Factor Reference	Emission Factors		Process Rates			Transfer Points	Control Efficiency	PM_{10} Emissions			$PM_{2.5}$ Emissions		
		PM_{10}	$PM_{2.5}$	Tons/Year	Tons/Day	Tons/Hour			(tons/yr)	(lb/day)	(lb/hr)	(tons/yr)	(lb/day)	(lb/hr)
1	MDAQMD Guidance, Sec. VI.E, AP-42 13.2.4.3, Eqn 1	1.15E-03 lb/ton	1.73E-04 lb/ton	8,000 tons	1,684 tons	211 tons	2	0%	0.01	3.88	0.49	0.00	0.58	0.07
2				1,600 tons	533 tons	67 tons	2		0.00	1.23	0.15	0.00	0.18	0.02

Notes:
1. Activity based on Assumed Activity Data (documented separately).
2. Assumed Control: None
3. Conversion factors:
   2,000 lb = 1 ton

Material Handling Emission Factor.

Data Input	Data Reference	Symbol	Value	Unit
Moisture Content	AP-42 Table 13.2.4-1 (Various Limestone Products)	M	2.1	%
Mean wind speed	Mean 2008 wind speed for Lehigh Station	U	5.27	mph
PM_{10} size multiplier	MDAQMD Guidance, Sec. VI.E	k	0.36	--
$PM_{2.5}$ size multiplier	WRAP AP-42 Fugitive Dust $PM_{2.5}/PM_{10}$ Ratios[1]	k	0.054	--
Material Handling Emission Factor	*MDAQMD Guidance, Sec. VI.E, AP-42 13.2.4.3, Eqn 1*	*Ef*	*Calculated*	*lb/ton*

$$Ef = k \times 0.0032 \times \frac{\left(\frac{U}{5}\right)^{1.3}}{\left(\frac{M}{2}\right)^{1.4}}$$

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Date: 12/7/2011

Table E-9. Permanente Creek Reclamation Area - Unpaved Road Dust Entrainment.

Project Phase	Emission Factor Reference	Emission Factors		Activity			Control Efficiency	PM_{10} Emissions			$PM_{2.5}$ Emissions		
		PM_{10}	$PM_{2.5}$	Miles/Year	Miles/Day	Miles/Hour		(tons/yr)	(lb/day)	(lb/hr)	(tons/yr)	(lb/day)	(lb/hr)
1	AP-42 13.2.2, Eqn 1a	1.75E+00 lb/mile	1.75E-01 lb/mile	76 miles	16 miles	2 miles	75%	0.02	6.99	0.87	0.00	0.70	0.09
2				76 miles	25 miles	3 miles		0.02	11.06	1.38	0.00	1.11	0.14

Notes:
1. Activity based on Assumed Activity Data (documented separately).
2. Assumed Control: 75% control associated with watering of unpaved roads.
3. Conversion factors:
   2,000 lb = 1 ton

Unpaved Road Dust Entrainment Emission Factor.

Data Input	Data Reference	Symbol	Value	Unit
Unpaved Surface Material Silt Content	2008 CEIR, Table B-1	s	2.7	%
Average Vehicle Weight	Average Vehicle Weight - Entire Facility (see App. D, *Air Quality Technical Analysis*)	W	83.7	tons
PM_{10} Size Multiplier	AP-42 13.2.2-2	k	1.5	lb/mile
$PM_{2.5}$ Size Multiplier	AP-42 13.2.2-2	k	0.15	lb/mile
Empirical Constants	AP-42 13.2.2-2	a	0.9	--
	AP-42 13.2.2-2	b	0.45	--
Dust Entrainment Emission Factor	*AP-42 13.2.2, Eqn 1a*	*Ef*	*Calculated*	*lb/mile*

$$E_f = k\left(\frac{s}{12}\right)^a\left(\frac{W}{3}\right)^b$$

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Table E-10. Permanente Creek Reclamation Area - Wind Erosion.

Project Phase	Emission Factor Reference	Emission Factors		Disturbed Area			Control Efficiency	PM_{10} Emissions			$PM_{2.5}$ Emissions		
		PM_{10}	$PM_{2.5}$	Ave. Acres	Total Days	Max. Acres		(tons/yr)	(lb/day)	(lb/hr)	(tons/yr)	(lb/day)	(lb/hr)
1	AP-42 13.2.5, Eqn 2	1.79E+00 ton/acre-yr	2.68E-01 ton/acre-yr	1.5 acres	7 days	2.1 acres	0%	0.05	20.83	2.60	0.01	3.13	0.39
2				1.3 acres	7 days	2.9 acres		0.05	28.29	3.54	0.01	4.24	0.53

Notes:
1. Activity based on Assumed Activity Data (documented separately).
2. Annual wind erosion emissions are based on acres disturbed over a one-year period. Therefore, average disturbed acres (for each phase) are multiplied by total days of area disturbance (for each phase) and divided by 365 days per year to calculate annual emissions. Daily and hourly emissions are based on the maximum acreage disturbed in a single day.
3. Assumed Control: None
4. Conversion factors:
   2,000 lb = 1 ton
   8 hours/day
   365 days/year

Wind Erosion Emission Factor.

Data Input	Data Reference	Symbol	Value	Unit
Erosion Potential per disturbance	AP-42 13.2.5, Eqn 3	P_i	Calculated	g/m^2
Friction Velocity per disturbance	AP-42 13.2.5, Eqn 4	u*	Calculated	m/s
Threshold Friction Velocity:	AP-42 Table 13.2.5-2 (overburden)	u^*_t	1.02	m/s
Fastest mile wind speed per disturbance at 10 meters	Daily maximum wind gust data from Lehigh Permanente Meteorological Station for 2008	u^+_{10}	Varies	m/s
Disturbances	Lehigh Permanente wind gust data	N	Daily (366)	--
PM_{10} Size Multiplier	AP-42 13.2.2-2	k	0.5	--
$PM_{2.5}$ Size Multiplier	AP-42 13.2.2-2	k	0.075	--
Wind Erosion Emission Factor	*AP-42 13.2.5, Eqn 2*	*Ef*	*Calculated*	*$g/(m^2\text{-}yr)$*

Eqn 3 $P = 58(u^* - u_t)^2 + 25(u^* - u_t)$

Eqn 4 $u^* = 0.053u_{10}$

Eqn 2 $E_f = k\sum_{i=1}^{N} P_i$

Table E-11. Permanente Creek Reclamation Area - Toxic Air Contaminants.

Annual Toxic Air Contaminant Emissions (pounds/year).

		Toxic Air Contaminants (TAC):	Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Cobalt	Copper	Lead	Mercury	Molyb-denum	Nickel	Selenium	Silver	Thallium	Vanadium	Zinc	Hexavalent Chromium	Crystalline Silica
		Overburden TAC Emission Factor (mg TAC /kg PM):	2.5	1.25	780	0.75	1.25	24	6.4	14	1.3	0.2	2.5	23	2.5	1.3	1.3	19	25	0.1	3712.8
		Unpaved Roads TAC Emission Factor (mg TAC/kg PM):	2.5	1.25	1000	0.75	1.25	41	9.8	25	2.3	0.14	2.5	54	2.5	1.25	1.25	83	34	1.9	7099.2
Project Phase	Component	PM_{10} (tons/year)	Toxic Air Contaminant Emissions (pounds)																		
1	Bulldozing, Scraping, and Grading	0.00	4.97E-06	2.49E-06	1.55E-03	1.49E-06	2.49E-06	4.77E-05	1.27E-05	2.78E-05	2.59E-06	3.98E-07	4.97E-06	4.58E-05	4.97E-06	2.59E-06	2.59E-06	3.78E-05	4.97E-05	1.99E-07	7.39E-03
	Material Handling	0.01	4.61E-05	2.30E-05	1.44E-02	1.38E-05	2.30E-05	4.42E-04	1.18E-04	2.58E-04	2.40E-05	3.69E-06	4.61E-05	4.24E-04	4.61E-05	2.40E-05	2.40E-05	3.50E-04	4.61E-04	1.84E-06	6.84E-02
	Unpaved Road Dust Entrainment	0.02	8.30E-05	4.15E-05	3.32E-02	2.49E-05	4.15E-05	1.36E-03	3.25E-04	8.30E-04	7.63E-05	4.65E-06	8.30E-05	1.79E-03	8.30E-05	4.15E-05	4.15E-05	2.75E-03	1.13E-03	6.31E-05	2.36E-01
	Wind Erosion-Disturbed Areas	0.05	2.62E-04	1.31E-04	8.18E-02	7.87E-05	1.31E-04	2.52E-03	6.71E-04	1.47E-03	1.36E-04	2.10E-05	2.62E-04	2.41E-03	2.62E-04	1.36E-04	1.36E-04	1.99E-03	2.62E-03	1.05E-05	3.89E-01
	Total - Phase 1	0.08	3.96E-04	1.98E-04	1.31E-01	1.19E-04	1.98E-04	4.37E-03	1.13E-03	2.58E-03	2.39E-04	2.97E-05	3.96E-04	4.67E-03	3.96E-04	2.04E-04	2.04E-04	5.14E-03	4.26E-03	7.56E-05	7.01E-01
2	Bulldozing, Scraping, and Grading	0.00	9.95E-06	4.97E-06	3.10E-03	2.98E-06	4.97E-06	9.55E-05	2.55E-05	5.57E-05	5.17E-06	7.96E-07	9.95E-06	9.15E-05	9.95E-06	5.17E-06	5.17E-06	7.56E-05	9.95E-05	3.98E-07	1.48E-02
	Material Handling	0.00	9.22E-06	4.61E-06	2.88E-03	2.76E-06	4.61E-06	8.85E-05	2.36E-05	5.16E-05	4.79E-06	7.37E-07	9.22E-06	8.48E-05	9.22E-06	4.79E-06	4.79E-06	7.00E-05	9.22E-05	3.69E-07	1.37E-02
	Unpaved Road Dust Entrainment	0.02	8.30E-05	4.15E-05	3.32E-02	2.49E-05	4.15E-05	1.36E-03	3.25E-04	8.30E-04	7.63E-05	4.65E-06	8.30E-05	1.79E-03	8.30E-05	4.15E-05	4.15E-05	2.75E-03	1.13E-03	6.31E-05	2.36E-01
	Wind Erosion-Disturbed Areas	0.05	2.28E-04	1.14E-04	7.13E-02	6.85E-05	1.14E-04	2.19E-03	5.85E-04	1.28E-03	1.19E-04	1.83E-05	2.28E-04	2.10E-03	2.28E-04	1.19E-04	1.19E-04	1.74E-03	2.28E-03	9.14E-06	3.39E-01
	Total - Phase 2	0.07	3.31E-04	1.65E-04	1.10E-01	9.92E-05	1.65E-04	3.74E-03	9.59E-04	2.22E-03	2.05E-04	2.45E-05	3.31E-04	4.07E-03	3.31E-04	1.70E-04	1.70E-04	4.64E-03	3.60E-03	7.30E-05	6.03E-01

Hourly Toxic Air Contaminant Emissions (pounds/hour).

		Toxic Air Contaminants (TAC):	Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Cobalt	Copper	Lead	Mercury	Molyb-denum	Nickel	Selenium	Silver	Thallium	Vanadium	Zinc	Hexavalent Chromium	Crystalline Silica
		Overburden TAC Emission Factor (mg TAC /kg PM):	2.5	1.25	780	0.75	1.25	24	6.4	14	1.25	0.2	2.5	23	2.5	1.25	1.25	19	25	0.1	3712.8
		Unpaved Roads TAC Emission Factor (mg TAC/kg PM):	2.5	1.25	1000	0.75	1.25	41	9.8	25	2.3	0.14	2.5	54	2.5	1.25	1.25	83	34	1.9	7099.2
Project Phase	Component	Hourly PM_{10} (pounds/hr)	Hourly Toxic Air Contaminant Emissions (pounds/hour)																		
1	Bulldozing, Scraping, and Grading	0.12	3.11E-07	1.55E-07	9.70E-05	9.32E-08	1.55E-07	2.98E-06	7.96E-07	1.74E-06	1.55E-07	2.49E-08	3.11E-07	2.86E-06	3.11E-07	1.55E-07	1.55E-07	2.36E-06	3.11E-06	1.24E-08	4.62E-04
	Material Handling	0.49	1.21E-06	6.06E-07	3.78E-04	3.64E-07	6.06E-07	1.16E-05	3.10E-06	6.79E-06	6.06E-07	9.70E-08	1.21E-06	1.12E-05	1.21E-06	6.06E-07	6.06E-07	9.22E-06	1.21E-05	4.85E-08	1.80E-03
	Unpaved Road Dust Entrainment	0.87	2.18E-06	1.09E-06	8.73E-04	6.55E-07	1.09E-06	3.58E-05	8.56E-06	2.18E-05	2.01E-06	1.22E-07	2.18E-06	4.72E-05	2.18E-06	1.09E-06	1.09E-06	7.25E-05	2.97E-05	1.66E-06	6.20E-03
	Wind Erosion-Disturbed Areas	2.60	6.51E-06	3.26E-06	2.03E-03	1.95E-06	3.26E-06	6.25E-05	1.67E-05	3.65E-05	3.26E-06	5.21E-07	6.51E-06	5.99E-05	6.51E-06	3.26E-06	3.26E-06	4.95E-05	6.51E-05	2.60E-07	9.67E-03
	Total - Phase 1	4.09	1.02E-05	5.11E-06	3.38E-03	3.07E-06	5.11E-06	1.13E-04	2.91E-05	6.68E-05	6.03E-06	7.65E-07	1.02E-05	1.21E-04	1.02E-05	5.11E-06	5.11E-06	1.34E-04	1.10E-04	1.98E-06	1.81E-02
2	Bulldozing, Scraping, and Grading	0.12	3.11E-07	1.55E-07	9.70E-05	9.32E-08	1.55E-07	2.98E-06	7.96E-07	1.74E-06	1.55E-07	2.49E-08	3.11E-07	2.86E-06	3.11E-07	1.55E-07	1.55E-07	2.36E-06	3.11E-06	1.24E-08	4.62E-04
	Material Handling	0.15	3.84E-07	1.92E-07	1.20E-04	1.15E-07	1.92E-07	3.69E-06	9.83E-07	2.15E-06	1.92E-07	3.07E-08	3.84E-07	3.53E-06	3.84E-07	1.92E-07	1.92E-07	2.92E-06	3.84E-06	1.54E-08	5.70E-04
	Unpaved Road Dust Entrainment	1.38	3.46E-06	1.73E-06	1.38E-03	1.04E-06	1.73E-06	5.67E-05	1.36E-05	3.46E-05	3.18E-06	1.94E-07	3.46E-06	7.47E-05	3.46E-06	1.73E-06	1.73E-06	1.15E-04	4.70E-05	2.63E-06	9.82E-03
	Wind Erosion-Disturbed Areas	3.54	8.84E-06	4.42E-06	2.76E-03	2.65E-06	4.42E-06	8.49E-05	2.26E-05	4.95E-05	4.42E-06	7.07E-07	8.84E-06	8.13E-05	8.84E-06	4.42E-06	4.42E-06	6.72E-05	8.84E-05	3.54E-07	1.31E-02
	Total - Phase 2	5.20	1.30E-05	6.50E-06	4.36E-03	3.90E-06	6.50E-06	1.48E-04	3.80E-05	8.80E-05	7.95E-06	9.56E-07	1.30E-05	1.62E-04	1.30E-05	6.50E-06	6.50E-06	1.87E-04	1.42E-04	3.01E-06	2.40E-02

Notes:

1. TAC emission factors obtained from sampling performed 11/20/2008 analyzed via EPA Methods 3060/7199 and 6020/7471A. Note, non-detect (ND) results were assumed to be 1/2 the detection limit. See Table 5A of 2008 CEIR.
2. Conversion Factors:
   2,000 lb/ton
   1,000,000 mg/kg

Table E-12a. Permanente Creek Reclamation Area - Off-Road Diesel Equipment Combustion Emissions (Phase 1).

Phase 1 Emissions - Annual (Tons per Year).

		Model	Horse-	Hours	Load	Emissions (tons/year)								Emissions (metric tons/year)			
Equipment	Model	Year	power	per Year	Factor	THC	ROG	CO	NOx	PM	PM_{10}	$PM_{2.5}$	SO_2	CO_2	CH_4	N_2O	CO_2e
Crawler Tractor	D8T	2009	310	16	0.64	0.00	0.00	0.00	0.02	0.00	0.00	0.00	0.00	1.80	0.00	0.00	1.82
Excavator	345D	2009	380	24	0.57	0.00	0.00	0.01	0.02	0.00	0.00	0.00	0.00	2.95	0.00	0.00	2.98
Grader	14M	2009	259	--	0.61	--	--	--	--	--	--	--	--	--	--	--	--
Loader	950H	2009	216	16	0.54	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	1.06	0.00	0.00	1.07
Haul Truck	740	2003	415	38	0.57	0.00	0.00	0.01	0.05	0.00	0.00	0.00	0.00	5.11	0.00	0.00	5.15
Crane	HTC-8640	2009	365	40	0.43	0.00	0.00	0.01	0.03	0.00	0.00	0.00	0.00	3.57	0.00	0.00	3.60
Concrete Truck	Paystar 5600	2009	360	--	0.50	--	--	--	--	--	--	--	--	--	--	--	--
Concrete Pump	B20	2009	110	--	0.74	--	--	--	--	--	--	--	--	--	--	--	--
Hydroseeder Truck	Paystar 5600	2009	360	28	0.20	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	1.15	0.00	0.00	1.16
Hydroseeder Pump	T330	2009	115	28	0.50	0.00	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.91	0.00	0.00	0.92
Total Off-Road Equipment Emissions:						0.01	0.01	0.04	0.15	0.01	0.01	0.00	0.00	16.56	0.00	0.00	16.70
Diesel PM Emissions:											0.01						

Conversion Factors:
- 453.59 grams/pound
- 2,000 pounds/ton
- 1,000,000 grams/metric ton

Phase 1 Emissions - Daily (Pounds per Day).

		Model	Horse-	Hours	Load	Emissions (pounds/day)											
Equipment	Model	Year	power	per Day	Factor	THC	ROG	CO	NOx	PM	PM_{10}	$PM_{2.5}$	SO_2	CO_2	CH_4	N_2O	CO_2e
Crawler Tractor	D8T	2009	310	--	0.64	--	--	--	--	--	--	--	--	--	--	--	--
Excavator	345D	2009	380	8	0.57	0.96	0.80	3.93	16.50	0.55	0.55	0.51	0.02	2,171.01	0.12	0.05	2,190.16
Grader	14M	2009	259	--	0.61	--	--	--	--	--	--	--	--	--	--	--	--
Loader	950H	2009	216	8	0.54	0.54	0.46	2.19	9.79	0.30	0.30	0.27	0.01	1,169.10	0.07	0.03	1,179.41
Haul Truck	740	2003	415	8	0.57	1.70	1.42	4.75	21.98	0.76	0.76	0.70	0.02	2,370.98	0.13	0.06	2,391.89
Crane	HTC-8640	2009	365	--	0.43	--	--	--	--	--	--	--	--	--	--	--	--
Concrete Truck	Paystar 5600	2009	360	--	0.50	--	--	--	--	--	--	--	--	--	--	--	--
Concrete Pump	B20	2009	110	--	0.74	--	--	--	--	--	--	--	--	--	--	--	--
Hydroseeder Truck	Paystar 5600	2009	360	--	0.20	--	--	--	--	--	--	--	--	--	--	--	--
Hydroseeder Pump	T330	2009	115	--	0.50	--	--	--	--	--	--	--	--	--	--	--	--
Total Off-Road Equipment Emissions:						3.19	2.68	10.87	48.27	1.61	1.61	1.48	0.05	5,711.09	0.32	0.14	5,761.46
Diesel PM Emissions:	(pounds/day)										1.61						
	(pounds/hour)										0.20						

Conversion Factors:
- 453.59 grams/pound
- 8 hours/day

Table E-12a. Permanente Creek Reclamation Area - Off-Road Diesel Equipment Combustion Emissions (Phase 1).

Phase 1 Off-Road Equipment Emission Factors.

						Emission Factors (grams/brake horsepower-hour)										
Vehicle Type	Model	Model Year	Horse-Power	Calculation Year	Cumul. Hours	THC	ROG	CO	NOx	PM	PM_{10}	$PM_{2.5}$	SO_2	CO_2	CH_4	N_2O
Crawler Tractor	D8T	2009	310	2012	6,000	0.250	0.210	1.029	4.318	0.143	0.143	0.132	0.0054	568.3	0.032	0.014
Excavator	345D	2009	380	2012	6,000	0.250	0.210	1.029	4.318	0.143	0.143	0.132	0.0054	568.3	0.032	0.014
Grader	14M	2009	259	2012	6,000	0.250	0.210	1.029	4.318	0.143	0.143	0.132	0.0054	568.3	0.032	0.014
Loader	950H	2009	216	2012	6,000	0.264	0.221	1.066	4.760	0.145	0.145	0.134	0.0054	568.3	0.032	0.014
Haul Truck	740	2003	415	2012	12,000	0.406	0.341	1.138	5.268	0.182	0.182	0.168	0.0054	568.3	0.032	0.014
Crane	HTC-8640	2009	365	2012	6,000	0.250	0.210	1.029	4.318	0.143	0.143	0.132	0.0054	568.3	0.032	0.014
Concrete Truck	Paystar 5600	2009	360	2012	6,000	0.250	0.210	1.029	4.318	0.143	0.143	0.132	0.0054	568.3	0.032	0.014
Concrete Pump	B20	2009	110	2012	6,000	0.353	0.296	3.583	5.457	0.346	0.346	0.319	0.0054	568.3	0.032	0.014
Hydroseeder Truck	Paystar 5600	2009	360	2012	6,000	0.250	0.210	1.029	4.318	0.143	0.143	0.132	0.0054	568.3	0.032	0.014
Hydroseeder Pump	T330	2009	115	2012	6,000	0.353	0.296	3.583	5.457	0.346	0.346	0.319	0.0054	568.3	0.032	0.014

Notes:

1. Per the document, *Overview: OFFROAD Model* , California Air Resources Board, November 2006 (available at www.arb.ca.gov/msei/offroad/offroad.htm), THC, CO, NOx, PM, and CO_2 emission factors are determined by the following equation:
   EF = ZH + dr * CHrs, where
   EF = emission factor, in grams per hoursepower-hour (g/bhp-hr)
   ZH = zero-hour emission rate or when the equipment is new (g/bhp-hr)
   dr = deterioration rate or the increase in ZH emissions as the equipment is used (g/bhp-hr^2)
   CHrs = cumulative hours or total number of hours accumulated on the equipment
2. Values utilized in the above emission factor table for ZH and dr are derived from *Offroad2007* (Version 2.0.1.2), California Air Resources Board, December 15, 2006, data from emfac.csv data file, lines 41-149 (default exhaust emission factors for off-road diesel equipment for which specific factors are not provided.)
3. ROG = 83.82% THC, PM10 = 100% PM, and PM2.5 = 92.29% PM. Source: *2008 Estimated Annual Average Emissions – Statewide* , California Air Resources Board, data for Off-Road Equipment, sorted for diesel-fueled vehicles, available at http://www.arb.ca.gov/ei/emissiondata.htm (accessed February 25, 2011).
4. Per the document, *Overview: OFFROAD Model* (op cit.) and the OFFROAD2007 emfac.csv file, the SO_2 emission factor is based on fuel sulfur content and brake-specific fuel consumption. Per *Title 13 California Code of Regulations* sec. 2281 (Sulfur Content of Fuel), as of June 2006 diesel sulfur content in diesel fuel is limited to 15 parts per million. Per the October 2010 CARB Staff Report (op cit.), CARB staff used BSFC values from EPA's NONROAD emissions model, as documented in the report, *Exhaust and Crankcase Emission Factors for Nonroad Engine Modeling – Compression-Ignition* (EPA Report No. EPA420-P-04-009/NR-009C), U.S. Environmental Protection Agency, April 2004. Table A2 of the EPA report (pages A5-A8) documents that for diesel engines up to 100 hp, a brake specific fuel consumption (BSFC) value of 0.408 lb/hp-hr is used. For diesel engines larger than 100 hp, a BSFC value of 0.367 lb/hp-hr is used. The above factors assume a BSFC value of 0.4 lb/hp-hr. The SO_2 emission factor is calculated as follows:
   EF_{SO2} = (Parts S in fuel/million) * (MW_{SO2}/MW_S) * BSFC (lb/hp-hr) * 453.6 g/lb
   = (15 parts S/million) * (64 g/g-mole SO_2/32 g/g-mole S) * 0.4 lb/hp-hr * 453.6 g/lb
   = 0.0054 g SO_2/hp-hr
5. CH_4 and N_2O factors in grams/gallon are from the Climate Registry, *General Reporting Protocol* Version 1.1 (May 2008), Table 13.6 (Default CH_4 and N_2O Emission Factors for Non-Highway Vehicles), factors for diesel-fueled construction vehicles. To convert CH_4 and N_2O factors in g/gallon to g/bhp, the following equations were employed:
   CH_4 = 0.58 g CH_4/gallon * (1 gallon/137,000 Btu) * 7,500 Btu/bhp-hr = 0.032 g CH_4/bhp-hr, and
   N_2O = 0.26 g N_2O/gallon * (1 gallon/137,000 Btu) * 7,500 Btu/bhp-hr = 0.014 g N_2O/bhp-hr.
   Source for the higher heating value of 137,000 Btu/gallon for diesel and the brake specific fuel combustion factor of 7,500 Btu/bhp-hr: Santa Barbara County Air Pollution Control District, *Piston IC Engine Technical Reference Document* (November 1, 2002), Tables 5 (Default Fuel Properties) and 6 (Default Engine Specifications - diesel turbocharged engines), available at http://www.sbcapcd.org/eng/spice/sbcapcdicerefdoc.pdf.
6. CO_2 equivalent emissions (CO_2e) calculated based on the global warming potentials in the IPCC's *Second Assessment Report* (SAR, 1996), as presented in the Climate Registry *General Reporting Protocol* (op cit.), Table B.1. CO_2e = 1 * CO_2 + 21 * CH_4 + 310 * N_2O.
7. Cumulative hours for each equipment item assumes that each item accumulates 2,000 hours of operation each year. Per the document, *Staff Report: Initial Statement of Reasons for Proposed Rulemaking – Proposed Amendments to the Regulation for In-use Off-road Diesel-fueled Fleets and the Off-road Large Spark-ignition Fleet Requirements,* California Air Resources Board, October 2010, Appendix D (OSM and Summary of Off-road Emissions Inventory Update), pages D-27 to D-28, CARB staff now assumes emission factors deteriorate only up to a maximum of 12,000 hours.
8. Annual and daily activity data documented separately.
9. Equipment load factors from *Offroad2007* (Version 2.0.1.2), op cit. The hydroseeder truck is assumed to have the same load profile (0.20) as a water truck. The hydroseeder pump is assigned a 0.50 load factor applicable to diesel sprayers. The concrete truck is assigned a 0.50 factor to reflect its expected load while offloading cement to the cement pump.

Table E-12b. Permanente Creek Reclamation Area - Off-Road Diesel Equipment Combustion Emissions (Phase 2).

Phase 2 Emissions - Annual (Tons per Year).

		Model	Horse-	Hours	Load	Emissions (tons/year)								Emissions (metric tons/year)			
Equipment	Model	Year	power	per Year	Factor	THC	ROG	CO	NOx	PM	PM_{10}	$PM_{2.5}$	SO_2	CO_2	CH_4	N_2O	CO_2e
Crawler Tractor	D8T	2009	310	16	0.64	0.00	0.00	0.00	0.02	0.00	0.00	0.00	0.00	1.80	0.00	0.00	1.82
Excavator	345D	2009	380	24	0.57	0.00	0.00	0.01	0.03	0.00	0.00	0.00	0.00	2.95	0.00	0.00	2.98
Grader	14M	2009	259	16	0.61	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	1.44	0.00	0.00	1.45
Loader	950H	2009	216	--	0.54	--	--	--	--	--	--	--	--	--	--	--	--
Haul Truck	740	2003	415	24	0.57	0.00	0.00	0.01	0.03	0.00	0.00	0.00	0.00	3.23	0.00	0.00	3.25
Crane	HTC-8640	2009	365	--	0.43	--	--	--	--	--	--	--	--	--	--	--	--
Concrete Truck	Paystar 5600	2009	360	2	0.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.20	0.00	0.00	0.21
Concrete Pump	B20	2009	110	2	0.74	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.09	0.00	0.00	0.09
Hydroseeder Truck	Paystar 5600	2009	360	11	0.20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.45	0.00	0.00	0.45
Hydroseeder Pump	T330	2009	115	11	0.50	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.36	0.00	0.00	0.36
Total Off-Road Equipment Emissions:						0.01	0.01	0.03	0.10	0.00	0.00	0.00	0.00	10.53	0.00	0.00	10.62
Diesel PM Emissions:											0.00						

Conversion Factors:
453.59 grams/pound
2,000 pounds/ton
1,000,000 grams/metric ton

Phase 2 Emissions - Daily (Pounds per Day).

		Model	Horse-	Hours	Load	Emissions (pounds/day)											
Equipment	Model	Year	power	per Day	Factor	THC	ROG	CO	NOx	PM	PM_{10}	$PM_{2.5}$	SO_2	CO_2	CH_4	N_2O	CO_2e
Crawler Tractor	D8T	2009	310	--	0.64	--	--	--	--	--	--	--	--	--	--	--	--
Excavator	345D	2009	380	8	0.57	1.53	1.28	4.35	17.71	0.67	0.67	0.62	0.02	2,171.01	0.12	0.05	2,190.16
Grader	14M	2009	259	8	0.61	1.11	0.93	3.17	12.92	0.49	0.49	0.45	0.02	1,583.56	0.09	0.04	1,597.52
Loader	950H	2009	216	--	0.54	--	--	--	--	--	--	--	--	--	--	--	--
Haul Truck	740	2003	415	8	0.57	1.70	1.42	4.75	21.98	0.76	0.76	0.70	0.02	2,370.98	0.13	0.06	2,391.89
Crane	HTC-8640	2009	365	--	0.43	--	--	--	--	--	--	--	--	--	--	--	--
Concrete Truck	Paystar 5600	2009	360	2	0.50	0.32	0.27	0.90	3.68	0.14	0.14	0.13	0.00	451.04	0.03	0.01	455.02
Concrete Pump	B20	2009	110	2	0.74	0.18	0.15	1.46	2.12	0.16	0.16	0.15	0.00	203.97	0.01	0.01	205.77
Hydroseeder Truck	Paystar 5600	2009	360	--	0.20	--	--	--	--	--	--	--	--	--	--	--	--
Hydroseeder Pump	T330	2009	115	--	0.50	--	--	--	--	--	--	--	--	--	--	--	--
Total Off-Road Equipment Emissions:						4.84	4.06	14.64	58.41	2.23	2.23	2.06	0.06	6,780.56	0.38	0.17	6,840.36
Diesel PM Emissions:	(pounds/day)										2.23						
	(pounds/hour)										0.28						

Conversion Factors:
453.59 grams/pound
8 hours/day

Table E-12b. Permanente Creek Reclamation Area - Off-Road Diesel Equipment Combustion Emissions (Phase 2).

Phase 2 Off-Road Equipment Emission Factors.

		Model	Horse-	Calculation	Cumul.	Emission Factors (grams/brake horsepower-hour)										
Vehicle Type	Model	Year	Power	Year	Hours	THC	ROG	CO	NOx	PM	PM_{10}	$PM_{2.5}$	SO_2	CO_2	CH_4	N_2O
Crawler Tractor	D8T	2009	310	2025	12,000	0.400	0.335	1.138	4.636	0.177	0.177	0.163	0.0054	568.3	0.032	0.014
Excavator	345D	2009	380	2025	12,000	0.400	0.335	1.138	4.636	0.177	0.177	0.163	0.0054	568.3	0.032	0.014
Grader	14M	2009	259	2025	12,000	0.400	0.335	1.138	4.636	0.177	0.177	0.163	0.0054	568.3	0.032	0.014
Loader	950H	2009	216	2025	12,000	0.408	0.342	1.212	5.140	0.179	0.179	0.166	0.0054	568.3	0.032	0.014
Haul Truck	740	2003	415	2025	12,000	0.406	0.341	1.138	5.268	0.182	0.182	0.168	0.0054	568.3	0.032	0.014
Crane	HTC-8640	2009	365	2025	12,000	0.400	0.335	1.138	4.636	0.177	0.177	0.163	0.0054	568.3	0.032	0.014
Concrete Truck	Paystar 5600	2009	360	2025	12,000	0.400	0.335	1.138	4.636	0.177	0.177	0.163	0.0054	568.3	0.032	0.014
Concrete Pump	B20	2009	110	2025	12,000	0.515	0.432	4.075	5.904	0.451	0.451	0.416	0.0054	568.3	0.032	0.014
Hydroseeder Truck	Paystar 5600	2009	360	2025	12,000	0.400	0.335	1.138	4.636	0.177	0.177	0.163	0.0054	568.3	0.032	0.014
Hydroseeder Pump	T330	2009	115	2025	12,000	0.515	0.432	4.075	5.904	0.451	0.451	0.416	0.0054	568.3	0.032	0.014

Notes:

1. Per the document, *Overview: OFFROAD Model* , California Air Resources Board, November 2006 (available at www.arb.ca.gov/msei/offroad/offroad.htm), THC, CO, NOx, PM, and CO_2 emission factors are determined by the following equation:
   EF = ZH + dr * CHrs, where
   EF = emission factor, in grams per hoursepower-hour (g/bhp-hr)
   ZH = zero-hour emission rate or when the equipment is new (g/bhp-hr)
   dr = deterioration rate or the increase in ZH emissions as the equipment is used (g/bhp-hr^2)
   CHrs = cumulative hours or total number of hours accumulated on the equipment
2. Values utilized in the above emission factor table for ZH and dr are derived from *Offroad2007* (Version 2.0.1.2), California Air Resources Board, December 15, 2006, data from emfac.csv data file, lines 41-149 (default exhaust emission factors for off-road diesel equipment for which specific factors are not provided.)
3. ROG = 83.82% THC, PM10 = 100% PM, and PM2.5 = 92.29% PM. Source: *2008 Estimated Annual Average Emissions – Statewide* , California Air Resources Board, data for Off-Road Equipment, sorted for diesel-fueled vehicles, available at http://www.arb.ca.gov/ei/emissiondata.htm (accessed February 25, 2011).
4. Per the document, *Overview: OFFROAD Model* (op cit.) and the OFFROAD2007 emfac.csv file, the SO_2 emission factor is based on fuel sulfur content and brake-specific fuel consumption. Per *Title 13 California Code of Regulations* sec. 2281 (Sulfur Content of Fuel), as of June 2006 diesel sulfur content in diesel fuel is limited to 15 parts per million. Per the October 2010 CARB Staff Report (op cit.), CARB staff used BSFC values from EPA's NONROAD emissions model, as documented in the report, *Exhaust and Crankcase Emission Factors for Nonroad Engine Modeling – Compression-Ignition* (EPA Report No. EPA420-P-04-009/NR-009C), U.S. Environmental Protection Agency, April 2004. Table A2 of the EPA report (pages A5-A8) documents that for diesel engines up to 100 hp, a brake specific fuel consumption (BSFC) value of 0.408 lb/hp-hr is used. For diesel engines larger than 100 hp, a BSFC value of 0.367 lb/hp-hr is used. The above factors assume a BSFC value of 0.4 lb/hp-hr. The SO_2 emission factor is calculated as follows:
   EF_{SO2} = (Parts S in fuel/million) * (MW_{SO2}/MW_S) * BSFC (lb/hp-hr) * 453.6 g/lb
   = (15 parts S/million) * (64 g/g-mole SO_2/32 g/g-mole S) * 0.4 lb/hp-hr * 453.6 g/lb
   = 0.0054 g SO_2/hp-hr
5. CH_4 and N_2O factors in grams/gallon are from the Climate Registry, *General Reporting Protocol* Version 1.1 (May 2008), Table 13.6 (Default CH_4 and N_2O Emission Factors for Non-Highway Vehicles), factors for diesel-fueled construction vehicles. To convert CH_4 and N_2O factors in g/gallon to g/bhp, the following equations were employed:
   CH_4 = 0.58 g CH_4/gallon * (1 gallon/137,000 Btu) * 7,500 Btu/bhp-hr = 0.032 g CH_4/bhp-hr, and
   N_2O = 0.26 g N_2O/gallon * (1 gallon/137,000 Btu) * 7,500 Btu/bhp-hr = 0.014 g N_2O/bhp-hr.
   Source for the higher heating value of 137,000 Btu/gallon for diesel and the brake specific fuel combustion factor of 7,500 Btu/bhp-hr: Santa Barbara County Air Pollution Control District, *Piston IC Engine Technical Reference Document* (November 1, 2002), Tables 5 (Default Fuel Properties) and 6 (Default Engine Specifications - diesel turbocharged engines), available at http://www.sbcapcd.org/eng/spice/sbcapcdicerefdoc.pdf.
6. CO_2 equivalent emissions (CO_2e) calculated based on the global warming potentials in the IPCC's *Second Assessment Report* (SAR, 1996), as presented in the Climate Registry *General Reporting Protocol* (op cit.), Table B.1. CO_2e = 1 * CO_2 + 21 * CH_4 + 310 * N_2O.
7. Cumulative hours for each equipment item assumes that each item accumulates 2,000 hours of operation each year. Per the document, *Staff Report: Initial Statement of Reasons for Proposed Rulemaking – Proposed Amendments to the Regulation for In-use Off-road Diesel-fueled Fleets and the Off-road Large Spark-ignition Fleet Requirements,* California Air Resources Board, October 2010, Appendix D (OSM and Summary of Off-road Emissions Inventory Update), pages D-27 to D-28, CARB staff now assumes emission factors deteriorate only up to a maximum of 12,000 hours.
8. Annual and daily activity data documented separately.
9. Equipment load factors from *Offroad2007* (Version 2.0.1.2), op cit. The hydroseeder truck is assumed to have the same load profile (0.20) as a water truck. The hydroseeder pump is assigned a 0.50 load factor applicable to diesel sprayers. The concrete truck is assigned a 0.50 factor to reflect its expected load while offloading cement to the cement pump.

Table E-13. Permanente Creek Reclamation Area - Assumed Activity Data.

Off-Road Diesel Equipment Activity (Hours).

					Phase 1 Activity (occuring in 2012)							Phase 2 Activity (occurring in 2025)			
Category	Manufacturer	Model	Year	HP	Subarea 3	Subarea 4	Subarea 5	Subarea 6	Subarea 7	Total Hours	Hours/ Day	Subarea 1	Subarea 2	Total Hours	Hours/ Day
Crawler Tractor	Caterpillar	D8T	2009	310	16	--	--	--	--	16	--	--	16	16	--
Excavator	Caterpillar	345D	2009	380	--	--	24	--	--	24	8	24	--	24	8
Grader	Caterpillar	14M	2009	259	--	--	--	--	--	--	--	16	--	16	8
Loader	Caterpillar	950H	2009	216	--	--	16	--	--	16	8	--	--	--	--
Haul Truck	Caterpillar	740	2003	415	--	--	38	--	--	38	8	24	--	24	8
Crane	Linkbelt	HTC-8640	2009	365	--	--	--	40	--	40	--	--	--	--	--
Concrete Truck	International	Paystar 5600	2009	360	--	--	--	--	--	--	--	2	--	2	2
Concrete Pump	Reed	B20	2009	110	--	--	--	--	--	--	--	2	--	2	2
Hydroseeder Truck	International	Paystar 5600	2009	360	7	7	5	2	7	28	--	3	8	11	--
Hydroseeder Pump	Finn	T330	2009	115	7	7	5	2	7	28	--	3	8	11	--

Notes:

1. Permanente Creek Reclamation Subarea activities for Subareas 3 through 7 are assumed to occur in 2012, in Phase 1 of the overall project. Reclamation activities for Subareas 1 and 2 are assumed to occur in 2025, in Phase 2 of the overall project.
2. Activity data reflect the extimated work effort necessary to complete Permanente Creek reclamation treatments in each designated subarea.
3. Even though the hydroseeder and concrete trucks are on-road heavy duty trucks, for calculation purposes they are conservatively assumed to be off-road trucks.
4. During Phase 1, peak daily activity will occur during work for Subarea 5; therefore peak hours/day are shown only for Subarea 5. During Phase 2, peak daily activity will occur during work for Subarea 1; therefore, peak hours/day are shown only for Subarea 1. Hydroseeding is assumed to follow site treatment work and therefore are not reflected in peak hours/day.
5. The above data do not reflect travel by supervisory personnel (medium-duty vehicles) or employees (passenger vehicles. These hours are accomodated within the peak on-road in-plant and employee commute vehicle activity reflected in Table D-14 of the *Air Quality Technical Analysis* .

Material Handling and Haul Truck Travel Activity.

	Phase 1 Activity (2012)						Phase 2 Activity (2025)		
Category	Subarea 3	Subarea 4	Subarea 5	Subarea 6	Subarea 7	Total	Subarea 1	Subarea 2	Total
40-ton Loads	--	--	200	--	--	200	40	--	40
Material Handling:									
Total Tons (U.S.)	--	--	8,000	--	--	8,000	1,600	--	1,600
Tons/Day	--	--	1,684	--	--	1,684	533	--	533
Tons/Hour	--	--	211	--	--	211	67	--	67
Haul Truck Travel:									
1-Way Travel	--	--	1,000	--	--	--	5,000	--	--
Total Miles (2-way)	--	--	76	--	--	76	76	--	76
Miles/Day	--	--	16	--	--	16	25	--	25
Miles/Hour	--	--	2	--	--	2	3	--	3

Notes:

1. Conversion factors:
   8 hours/day
   5,280 feet/mile

Mechanically Disturbed Areas (Acres).

	Phase 1 (2012)							Phase 2 (2025)			
Category	Subarea 3	Subarea 4	Subarea 5	Subarea 6	Subarea 7	Average	Maximum	Subarea 1	Subarea 2	Average	Maximum
Total Acres	4.25	3.96	2.58	0.90	4.26			1.42	5.77		
Mechanically Disturbed Areas	4.25	--	2.58	--	--			1.42	5.77		
Disturbed at Any One Time	2.13	--	1.29	--	--	1.53	2.13	0.71	2.89	1.33	2.89
Disturbance Days	2	--	5	--	--	7	2	5	2	7	2

Notes:

1. Based on the anticipated reclamation treatment for each Subarea, Subareas 4, 6, and 7 are not anticipated to have any mechanical disturbance. (For Subarea 6, the crane will operate from the unpaved road above the area, which has already been assumed to be disturbed.)
2. Assumes that 50% of an area's acreage is disturbed at any one time.
3. Disturbance days for each phase reflects the value for the area with the maximum disturbed acres.

Table E-14. Permanente Creek Reclamation Area - Emission Zero Hour and Deterioration Rate Emission Factors for Off-Road Diesel Equipment.

Fuel	Min HP	Max HP	Year	THCzh	THCdr	THCunits	COzh	COdr	COunits	NOXzh	NOXdr	NOXunits	PMzh	PMdr	PMunits	CO2zh	CO2dr	CO2units
D	1	15	1994	1.5	0.00E+00	G/HP-HR	5	0.00E+00	G/HP-HR	10	0.00E+00	G/HP-HR	1	0.00E+00	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	1	15	1999	1.05	0.00E+00	G/HP-HR	5	0.00E+00	G/HP-HR	9.35	0.00E+00	G/HP-HR	0.57	0.00E+00	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	1	15	2004	0.68	0.00E+00	G/HP-HR	3.47	0.00E+00	G/HP-HR	6.08	0.00E+00	G/HP-HR	0.47	0.00E+00	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	1	15	2007	0.49	0.00E+00	G/HP-HR	3.47	0.00E+00	G/HP-HR	4.37	0.00E+00	G/HP-HR	0.38	0.00E+00	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	1	15	2040	0.49	0.00E+00	G/HP-HR	3.47	0.00E+00	G/HP-HR	4.37	0.00E+00	G/HP-HR	0.19	0.00E+00	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	16	25	1994	1.84	0.00E+00	G/HP-HR	5	0.00E+00	G/HP-HR	6.92	0.00E+00	G/HP-HR	0.76	0.00E+00	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	16	25	1999	0.9	0.00E+00	G/HP-HR	5	0.00E+00	G/HP-HR	6.92	0.00E+00	G/HP-HR	0.57	0.00E+00	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	16	25	2004	0.64	0.00E+00	G/HP-HR	2.34	0.00E+00	G/HP-HR	5.79	0.00E+00	G/HP-HR	0.38	0.00E+00	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	16	25	2007	0.57	0.00E+00	G/HP-HR	2.34	0.00E+00	G/HP-HR	4.57	0.00E+00	G/HP-HR	0.38	0.00E+00	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	16	25	2040	0.57	0.00E+00	G/HP-HR	2.34	0.00E+00	G/HP-HR	4.57	0.00E+00	G/HP-HR	0.19	0.00E+00	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	26	50	1987	1.84	2.35E-04	G/HP-HR	5	5.13E-04	G/HP-HR	7	1.05E-04	G/HP-HR	0.76	5.89E-05	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	26	50	1998	1.8	2.30E-04	G/HP-HR	5	5.13E-04	G/HP-HR	6.9	1.04E-04	G/HP-HR	0.76	5.89E-05	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	26	50	2003	1.45	1.85E-04	G/HP-HR	4.1	4.20E-04	G/HP-HR	5.55	1.03E-04	G/HP-HR	0.6	4.65E-05	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	26	50	2004	0.64	9.80E-05	G/HP-HR	3.27	3.34E-04	G/HP-HR	5.1	9.33E-05	G/HP-HR	0.43	3.36E-05	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	26	50	2005	0.37	6.90E-05	G/HP-HR	3	3.05E-04	G/HP-HR	4.95	9.67E-05	G/HP-HR	0.38	2.93E-05	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	26	50	2007	0.24	5.45E-05	G/HP-HR	2.86	2.90E-04	G/HP-HR	4.88	9.83E-05	G/HP-HR	0.35	2.72E-05	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	26	50	2012	0.1	4.00E-05	G/HP-HR	2.72	2.76E-04	G/HP-HR	4.8	1.00E-04	G/HP-HR	0.16	1.20E-05	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	26	50	2040	0.1	4.00E-05	G/HP-HR	2.72	2.76E-04	G/HP-HR	2.9	6.00E-05	G/HP-HR	0.01	1.20E-06	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	51	120	1987	1.44	6.66E-05	G/HP-HR	4.8	1.27E-04	G/HP-HR	13	3.01E-04	G/HP-HR	0.84	6.11E-05	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	51	120	1997	0.99	4.58E-05	G/HP-HR	3.49	9.23E-05	G/HP-HR	8.75	2.02E-04	G/HP-HR	0.69	5.02E-05	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	51	120	2003	0.99	4.58E-05	G/HP-HR	3.49	9.23E-05	G/HP-HR	6.9	1.60E-04	G/HP-HR	0.69	5.02E-05	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	51	120	2004	0.46	3.33E-05	G/HP-HR	3.23	8.55E-05	G/HP-HR	5.64	1.03E-04	G/HP-HR	0.39	2.85E-05	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	51	120	2005	0.28	2.92E-05	G/HP-HR	3.14	8.33E-05	G/HP-HR	5.22	8.40E-05	G/HP-HR	0.29	2.12E-05	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	51	120	2007	0.19	2.71E-05	G/HP-HR	3.09	8.21E-05	G/HP-HR	5.01	7.45E-05	G/HP-HR	0.24	1.76E-05	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	51	120	2011	0.1	2.50E-05	G/HP-HR	3.05	8.10E-05	G/HP-HR	2.89	3.80E-05	G/HP-HR	0.2	8.58E-06	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	51	120	2012	0.09	2.31E-05	G/HP-HR	3.05	8.10E-05	G/HP-HR	2.53	3.38E-05	G/HP-HR	0.07	4.30E-06	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	51	120	2014	0.09	2.31E-05	G/HP-HR	3.05	8.10E-05	G/HP-HR	2.53	3.38E-05	G/HP-HR	0.01	1.04E-06	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	51	120	2040	0.07	1.74E-05	G/HP-HR	3.05	8.10E-05	G/HP-HR	1.4	1.88E-05	G/HP-HR	0.01	1.04E-06	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	121	175	1969	1.32	6.11E-05	G/HP-HR	4.4	1.16E-04	G/HP-HR	14	3.24E-04	G/HP-HR	0.77	5.60E-05	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	121	175	1971	1.1	5.09E-05	G/HP-HR	4.4	1.16E-04	G/HP-HR	13	3.01E-04	G/HP-HR	0.66	4.80E-05	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	121	175	1979	1	4.63E-05	G/HP-HR	4.4	1.16E-04	G/HP-HR	12	2.78E-04	G/HP-HR	0.55	4.00E-05	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	121	175	1984	0.94	4.35E-05	G/HP-HR	4.3	1.14E-04	G/HP-HR	11	2.54E-04	G/HP-HR	0.55	4.00E-05	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	121	175	1987	0.88	4.07E-05	G/HP-HR	4.2	1.11E-04	G/HP-HR	11	2.54E-04	G/HP-HR	0.55	4.00E-05	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	121	175	1996	0.68	3.15E-05	G/HP-HR	2.7	7.14E-05	G/HP-HR	8.17	1.89E-04	G/HP-HR	0.38	2.76E-05	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	121	175	2002	0.68	3.15E-05	G/HP-HR	2.7	7.14E-05	G/HP-HR	6.9	1.60E-04	G/HP-HR	0.38	2.76E-05	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	121	175	2003	0.33	2.79E-05	G/HP-HR	2.7	7.14E-05	G/HP-HR	5.26	9.64E-05	G/HP-HR	0.24	1.70E-05	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	121	175	2004	0.22	2.63E-05	G/HP-HR	2.7	7.14E-05	G/HP-HR	4.72	7.52E-05	G/HP-HR	0.19	1.35E-05	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	121	175	2006	0.16	2.57E-05	G/HP-HR	2.7	7.14E-05	G/HP-HR	4.44	6.46E-05	G/HP-HR	0.16	1.18E-05	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	121	175	2011	0.1	2.50E-05	G/HP-HR	2.7	7.14E-05	G/HP-HR	2.45	3.20E-05	G/HP-HR	0.14	1.00E-05	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	121	175	2014	0.09	2.17E-05	G/HP-HR	2.7	7.14E-05	G/HP-HR	2.27	2.88E-05	G/HP-HR	0.01	5.00E-07	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	121	175	2040	0.05	1.17E-05	G/HP-HR	2.7	7.14E-05	G/HP-HR	0.27	3.75E-06	G/HP-HR	0.01	5.00E-07	G/HP-HR	568.3	0.00E+00	G/HP-HR

Table E-14. Permanente Creek Reclamation Area - Emission Zero Hour and Deterioration Rate Emission Factors for Off-Road Diesel Equipment.

Fuel	Min HP	Max HP	Year	THCzh	THCdr	THCunits	COzh	COdr	COunits	NOXzh	NOXdr	NOXunits	PMzh	PMdr	PMunits	CO2zh	CO2dr	CO2units
D	176	250	1969	1.32	6.11E-05	G/HP-HR	4.4	1.16E-04	G/HP-HR	14	3.24E-04	G/HP-HR	0.77	5.60E-05	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	176	250	1971	1.1	5.09E-05	G/HP-HR	4.4	1.16E-04	G/HP-HR	13	3.01E-04	G/HP-HR	0.66	4.80E-05	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	176	250	1979	1	4.63E-05	G/HP-HR	4.4	1.16E-04	G/HP-HR	12	2.78E-04	G/HP-HR	0.55	4.00E-05	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	176	250	1984	0.94	4.35E-05	G/HP-HR	4.3	1.14E-04	G/HP-HR	11	2.54E-04	G/HP-HR	0.55	4.00E-05	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	176	250	1987	0.88	4.07E-05	G/HP-HR	4.2	1.11E-04	G/HP-HR	11	2.54E-04	G/HP-HR	0.55	4.00E-05	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	176	250	1995	0.68	3.15E-05	G/HP-HR	2.7	7.14E-05	G/HP-HR	8.17	1.89E-04	G/HP-HR	0.38	2.76E-05	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	176	250	2002	0.32	1.48E-05	G/HP-HR	0.92	2.43E-05	G/HP-HR	6.25	1.45E-04	G/HP-HR	0.15	7.96E-06	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	176	250	2003	0.19	2.09E-05	G/HP-HR	0.92	2.43E-05	G/HP-HR	5	9.05E-05	G/HP-HR	0.12	6.51E-06	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	176	250	2004	0.14	2.30E-05	G/HP-HR	0.92	2.43E-05	G/HP-HR	4.58	7.23E-05	G/HP-HR	0.11	6.03E-06	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	176	250	2006	0.12	2.40E-05	G/HP-HR	0.92	2.43E-05	G/HP-HR	4.38	6.33E-05	G/HP-HR	0.11	5.79E-06	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	176	250	2010	0.1	2.50E-05	G/HP-HR	0.92	2.43E-05	G/HP-HR	2.45	3.18E-05	G/HP-HR	0.11	5.59E-06	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	176	250	2013	0.07	1.83E-05	G/HP-HR	0.92	2.43E-05	G/HP-HR	1.36	1.75E-05	G/HP-HR	0.01	3.75E-07	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	176	250	2040	0.05	1.17E-05	G/HP-HR	0.92	2.43E-05	G/HP-HR	0.27	3.75E-06	G/HP-HR	0.01	3.75E-07	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	251	500	1969	1.26	4.39E-05	G/HP-HR	4.2	8.32E-04	G/HP-HR	14	2.33E-04	G/HP-HR	0.74	3.93E-05	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	251	500	1971	1.05	3.66E-05	G/HP-HR	4.2	8.32E-04	G/HP-HR	13	2.16E-04	G/HP-HR	0.63	3.34E-05	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	251	500	1979	0.95	3.31E-05	G/HP-HR	4.2	8.32E-04	G/HP-HR	12	2.00E-04	G/HP-HR	0.53	2.81E-05	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	251	500	1984	0.9	3.14E-05	G/HP-HR	4.2	8.32E-04	G/HP-HR	11	1.83E-04	G/HP-HR	0.53	2.81E-05	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	251	500	1987	0.84	2.93E-05	G/HP-HR	4.1	8.12E-04	G/HP-HR	11	1.83E-04	G/HP-HR	0.53	2.81E-05	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	251	500	1995	0.68	2.37E-05	G/HP-HR	2.7	5.35E-05	G/HP-HR	8.17	1.36E-04	G/HP-HR	0.38	2.02E-05	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	251	500	2000	0.32	1.12E-05	G/HP-HR	0.92	1.82E-05	G/HP-HR	6.25	1.04E-04	G/HP-HR	0.15	7.96E-06	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	251	500	2001	0.19	1.95E-05	G/HP-HR	0.92	1.82E-05	G/HP-HR	4.95	7.34E-05	G/HP-HR	0.12	6.51E-06	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	251	500	2002	0.14	2.22E-05	G/HP-HR	0.92	1.82E-05	G/HP-HR	4.51	6.32E-05	G/HP-HR	0.11	6.03E-06	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	251	500	2004	0.12	2.36E-05	G/HP-HR	0.92	1.82E-05	G/HP-HR	4.29	5.81E-05	G/HP-HR	0.11	5.79E-06	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	251	500	2005	0.1	2.50E-05	G/HP-HR	0.92	1.82E-05	G/HP-HR	4	5.30E-05	G/HP-HR	0.11	5.55E-06	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	251	500	2010	0.1	2.50E-05	G/HP-HR	0.92	1.82E-05	G/HP-HR	2.45	3.18E-05	G/HP-HR	0.11	5.55E-06	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	251	500	2013	0.07	1.83E-05	G/HP-HR	0.92	1.82E-05	G/HP-HR	1.36	1.75E-05	G/HP-HR	0.01	3.75E-07	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	251	500	2040	0.05	1.17E-05	G/HP-HR	0.92	1.82E-05	G/HP-HR	0.27	3.75E-06	G/HP-HR	0.01	3.75E-07	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	501	750	1969	1.26	4.39E-05	G/HP-HR	4.2	8.32E-04	G/HP-HR	14	2.33E-04	G/HP-HR	0.74	3.93E-05	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	501	750	1971	1.05	3.66E-05	G/HP-HR	4.2	8.32E-04	G/HP-HR	13	2.16E-04	G/HP-HR	0.63	3.34E-05	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	501	750	1979	0.95	3.31E-05	G/HP-HR	4.2	8.32E-04	G/HP-HR	12	2.00E-04	G/HP-HR	0.53	2.81E-05	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	501	750	1984	0.9	3.14E-05	G/HP-HR	4.2	8.32E-04	G/HP-HR	11	1.83E-04	G/HP-HR	0.53	2.81E-05	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	501	750	1987	0.84	2.93E-05	G/HP-HR	4.1	8.12E-04	G/HP-HR	11	1.83E-04	G/HP-HR	0.53	2.81E-05	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	501	750	1995	0.68	2.37E-05	G/HP-HR	2.7	5.35E-05	G/HP-HR	8.17	1.36E-04	G/HP-HR	0.38	2.02E-05	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	501	750	2001	0.32	1.12E-05	G/HP-HR	0.92	1.82E-05	G/HP-HR	6.25	1.04E-04	G/HP-HR	0.15	7.96E-06	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	501	750	2002	0.19	1.95E-05	G/HP-HR	0.92	1.82E-05	G/HP-HR	4.95	7.34E-05	G/HP-HR	0.12	6.51E-06	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	501	750	2003	0.14	2.22E-05	G/HP-HR	0.92	1.82E-05	G/HP-HR	4.51	6.32E-05	G/HP-HR	0.11	6.03E-06	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	501	750	2005	0.12	2.36E-05	G/HP-HR	0.92	1.82E-05	G/HP-HR	4.29	5.81E-05	G/HP-HR	0.11	5.79E-06	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	501	750	2010	0.1	2.50E-05	G/HP-HR	0.92	1.82E-05	G/HP-HR	2.45	3.18E-05	G/HP-HR	0.11	5.55E-06	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	501	750	2013	0.07	1.83E-05	G/HP-HR	0.92	1.82E-05	G/HP-HR	1.36	1.75E-05	G/HP-HR	0.01	3.75E-07	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	501	750	2040	0.05	1.17E-05	G/HP-HR	0.92	1.82E-05	G/HP-HR	0.27	3.75E-06	G/HP-HR	0.01	3.75E-07	G/HP-HR	568.3	0.00E+00	G/HP-HR

Table E-14. Permanente Creek Reclamation Area - Emission Zero Hour and Deterioration Rate Emission Factors for Off-Road Diesel Equipment.

Fuel	Min HP	Max HP	Year	THCzh	THCdr	THCunits	COzh	COdr	COunits	NOXzh	NOXdr	NOXunits	PMzh	PMdr	PMunits	CO2zh	CO2dr	CO2units
D	751	1000	1969	1.26	4.39E-05	G/HP-HR	4.2	8.32E-04	G/HP-HR	14	2.33E-04	G/HP-HR	0.74	3.93E-05	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	751	1000	1971	1.05	3.66E-05	G/HP-HR	4.2	8.32E-04	G/HP-HR	13	2.16E-04	G/HP-HR	0.63	3.34E-05	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	751	1000	1979	0.95	3.31E-05	G/HP-HR	4.2	8.32E-04	G/HP-HR	12	2.00E-04	G/HP-HR	0.53	2.81E-05	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	751	1000	1984	0.9	3.14E-05	G/HP-HR	4.2	8.32E-04	G/HP-HR	11	1.83E-04	G/HP-HR	0.53	2.81E-05	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	751	1000	1987	0.84	2.93E-05	G/HP-HR	4.1	8.12E-04	G/HP-HR	11	1.83E-04	G/HP-HR	0.53	2.81E-05	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	751	1000	1999	0.68	1.12E-05	G/HP-HR	2.7	5.35E-05	G/HP-HR	8.17	1.36E-04	G/HP-HR	0.38	2.02E-06	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	751	1000	2005	0.32	1.12E-05	G/HP-HR	0.92	1.82E-05	G/HP-HR	6.25	1.04E-04	G/HP-HR	0.15	7.96E-06	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	751	1000	2006	0.19	1.95E-05	G/HP-HR	0.92	1.82E-05	G/HP-HR	4.95	7.34E-05	G/HP-HR	0.12	6.51E-06	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	751	1000	2007	0.14	2.22E-05	G/HP-HR	0.92	1.82E-05	G/HP-HR	4.51	6.32E-05	G/HP-HR	0.11	6.03E-06	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	751	1000	2009	0.12	2.36E-05	G/HP-HR	0.92	1.82E-05	G/HP-HR	4.29	5.81E-05	G/HP-HR	0.11	5.79E-06	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	751	1000	2010	0.1	2.50E-05	G/HP-HR	0.92	1.82E-05	G/HP-HR	4.08	5.30E-05	G/HP-HR	0.11	5.55E-06	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	751	1000	2014	0.07	1.83E-05	G/HP-HR	0.92	1.82E-05	G/HP-HR	2.36	3.00E-05	G/HP-HR	0.06	2.50E-06	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	751	1000	2040	0.05	1.17E-05	G/HP-HR	0.92	1.82E-05	G/HP-HR	2.36	3.00E-05	G/HP-HR	0.02	1.00E-06	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	1001	9999	1969	1.26	4.39E-05	G/HP-HR	4.2	8.32E-04	G/HP-HR	14	2.33E-04	G/HP-HR	0.74	3.93E-05	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	1001	9999	1971	1.05	3.66E-05	G/HP-HR	4.2	8.32E-04	G/HP-HR	13	2.16E-04	G/HP-HR	0.63	3.34E-05	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	1001	9999	1979	0.95	3.31E-05	G/HP-HR	4.2	8.32E-04	G/HP-HR	12	2.00E-04	G/HP-HR	0.53	2.81E-05	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	1001	9999	1984	0.9	3.14E-05	G/HP-HR	4.2	8.32E-04	G/HP-HR	11	1.83E-04	G/HP-HR	0.53	2.81E-05	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	1001	9999	1987	0.84	2.93E-05	G/HP-HR	4.1	8.12E-04	G/HP-HR	11	1.83E-04	G/HP-HR	0.53	2.81E-05	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	1001	9999	1999	0.68	1.12E-05	G/HP-HR	2.7	5.35E-05	G/HP-HR	8.17	1.36E-04	G/HP-HR	0.38	2.02E-06	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	1001	9999	2005	0.32	1.12E-05	G/HP-HR	0.92	1.82E-05	G/HP-HR	6.25	1.04E-04	G/HP-HR	0.15	7.96E-06	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	1001	9999	2006	0.19	1.95E-05	G/HP-HR	0.92	1.82E-05	G/HP-HR	4.95	7.34E-05	G/HP-HR	0.12	6.51E-06	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	1001	9999	2007	0.14	2.22E-05	G/HP-HR	0.92	1.82E-05	G/HP-HR	4.51	6.32E-05	G/HP-HR	0.11	6.03E-06	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	1001	9999	2009	0.12	2.36E-05	G/HP-HR	0.92	1.82E-05	G/HP-HR	4.29	5.81E-05	G/HP-HR	0.11	5.79E-06	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	1001	9999	2010	0.1	2.50E-05	G/HP-HR	0.92	1.82E-05	G/HP-HR	4.08	5.30E-05	G/HP-HR	0.11	5.55E-06	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	1001	9999	2014	0.1	2.50E-05	G/HP-HR	0.92	1.82E-05	G/HP-HR	2.36	3.00E-05	G/HP-HR	0.06	2.50E-06	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	1001	9999	2040	0.05	1.17E-05	G/HP-HR	0.92	1.82E-05	G/HP-HR	2.36	3.00E-05	G/HP-HR	0.02	1.00E-06	G/HP-HR	568.3	0.00E+00	G/HP-HR

Notes:

1. The above factors are derived from *Offroad2007* (Version 2.0.1.2), California Air Resources Board, December 15, 2006, data from emfac.csv data file, lines 41-149 (default exhaust emission factors for off-road diesel equipment for which specific factors are not provided).
2. The above factors are consistent with the factors used by CARB staff to estimate off-road diesel equipment emissions, as documented in *Staff Report: Initial Statement of Reasons for Proposed Rulemaking – Proposed Amendments to the Regulation for In-use Off-road Diesel-fueled Fleets and the Off-road Large Spark-ignition Fleet Requirements*, California Air Resources Board, October 2010, Appendix D (OSM and Summary of Off-road Emissions Inventory Update), Attachment D (Diesel Emission Factors (g/bhp-hr)).

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Appendix F

Permanente Creek Long-Term Restoration (Phase 3) Emission Calculations

Permanente Creek Long-Term Restoration (Phase 3) Emission Calculations.

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Table F-1. Permanente Creek Long-Term Restoration (Phase 3) - Total Criteria Pollutant Emissions (tons).

Emission Source Category	PM_{10}	$PM_{2.5}$	CO	NOx	ROG	SOx
Material Handling	0.03	0.00	--	--	--	--
Unpaved Road Dust Entrainment	0.28	0.03	--	--	--	--
Wind Erosion - Disturbed Areas	0.07	0.01	--	--	--	--
Off-Road Diesel Equipment	0.03	0.03	0.16	0.71	0.05	0.00
Subtotal - Phase 3	0.41	0.07	0.16	0.71	0.05	0.00

Table F-2. Permanente Creek Long-Term Restoration (Phase 3) - Daily Criteria Pollutant Emissions (pounds/day).

Emission Source Category	PM_{10}	$PM_{2.5}$	CO	NOx	ROG	SOx
Material Handling	2.76	0.41	--	--	--	--
Unpaved Road Dust Entrainment	51.21	5.12	--	--	--	--
Wind Erosion - Disturbed Areas	8.74	1.31	--	--	--	--
Off-Road Diesel Equipment	2.96	2.73	18.60	83.65	5.54	0.09
Subtotal - Phase 3	65.67	9.58	18.60	83.65	5.54	0.09

Table F-3. Permanente Creek Long-Term Restoration (Phase 3) - Total Toxic Air Contaminant Emissions (pounds).

Emission Source Category	Diesel PM	Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Cobalt	Copper	Lead	Mercury	Molyb-denum	Nickel	Selenium	Silver	Thallium	Vanadium	Zinc	Hexavalent Chromium	Crystalline Silica
Material Handling	--	1.30E-04	6.48E-05	4.04E-02	3.89E-05	6.48E-05	1.24E-03	3.32E-04	7.26E-04	6.74E-05	1.04E-05	1.30E-04	1.19E-03	1.30E-04	6.74E-05	6.74E-05	9.85E-04	1.30E-03	5.18E-06	1.92E-01
Unpaved Road Dust Entrainment	--	1.42E-03	7.11E-04	5.69E-01	4.27E-04	7.11E-04	2.33E-02	5.58E-03	1.42E-02	1.31E-03	7.97E-05	1.42E-03	3.07E-02	1.42E-03	7.11E-04	7.11E-04	4.72E-02	1.93E-02	1.08E-03	4.04E+00
Wind Erosion - Disturbed Areas	--	3.53E-04	1.77E-04	1.10E-01	1.06E-04	1.77E-04	3.39E-03	9.05E-04	1.98E-03	1.84E-04	2.83E-05	3.53E-04	3.25E-03	3.53E-04	1.84E-04	1.84E-04	2.69E-03	3.53E-03	1.41E-05	5.25E-01
Off-Road Diesel Equipment	50.34	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Subtotal - Phase 3	50.34	1.91E-03	9.53E-04	7.20E-01	5.72E-04	9.53E-04	2.80E-02	6.81E-03	1.69E-02	1.56E-03	1.18E-04	1.91E-03	3.52E-02	1.91E-03	9.62E-04	9.62E-04	5.09E-02	2.42E-02	1.10E-03	4.76E+00

Table F-4. Permanente Creek Long-Term Restoration (Phase 3) - Hourly Toxic Air Contaminant Emissions (pounds/hour).

Emission Source Category	Diesel PM	Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Cobalt	Copper	Lead	Mercury	Molyb-denum	Nickel	Selenium	Silver	Thallium	Vanadium	Zinc	Hexavalent Chromium	Crystalline Silica
Material Handling	--	8.64E-07	4.32E-07	2.70E-04	2.59E-07	4.32E-07	8.29E-06	2.21E-06	4.84E-06	4.32E-07	6.91E-08	8.64E-07	7.95E-06	8.64E-07	4.32E-07	4.32E-07	6.57E-06	8.64E-06	3.46E-08	1.28E-03
Unpaved Road Dust Entrainment	--	1.60E-05	8.00E-06	6.40E-03	4.80E-06	8.00E-06	2.62E-04	6.27E-05	1.60E-04	1.47E-05	8.96E-07	1.60E-05	3.46E-04	1.60E-05	8.00E-06	8.00E-06	5.31E-04	2.18E-04	1.22E-05	4.54E-02
Wind Erosion - Disturbed Areas	--	2.73E-06	1.37E-06	8.52E-04	8.19E-07	1.37E-06	2.62E-05	6.99E-06	1.53E-05	1.37E-06	2.18E-07	2.73E-06	2.51E-05	2.73E-06	1.37E-06	1.37E-06	2.08E-05	2.73E-05	1.09E-07	4.06E-03
Off-Road Diesel Equipment	0.37	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Subtotal - Phase 3	0.37	1.96E-05	9.80E-06	7.52E-03	5.88E-06	9.80E-06	2.97E-04	7.19E-05	1.80E-04	1.65E-05	1.18E-06	1.96E-05	3.79E-04	1.96E-05	9.80E-06	9.80E-06	5.59E-04	2.54E-04	1.23E-05	5.08E-02

Table F-5. Permanente Creek Long-Term Restoration (Phase 3) - Greenhouse Gas Emissions (metric tons).

Emission Source Category	CO_2	CH_4	N_2O	CO_2e
Material Handling	--	--	--	--
Unpaved Road Dust Entrainment	--	--	--	--
Wind Erosion - Disturbed Areas	--	--	--	--
Off-Road Diesel Equipment	71.74	0.00	0.00	72.38
Subtotal - Phase 3	71.74	0.00	0.00	72.38

Table F-6. Permanente Creek Long-Term Restoration (Phase 3) - Material Handling.

Project Phase	Emission Factor Reference	Emission Factors		Process Rates			Transfer Points	Control Efficiency	PM_{10} Emissions			$PM_{2.5}$ Emissions		
		PM_{10}	$PM_{2.5}$	Tons/Year	Tons/Day	Tons/Hour			(tons/yr)	(lb/day)	(lb/hr)	(tons/yr)	(lb/day)	(lb/hr)
3	MDAQMD Guidance, Sec. VI.E, AP-42 13.2.4.3, Eqn 1	1.15E-03 lb/ton	1.73E-04 lb/ton	22,500 tons	1,200 tons	150 tons	2	0%	0.03	2.76	0.35	0.00	0.41	0.05

Notes:
1. Activity based on Assumed Activity Data (documented separately).
2. Assumed Control: None
3. Conversion factors:
   2,000 lb = 1 ton

Material Handling Emission Factor.

Data Input	Data Reference	Symbol	Value	Unit
Moisture Content	AP-42 Table 13.2.4-1 (Various Limestone Products)	M	2.1	%
Mean wind speed	Mean 2008 wind speed for Lehigh Station	U	5.27	mph
PM_{10} size multiplier	MDAQMD Guidance, Sec. VI.E	k	0.36	--
$PM_{2.5}$ size multiplier	WRAP AP-42 Fugitive Dust $PM_{2.5}/PM_{10}$ Ratios[1]	k	0.054	--
Material Handling Emission Factor	*MDAQMD Guidance, Sec. VI.E, AP-42 13.2.4.3, Eqn 1*	*Ef*	*Calculated*	*lb/ton*

$$Ef = k \times 0.0032 \times \frac{\left(\frac{U}{5}\right)^{1.3}}{\left(\frac{M}{2}\right)^{1.4}}$$

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Date: 12/7/2011

Table F-7. Permanente Creek Long-Term Restoration (Phase 3) - Unpaved Road Dust Entrainment.

Project Phase	Emission Factor Reference	Emission Factors		Activity			Control	PM_{10} Emissions			$PM_{2.5}$ Emissions		
		PM_{10}	$PM_{2.5}$	Miles/Year	Miles/Day	Miles/Hour	Efficiency	(tons/yr)	(lb/day)	(lb/hr)	(tons/yr)	(lb/day)	(lb/hr)
3	AP-42 13.2.2, Eqn 1a	1.75E+00 lb/mile	1.75E-01 lb/mile	1,299 miles	117 miles	15 miles	75%	0.28	51.21	6.40	0.03	5.12	0.64

Notes:
1. Activity based on Assumed Activity Data (documented separately).
2. Assumed Control: 75% control associated with watering of unpaved roads.
3. Conversion factors:
   2,000 lb = 1 ton

Unpaved Road Dust Entrainment Emission Factor.

Data Input	Data Reference	Symbol	Value	Unit
Unpaved Surface Material Silt Content	2008 CEIR, Table B-1	s	2.7	%
Average Vehicle Weight	Average Vehicle Weight - Entire Facility (see updated Air Quality Technical Analysis)	W	83.7	tons
PM_{10} Size Multiplier	AP-42 13.2.2-2	k	1.5	lb/mile
$PM_{2.5}$ Size Multiplier	AP-42 13.2.2-2	k	0.15	lb/mile
Empirical Constants	AP-42 13.2.2-2	a	0.9	--
	AP-42 13.2.2-2	b	0.45	--
Dust Entrainment Emission Factor	*AP-42 13.2.2, Eqn 1a*	*Ef*	*Calculated*	*lb/mile*

$$E_f = k\left(\frac{s}{12}\right)^a \left(\frac{W}{3}\right)^b$$

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Table F-8. Permanente Creek Long-Term Restoration (Phase 3) - Wind Erosion.

Project Phase	Emission Factor Reference	Emission Factors		Disturbed Area			Control Efficiency	PM_{10} Emissions			$PM_{2.5}$ Emissions		
		PM_{10}	$PM_{2.5}$	Ave. Acres	Total Days	Max. Acres		(tons/yr)	(lb/day)	(lb/hr)	(tons/yr)	(lb/day)	(lb/hr)
1	AP-42 13.2.5, Eqn 2	1.79E+00 ton/acre-yr	2.68E-01 ton/acre-yr	0.8 acres	19 days	0.9 acres	0%	0.07	8.74	1.09	0.01	1.31	0.16

Notes:
1. Activity based on Assumed Activity Data (documented separately).
2. Annual wind erosion emissions are based on acres disturbed over a one-year period. Therefore, average disturbed acres (for each phase) are multiplied by total days of area disturbance (for each phase) and divided by 365 days per year to calculate annual emissions. Daily and hourly emissions are based on the maximum acreage disturbed in a single day.
3. Assumed Control: None
4. Conversion factors:
   2,000 lb = 1 ton
   8 hours/day
   365 days/year

Wind Erosion Emission Factor.

Data Input	Data Reference	Symbol	Value	Unit
Erosion Potential per disturbance	AP-42 13.2.5, Eqn 3	P_i	Calculated	g/m^2
Friction Velocity per disturbance	AP-42 13.2.5, Eqn 4	u*	Calculated	m/s
Threshold Friction Velocity:	AP-42 Table 13.2.5-2 (overburden)	u^*_t	1.02	m/s
Fastest mile wind speed per disturbance at 10 meters	Daily maximum wind gust data from Lehigh Permanente Meteorological Station for 2008	u^+_{10}	Varies	m/s
Disturbances	Lehigh Permanente wind gust data	N	Daily (366)	--
PM_{10} Size Multiplier	AP-42 13.2.2-2	k	0.5	--
$PM_{2.5}$ Size Multiplier	AP-42 13.2.2-2	k	0.075	--
Wind Erosion Emission Factor	*AP-42 13.2.5, Eqn 2*	*Ef*	*Calculated*	*$g/(m^2\text{-}yr)$*

Eqn 3 $P = 58(u^* - u_t)^2 + 25(u^* - u_t)$

Eqn 4 $u^* = 0.053u_{10}$

Eqn 2 $E_f = k\sum_{i=1}^{N} P_i$

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Table F-9. Permanente Creek Long-Term Restoration (Phase 3) - Toxic Air Contaminants.

Annual Toxic Air Contaminant Emissions (pounds/year).

Toxic Air Contaminants (TAC):		Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Cobalt	Copper	Lead	Mercury	Molyb-denum	Nickel	Selenium	Silver	Thallium	Vanadium	Zinc	Hexavalent Chromium	Crystalline Silica
Overburden TAC Emission Factor (mg TAC /kg PM):		2.5	1.25	780	0.75	1.25	24	6.4	14	1.3	0.2	2.5	23	2.5	1.3	1.3	19	25	0.1	3712.8
Unpaved Roads TAC Emis. Factor (mg TAC/kg PM):		2.5	1.25	1000	0.75	1.25	41	9.8	25	2.3	0.14	2.5	54	2.5	1.25	1.25	83	34	1.9	7099.2
Component	PM_{10} (tons/year)	Toxic Air Contaminant Emissions (pounds)																		
Material Handling	0.03	1.30E-04	6.48E-05	4.04E-02	3.89E-05	6.48E-05	1.24E-03	3.32E-04	7.26E-04	6.74E-05	1.04E-05	1.30E-04	1.19E-03	1.30E-04	6.74E-05	6.74E-05	9.85E-04	1.30E-03	5.18E-06	1.92E-01
Unpaved Road Dust Entrainment	0.28	1.42E-03	7.11E-04	5.69E-01	4.27E-04	7.11E-04	2.33E-02	5.58E-03	1.42E-02	1.31E-03	7.97E-05	1.42E-03	3.07E-02	1.42E-03	7.11E-04	7.11E-04	4.72E-02	1.93E-02	1.08E-03	4.04E+00
Wind Erosion-Disturbed Areas	0.07	3.53E-04	1.77E-04	1.10E-01	1.06E-04	1.77E-04	3.39E-03	9.05E-04	1.98E-03	1.84E-04	2.83E-05	3.53E-04	3.25E-03	3.53E-04	1.84E-04	1.84E-04	2.69E-03	3.53E-03	1.41E-05	5.25E-01
Total - Phase 3	0.38	1.91E-03	9.53E-04	7.20E-01	5.72E-04	9.53E-04	2.80E-02	6.81E-03	1.69E-02	1.56E-03	1.18E-04	1.91E-03	3.52E-02	1.91E-03	9.62E-04	9.62E-04	5.09E-02	2.42E-02	1.10E-03	4.76E+00

Hourly Toxic Air Contaminant Emissions (pounds/hour).

Toxic Air Contaminants (TAC):		Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Cobalt	Copper	Lead	Mercury	Molyb-denum	Nickel	Selenium	Silver	Thallium	Vanadium	Zinc	Hexavalent Chromium	Crystalline Silica
Overburden TAC Emission Factor (mg TAC /kg PM):		2.5	1.25	780	0.75	1.25	24	6.4	14	1.25	0.2	2.5	23	2.5	1.25	1.25	19	25	0.1	3712.8
Unpaved Roads TAC Emis. Factor (mg TAC/kg PM):		2.5	1.25	1000	0.75	1.25	41	9.8	25	2.3	0.14	2.5	54	2.5	1.25	1.25	83	34	1.9	7099.2
Component	Hourly PM_{10} (pounds/hr)	Hourly Toxic Air Contaminant Emissions (pounds/hour)																		
Material Handling	0.35	8.64E-07	4.32E-07	2.70E-04	2.59E-07	4.32E-07	8.29E-06	2.21E-06	4.84E-06	4.32E-07	6.91E-08	8.64E-07	7.95E-06	8.64E-07	4.32E-07	4.32E-07	6.57E-06	8.64E-06	3.46E-08	1.28E-03
Unpaved Road Dust Entrainment	6.40	1.60E-05	8.00E-06	6.40E-03	4.80E-06	8.00E-06	2.62E-04	6.27E-05	1.60E-04	1.47E-05	8.96E-07	1.60E-05	3.46E-04	1.60E-05	8.00E-06	8.00E-06	5.31E-04	2.18E-04	1.22E-05	4.54E-02
Wind Erosion-Disturbed Areas	1.09	2.73E-06	1.37E-06	8.52E-04	8.19E-07	1.37E-06	2.62E-05	6.99E-06	1.53E-05	1.37E-06	2.18E-07	2.73E-06	2.51E-05	2.73E-06	1.37E-06	1.37E-06	2.08E-05	2.73E-05	1.09E-07	4.06E-03
Total - Phase 3	7.84	1.96E-05	9.80E-06	7.52E-03	5.88E-06	9.80E-06	2.97E-04	7.19E-05	1.80E-04	1.65E-05	1.18E-06	1.96E-05	3.79E-04	1.96E-05	9.80E-06	9.80E-06	5.59E-04	2.54E-04	1.23E-05	5.08E-02

Notes:

1. TAC emission factors obtained from sampling performed 11/20/2008 analyzed via EPA Methods 3060/7199 and 6020/7471A. Note, non-detect (ND) results were assumed to be 1/2 the detection limit. See Table 5A of 2008 CEIR.
2. Conversion Factors:
   2,000 lb/ton
   1,000,000 mg/kg

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Date: 12/7/2011

Table F-10. Permanente Creek Long-Term Restoration (Phase 3) - Off-Road Diesel Equipment Combustion Emissions.

Phase 3 Emissions - Annual (Tons per Year).

						Emissions (tons/year)								Emissions (metric tons/year)			
Equipment	Model	Model Year	Horse-power	Hours per Year	Load Factor	THC	ROG	CO	NOx	PM	PM_{10}	$PM_{2.5}$	SO_2	CO_2	CH_4	N_2O	CO_2e
Excavator	345D	2009	380	150	0.57	0.01	0.01	0.04	0.17	0.01	0.01	0.01	0.00	18.46	0.00	0.00	18.63
Haul Trucks	740	2003	415	396	0.57	0.04	0.04	0.12	0.54	0.02	0.02	0.02	0.00	53.28	0.00	0.00	53.75
Total Off-Road Equipment Emissions:						0.06	0.05	0.16	0.71	0.03	0.03	0.02	0.00	71.74	0.00	0.00	72.38
Diesel PM Emissions:											0.03						

Conversion Factors:
- 453.59 grams/pound
- 2,000 pounds/ton
- 1,000,000 grams/metric ton

Phase 3 Emissions - Daily (Pounds per Day).

						Emissions (pounds/day)											
Equipment	Model	Model Year	Horse-power	Hours per Day	Load Factor	THC	ROG	CO	NOx	PM	PM_{10}	$PM_{2.5}$	SO_2	CO_2	CH_4	N_2O	CO_2e
Excavator	345D	2009	380	8	0.57	1.53	1.28	4.35	17.71	0.67	0.67	0.62	0.02	2,171.01	0.12	0.05	2,190.16
Haul Trucks	740	2003	415	24	0.57	5.09	4.26	14.25	65.94	2.28	2.28	2.11	0.07	7,112.93	0.40	0.18	7,175.66
Total Off-Road Equipment Emissions:						6.61	5.54	18.60	83.65	2.96	2.96	2.73	0.09	9,283.94	0.52	0.23	9,365.82
Diesel PM Emissions:	(pounds/day)										2.96						
	(pounds/hour)										0.37						

Conversion Factors:
- 453.59 grams/pound
- 8 hours/day

Phase 3 Off-Road Equipment Emission Factors.

						Emission Factors (grams/brake horsepower-hour)										
Vehicle Type	Model	Model Year	Horse-Power	Calculation Year	Cumul. Hours	THC	ROG	CO	NOx	PM	PM_{10}	$PM_{2.5}$	SO_2	CO_2	CH_4	N_2O
Excavator	345D	2009	380	2026	12,000	0.400	0.335	1.138	4.636	0.177	0.177	0.163	0.0054	568.3	0.032	0.014
Haul Trucks	740	2003	415	2026	12,000	0.406	0.341	1.138	5.268	0.182	0.182	0.168	0.0054	568.3	0.032	0.014

Notes:

1. Per the document, *Overview: OFFROAD Model*, California Air Resources Board, November 2006 (available at www.arb.ca.gov/msei/offroad/offroad.htm), THC, CO, NOx, PM, and CO_2 emission factors are determined by the following equation:

   EF = ZH + dr * CHrs, where
   - EF = emission factor, in grams per hoursepower-hour (g/bhp-hr)
   - ZH = zero-hour emission rate or when the equipment is new (g/bhp-hr)
   - dr = deterioration rate or the increase in ZH emissions as the equipment is used ($g/bhp\text{-}hr^2$)
   - CHrs = cumulative hours or total number of hours accumulated on the equipment
2. Values utilized in the above emission factor table for ZH and dr are derived from *Offroad2007* (Version 2.0.1.2), California Air Resources Board, December 15, 2006, data from emfac.csv data file, lines 41-149 (default exhaust emission factors for off-road diesel equipment for which specific factors are not provided.)
3. ROG = 83.82% THC, PM10 = 100% PM, and PM2.5 = 92.29% PM. Source: *2008 Estimated Annual Average Emissions – Statewide*, California Air Resources Board, data for Off-Road Equipment, sorted for diesel-fueled vehicles, available at http://www.arb.ca.gov/ei/emissiondata.htm (accessed February 25, 2011).
4. Per the document, *Overview: OFFROAD Model* (op cit.) and the OFFROAD2007 emfac.csv file, the SO_2 emission factor is based on fuel sulfur content and brake-specific fuel consumption. Per *Title 13 California Code of Regulations* sec. 2281 (Sulfur Content of Fuel), as of June 2006 diesel sulfur content in diesel fuel is limited to 15 parts per million. Per the October 2010 CARB Staff Report (op cit.), CARB staff used BSFC values from EPA's NONROAD emissions model, as documented in the report, *Exhaust and Crankcase Emission Factors for Nonroad Engine Modeling – Compression-Ignition* (EPA Report No. EPA420-P-04-009/NR-009C), U.S. Environmental Protection Agency, April 2004. Table A2 of the EPA report (pages A5-A8) documents that for diesel engines up to 100 hp, a brake specific fuel consumption (BSFC) value of 0.408 lb/hp-hr is used. For diesel engines larger than 100 hp, a BSFC value of 0.367 lb/hp-hr is used. The above factors assume a BSFC value of 0.4 lb/hp-hr. The SO_2 emission factor is calculated as follows:

   EF_{SO2} = (Parts S in fuel/million) * (MW_{SO2}/MW_S) * BSFC (lb/hp-hr) * 453.6 g/lb

   = (15 parts S/million) * (64 g/g-mole SO_2/32 g/g-mole S) * 0.4 lb/hp-hr * 453.6 g/lb

Table F-10. Permanente Creek Long-Term Restoration (Phase 3) - Off-Road Diesel Equipment Combustion Emissions.

= 0.0054 g SO_2/hp-hr

5. CH_4 and N_2O factors in grams/gallon are from the Climate Registry, *General Reporting Protocol* Version 1.1 (May 2008), Table 13.6 (Default CH_4 and N_2O Emission Factors for Non-Highway Vehicles), factors for diesel-fueled construction vehicles. To convert CH_4 and N_2O factors in g/gallon to g/bhp, the following equations were employed:

   CH_4 = 0.58 g CH_4/gallon * (1 gallon/137,000 Btu) * 7,500 Btu/bhp-hr = 0.032 g CH_4/bhp-hr, and

   N_2O = 0.26 g N_2O/gallon * (1 gallon/137,000 Btu) * 7,500 Btu/bhp-hr = 0.014 g N_2O/bhp-hr.

   Source for the higher heating value of 137,000 Btu/gallon for diesel and the brake specific fuel combustion factor of 7,500 Btu/bhp-hr: Santa Barbara County Air Pollution Control District, *Piston IC Engine Technical Reference Document* (November 1, 2002), Tables 5 (Default Fuel Properties) and 6 (Default Engine Specifications - diesel turbocharged engines), available at http://www.sbcapcd.org/eng/spice/sbcapcdicerefdoc.pdf.
6. CO_2 equivalent emissions (CO_2e) calculated based on the global warming potentials in the IPCC's *Second Assessment Report* (SAR, 1996), as presented in the Climate Registry *General Reporting Protocol* (op cit.), Table B.1. $CO_2e = 1 * CO_2 + 21 * CH_4 + 310 * N_2O$.
7. Cumulative hours for each equipment item assumes that each item accumulates 2,000 hours of operation each year. Per the document, *Staff Report: Initial Statement of Reasons for Proposed Rulemaking – Proposed Amendments to the Regulation for In-use Off-road Diesel-fueled Fleets and the Off-road Large Spark-ignition Fleet Requirements,* California Air Resources Board, October 2010, Appendix D (OSM and Summary of Off-road Emissions Inventory Update), pages D-27 to D-28, CARB staff now assumes emission factors deteriorate only up to a maximum of 12,000 hours.
8. Annual and daily activity data documented separately.

Table F-11. Permanente Creek Long-Term Restoration (Phase 3) - Assumed Activity Data.

Off-Road Diesel Equipment Activity (Hours).

Category	Manufacturer	Model	Year	HP	Upper Area (Reaches 17/18) Removed Mat'l (Yds^3/Year)	Upper Area (Reaches 17/18) Estimated Hours/Year	Lower Area (Reaches 12/13) Removed Mat'l (Yds^3/Year)	Lower Area (Reaches 12/13) Estimated Hours/Year	Total Hours/Year	Maximum Hours/Day
Excavator	Caterpillar	345D	2009	380	11,000	91.67	7,000	58.33	150.00	8
Haul Trucks	Caterpillar	740	2003	415		183.33		175.00	396.33	24

Notes:

1. Assumes the following conversion factors and operating equipment specifications:
   - 4.0 cubic yard excavator bucket capacity
   - 2.0 minutes per excavator bucket load
   - 60 minutes per hour
   - 2 haul trucks per excavator for the Upper Area
   - 3 haul trucks per excavator for the Lower Area
2. Estimated activity data reflects the work effort necessary to complete Permanente Creek long-term restoration in each designated area.
3. The number of haul trucks required per excavator assumes a material density of 2,500 pounds/cubic yard, and a normal haul weight of 35 tons/truck. Based on this information, the average excavator load will be 5 tons/bucket, and each truck will require 7 bucket loads. Assuming 2 minutes per bucket load, each truck load cycle will average 14 minutes per truck load. The average trip length for the Upper Area is assumed to be 3,000 feet one-way, or 6,000 feet round trip (1.14 miles round trip). At an average speed of 13 miles per hour (4.62 minutes/mile), the haul truck round trip will require 5.24 minutes + 5 minutes to offload, for a haul truck travel cycle of 10.24 minutes/trip, and a total truck cycle time of 24.24 minutes.load. The average trip length for the Lower Area is assumed to be 9,000 feet one-way, or 18,000 feet round trip (3.41 miles round trip). At an average speed of 13 miles per hour, the haul truck round trip will require 15.73 minutes + 5 minutes to offload, for a haul truck travel cycle of 20.73 minutes/trip, and a total truck cycle time of 34.73 minutes/load.

Material Handling and Haul Truck Travel Activity.

Category	Upper Area	Lower Area	Total
Material Handling:			
Cubic Yards	11,000	7,000	18,000
Total Tons (U.S.)	13,750	8,750	22,500
Maximum Tons/Day	1,200	1,200	1,200
Tons/Hour	150	150	150
Haul Truck Travel:			
40-ton Truck Loads			
Total Loads	392.9	250.0	642.9
Loads/Hour	4.3	4.3	4.3
1-Way Travel	3,000	9,000	--
Total Miles (2-way)	446	852	1,299
Maximum Miles/Day	39	117	117
Maximum Miles/Hour	5	15	15

Notes:

1. Conversion factors:
   - 2,500 pounds/cubic yard
   - 2,000 pounds/ton
   - 8 hours/day
   - 5,280 feet/mile
   - 35 tons/load normal haul weight

Mechanically Disturbed Areas (Acres).

Category	Upper Area	Lower Area	Average	Maximum
Total Acres	1.78	1.15		
Mechanically Disturbed Areas	1.78	1.15		
Disturbed at Any One Time	0.89	0.58	0.77	0.89
Disturbance Days	11.46	7.29	18.75	11.46

Notes:

1. Assumes that 50% of an area's acreage is disturbed at any one time.

Table F-12. Permanente Creek Long-Term Restoration (Phase 3) - Emission Zero Hour and Deterioration Rate Emission Factors for Off-Road Diesel Equipment.

Fuel	Min HP	Max HP	Year	THCzh	THCdr	THCunits	COzh	COdr	COunits	NOXzh	NOXdr	NOXunits	PMzh	PMdr	PMunits	CO2zh	CO2dr	CO2units
D	1	15	1994	1.5	0.00E+00	G/HP-HR	5	0.00E+00	G/HP-HR	10	0.00E+00	G/HP-HR	1	0.00E+00	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	1	15	1999	1.05	0.00E+00	G/HP-HR	5	0.00E+00	G/HP-HR	9.35	0.00E+00	G/HP-HR	0.57	0.00E+00	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	1	15	2004	0.68	0.00E+00	G/HP-HR	3.47	0.00E+00	G/HP-HR	6.08	0.00E+00	G/HP-HR	0.47	0.00E+00	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	1	15	2007	0.49	0.00E+00	G/HP-HR	3.47	0.00E+00	G/HP-HR	4.37	0.00E+00	G/HP-HR	0.38	0.00E+00	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	1	15	2040	0.49	0.00E+00	G/HP-HR	3.47	0.00E+00	G/HP-HR	4.37	0.00E+00	G/HP-HR	0.19	0.00E+00	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	16	25	1994	1.84	0.00E+00	G/HP-HR	5	0.00E+00	G/HP-HR	6.92	0.00E+00	G/HP-HR	0.76	0.00E+00	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	16	25	1999	0.9	0.00E+00	G/HP-HR	5	0.00E+00	G/HP-HR	6.92	0.00E+00	G/HP-HR	0.57	0.00E+00	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	16	25	2004	0.64	0.00E+00	G/HP-HR	2.34	0.00E+00	G/HP-HR	5.79	0.00E+00	G/HP-HR	0.38	0.00E+00	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	16	25	2007	0.57	0.00E+00	G/HP-HR	2.34	0.00E+00	G/HP-HR	4.57	0.00E+00	G/HP-HR	0.38	0.00E+00	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	16	25	2040	0.57	0.00E+00	G/HP-HR	2.34	0.00E+00	G/HP-HR	4.57	0.00E+00	G/HP-HR	0.19	0.00E+00	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	26	50	1987	1.84	2.35E-04	G/HP-HR	5	5.13E-04	G/HP-HR	7	1.05E-04	G/HP-HR	0.76	5.89E-05	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	26	50	1998	1.8	2.30E-04	G/HP-HR	5	5.13E-04	G/HP-HR	6.9	1.04E-04	G/HP-HR	0.76	5.89E-05	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	26	50	2003	1.45	1.85E-04	G/HP-HR	4.1	4.20E-04	G/HP-HR	5.55	1.03E-04	G/HP-HR	0.6	4.65E-05	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	26	50	2004	0.64	9.80E-05	G/HP-HR	3.27	3.34E-04	G/HP-HR	5.1	9.33E-05	G/HP-HR	0.43	3.36E-05	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	26	50	2005	0.37	6.90E-05	G/HP-HR	3	3.05E-04	G/HP-HR	4.95	9.67E-05	G/HP-HR	0.38	2.93E-05	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	26	50	2007	0.24	5.45E-05	G/HP-HR	2.86	2.90E-04	G/HP-HR	4.88	9.83E-05	G/HP-HR	0.35	2.72E-05	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	26	50	2012	0.1	4.00E-05	G/HP-HR	2.72	2.76E-04	G/HP-HR	4.8	1.00E-04	G/HP-HR	0.16	1.20E-05	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	26	50	2040	0.1	4.00E-05	G/HP-HR	2.72	2.76E-04	G/HP-HR	2.9	6.00E-05	G/HP-HR	0.01	1.20E-06	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	51	120	1987	1.44	6.66E-05	G/HP-HR	4.8	1.27E-04	G/HP-HR	13	3.01E-04	G/HP-HR	0.84	6.11E-05	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	51	120	1997	0.99	4.58E-05	G/HP-HR	3.49	9.23E-05	G/HP-HR	8.75	2.02E-04	G/HP-HR	0.69	5.02E-05	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	51	120	2003	0.99	4.58E-05	G/HP-HR	3.49	9.23E-05	G/HP-HR	6.9	1.60E-04	G/HP-HR	0.69	5.02E-05	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	51	120	2004	0.46	3.33E-05	G/HP-HR	3.23	8.55E-05	G/HP-HR	5.64	1.03E-04	G/HP-HR	0.39	2.85E-05	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	51	120	2005	0.28	2.92E-05	G/HP-HR	3.14	8.33E-05	G/HP-HR	5.22	8.40E-05	G/HP-HR	0.29	2.12E-05	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	51	120	2007	0.19	2.71E-05	G/HP-HR	3.09	8.21E-05	G/HP-HR	5.01	7.45E-05	G/HP-HR	0.24	1.76E-05	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	51	120	2011	0.1	2.50E-05	G/HP-HR	3.05	8.10E-05	G/HP-HR	2.89	3.80E-05	G/HP-HR	0.2	8.58E-06	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	51	120	2012	0.09	2.31E-05	G/HP-HR	3.05	8.10E-05	G/HP-HR	2.53	3.38E-05	G/HP-HR	0.07	4.30E-06	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	51	120	2014	0.09	2.31E-05	G/HP-HR	3.05	8.10E-05	G/HP-HR	2.53	3.38E-05	G/HP-HR	0.01	1.04E-06	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	51	120	2040	0.07	1.74E-05	G/HP-HR	3.05	8.10E-05	G/HP-HR	1.4	1.88E-05	G/HP-HR	0.01	1.04E-06	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	121	175	1969	1.32	6.11E-05	G/HP-HR	4.4	1.16E-04	G/HP-HR	14	3.24E-04	G/HP-HR	0.77	5.60E-05	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	121	175	1971	1.1	5.09E-05	G/HP-HR	4.4	1.16E-04	G/HP-HR	13	3.01E-04	G/HP-HR	0.66	4.80E-05	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	121	175	1979	1	4.63E-05	G/HP-HR	4.4	1.16E-04	G/HP-HR	12	2.78E-04	G/HP-HR	0.55	4.00E-05	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	121	175	1984	0.94	4.35E-05	G/HP-HR	4.3	1.14E-04	G/HP-HR	11	2.54E-04	G/HP-HR	0.55	4.00E-05	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	121	175	1987	0.88	4.07E-05	G/HP-HR	4.2	1.11E-04	G/HP-HR	11	2.54E-04	G/HP-HR	0.55	4.00E-05	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	121	175	1996	0.68	3.15E-05	G/HP-HR	2.7	7.14E-05	G/HP-HR	8.17	1.89E-04	G/HP-HR	0.38	2.76E-05	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	121	175	2002	0.68	3.15E-05	G/HP-HR	2.7	7.14E-05	G/HP-HR	6.9	1.60E-04	G/HP-HR	0.38	2.76E-05	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	121	175	2003	0.33	2.79E-05	G/HP-HR	2.7	7.14E-05	G/HP-HR	5.26	9.64E-05	G/HP-HR	0.24	1.70E-05	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	121	175	2004	0.22	2.63E-05	G/HP-HR	2.7	7.14E-05	G/HP-HR	4.72	7.52E-05	G/HP-HR	0.19	1.35E-05	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	121	175	2006	0.16	2.57E-05	G/HP-HR	2.7	7.14E-05	G/HP-HR	4.44	6.46E-05	G/HP-HR	0.16	1.18E-05	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	121	175	2011	0.1	2.50E-05	G/HP-HR	2.7	7.14E-05	G/HP-HR	2.45	3.20E-05	G/HP-HR	0.14	1.00E-05	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	121	175	2014	0.09	2.17E-05	G/HP-HR	2.7	7.14E-05	G/HP-HR	2.27	2.88E-05	G/HP-HR	0.01	5.00E-07	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	121	175	2040	0.05	1.17E-05	G/HP-HR	2.7	7.14E-05	G/HP-HR	0.27	3.75E-06	G/HP-HR	0.01	5.00E-07	G/HP-HR	568.3	0.00E+00	G/HP-HR

Table F-12. Permanente Creek Long-Term Restoration (Phase 3) - Emission Zero Hour and Deterioration Rate Emission Factors for Off-Road Diesel Equipment.

Fuel	Min HP	Max HP	Year	THCzh	THCdr	THCunits	COzh	COdr	COunits	NOXzh	NOXdr	NOXunits	PMzh	PMdr	PMunits	CO2zh	CO2dr	CO2units
D	176	250	1969	1.32	6.11E-05	G/HP-HR	4.4	1.16E-04	G/HP-HR	14	3.24E-04	G/HP-HR	0.77	5.60E-05	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	176	250	1971	1.1	5.09E-05	G/HP-HR	4.4	1.16E-04	G/HP-HR	13	3.01E-04	G/HP-HR	0.66	4.80E-05	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	176	250	1979	1	4.63E-05	G/HP-HR	4.4	1.16E-04	G/HP-HR	12	2.78E-04	G/HP-HR	0.55	4.00E-05	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	176	250	1984	0.94	4.35E-05	G/HP-HR	4.3	1.14E-04	G/HP-HR	11	2.54E-04	G/HP-HR	0.55	4.00E-05	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	176	250	1987	0.88	4.07E-05	G/HP-HR	4.2	1.11E-04	G/HP-HR	11	2.54E-04	G/HP-HR	0.55	4.00E-05	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	176	250	1995	0.68	3.15E-05	G/HP-HR	2.7	7.14E-05	G/HP-HR	8.17	1.89E-04	G/HP-HR	0.38	2.76E-05	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	176	250	2002	0.32	1.48E-05	G/HP-HR	0.92	2.43E-05	G/HP-HR	6.25	1.45E-04	G/HP-HR	0.15	7.96E-06	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	176	250	2003	0.19	2.09E-05	G/HP-HR	0.92	2.43E-05	G/HP-HR	5	9.05E-05	G/HP-HR	0.12	6.51E-06	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	176	250	2004	0.14	2.30E-05	G/HP-HR	0.92	2.43E-05	G/HP-HR	4.58	7.23E-05	G/HP-HR	0.11	6.03E-06	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	176	250	2006	0.12	2.40E-05	G/HP-HR	0.92	2.43E-05	G/HP-HR	4.38	6.33E-05	G/HP-HR	0.11	5.79E-06	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	176	250	2010	0.1	2.50E-05	G/HP-HR	0.92	2.43E-05	G/HP-HR	2.45	3.18E-05	G/HP-HR	0.11	5.59E-06	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	176	250	2013	0.07	1.83E-05	G/HP-HR	0.92	2.43E-05	G/HP-HR	1.36	1.75E-05	G/HP-HR	0.01	3.75E-07	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	176	250	2040	0.05	1.17E-05	G/HP-HR	0.92	2.43E-05	G/HP-HR	0.27	3.75E-06	G/HP-HR	0.01	3.75E-07	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	251	500	1969	1.26	4.39E-05	G/HP-HR	4.2	8.32E-04	G/HP-HR	14	2.33E-04	G/HP-HR	0.74	3.93E-05	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	251	500	1971	1.05	3.66E-05	G/HP-HR	4.2	8.32E-04	G/HP-HR	13	2.16E-04	G/HP-HR	0.63	3.34E-05	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	251	500	1979	0.95	3.31E-05	G/HP-HR	4.2	8.32E-04	G/HP-HR	12	2.00E-04	G/HP-HR	0.53	2.81E-05	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	251	500	1984	0.9	3.14E-05	G/HP-HR	4.2	8.32E-04	G/HP-HR	11	1.83E-04	G/HP-HR	0.53	2.81E-05	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	251	500	1987	0.84	2.93E-05	G/HP-HR	4.1	8.12E-04	G/HP-HR	11	1.83E-04	G/HP-HR	0.53	2.81E-05	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	251	500	1995	0.68	2.37E-05	G/HP-HR	2.7	5.35E-05	G/HP-HR	8.17	1.36E-04	G/HP-HR	0.38	2.02E-05	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	251	500	2000	0.32	1.12E-05	G/HP-HR	0.92	1.82E-05	G/HP-HR	6.25	1.04E-04	G/HP-HR	0.15	7.96E-06	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	251	500	2001	0.19	1.95E-05	G/HP-HR	0.92	1.82E-05	G/HP-HR	4.95	7.34E-05	G/HP-HR	0.12	6.51E-06	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	251	500	2002	0.14	2.22E-05	G/HP-HR	0.92	1.82E-05	G/HP-HR	4.51	6.32E-05	G/HP-HR	0.11	6.03E-06	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	251	500	2004	0.12	2.36E-05	G/HP-HR	0.92	1.82E-05	G/HP-HR	4.29	5.81E-05	G/HP-HR	0.11	5.79E-06	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	251	500	2005	0.1	2.50E-05	G/HP-HR	0.92	1.82E-05	G/HP-HR	4	5.30E-05	G/HP-HR	0.11	5.55E-06	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	251	500	2010	0.1	2.50E-05	G/HP-HR	0.92	1.82E-05	G/HP-HR	2.45	3.18E-05	G/HP-HR	0.11	5.55E-06	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	251	500	2013	0.07	1.83E-05	G/HP-HR	0.92	1.82E-05	G/HP-HR	1.36	1.75E-05	G/HP-HR	0.01	3.75E-07	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	251	500	2040	0.05	1.17E-05	G/HP-HR	0.92	1.82E-05	G/HP-HR	0.27	3.75E-06	G/HP-HR	0.01	3.75E-07	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	501	750	1969	1.26	4.39E-05	G/HP-HR	4.2	8.32E-04	G/HP-HR	14	2.33E-04	G/HP-HR	0.74	3.93E-05	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	501	750	1971	1.05	3.66E-05	G/HP-HR	4.2	8.32E-04	G/HP-HR	13	2.16E-04	G/HP-HR	0.63	3.34E-05	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	501	750	1979	0.95	3.31E-05	G/HP-HR	4.2	8.32E-04	G/HP-HR	12	2.00E-04	G/HP-HR	0.53	2.81E-05	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	501	750	1984	0.9	3.14E-05	G/HP-HR	4.2	8.32E-04	G/HP-HR	11	1.83E-04	G/HP-HR	0.53	2.81E-05	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	501	750	1987	0.84	2.93E-05	G/HP-HR	4.1	8.12E-04	G/HP-HR	11	1.83E-04	G/HP-HR	0.53	2.81E-05	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	501	750	1995	0.68	2.37E-05	G/HP-HR	2.7	5.35E-05	G/HP-HR	8.17	1.36E-04	G/HP-HR	0.38	2.02E-05	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	501	750	2001	0.32	1.12E-05	G/HP-HR	0.92	1.82E-05	G/HP-HR	6.25	1.04E-04	G/HP-HR	0.15	7.96E-06	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	501	750	2002	0.19	1.95E-05	G/HP-HR	0.92	1.82E-05	G/HP-HR	4.95	7.34E-05	G/HP-HR	0.12	6.51E-06	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	501	750	2003	0.14	2.22E-05	G/HP-HR	0.92	1.82E-05	G/HP-HR	4.51	6.32E-05	G/HP-HR	0.11	6.03E-06	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	501	750	2005	0.12	2.36E-05	G/HP-HR	0.92	1.82E-05	G/HP-HR	4.29	5.81E-05	G/HP-HR	0.11	5.79E-06	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	501	750	2010	0.1	2.50E-05	G/HP-HR	0.92	1.82E-05	G/HP-HR	2.45	3.18E-05	G/HP-HR	0.11	5.55E-06	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	501	750	2013	0.07	1.83E-05	G/HP-HR	0.92	1.82E-05	G/HP-HR	1.36	1.75E-05	G/HP-HR	0.01	3.75E-07	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	501	750	2040	0.05	1.17E-05	G/HP-HR	0.92	1.82E-05	G/HP-HR	0.27	3.75E-06	G/HP-HR	0.01	3.75E-07	G/HP-HR	568.3	0.00E+00	G/HP-HR

Table F-12. Permanente Creek Long-Term Restoration (Phase 3) - Emission Zero Hour and Deterioration Rate Emission Factors for Off-Road Diesel Equipment.

Fuel	Min HP	Max HP	Year	THCzh	THCdr	THCunits	COzh	COdr	COunits	NOXzh	NOXdr	NOXunits	PMzh	PMdr	PMunits	CO2zh	CO2dr	CO2units
D	751	1000	1969	1.26	4.39E-05	G/HP-HR	4.2	8.32E-04	G/HP-HR	14	2.33E-04	G/HP-HR	0.74	3.93E-05	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	751	1000	1971	1.05	3.66E-05	G/HP-HR	4.2	8.32E-04	G/HP-HR	13	2.16E-04	G/HP-HR	0.63	3.34E-05	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	751	1000	1979	0.95	3.31E-05	G/HP-HR	4.2	8.32E-04	G/HP-HR	12	2.00E-04	G/HP-HR	0.53	2.81E-05	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	751	1000	1984	0.9	3.14E-05	G/HP-HR	4.2	8.32E-04	G/HP-HR	11	1.83E-04	G/HP-HR	0.53	2.81E-05	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	751	1000	1987	0.84	2.93E-05	G/HP-HR	4.1	8.12E-04	G/HP-HR	11	1.83E-04	G/HP-HR	0.53	2.81E-05	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	751	1000	1999	0.68	1.12E-05	G/HP-HR	2.7	5.35E-05	G/HP-HR	8.17	1.36E-04	G/HP-HR	0.38	2.02E-06	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	751	1000	2005	0.32	1.12E-05	G/HP-HR	0.92	1.82E-05	G/HP-HR	6.25	1.04E-04	G/HP-HR	0.15	7.96E-06	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	751	1000	2006	0.19	1.95E-05	G/HP-HR	0.92	1.82E-05	G/HP-HR	4.95	7.34E-05	G/HP-HR	0.12	6.51E-06	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	751	1000	2007	0.14	2.22E-05	G/HP-HR	0.92	1.82E-05	G/HP-HR	4.51	6.32E-05	G/HP-HR	0.11	6.03E-06	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	751	1000	2009	0.12	2.36E-05	G/HP-HR	0.92	1.82E-05	G/HP-HR	4.29	5.81E-05	G/HP-HR	0.11	5.79E-06	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	751	1000	2010	0.1	2.50E-05	G/HP-HR	0.92	1.82E-05	G/HP-HR	4.08	5.30E-05	G/HP-HR	0.11	5.55E-06	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	751	1000	2014	0.07	1.83E-05	G/HP-HR	0.92	1.82E-05	G/HP-HR	2.36	3.00E-05	G/HP-HR	0.06	2.50E-06	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	751	1000	2040	0.05	1.17E-05	G/HP-HR	0.92	1.82E-05	G/HP-HR	2.36	3.00E-05	G/HP-HR	0.02	1.00E-06	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	1001	9999	1969	1.26	4.39E-05	G/HP-HR	4.2	8.32E-04	G/HP-HR	14	2.33E-04	G/HP-HR	0.74	3.93E-05	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	1001	9999	1971	1.05	3.66E-05	G/HP-HR	4.2	8.32E-04	G/HP-HR	13	2.16E-04	G/HP-HR	0.63	3.34E-05	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	1001	9999	1979	0.95	3.31E-05	G/HP-HR	4.2	8.32E-04	G/HP-HR	12	2.00E-04	G/HP-HR	0.53	2.81E-05	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	1001	9999	1984	0.9	3.14E-05	G/HP-HR	4.2	8.32E-04	G/HP-HR	11	1.83E-04	G/HP-HR	0.53	2.81E-05	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	1001	9999	1987	0.84	2.93E-05	G/HP-HR	4.1	8.12E-04	G/HP-HR	11	1.83E-04	G/HP-HR	0.53	2.81E-05	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	1001	9999	1999	0.68	1.12E-05	G/HP-HR	2.7	5.35E-05	G/HP-HR	8.17	1.36E-04	G/HP-HR	0.38	2.02E-06	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	1001	9999	2005	0.32	1.12E-05	G/HP-HR	0.92	1.82E-05	G/HP-HR	6.25	1.04E-04	G/HP-HR	0.15	7.96E-06	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	1001	9999	2006	0.19	1.95E-05	G/HP-HR	0.92	1.82E-05	G/HP-HR	4.95	7.34E-05	G/HP-HR	0.12	6.51E-06	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	1001	9999	2007	0.14	2.22E-05	G/HP-HR	0.92	1.82E-05	G/HP-HR	4.51	6.32E-05	G/HP-HR	0.11	6.03E-06	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	1001	9999	2009	0.12	2.36E-05	G/HP-HR	0.92	1.82E-05	G/HP-HR	4.29	5.81E-05	G/HP-HR	0.11	5.79E-06	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	1001	9999	2010	0.1	2.50E-05	G/HP-HR	0.92	1.82E-05	G/HP-HR	4.08	5.30E-05	G/HP-HR	0.11	5.55E-06	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	1001	9999	2014	0.1	2.50E-05	G/HP-HR	0.92	1.82E-05	G/HP-HR	2.36	3.00E-05	G/HP-HR	0.06	2.50E-06	G/HP-HR	568.3	0.00E+00	G/HP-HR
D	1001	9999	2040	0.05	1.17E-05	G/HP-HR	0.92	1.82E-05	G/HP-HR	2.36	3.00E-05	G/HP-HR	0.02	1.00E-06	G/HP-HR	568.3	0.00E+00	G/HP-HR

Notes:

1. The above factors are derived from *Offroad2007* (Version 2.0.1.2), California Air Resources Board, December 15, 2006, data from emfac.csv data file, lines 41-149 (default exhaust emission factors for off-road diesel equipment for which specific factors are not provided).
2. The above factors are consistent with the factors used by CARB staff to estimate off-road diesel equipment emissions, as documented in *Staff Report: Initial Statement of Reasons for Proposed Rulemaking – Proposed Amendments to the Regulation for In-use Off-road Diesel-fueled Fleets and the Off-road Large Spark-ignition Fleet Requirements*, California Air Resources Board, October 2010, Appendix D (OSM and Summary of Off-road Emissions Inventory Update), Attachment D (Diesel Emission Factors (g/bhp-hr)).

APPENDIX C
Biological Resources

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Attachment B
Biological Resource Report

Biological Resources Assessment

HANSON PERMANENTE QUARRY
SANTA CLARA COUNTY, CALIFORNIA

Prepared For:
John Giovanola
Hanson Permanente Cement
24001 Stevens Creek Blvd.
Cupertino CA, 95014-5659

Contact:
Mike Josselyn
josselyn@wra-ca.com

Date:
December 2006

WRA ENVIRONMENTAL CONSULTANTS

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APPENDICES

1.0 INTRODUCTION

On September 28, 2006, WRA, Inc. performed an assessment of biological resources on approximately 917 acres of Hanson Permanente Quarry property, in Santa Clara County, California (Figure 1). The purpose of the assessment was to gather information necessary to complete a review of biological resources in the Project Area where a quarry reclamation plan modification is proposed.

This report describes the results of the site visit, which assessed the Project Area for the (1) presence of special status species; (2) potential to support special status species; and (3) presence of other sensitive biological resources protected by local, state, and federal laws and regulations.

A biological resources assessment provides general information on the potential presence of sensitive species and habitats. The biological resources assessment is not an official protocol level survey for listed species that may be required for project approval by local, state, or federal agencies. However, specific findings on the occurrence of any species or the presence of sensitive habitats may require that protocol surveys be conducted. This assessment is based on information available at the time of the study and on site conditions that were observed on the date of the site visit.

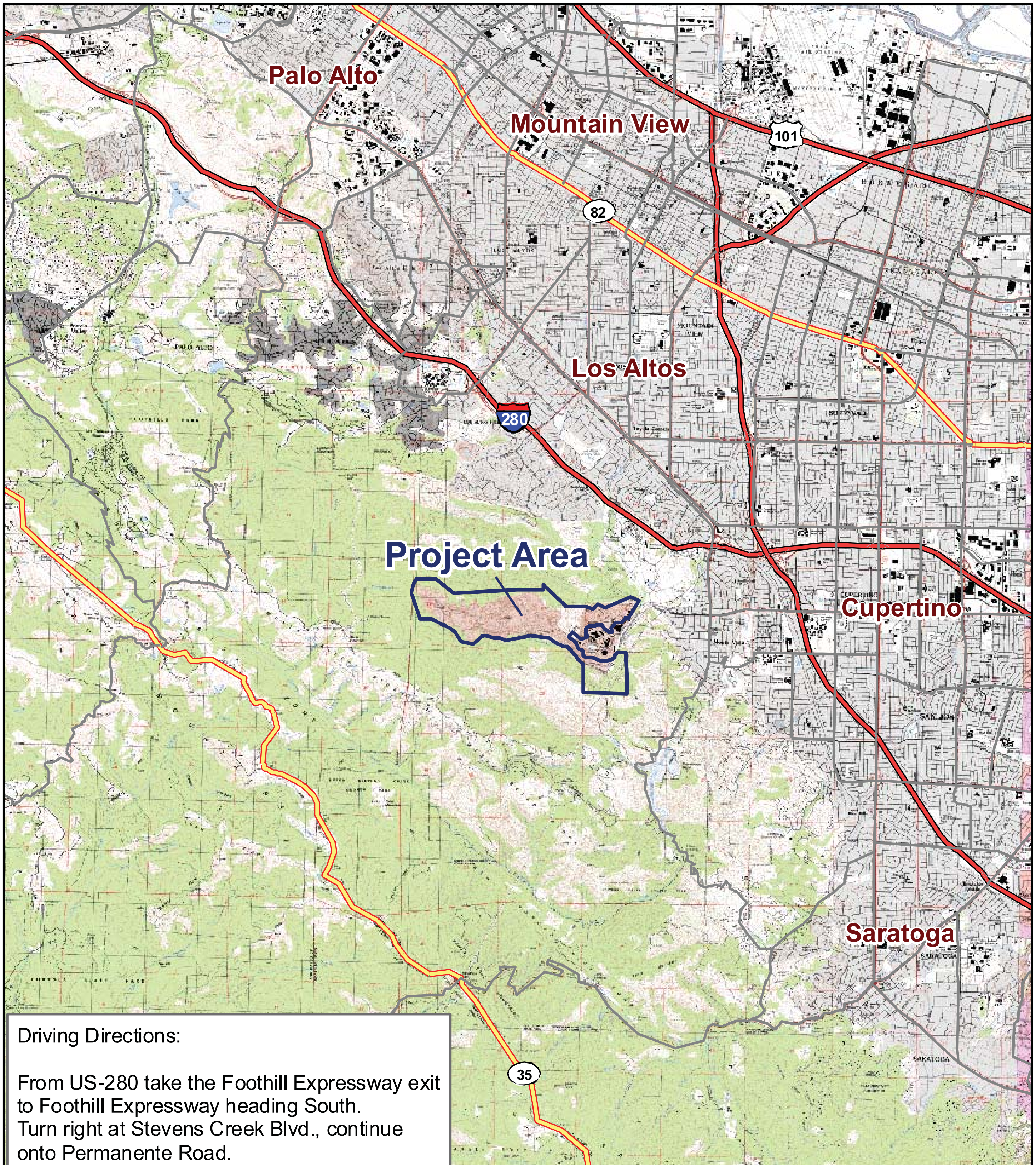
1.1 General Project Area Description

The Project Area is located north of Monte Bello Ridge, approximately ½ mile west of Rancho San Antonio County Park, at the west end of Permanente Road, approximately 4 miles west of downtown Cupertino in Santa Clara County. The Project Area elevation ranges from 600 to over 1900 feet above sea level.

The Project Area is characterized as an actively operating quarry consisting of mining facilities and structures, including an open quarry pit in the center of the area, material storage fill areas to the east and west of the active pit and an operational rock plant in the southeast corner. Additionally, approximately 172 acres of Buffer Area lands surrounding the active quarry are included in the Project Area. Most of the Buffer Area lands within the Project Area are not currently intended to be part of the quarry operations, but are included to act as a buffer between active areas and areas outside of the reclamation plan modification. Some Buffer Areas were also included due to “squaring off” of the reclamation plan boundaries at parcel boundaries for staking and monitoring purposes.

2.0 METHODS

On September 28, 2006, the Project Area was traversed on foot to determine (1) plant communities present within the Project Area, (2) if existing conditions provided suitable habitat for any special status plant or wildlife species, and (3) if sensitive habitats are present. For those areas that were inaccessible, inspection was conducted using aerial photographs and referencing to areas observed on foot.



Driving Directions:

From US-280 take the Foothill Expressway exit to Foothill Expressway heading South.
Turn right at Stevens Creek Blvd., continue onto Permanente Road.

Figure 1. Location Map

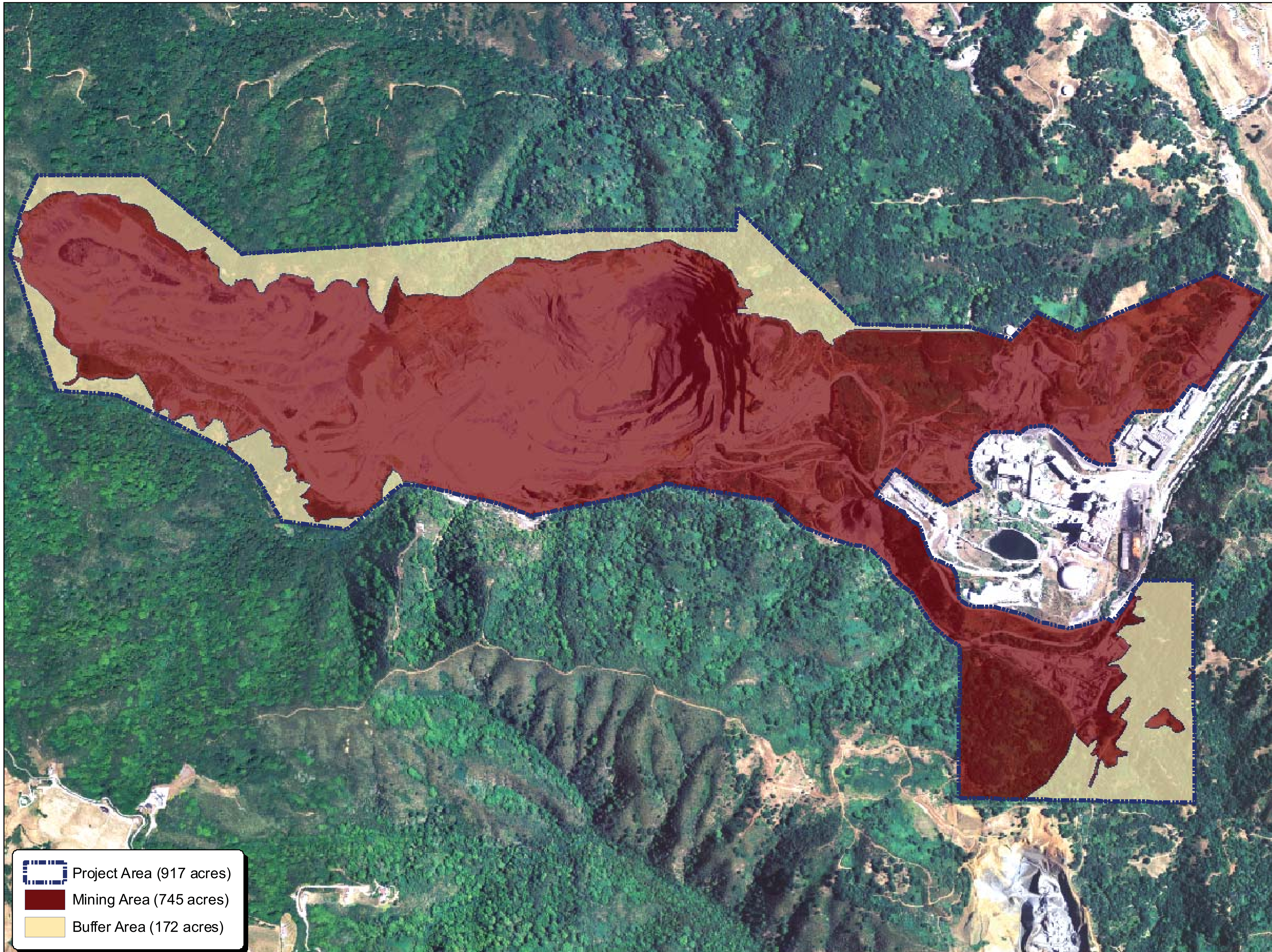
Santa Clara County, CA

N

0 1 2 4
Miles

ENVIRONMENTAL CONSULTANTS

Date: December 2006
Basemap: USGS Topo Quad
Map By: Michael Rochelle
Filepath: I:\ACAD2000\16000\16143\GIS\ArcMap\LocationDec06.mxd



wra
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San Rafael, CA 94901
(415) 454-8868 Phone
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Santa Clara County, California

Figure 2.

Biological Assessment Areas

0 500 1,000 2,000
Feet

Date: December 2006
Map By: Michael Rochelle

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2.1 Biological Communities

Prior to the site visit, the Soil Survey of the Santa Clara Area, California [U.S. Department of Agriculture (USDA) 1941], the US Fish and Wildlife Service (USFWS) National Wetland Inventory, and USDA aerial photos were examined to determine if any unique soil types, vegetative features, and/or aquatic features that could support sensitive plant communities were present in the Project Area. Biological communities present in the Project Area were classified based on existing plant community descriptions described in the *Preliminary Descriptions of the Terrestrial Natural Communities of California* (Holland 1986). However, in some cases it is necessary to identify variants of community types or to describe non-vegetated areas that are not described in the literature. Figure 3 shows the general location and extent of the biological communities observed in the Project Area. See Appendix B for representative site photographs of the observed plant communities.

2.2 Sensitive Plant Communities and Aquatic Features

Biological communities identified within the Project Area were evaluated to determine if they are considered sensitive or non-sensitive as defined by the California Environmental Quality Act (CEQA) and other applicable laws and regulations.

2.2.1 Wetlands and Waters

Any potential wetland areas were identified as areas dominated by plant species with a wetland indicator status[1] of OBL, FACW, or FAC as given on the U.S. Fish and Wildlife Service List of Plant Species that Occur in Wetlands (Reed 1988). Evidence of wetland hydrology can include direct evidence (primary indicators), such as visible inundation or saturation, surface sediment deposits, algal mats and drift lines, or indirect indicators (secondary indicators), such as oxidized root channels. Some indicators of wetland soils include dark colored soils, soils with a sulfidic odor, and soils that contain redoximorphic features as defined by the Corps Manual and Field Indicators of Hydric Soils in the United States (NRCS, 2002).

2.2.2 Riparian Habitat

An inspection was conducted to determine if the banks of drainages, streams and other aquatic features within the Project Area supported hydrophytic or stream-dependent woody plant species (riparian species). Streams supporting riparian vegetation were noted and the area of the riparian habitat was estimated and mapped using ArcGIS software.

2.2.3 Other Sensitive Biological Communities

The Project Area was evaluated for the presence of other sensitive biological communities recognized by the California Department of Fish and Game (CDFG) or other local or regional ordinances. If present in the Project Area, these sensitive biological communities were mapped and are described in Section 3.1.2 below.

[1] OBL = Obligate, always found in wetlands (> 99% frequency of occurrence); FACW = Facultative wetland, usually found in wetlands (67-99% frequency of occurrence); FAC = Facultative, equal occurrence in wetland or non-wetlands (34-66% frequency of occurrence).

2.3 Special Status Species

2.3.1 Literature Review

Potential occurrence of special status species in the Project Area was evaluated by first determining which special status species occur in the vicinity of the Project Area through a literature and database search. Database searches for known occurrences of special status species focused on the Cupertino and Mindego Hill 7.5 minute USGS quadrangles and the eight surrounding USGS quadrangles. The following sources were reviewed to determine which special status plant and wildlife species have been documented to occur in the vicinity of the Project Area:

- California Natural Diversity Database records (CNDDB) (CDFG September 2006)
- USFWS quadrangle species lists (USFWS September 2006)
- CNPS Electronic Inventory records (CNPS September 2006)
- CDFG publication "California's Wildlife, Volumes I-III" (Zeiner et al. 1990)
- CDFG publication "Amphibians and Reptile Species of Special Concern in California" (Jennings 1994)
- A Field Guide to Western Reptiles and Amphibians (Stebbins, R.C. 2003)
- CDFG CalFish ArcIMS Fish Distribution Mapping Tool and Fish Passage Assessment Database (CDFG September 2006)
- National Oceanic and Atmospheric Administration NMFS Distribution Maps for California Salmonid Species (1999)

2.3.2 Site Assessment

A site visit was made to the Project Area to search for suitable habitats for species identified in the literature review as occurring in the vicinity. The potential for each special status species to occur in the Project Area was then evaluated according to the following criteria:

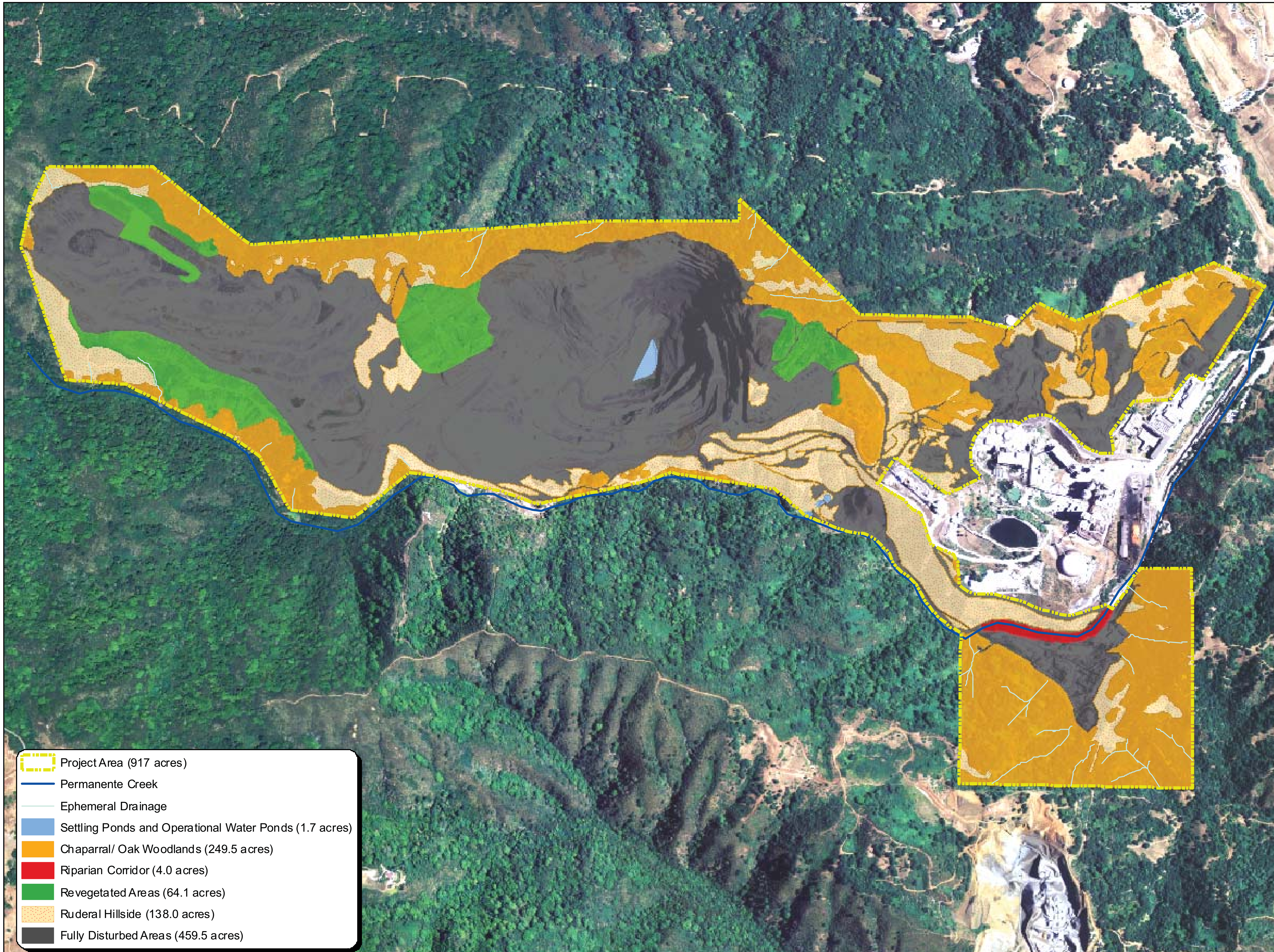
1) No Potential. Habitat on and adjacent to the site is clearly unsuitable for the species requirements (foraging, breeding, cover, substrate, elevation, hydrology, plant community, site history, disturbance regime).

2) Unlikely. Few of the habitat components meeting the species requirements are present, and/or the majority of habitat on and adjacent to the site is unsuitable or of very poor quality. The species is not likely to be found on the site.

3) Moderate Potential. Some of the habitat components meeting the species requirements are present, and/or only some of the habitat on or adjacent to the site is unsuitable. The species has a moderate probability of being found on the site.

4) High Potential. All of the habitat components meeting the species requirements are present and/or most of the habitat on or adjacent to the site is highly suitable. The species has a high probability of being found on the site.

5) Present. Species is observed on the site or has been recorded (i.e. CNDDB, other reports) on the site recently.



ENVIRONMENTAL CONSULTANTS
2169-G East Francisco Blvd.
San Rafael, CA 94901
(415) 454-8868 Phone
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Santa Clara County, California

Figure 3.

Biological Communities

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Date: December 2006
Map By: Michael Rochelle

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The site assessment is intended to identify the presence or absence of suitable habitat for each special status species known to occur in the vicinity in order to determine its potential to occur in the Project Area. The site visit does not constitute a protocol-level survey and is not intended to determine the actual presence or absence of a species; however, if a special status species is observed during the site visit, its presence will be recorded and discussed. Appendix A presents the evaluation of potential for occurrence of each special status plant and wildlife species known to occur in the vicinity of the Project Area with their habitat requirements, potential for occurrence, and rationale for the classification based on criteria listed above.

3.0 RESULTS

The following sections present the results of the biological resources assessment for special status species, sensitive plant communities and aquatic features within the Project Area. The Project Area has been divided into two distinct sections for the purposes of this assessment, an approximately 745-acre Mining Area, and a smaller, approximately 172-acre area, referred to as the Buffer Area (Figure 2).

Most of the Project Area consisting of an active quarry has been significantly altered from its native state. An unpaved road separates the southern boundary of the Project Area from Permanente Creek, except for an approximately 4.0-acre area where Permanente Creek enters the Project Area in the southeast section of the Project Area.

The Mining Area is primarily situated upon four soil series: Soper series gravelly loam, Los Gatos clay loam, Los Gatos-Maymen complex, and Permanente stony soils, however the native soils have been disturbed by quarry activities for decades. An unmined area located on a hilltop directly east of the quarry office in the central portion of the Project Area contains evidence of historic human disturbance including degrading pavement, a small grove of plum trees, and numerous piles of rubbish materials of unknown origin.

The Buffer Area is comprised of various perimeter areas around the edges of the active quarry that have not been significantly disturbed from their native state by quarry activities. These areas are comprised primarily of steep, densely vegetated oak woodland and chaparral slopes (~1000' to 1900' elevation), occasionally interspersed with ruderal vegetation. Soils in these regions are mapped exclusively as Permanente series, stony soils, 50+ percent slopes. No future mining activities are proposed in the Buffer Area.

3.1 Biological Communities

Seven distinct biological communities are located in the Project Area: 1) ruderal hillslopes, 2) Northern Mixed Chaparral / Coast Live Oak Woodland, 3) riparian corridor, 4) revegetated areas, 5) fully disturbed areas, 6) settling ponds and operational water ponds, and 7) ephemeral drainages. Their general locations and extent are shown on the Biological Communities Map (Figure 3).

3.1.1 Non-Sensitive Biological Communities

Ruderal Hillslopes - Areas of the Project Area that were disturbed historically, but have been idle for a period long enough to encourage establishment of plant cover or have been hydroseeded in the past for erosion control and support a sparse cover of grass and shrub vegetation are considered ruderal hillslopes. Generally these areas are steeper slopes along roadsides, and the southeastern border of the Project Area that have become vegetated with weedy plant species including yellow star thistle (*Centaurea solstitialis*), black mustard (*Brassica nigra*), scarlet bugler (*Penstemon centranthifolius*), wild oats (*Avena* spp.), brome grass (*Bromus* spp.),rose clover (*Trifolium hirtum*), and some volunteer native shrub species including coyote brush (*Baccharis pilularis*), chamise (*Adenostoma fasciculatum*), and California sagebrush (*Artemisia californica*).

Revegetated Areas - Revegetated areas are historically disturbed slopes that have been graded to a final contour, hydroseeded with native grass species, and often planted at a low to moderate density with native shrubs and trees including coyote brush, chamise, and oaks from locally collected cuttings and acorns. Irrigation has been applied to some revegetated areas to encourage the establishment of planted trees and shrubs, and protective cages have been installed around most plantings to reduce damage from deer browsing. Generally, these areas are dominated by grass species including wild oats, brome grasses, small fescue (*Vulpia microstachys*), and Italian rye-grass (*Lolium multiflorum*) with some establishment of yellow star thistle throughout the open areas.

Fully Disturbed Areas - Areas identified in Figure 3 as fully disturbed have been recently disturbed by quarry activities and host a very small number of weedy and/or native plant species including yellow star thistle, coyote brush, chamise, wild oats, sweet fennel (*Foeniculum vulgare*), and black mustard. Generally, plant cover in these areas is very sparse due to the lack of topsoil. The majority of the fully disturbed area was used for quarry materials storage and is a mosaic of piles of waste rock from various sources on the quarry. This community offers little habitat for plants or animals.

3.1.2 Sensitive Plant Communities and Aquatic Features

Riparian Corridor - A stretch of Permanente Creek runs through the Project Area southeast of the main cement plant near the southeastern rock washing plant. Along the riparian corridor associated with this portion of the creek, a dense overstory of mature riparian trees covers approximately 4.0 acres. Species dominant in the overstory include white alder (*Alnus rhombifolia*), willow (*Salix* spp.), bigleaf maple (*Acer macrophyllum*), madrone (*Arbutus menziesii*), and cottonwood (*Populus balsamifera* ssp. *trichocarpa*). The understory is dominated by poison oak (*Toxicodendron diversilobum*) and California blackberry (*Rubus ursinus*).

Northern Mixed Chaparral / Coast Live Oak Woodland - The Northern Mixed Chaparral / Coast Live Oak Woodland community is presumably the natural community that once dominated the Project Area. Most of the Buffer Area lands within the Project Area are described as this community type. This biological community is a mosaic of south-facing dry rocky hillslopes with sparse soil dominated by chaparral species and north-facing hillslopes and shaded ravines dominated by a mature oak-dominated canopy.

Shrub species typical of this community include mainly native species: coyote brush, scrub oak (*Quercus berberidifolia*), buckbrush (*Ceanothus cuneatus*), California sagebrush, chamise, toyon (*Heteromeles arbutifolia*), and poison oak. On north-facing slopes, typical overstory species include coast live oak, California bay (*Umbellularia californica*), and California buckeye (*Aesculus californica*), with scattered valley oak (*Q. lobata*), and blue oak (*Q. douglasii*). The brush species in the understory on north-facing slopes are typically coyote brush and poison oak.

Ephemeral Drainages - Ephemeral drainages were mapped based on topography. Within the Buffer Area, many small ephemeral drainages are expected to run down the steep slopes to Permanente Creek in the eastern areas, to Ohlone Creek in the southwestern areas, or to an unnamed tributary of Permanente Creek in the northwestern areas. Typically these drainages do not support an assemblage of plant species particularly adapted to wetland conditions, and probably contain flow only during the wettest winter weeks. Within the Northern Mixed Chaparral / Coast Live Oak Woodland community type, these drainages are primarily covered by a dense overstory of California bay and oak species.

Settling Ponds and Operational Water Ponds - Settling ponds for quarry runoff and operational water ponds were identified in the Project Area as shown in Figure 3.

3.2 Special Status Species

3.2.1 Plants

Based upon a review of the resources and databases given in Section 2.3.1, fifty six plant species which have been given special protection status under state and federal species legislation are known to occur in the vicinity of the Project Area. These species and their likelihood of occurrence are presented in Appendix A. California Natural Diversity Database records (Figure 4) indicate that one special status plant species has been recorded onsite: caper-fruited tropidocarpum (*Tropidocarpum capparideum*), but the record presented is an approximately five-mile radius around a reported collection from 1907, which may have been misidentified. It is our belief that this species is not present in the Project Area.

Based on the reconnaissance level site visit and review of the literature, twenty-three of the fifty six listed species were determined to have the potential to occur in the Project Area due to their habitat requirements, known distribution, and the habitats provided in the Project Area. Three of these species have a moderate likelihood of being present and focused surveys during the blooming period for each are recommended to determine their presence: western leatherwood (*Dirca occidentalis*), Loma Prieta hoita (*Hoita strobilina*), and Mt. Diablo cottonweed (*Micropus amphibolus*). Due to the extent of historical disturbance in the Project Area vicinity, it is unlikely that any of these special status plants are present in the Mining Area, although some Buffer Area lands may provide suitable habitat.

Special status plant species that are most likely (high or moderate potential) to occur in the Project Area are discussed below.

Western leatherwood (*Dirca occidentalis*). CNPS List 1B. Western leatherwood is a deciduous shrub in the Mezereum family (Thylemaceae) that blooms from January through March and is endemic to California, specifically the San Francisco bay area. It primarily occurs on moist slopes in all types of forest or shrub- dominated communities at elevations of 50 to 395 meters. Chaparral and woodland habitats in the Buffer Area may provide suitable habitat for this species and there are several known occurrences within the vicinity of the Project Area.

Loma Prieta hoita (*Hoita strobilina*). CNPS List 1B. Loma Prieta hoita is a perennial herb in the pea family (Fabaceae) that blooms from May through July and is endemic to the San

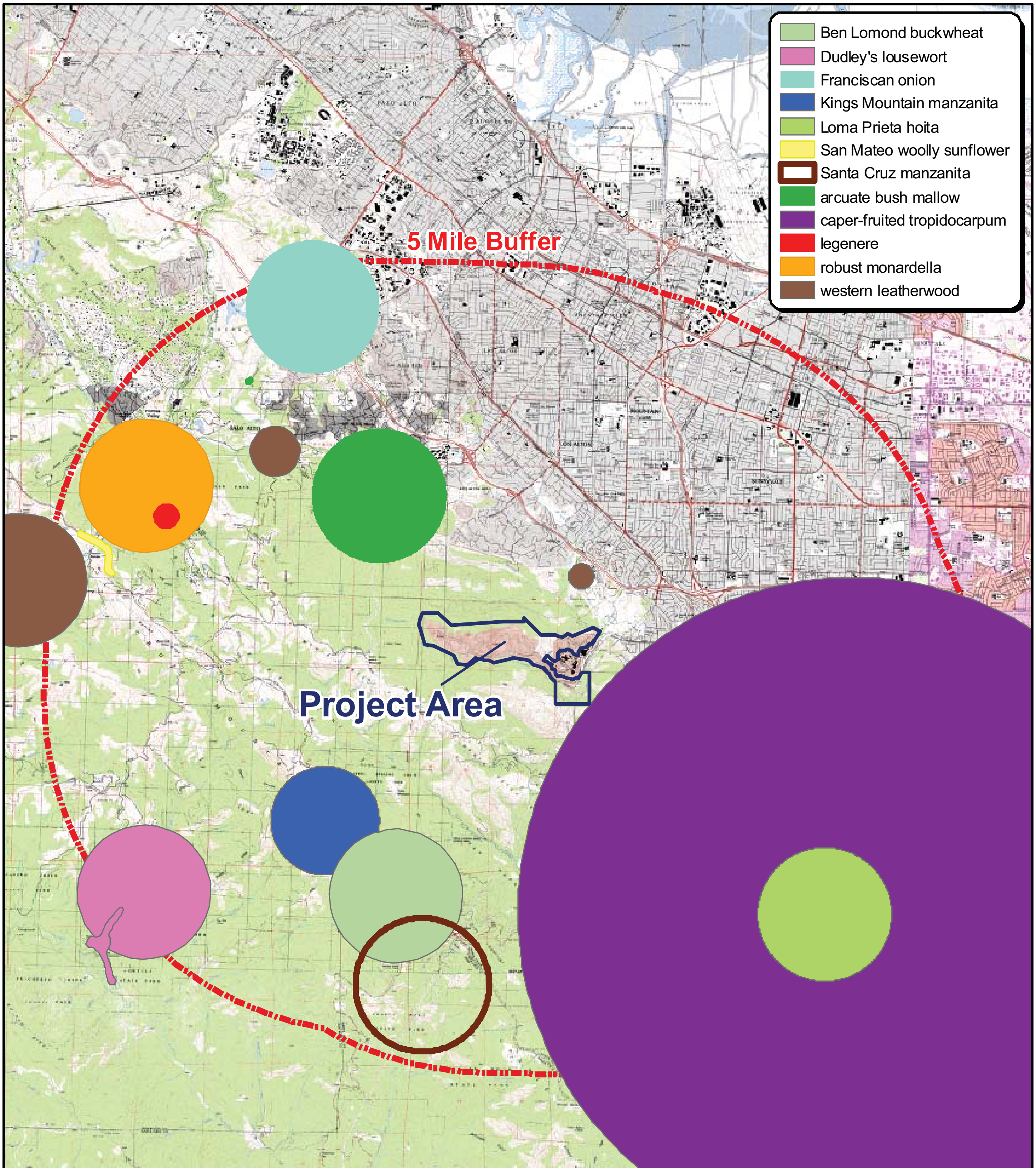

Figure 4. CNDDB Special Status Plant Occurrences Within Five Miles of Project Area

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Santa Clara County, CA

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ENVIRONMENTAL CONSULTANTS

Date: November 2006
Basemap: USGS Topo Quad
Map By: Michael Rochelle
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Francisco bay area. It primarily occurs in moist chaparral and wooded habitats at elevations ranging from 30 to 860 meters. Chaparral and wooded habitats in the Buffer Area may provide suitable habitat for this species and there are several documented occurrences in the vicinity of the Project Area.

Mount Diablo cottonweed (*Micropus amphibolus*). CNPS List 3. Mt. Diablo cottonweed is an annual herb in the sunflower family (Asteraceae) that blooms from March through May and is endemic to California. It occurs in grassland, chaparral, and woodlands at elevations ranging from 45 to 825 meters. Chaparral and wooded habitats in the Buffer Area may provide suitable habitat for this species and there are several documented occurrences in the vicinity of the Project Area.

3.2.2 Wildlife

Thirty-nine special status species of wildlife have been recorded in the vicinity of the Project Area. These species and their likelihood of occurrence are presented in Appendix A. Figure 5 shows CNDDB documented special status wildlife occurrences within five miles of the Project Area. Of these species, one is present, California red-legged frog, and no others have a high potential to occur in the Project Area. Two special status species have a moderate potential for occurrence in woodlands and/or chaparral within or immediately adjacent to the Project Area: Cooper's Hawk (*Accipiter cooperi*), and Long-eared Owl (*Asio otus*). Special status wildlife species that are present or have a moderate potential to occur in the Project Area are discussed below.

Cooper's Hawk (*Accipiter cooperi*), CDFG Species of Special Concern; Species of Local Concern. This hawk is associated with woodland and forest habitats throughout California. Although nest sites are usually found in isolated areas, this species frequently occurs in urban habitats in winter and during migration and has adapted to urban conditions in some portions of its range. Dense stands of live oak, riparian deciduous, or other forest habitat near water is used most frequently by this hawk. Cooper's Hawks prefer nesting in stands of deciduous trees or conifers near water.

There is a moderate potential for this raptor to occur in portions of the Project Area due to the presence of moderately-suitable foraging and breeding habitat along wooded edges in the Buffer Area, and typical nesting habitat present in mature riparian vegetation along on-site portions of Permanente Creek. This species is known to utilize habitats disturbed by human activities and may become adapted to areas affected by quarry activities where suitable vegetation is present. As the Project Area has been disturbed in its present condition for several decades, to the extent that any Cooper's Hawks nesting in or adjacent to the Project Area exist, they have likely adapted to coexist with the ongoing operations.

Long-eared Owl (*Asio otus*), CDFG Species of Special Concern. Nesting Long-eared Owls range from coastal lowlands to interior deserts and seem to prefer riparian groves, planted woodlots, and belts of live oaks paralleling streams (Shuford, 1993). This owl generally frequents dense, riparian and live oak thickets paralleling stream courses, and nearby woodland and forest habitats (Zeiner, et al., 1990). Long-eared Owls nest almost exclusively in old stick nests of crows, magpies, ravens, hawks, or herons.

There is a moderate potential for this owl to occur in portions of the Project Area due to the presence of moderately-suitable foraging and breeding habitat in wooded edges in the Buffer

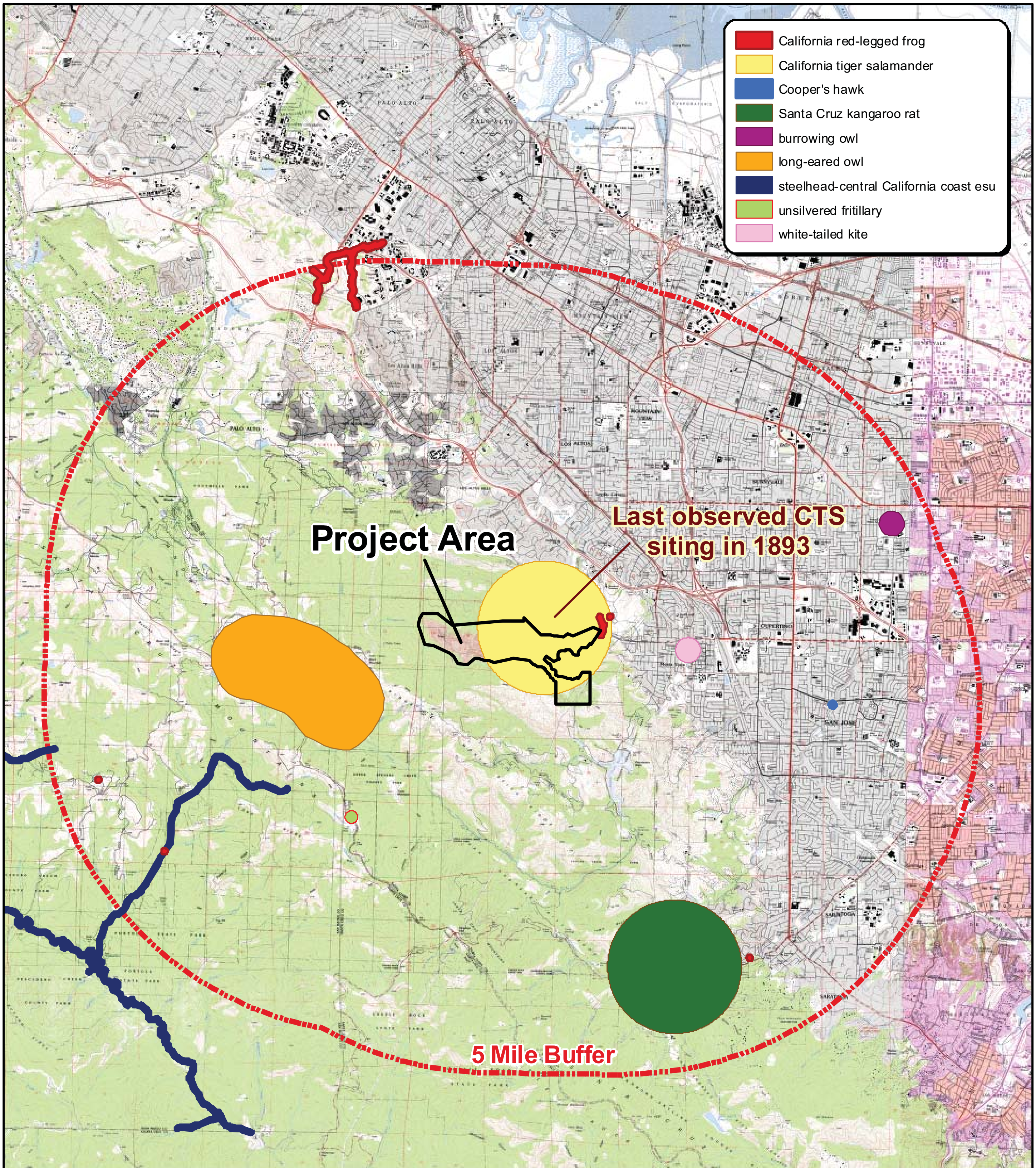

Figure 5. CNDDB Special Status Wildlife Occurences Within Five Miles of Project Area

Santa Clara County, CA

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Date:January 2006
Basemap: USGS Topo Quad
Map By: Michael Rochelle
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Area, and typical nesting habitat present in mature riparian vegetation along on-site portions of Permanente Creek. Due to unsuitable habitat conditions, it is unlikely that this species occurs in the Mining Area. A breeding pair of Long-eared Owls was recently documented to occur on surrounding lands less than one mile west of the Project Area boundary (CNDDB 2006). Because the Project Area has been disturbed in its present condition for several decades, Long-eared Owls nesting in or adjacent to the Project Area (if any) have likely adapted to coexist with the ongoing operations.

California red-legged frog (*Rana aurora draytonii*), Federally Threatened; CDFG Species of Special Concern. The red-legged frog (CRLF) is a medium-sized frog with reddish-colored legs. The species is generally restricted to riparian and lacustrine habitats in California and northern Baja California. In response to a significant decrease in the historic range of the California red-legged frog, the USFWS listed the subspecies as Threatened in 1996. Red-legged frogs prefer deep, quiet pools in creeks, rivers, or lakes below 1500 meters in elevation. Habitat requirements include fresh emergent or dense riparian vegetation, especially willows adjacent to shorelines. Red-legged frogs can survive in seasonal bodies of water that are dry for short periods if a permanent water body or dense vegetation stands are nearby; rodent burrows and grasslands provide upland estivation habitat.

In 2006, in accordance with USFWS, California red-legged frog surveys were conducted by Dr. Mark Jennings at the Hanson Permanente Quarry facility. CRLF were found to inhabit Permanente Creek and four off-stream sediment settling ponds. One of these ponds, Pond 13, occurs within the Mining Area at the southern boundary of the Project Area, on the north side of Permanente Creek adjacent to a concrete weir (Jennings, 2006; See Appendix C). To our knowledge, this is the only on-site occurrence of CRLF in the Project Area. However, it is possible that other vegetated settling ponds in the vicinity of Permanente Creek may provide low quality habitat for CRLF. Additionally, moderate-quality breeding habitat may be present in the short section of Permanente Creek that runs through the southeast corner of the Project Area. This portion of the Creek is surrounded by riparian vegetation and is not proposed for any disturbance. Upland estivation habitat for CRLF within the Project Area is limited to ruderal hillside slopes and revegetated areas in the immediate vicinity of Permanente Creek (see Figure 3). CRLF are unlikely to occur in active quarry areas or in heavily disturbed habitats.

Previous habitat assessments have determined that not all portions of Permanente Creek provide suitable CRLF habitat. To prevent unintended take of an occasional CRLF that may disperse from areas of suitable aquatic habitat associated with Permanente Creek, it is recommended that exclusionary fencing be installed where practicable and if surveys or assessments indicate a significant risk of dispersal. With implementation of this measure, the likelihood of unintended take or impacts to existing habitat are minimal.

All of the wildlife observed in the Project Area during the site visit on September 28, 2006 are commonly found species, and many are adapted to occupying disturbed or urban areas. No special status wildlife species were observed.

4.0 CONCLUSIONS

Three sensitive communities or categories of aquatic features were identified within the Project Area (riparian habitat, Northern Mixed Chaparral / Coast Live Oak Woodland, settling ponds / operational water ponds and ephemeral drainages). Three special status plant species (western leatherwood, Loma Prieta hoita, and Mt. Diablo cottonweed) and two special status wildlife species (Cooper's Hawk, and Long-eared Owl) have a moderate potential to occur within or immediately adjacent to the Project Area. California red-legged frog is known to utilize one settling pond located along the southern boundary of the Project Area.

4.1 Biological Communities

Most of the Mining Area is heavily disturbed with little vegetation present. Revegetation efforts have successfully covered a number of acres protecting the surface from erosion and promoting establishment of native vegetation. Revegetation is scheduled to continue as described in the Reclamation Plan Amendment. In addition to these non-sensitive communities, riparian habitat, Northern Mixed Chaparral / Coast Live Oak Woodland, and several man-made aquatic features are present.

4.2 Sensitive Plant Communities and Aquatic Features

Sensitive plant communities present within the Project Area include settling ponds and operational water ponds, riparian habitat with associated creek channel, and Northern Mixed Chaparral / Coast Live Oak Woodland habitat with ephemeral drainages.

4.2.1 Settling Ponds and Other Aquatic Features

A stretch of Permanente Creek, and ephemeral drainages in the Buffer Area may provide habitat for sensitive local plants and animals and may be considered sensitive communities by state and local authorities. One settling pond located along the southeastern boundary of the Project Area adjacent to Permanente Creek has been documented to support California red-legged frog.

4.2.2 Riparian Habitat

4.0 acres of the Project Area meets the definition of "riparian habitat" as described in the Fish and Game Code and the California Code of Regulations.

4.2.3 Oak Woodland

Northern Mixed Chaparral / Coast Live Oak Woodland plant communities are present within the Project Area primarily in the Buffer Area. This community may provide suitable habitat for three special status plant species: Loma Prieta hoita, western leatherwood, and Mt. Diablo cottonweed however no special status species were observed on site during this biological resources assessment.

4.3 Wildlife

Suitable habitat is present for several special status and non-status species in the Buffer Area and in the small portion of Permanente Creek running through the southeast corner of the Project Area. Two special status wildlife species have a moderate potential to occur in Project Area detention ponds, or in portions of Permanente Creek within the Project Area or immediately adjacent to it, and one species has been documented to occur (California red-legged frog).

4.3.1 Avian Species

Special status bird species with a moderate potential to occur within the Project Area include: Cooper's Hawk and Long-eared Owl. Mature trees are an important habitat requirement for birds. Breeding birds may occur within Buffer Area lands and in wooded habitats within the Project Area, including Northern Mixed Chaparral / Coast Live Oak Woodland habitats adjacent to or within the Mining Area. The Project Area has been disturbed in its present condition for several decades, to the extent that any hawks or owls occurring in or adjacent to the Project Area have adapted to coexist with the ongoing operations.

4.3.2 Amphibians

Limited suitable habitat is present within the Project Area for California red-legged frog (*Rana aurora draytonii*). Potential habitat is limited to vegetated banks of Permanente Creek outside of active quarry operations areas and one settling pond, approximately 10 meters in diameter, located along the southern boundary of the Project Area on the north side of Permanente Creek adjacent to a concrete weir (Jennings, 2006). To our knowledge, this is the only on-site occurrence of CRLF within the Project Area. Future quarry expansion in the southeast section of the Project Area in the vicinity of the Rock Plant is unlikely to affect any CRLF potentially occurring in Pond 13, as identified in the Jennings report (2006, Appendix C).

During winter rains, CRLF tend to disperse into uplands adjacent to aquatic habitats to forage. To prevent unintended take of an occasional CRLF that may disperse into the Project Area from Permanente Creek, it is recommended that exclusionary fencing be installed where practicable and if surveys or assessments indicate a significant risk of dispersal. With implementation of this measure, the likelihood of unintended take or impacts to existing habitat are minimal.

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APPENDIX A. Potential for Special Species to Occur in the Project Area

Appendix A. Potential for Special Status Plant and Wildlife Species to Occur in the Project Area. List compiled from the California Department of Fish and Game (CDFG) Natural Diversity Database (September 2006), U.S. Fish and Wildlife Service (USFWS) Species Lists, and California Native Plant Society (CNPS) Electronic Inventory search of the Cupertino, Castle Rock Ridge, Big Basin, Milpitas, San Jose West, Los Gatos, Mountain View, Palo Alto, and Mindego Hill USGS 7.5' quadrangles, and a review of other CDFG lists and publications (Jennings and Hayes 1994, Zeiner et al. 1990).

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE
Mammals			
salt-marsh wandering shrew *Sorex vagrans halicoetes*	CSC	Salt marshes of the south arm of San Francisco Bay. Medium high marsh 6 to 8 feet above sea level where abundant driftwood is scattered among *Salicornia*.	**Not Present.** No suitable habitat is available in the Project Area or vicinity.
pallid bat *Antrozous pallidus*	CSC, WBWG	Found in deserts, grasslands, shrublands, woodlands, and forests. Most common in open, dry habitats with rocky areas for roosting. Roosts must protect bats from high temperatures. Sensitive to disturbance of roosting sites.	**Unlikely.** Suitable roost habitat is limited to Buffer areas. Disturbance associated with the quarry may preclude the presence of this species.
Townsend's big-eared bat *Corynorhinus townsendii*	CSC, WBWG	Live in a wide variety of habitats but most common in mesic sites. Day roosts highly associated with caves and mines. Need appropriate roosting, maternity, and hibernacula sites free from human disturbance.	**Unlikely.** Suitable roost habitat is limited to Buffer areas. Disturbance associated with the quarry may preclude the presence of this species.
salt-marsh harvest mouse *Reithrodontomys raviventris*	FE, SE, CFP	Found only in the saline emergent wetlands of San Francisco bay and its tributaries. Primary habitat is pickleweed-dominated, saline emergent marshes. Requires adjacent, upland areas for escape from high tides. Does not burrow.	**Not Present.** No suitable habitat is available in the Project Area or vicinity.

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE
San Joaquin kit fox *Vulpes macrotis mutica*	FE, ST, RP	Annual grasslands or grassy open stages with scattered shrubby vegetation. Need loose-textured sandy soils for burrowing, and suitable prey base.	**Not Present.** Suitable habitat is not available within the Project Area. Project Area is outside of the typical range and lowland habitat associated with the this species.
American badger *Taxidea taxus*	CSC	Most abundant in drier open stages of most shrub, forest, and herbaceous habitats, with friable soils. Requires friable soils and open, uncultivated ground. Preys on burrowing rodents.	**Unlikely.** Suitable borrowing and foraging habitat is available in the Buffer areas. Prey species and other small mammals are present on site. Suitable habitat is not available within the quarry.
Birds			
Cooper's Hawk *Accipiter cooperii*	CSC	Associated with open or interrupted woodland and riparian habitats in the Coast ranges and foothills surrounding the Central Valley. Nests mainly in riparian growths of deciduous trees, as in canyon bottoms on river flood-plains; also nests in live oaks and eucalyptus.	**Moderate Potential**. Suitable riparian forest nesting habitat is limited to the fragmented portion of Permanente Creek that runs through the Project Area and oak woodland habitat adjacent to the quarry in the Buffer areas. Recent documented occurrence within 4 miles of the Project Area (CNDDB 2006).
Ferruginous Hawk *Buteo regalis*	CSC, BCC	Frequents open grasslands, sagebrush flats, desert scrub, low foothills surrounding valleys and fringes of pinyon-juniper habitats. Prefers flat, open areas largely devoid of trees. Preys on lagomorphs, ground squirrels and mice. Population trends may follow lagomorph population cycles.	**Unlikely**. May rarely forage over the Project Area, however typical, open habitat is not present in the Project Area.

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE
Northern Harrier *Circus cyaneus*	CSC	Nests and forages in open meadows, savannah and grassland habitats, often in association with wetlands. Nests on ground in shrubby vegetation; nest built of a large mound of sticks in wet areas. May also occur in upland desert steeps; they generally avoid forested and mountainous areas.	**Unlikely.** Typical wetland foraging habitat is not present in Buffer areas; no available nesting habitat is present in the Project Area.
White-tailed Kite *Elanus leucurus*	CFP	Year-long resident of coastal and valley lowlands; rarely found away from agricultural areas. Preys on small diurnal mammals and occasional birds, insects, reptiles, and amphibians.	**Unlikely**. May rarely forage over the Project Area, however typical, open habitat is not present in the Project Area. Recent documented occurrence within 2 miles of the Project Area (CNDDB 2006).
Bald Eagle *Haliaeetus leucocephalus*	FPD ,FT, SE, CFP	Requires large bodies of water, or free-flowing rivers with abundant fish and adjacent snags or other perches. Nests in large, old-growth, or dominant live tree with open branchwork. Shows a preference for ponderosa pine. Roosts communally in winter.	**Unlikely**. Large nesting trees and suitable, large bodies of water for foraging are not present within the Project Area. May rarely perch in large oak trees in the Buffer areas.
Osprey *Pandion haliaetus*	CSC	(Nesting) Frequents ocean shores, bays, fresh-water lakes, and larger streams. Prefers large trees, snags and dead-topped trees near large water bodies for cover and nesting. May travel 5-6 miles from nest to fishing areas.	**Unlikely**. Large nesting trees and suitable, large bodies of water for foraging are not present within the Project Area. May rarely perch in large oak trees in the Buffer areas.
American Peregrine Falcon *Falco peregrinus anatum*	FD, SE, BCC, CFP,	(Nesting) Prefers dry, open terrain, either level or hilly. Forages far afield, even to marshlands and ocean shores. Nests near wetlands, lakes, rivers, or other water; on cliffs, banks, dunes, mounds; also, human-made structures. Nest consists of a scrape on a depression or ledge in an open site.	**Unlikely**. May rarely forage over the Project Area, however typical, nesting habitat is not present in the Project Area. Disturbance associated with the quarry may preclude the presence of this species.

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE
Black Rail *Laterallus jamaicensis coturniculus*	ST, CFP	Rarely seen resident of saline, brackish, and fresh water emergent wetlands of the San Francisco Bay area. Nests in dense stands of pickleweed.	**Not Present.** No suitable habitat is available in the Project Area or vicinity.
California Clapper Rail *Rallus longirostris obsoletus*	FE, SE	Found in tidal salt marshes of the San Francisco Bay area. Requires mud flats for foraging and dense vegetation on higher ground for nesting.	**Not Present.** No suitable habitat is available in the Project Area or vicinity.
Western Snowy Plover *Charadrius alexandrinus nivosus*	FT, CSC, BCC, RP	(Nesting) Federal listing applies only to the Pacific coastal population. Found on sandy beaches, salt pond levees and shores of large alkali lakes. Requires sandy, gravelly or friable soils for nesting.	**Not Present.** No suitable habitat is available in the Project Area or vicinity.
California Least Tern *Sterna (Sternula) antillarum browni*	FE, SE, CFP	(Nesting) Nests along the coast from San Francisco Bay south to northern Baja California. Breeding colonies in San Francisco Bay found in abandoned salt ponds and along estuarine shores. Colonial breeder on barren or sparsely vegetated, flat substrates near water.	**Not Present.** No suitable nesting habitat is available in the Project Area or vicinity.
Marbled Murrelet *Brachyramphus marmoratus*	FT, SE	(Nesting) Feeds near shore; nests inland along the Pacific coast from Eureka to the Oregon border, and from Half Moon Bay to Santa Cruz. Nests in old-growth redwood-dominated forests, up to six miles inland. Nests often built in Douglas-fir or redwood stands containing platform-like branches.	**Not Present.** No suitable nesting habitat is available in the Project Area or vicinity.

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE
Long-eared Owl *Asio otus*	CSC	Nests in mature riparian bottomlands with willows and cottonwoods; also, belts of live oak paralleling stream courses. Require adjacent open land productive of mice and the presence of old nests of crows, hawks, or magpies for breeding.	**Moderate Potential.** Suitable oak woodland habitat is present in the Buffer areas and in fragmented riparian corridors of Permanente Creek occurring within and adjacent to the Project Area. Recent documented occurrence within 2 miles of the Project Area (CNDDB 2006).
Burrowing Owl *Athene cunicularia*	CSC, BCC	Frequents open, dry annual or perennial grasslands and scrub habitats with low-growing vegetation, perches and abundant burrows. Preys upon insects, small mammals, reptiles, birds, and carrion. Subterranean nester; nests and roosts in old burrows of small mammals.	**Unlikely**. Project Area is steeply sloped and dominated by rocky soil and erosion associated with active quarrying activities. Buffer areas are steeply sloped and densely vegetated and do not provide suitable habitat for this species. One documented occurrence within 5 miles of the Project Area (CNDDB 2006).
Loggerhead Shrike *Lanius ludovicianus*	CSC, BCC	Occurs in woodland, grassland, savannah, pinyon-juniper forest, desert, and scrub habitats. Prefers open areas with sparse shrubs, trees, posts, and other suitable perches which to forage for large insects. Nests are well-concealed above ground in densely-foliaged shrub or tree.	**Unlikely.** Limited, low-quality foraging habitat is present in grassland portions of the Buffer areas; Trees and shrubs are present on site for nesting. Disturbance associated with the quarry may preclude the presence of this species.
Saltmarsh Common Yellowthroat *Geothlypis trichas sinuosa*	CSC, BCC	Resident of the San Francisco Bay region, in fresh and salt water marshes. Frequents low, dense vegetation near water. Requires thick, continuous cover down to water surface for foraging, and tall grasses, tule patches, or willows for nesting.	**Unlikely.** No suitable marsh habitat is available in the Project Area. May rarely disperse through Project Area via Permanente Creek.

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE
Alameda Song Sparrow *Melospiza melodia pusillula*	CSC, BCC	Resident of salt marshes bordering south arm of San Francisco Bay. Inhabits *Salicornia* marshes; nests low in *Grindelia* bushes (high enough to escape high tides) and in *Salicornia*.	**Not Present.** No salt marsh habitat is present in Project Area.
Tricolored Blackbird *Agelaius tricolor*	CSC, BCC, RP	A highly colonial species, most numerous in the Central Valley and vicinity. Usually nests over or near freshwater in dense cattails, tules, or thickets of willow, blackberry, wild rose or other tall herbs. Requires breeding habitat sufficient to support 30 nesting pairs.	**Unlikely.** Cattails, blackberries and willow thickets on site do not provide sufficient coverage for a breeding colony.
Reptiles and Amphibians			
western pond turtle *Emys (Clemmys) marmorata*	CSC	Occurs in perennial ponds, lakes, rivers and streams with suitable basking habitat (mud banks, mats of floating vegetation, partially submerged logs) and submerged shelter.	**Unlikely.** No typical aquatic habitat was observed in the Project Area, however dispersing individuals may occasionally occur in Permanente Creek and large detention ponds containing sufficient emergent vegetation within the Project Area.
Alameda whipsnake *Masticophis lateralis euryxanthus*	FT, ST	Inhabits chaparral and foothill-hardwood habitats in the eastern Bay Area. Prefers south-facing slopes and ravines with rock outcroppings where shrubs form a vegetative mosaic with oak trees and grasses and small mammal burrows provide basking and refuge.	**Unlikely.** The Project Area does not contain typical habitat for this species within the current limits of disturbance. This species may rarely occur in upland portions of the Buffer areas. There are no CNDDB documented occurrences within 5 miles (2006).
Giant Garter Snake *Thamnophis gigas*	FT, ST, RP	Prefers freshwater marsh and low gradient streams. Has adapted to drainage canals and irrigation ditches in the Central Valley. This is the most aquatic of the garter snakes in California.	**Not Present.** Suitable habitat is not present within the Study Area. Study Area is outside of the Central Valley floor range and habitat associated with the this species. There are no CNDDB documented occurrences within 5 miles of the Study Area (2006).

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE
California tiger salamander *Ambystoma californiense*	FT, CSC	Inhabits annual grassland habitats with mammal burrows. Seasonal ponds and vernal pools are crucial to breeding.	**Unlikely.** Poor quality habitat is present in isolated sections of Permanente Creek adjacent to the Project Area. Poor water quality and annual disturbance in quarry detention ponds are likely to preclude breeding within the Project Area. Last known occurrence in Permanente Creek drainage system was in 1893 (CNDDB 2006). This species is unlikely to occur in upland areas where suitable habitat is present within 300 feet of potential Permanente Creek breeding habitat.
California red-legged frog *Rana aurora draytonii*	FT, CSC	Associated with quiet perennial to intermittent ponds, stream pools and wetlands. Prefers shorelines with extensive vegetation. Documented to disperse through upland habitats after rains.	**High Potential.** CRLF are currently documented to occur in one detention pond located along the southern boundary of the Project Area on the north side of Permanente Creek adjacent to a concrete weir (Jennings, 2006). In 1994 and 1997 CRLF were documented in Permanente Creek, just north of the Permanente Road bridge, located in two sequential impounds in a historical watercourse, and in riparian habitat directly downstream (CNDDB 2006). Potential breeding habitat is present in vegetated ponded areas and fragmented riparian corridors of Permanente Creek occurring adjacent to the southern boundary of the Project Area.

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE
Fishes			
coho salmon - central CA coast ESU *Oncorhynchus kisutch*	FE, NMFS	Occurs inland and in coastal marine waters. Requires beds of loose, silt-free, coarse gravel for spawning. Also needs cover, cool water and sufficient dissolved oxygen.	**Not Present.** Study Area is outside of the present distribution range of central California coast coho salmon (NOAA 2006).
steelhead - central CA coast ESU *Oncorhynchus mykiss*	FT, NMFS	Occurs from the Russian River south to Soquel Creek and Pajaro River. Also in San Francisco and San Pablo Bay Basins. Adults migrate upstream to spawn in cool, clear, well-oxygenated streams. Juveniles remain in fresh water for 1 or more years before migrating downstream to the ocean.	**Unlikely.** Documented to occur in Peters Creek on the west side of Highway 35 within 3 miles of Project Area (CNDDB 2006). Barriers in Permanente Creek would likely preclude the presence of this species in the Project Area.
steelhead - Central Valley ESU *Oncorhynchus mykiss*	FT, NMFS	Adults migrate upstream to spawn in cool, clear, well-oxygenated streams. Juveniles remain in fresh water for 1 or more years before migrating downstream to the ocean.	**Not Present.** Study Area is outside of present distribution range for Central Valley steelhead ESU (NOAA 2006).
chinook salmon - Central Valley *Oncorhynchus tshawytscha spring-run*	FT, ST, RP, NMFS	Adults migrate upstream to spawn in cool, clear, well-oxygenated streams. Juveniles remain in fresh water for 1 or more years before migrating downstream to the ocean. Water temperature greater than 27 degrees C is lethal to adults.	**Not Present.** Study Area is outside of the present distribution range of Central Valley chinook salmon (NOAA 2006).
delta smelt *Hypomesus transpacificus*	FT, ST, RP	Lives in the Sacramento-San Joaquin estuary in areas where salt and freshwater systems meet.	**Not present.** No typical habitat is present in the Study Area. The portion of Permanente Creek running though the Project Area is unsuitable for this species.

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE
Invertebrates			
Bay checkerspot butterfly *Euphydryas editha bayensis*	FT, SSI, RP	Restricted to native grasslands on outcrops of serpentine soil in the vicinity of San Francisco Bay and San Jose. *Plantago erecta* is the primary host plant; *Orthocarpus densiflorus* and *O. purpurscens* are the secondary host plants.	**Not Present.** Suitable serpentine soil habitat is not present in the Project Area to support the larval host plant.
unsilvered fritillary butterfly *Speyeria adiaste adiaste*	SSI	Restricted range: Santa Clara north to San Mateo County; east to north Los Angeles County and Kern County. Larval host plant is *Viola quercetorum*. Adults utilize openings in redwood and coniferous forests, oak woodlands, and chaparral habitats.	**Unlikely.** Suitable habitat is limited to the Buffer areas. The host plant blooming period is March to May, at which time larvae may be feeding.
San Bruno elfin butterfly *Incisalia (=Callophrys) mossii bayensis*	FE, SSI, RP	Limited to the vicinity of San Bruno Mountain, San Mateo County. Colonies are located on in rocky outcrops and cliffs in coastal scrub habitat on steep, north-facing slopes within the fog belt. Species range is tried to the distribution of the larval host plant, *Sedum spathulifolium*.	**Unlikely.** Suitable habitat is limited to the Buffer areas. The host plant blooming period is June to July, at which time larvae may be feeding.
Conservancy fairy shrimp *Branchinecta conservatio*	FE, SSI, RP	Endemic to the grasslands of the northern two-thirds of the Central Valley; found in large, turbid pools. Inhabit astatic pools located in swales formed by old, braided alluvium; filled by winter/spring rains, last until June.	**Not Present.** Suitable vernal pool or seasonal swale habitat is not present in Project Area.
vernal pool tadpole shrimp *Lepidurus packardi*	FE, SSI, RP	Inhabits vernal pools and swales in the Sacramento Valley and San Francisco Bay Area containing clear to highly turbid water. Pools commonly found in grass bottomed swales of unplowed grasslands. Some pools are mud-bottomed and highly turbid.	**Not Present.** Suitable vernal pool or seasonal swale habitat is not present in Project Area.

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE
Plants			
Acanthomintha duttonii San Mateo Thorn-mint	FE, SE List 1B	Chaparral, valley and foothill grassland often on serpentine soils. 50-300 meters (m). Blooms April-June.	**Unlikely.** Chaparral and grassland habitats in the Project Area may provide suitable habitat for this species, however serpentine soils potentially present would be heavily disturbed. The only presumed extant occurrences are out of the county.
Allium peninsulare var. *franciscanum* Franciscan onion	List 1B	Cismontane woodland, valley and foothill grassland with clay soils, often on serpentine parent material. 100-300 meters(m). Blooms May-June.	**Unlikely.** Woodland and grassland habitats in the Project Area may provide suitable habitat for this species, however heavy disturbance of clay and serpentine soils potentially present may preclude presence of this species.
Anomobryum julaceum slender silver moss	List 2	Broadleafed upland forest, lower montane coniferous forest, North Coast coniferous forest, usually on damp rock and soil on outcrops near roadcuts. 100-1000 meters (m).	**No Potential.** Oak woodland habitats in the Project Area may provide habitat for this moss, however damp rocks and outcrops are not present. This species is known in the vicinity of the Project Area from one recorded occurrence in Big Basin Redwoods State Park.
Arctostaphylos andersonii Santa Cruz manzanita	List 1B	Broadleafed upland forest, chaparral, North Coast coniferous forest, usually found near forest openings or edges in redwood forests. 60-730 meters (m). Blooms November-April.	**Unlikely.** Chaparral and woodland habitats in the Project Area may provide suitable habitat for this species, however no redwood forests were observed on site.
Arctostaphylos glutinosa Schreiber's manzanita	List 1B	Closed-cone coniferous forest, chaparral, usually associated with diatomaceous shale and *Pinus attenuata*. 170-685 meters (m). Blooms November-April.	**Unlikely.** Chaparral and woodland habitats in the Project Area may provide suitable habitat for this species, however no *Pinus attenuata* or diatomaceous shale were observed.

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE
Arctostaphylos pajaroensis Pajaro manzanita	List 1B	Chaparral and sandy soils. 30-760 meters (m). Blooms December-March.	**Unlikely.** Chaparral habitat in the Project Area may provide suitable habitat for this species, however, soils are not sandy and are generally heavily disturbed.
Arctostaphylos regismontana King's Mountain manzanita	List 1B	Broadleafed upland forest, chaparral, North Coast coniferous forest, usually associated with granitic or sandstone outcrops. 305-730 meters (m). Blooms January-April.	**Unlikely.** Chaparral and woodland habitats in the Project Area may provide suitable habitat for this species, however no rock outcrops were observed.
Arctostaphylos silvicola Bonny Doon manzanita	List 1B	Closed-cone coniferous forest, chaparral, lower montane coniferous forest, only found on inland marine sands in Santa Cruz County. 120-600 meters (m). Blooms February-March.	**No Potential.** Chaparral and woodland habitats in the Project Area may provide suitable habitat for this species, however no inland marine sands are present.
Astragalus tener var. *tener* alkali milk-vetch	List 1B	Playas, valley and foothill grassland on adobe clay, and vernal pools usually associated with alkaline conditions. 1-60 meter (m). Blooms March-June.	**No Potential.** Suitable clay soils and alkaline pool habitats are not present on the steep slopes of the Project Area.
Atriplex depressa brittlescale	List 1B	Chenopod scrub, meadows and seeps, playas, valley and foothill grassland, vernal pools, usually on alkaline and clay soils. 1-320 meters (m). Blooms May-October.	**No Potential.** Suitable alkaline conditions are not present in the Project Area. Additionally, the only recorded occurrence in the vicinity of the Project Area is in the tidal ponds of the Don Edwards National Wildlife Refuge.
Atriplex joaquiniana San Joaquin spearscale	List 1B	Chenopod scrub, meadows and seeps, playas, and alkaline grasslands. 1-835 meters (m). Blooms April-October.	**No Potential.** Suitable alkaline conditions are not present in the Project Area.
Calyptridium parryi var. *hesseae* Santa Cruz mountains pussypaws	List 3	Chaparral, cismontane woodland. 305-1115 meters (m). Blooms May-July.	**Unlikely.** Chaparral habitat in the Project Area may provide suitable habitat for this species.

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE
Centromadia parryi ssp. *congdonii* Congdon's tarplant	List 1B	Alkaline valley and foothill grassland. 1-230 meters (m). Blooms May-October.	**No Potential.** Most known occurrences of this species in the vicinity of the Project Area are associated with alkaline conditions which are not present in the Project Area.
Chorizanthe pungens var. *hartwegiana* Ben Lomond spineflower	FE, List 1B	Lower montane coniferous forest, usually associated with maritime ponderosa pine sandhills. 90-610 meters (m). Blooms April-June.	**No Potential.** Suitable ponderosa pine sandhill habitat is not present in the Project Area.
Chorizanthe robusta var. *robusta* robust spineflower	FE, List 1B	Cismontane woodland, coastal dunes, coastal scrub, usually on sandy terraces or bluffs in loose sand. 3-300 meters (m). Blooms April-September.	**No Potential.** The only known occurrences of this species in the vicinity of the Project Area are considered possibly extirpated. The Project Area lacks suitable coastal and sandy habitat.
Cirsium fontinale var. *campylon* Mt. Hamilton thistle	List 1B	Cismontane woodland, chaparral, valley and foothill grassland, usually associated with serpentine soils. 100-890 meters (m). Blooms April-October.	**Unlikely.** The only known occurrences of this species in the vicinity of the Project Area are in the southern portion of the county. Additionally, the Project Area's potentially present serpentine soils are heavily disturbed.
Cirsium fontinale var. *fontinale* fountain thistle	FE, SE, List 1B	Chaparral, valley and foothill grassland, usually associated with serpentine soils. 90-175 meters (m). Blooms June-October.	**Unlikely.** The Project Area's potentially present serpentine soils are heavily disturbed which probably precludes presence of this species.
Cirsium praeteriens lost thistle	List 1A	This species is known from one recorded occurrence in the Palo Alto area in 1901, and has not been seen since.	**No Potential.** This species is presumed extinct in California.

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE
Collinsia multicolor San Francisco collinsia	List 1B	Closed-cone coniferous forest, coastal scrub, usually on decomposed shale (mudstone). 30-250 meters (m). Blooms March-May.	**No Potential.** Suitable forest and coastal scrub habitat not present in the Project Area.
Cordylanthus maritimus ssp. *palustris* Point Reyes bird's beak	List 1B	Coastal salt marsh. 0-10 meters (m). Blooms June-October.	**No Potential.** All recorded occurrences of this species are associated with tidal marsh. Suitable marsh habitat is not present in the Project Area.
Cupressus abramsiana Sant Cruz cypress	FE, SE, List 1B	Closed-cone coniferous forest, chaparral, lower-montane coniferous forest, restricted to the Santa Cruz mountains, usually found with *Pinus attenuata*. 280-800 meters (m).	**No Potential.** Few conifers were observed in the Project Area, none of which were *C. abramsiana.*
Didymodon norrisii Norris's beard-moss	List 2	Cismontane woodland, lower montane coniferous forest, usually on intermittently mesic rocks. 600-1700 meters (m).	**No Potential.** Suitable intermittently mesic rocks not present in the Project Area.
Dirca occidentalis western leatherwood	List 1B	Broadleafed upland forest, closed-cone coniferous forest, chaparral, cismontane woodland, North Coast coniferous forest, riparian forest, riparian woodland, usually on brushy slopes and mesic sites. 50-395 meters (m). Blooms January-March.	**Moderate Potential.** Chaparral and woodland habitats in the Project Area may provide suitable habitat for this species. Several known occurrences are recorded in the vicinity of the Project Area.
Dudleya setchellii Santa Clara valley dudleya	FE, List 1B	Rocky and serpentine valley and foothill grassland. 60-455 meters (m). Blooms April-June.	**Unlikely.** Suitable serpentine soils potentially present in the Project Area have been heavily disturbed. The only recorded occurrence of this species in the vicinity of the Project Area is in the southern portion of the county.

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE
Eriogonum nudum var.*decurrens* Ben Lomond buckwheat	List 1B	Chaparral, cismontane woodland, lower montane coniferous forest, usually found on maritime ponderosa pine sandhills. 50-800 meters (m). Blooms June-October.	**No Potential.** The only recorded occurrence for this species in the vicinity of the Project Area was collected in 1953. Additionally, the Project Area lacks suitable maritime ponderosa pine sandhill habitat.
Eriophyllum latilobum San Mateo woolly sunflower	FE, SE, List 1B	Cismontane woodland, often on serpentine in roadcuts. 45-150 meters (m) Blooms May-June.	**Unlikely.** Suitable serpentine soils potentially present in the Project Area are heavily disturbed. Additionally, the only presumed extant population in the vicinity of the Project Area is known from a 1962 collection.
Eryngium aristulatum var. *hooveri* Hoover's button-celery	List 1B	Alkaline depressions, vernal pools, roadside ditches and other wet places near the coast. 5-45 meters (m). Blooms July.	**No Potential.** Most known occurrences within the vicinity of the Project Area are associated with alkaline influences from the San Francisco bay. The Project Area does not receive these alkaline influences.
Fritillaria liliacea fragrant fritillary	List 1B	Cismontane woodland, coastal prairie, coastal scrub, valley and foothill grassland, usually associated with serpentine. 3-410 meters (m). Blooms February-April.	**No Potential.** Suitable coastal habitats are not present in the Project Area.
Hespervax sparsiflora var. *brevifolia* short-leaved evax	List 2	Coastal bluff scrub, coastal dunes. 0-215 meters. Blooms March-June.	**No Potential.** Suitable coastal habitats are not present in the Project Area.
Hesperolinon congestum Marin western flax	FT, ST, List 1B	Serpentine valley and foothill grasslands and chaparral. 30-365 meters (m). Blooms April-July.	**Unlikely.** Suitable serpentine soils potentially present in the Project Area are heavily disturbed which probably precludes presence of this species.

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE
Hoita strobilina Loma Prieta hoita	List 1B	Chaparral, cismontane woodland, riparian woodland, usually on serpentine soils and mesic sites. 30-860 meters (m). Blooms May-July.	**Moderate Potential.** Chaparral habitats on the Project Area may provide suitable habitat for this species.
Lasthenia conjugens Contra Costa Goldfields	FE, List 1B	Cismontane woodland, playas, valley and foothill grassland, and alkaline vernal pools. 0-470 meters (m). Blooms March-June.	**Unlikely.** The only recorded occurrence of this species in the vicinity of the Project Area is in Alameda county. Additionally, the Project Area lacks suitable vernal pool habitat.
Legenere limosa legenere	List 1B	Vernal pools. 1-880 meters (m). Blooms April-June.	**No Potential.** Suitable vernal pool habitat is not present in the Project Area.
Lessingia micradenia var. *glabrata* smooth lessingia	List 1B	Chaparral, cismontane woodland, usually on serpentine soils near roadsides. 120-420 meters (m). Blooms July-November.	**Unlikely.** Disturbance of the project area's potential serpentine soils probably precludes presence of this species.
Malacothamnus arcuatus arcuate bushmallow	List 1B	Chaparral, cismontane woodland, usually in gravelly alluvium. 15-355 meters (m). Blooms April-September.	**Unlikely.** Chaparral habitat in the Project Area may provide suitable habitat for this species, however, slopes are too steep to hold suitable gravelly alluvium.
Malacothamnus davidsonii Davidson's bushmallow	List 1B	Chaparral, cismontane woodland, coastal scrub, riparian woodland, usually in sandy washes. 185-855 meters (m). Blooms June-January.	**Unlikely.** The only recorded occurrence of this species within the vicinity of the Project Area was recorded in 1936.
Malacothamnus hallii Hall's bushmallow	List 1B	Chaparral, coastal scrub, some populations on serpentine. 10-760 meters (m). Blooms May-September.	**Unlikely.** The only known occurrences of this species in the vicinity of the Project Area date from 1936 and 1993. The site visit occurred during the blooming period of this species and it was not observed.

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE
Micropus amphibolus Mt. Diablo cottonweed	List 3	Broadleafed upland forest, chaparral, cismontane woodland, valley and foothill grassland. 45-825 meters (m). Blooms March-May.	**Moderate Potential.** Grassy slopes in the Project Area may provide suitable habitat for this species.
Monardella villosa ssp.*globosa* robust monardella	List 1B	Openings in chaparral, broadleafed upland forest, cismontane woodland, and valley and foothill grassland. 30-915 meters (m). Blooms June-July.	**Unlikely.** Most recorded occurrences of this species in the vicinity of the Project Area are associated with tree species not found in the Project Area.
Navarretia prostrata prostrate navarretia	List 1B	Coastal scrub, meadows and seeps, valley and foothill grassland, alkaline vernal pools. 15-700 meters (m). Blooms April-July.	**No Potential.** The only known occurrences of this species in the vicinity of the Project Area are associated with vernal pools near the San Francisco Bay. The Project Area lacks suitable alkaline vernal pool habitat.
Pedicularis dudleyi Dudley's lousewort	SR, List 1B	Chaparral, lower montane coniferous forest, North Coast coniferous forest. 60-900 meters (m). Blooms April-June.	**Unlikely.** The occurrences from which this species is known in the vicinity of the Project Area are associated with coastal redwood forest and maritime chaparral. Suitable maritime and coastal redwood forest habitats not present in the Project Area.
Penstemon rattanii var. *kleei* Santa Cruz mountains beardtongue	List 1B	Chaparral, lower montane coniferous fores, North Coast coniferous forest, usually on sandy shale slopes and sometimes in the transition zone between forest and chaparral. 400-1100 meters (m). Blooms May-June.	**Unlikely.** The only occurrences of this species in the vicinity of the Project Area are known from collections from the western side of the Santa Cruz mountains in 1954 and 1955. Additionally, the Project Area lacks suitable sandy shale slopes and coniferous forest habitat.

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE
Pentachaeta bellidiflora white-rayed pentacheata	FE, SE, List 1B	Valley and foothill grassland, often associated with serpentine soils. 35-620 meters (m). Blooms March-May.	**Unlikely.** The only recent recorded occurrence of this species in the vicinity of the Project Area is in a serpentine wildflower field. Suitable serpentine grassland habitat is not present in the Project Area.
Plagiobothrys glaber hairless popcorn-flower	List 1A	Alkaline meadows and seeps, coastal salt marshes and swamps. 15-180 meters (m). Blooms March-May.	**No Potential.** This species is presumed extinct in California. The project Area lacks suitable salt marsh and alkaline meadow habitats.
Potamogeton filiformis slender-leaved pondweed	List 2	Assorted shallow freshwater marshes and swamps. 300-2150 meters (m). Blooms May-July.	**No Potential.** This species is known in the vicinity of the Project Area from one collection in 1899. Additionally, the Project Area lacks suitable swamp habitat.
Stebbinsoseris decipiens Santa Cruz microseris	List 1B	Openings in broadleafed upland forest, closed-cone coniferous forest, chaparral, coastal prairie, coastal scrub, valley and foothill grassland, sometimes on serpentine soils. 10-500 meters (m). Blooms April-May.	**Unlikely.** Chaparral and grassland habitat in the Project Area may provide suitable habitat for this species, however most recorded occurrences are outside the county and associated with coastal communities which are not present in the Project Area.
Strepanthus albidus ssp. *albidus* Metcalf Canyon jewel-flower	FE, List 1B	Relatively open areas in dry grassy meadows on serpentine soils and serpentine balds. 45-800 meters (m). Blooms April-July.	**Unlikely.** The only recorded occurrence of this species in the vicinity of the Project Area was collected in 1895. Disturbance of the soil surface probably precludes presence of this species.

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE
Streptanthus albudus ssp. *peramoenus* most beautiful jewel-flower	List 1B	Chaparral, cismontane woodland, valley and foothill grassland, often on serpentine soils. 110-1000 meters (m). Blooms April-June.	**Unlikely.** The only known occurrences of this species in the vicinity of the Project Area are associated with serpentine soils. Serpentine soils potentially present in the Project Area have been heavily disturbed. This disturbance probably precludes presence of this species.
Sueda californica California seablite	FE, List 1B	Coastal salt marshes and swamps. 0-15 meters (m). Blooms July-October.	**No Potential.** Suitable coastal salt marsh habitat not present in the Project Area.
Tropidocarpum capparideum caper-fruited tropidocarpum	List 1B	Valley and foothill grassland on alkaline clay soils. 0-455 meters (m). Blooms March-April.	**Unlikely.** The Project Area lacks suitable alkaline clay soils. Additionally, the recorded occurrences in the vicinity of the Project Area date from 1902 and 1907 and may be incorrectly identified.

SPECIES	STATUS*	HABITAT	POTENTIAL FOR OCCURRENCE

*** Key to status codes:**

FE	Federal Endangered
FT	Federal Threatened
FC	Federal Candidate
FD	Federal De-listed
FPD	Federal Proposed for De-listing
NMFS	Species under the Jurisdiction of the National Marine Fisheries Service
BCC	USFWS Birds of Conservation Concern
RP	Sensitive species included in a USFWS Recovery Plan or Draft Recovery Plan
SE	State Endangered
ST	State Threatened
SR	State Rare
CSC	CDFG Species of Special Concern
Draft CSC	4 April 2000 Draft CDFG Species of Special Concern
CFP	CDFG Fully Protected Animal
SSI	CDFG Special Status Invertebrates
WBWG	Western Bat Working Group High Priority species
List 1A	CNPS List 1A: Plants presumed extinct in California
List 1B	CNPS List 1B: Plants rare, threatened or endangered in California and elsewhere
List 2	CNPS List 2: Plants rare, threatened, or endangered in California, but more common elsewhere
List 3	CNPS List 3: Plants about which CNPS needs more information (a review list)

APPENDIX B. Representative Site Photographs

Top: Ruderal hillslope east of the quarry office
Bottom: Revegetated slope

Photos taken Sept. 28, 2006

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Top: Chaparral/ Oak Woodland in the Buffer area northwest of the quarry pit
Bottom: Example of active areas in the Project Area

Photos taken Sept. 28, 2006

wra ENVIRONMENTAL CONSULTANTS

Top: Example of vegetated settling pond prior to maintenance dredging

Bottom: Wetland vegetation resultant from temporary settling pond diversion flows.

Photos taken Sept. 28, 2006

wra
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Top: Revegetation area on the southwest side of the Project Area
Bottom: Example of current revegetation efforts showing irrigation and deer cages

Photos taken Sept. 28, 2006

ENVIRONMENTAL CONSULTANTS

APPENDIX C. 2006 Hanson Permanente Quarry California Red-legged Frog Survey

2006 CALIFORNIA RED-LEGGED FROG (*Rana draytonii*) SURVEYS AT THE HANSON PERMANENTE CEMENT FACILITY, CUPERTINO, CALIFORNIA

Prepared by:

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Rana Resources
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For

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828 Mission Avenue
San Rafael, CA 94901-3209

December 30, 2006

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EXECUTIVE SUMMARY

Protocol surveys were conducted for California red-legged frogs (CRLFs; *Rana draytonii*) on 21 February; 25 March; 02, 11, and 29 April; 06 May; 31 July; and 08 August 2006, at the Hanson Permanente Cement Facility in the vicinity of Cupertino, California, to determine the use of in-stream and off-stream sediment settling ponds by this species. As with previous surveys of the facility grounds, CRLFs were found to not only inhabit Permanente Creek, but they also inhabited Pond #13, 14, 21, and 22. No CRLFs were found in Pond #04A, 04B, 04C, 05, 09, 10, 11, 13A, 13B, 16, 17, 18, 19, and 20. Instead, Pacific treefrogs (*Hyla regilla*) were found to inhabit and breed in all ponds examined, as well as many of the watercourses between the sediment ponds. Additionally, Coast Range newts (*Taricha torosa torosa*) were found to breed in Pond #13, and 14, as well as Permanente Creek. CRLFs were observed to successfully breed only in Pond #14 and 21 as well as the watercourse downstream of Pond #20. These data indicate that CRLFs continue to live and reproduce on the Hanson Permanente Cement Facility property in harmony with current operations. The proposed removal of sediment from Pond #13A, 13B, and 17—where CRLFs were not observed—will have no adverse effects on the CRLF population inhabiting this part of the Permanente Creek drainage.

INTRODUCTION

The Hanson Permanente Cement Facility is located in Santa Clara County, in the vicinity of Cupertino, California (Figure 1). The facility surrounds the lower reaches of the Permanente Creek drainage with 18 current settling ponds installed to remove suspended sediments from the water that is drained from quarry and other facility operations. The resulting water from the sediment ponds runs through rock filters before being discharged into Permanente Creek (except for pond 14, which is a standard retention basin that allows all sediments to settle prior to water flowing through a weir and joining Permanente Creek). Because certain settling ponds need to be cleaned out from time to time in order to keep them functional, protocol surveys were conducted to during 2006 determine if they were being used by the federally threatened California red-legged frog (CRLF; *Rana draytonii*). These surveys follow previous surveys conducted for the

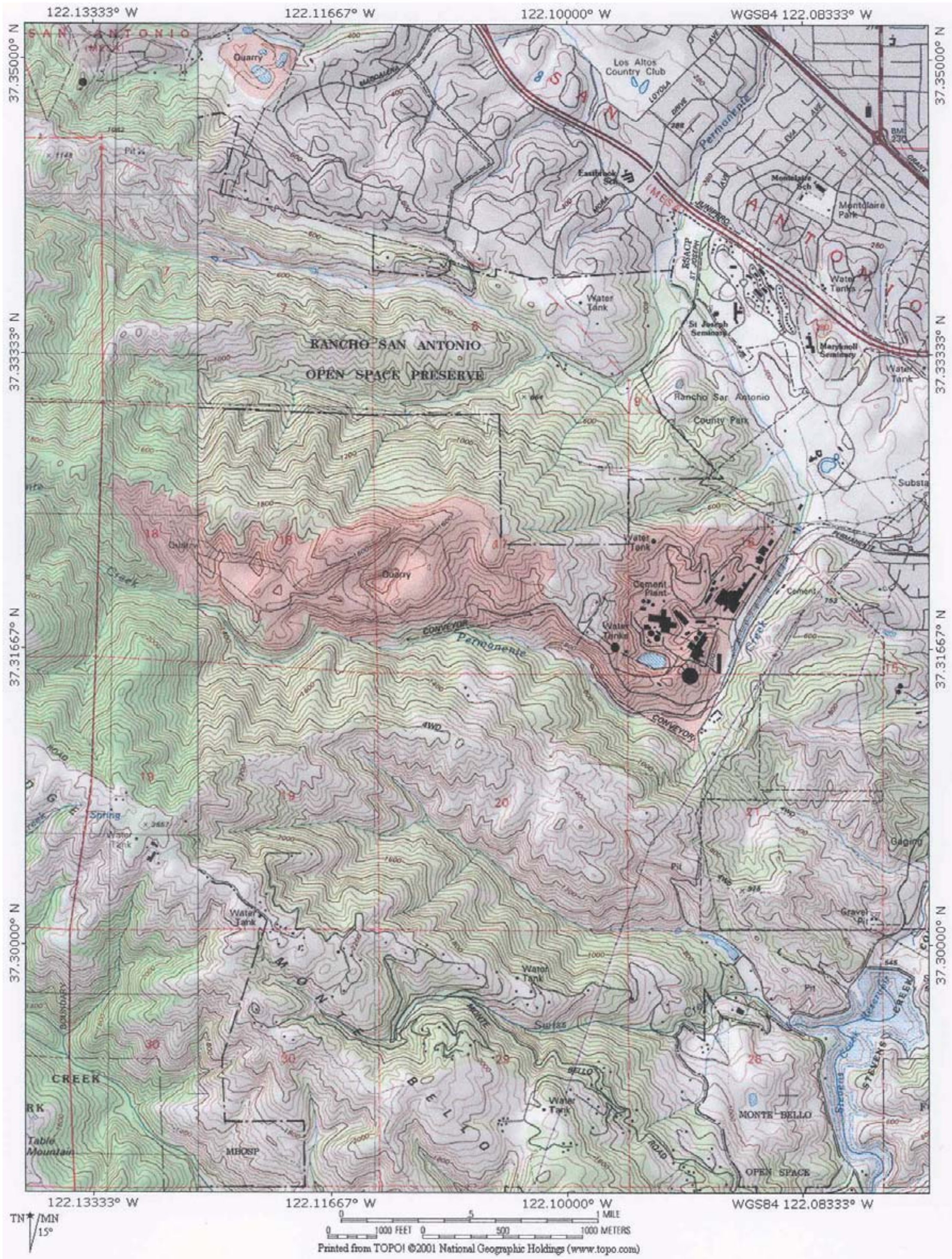

Figure 1. Location of the Hanson Permanente Cement Facility.

species during 2005. Per recent taxonomic changes with frog species in California, I follow Jennings (2004) and Shaffer et al. (2004) and use the scientific name "*Rana draytonii*" for the CRLF. In almost all other documents and field guides, this frog is stated as the subspecies "*Rana aurora draytonii*" (e.g., see Stebbins 2003).

STUDY AREA

The Hanson Permanente Cement Facility is an approximately 3,650-acre piece of land that lies just southwest of the intersection of I-280 and Hwy 85 in Santa Clara County (Figure 1). The facility is along the lower reaches of Permanente Creek and contains various buildings, rock crushers, storage yards, sand and rock quarries, paved roads, railroad tracks, and aggregate conveyors located over a wide area. A total of 18 settling ponds are used to remove excess sediment from water received from facility and quarry operations. The resulting water in these settling ponds is discharged into Permanente Creek (Figure 2). These settling ponds also have vegetation present and are used by a wide variety of wildlife including Coast Range newts (*Taricha torosa torosa*), Pacific treefrogs (*Hyla regilla*), California toads (*Bufo boreas halophilus*), and CRLF (Jennings, pers. observ.). The surrounding hillsides and flats have mixed oak (*Quercus* spp.) woodlands, with scattered chaparral and other vegetation. The settling ponds contain cattails (*Typha* sp.) and bulrushes (*Scirpus* sp.), as well as scattered patches of willows (*Salix* sp.) and Himalayan blackberries (*Rubus discolor*). Willows and Himalayan blackberries are common along the main Permanente Creek channel.

MATERIALS AND METHODS

The surveys for the CRLF followed guidelines as set forth by the U.S. Fish and Wildlife Service (U.S. Fish and Wildlife Service 2005). All settling ponds were surveyed during daylight hours on 21 February, 25 March, 06 May, and 31 July 2006, and at night on 25 March; 02, 11, and 29 April; and 08 August 2006. Surveys were conducted as per protocol survey standards for the CRLF (U.S. Fish and Wildlife Service 2005) and my long-term experience with this species (e.g., see Jennings and Hayes 1994). A flashlight

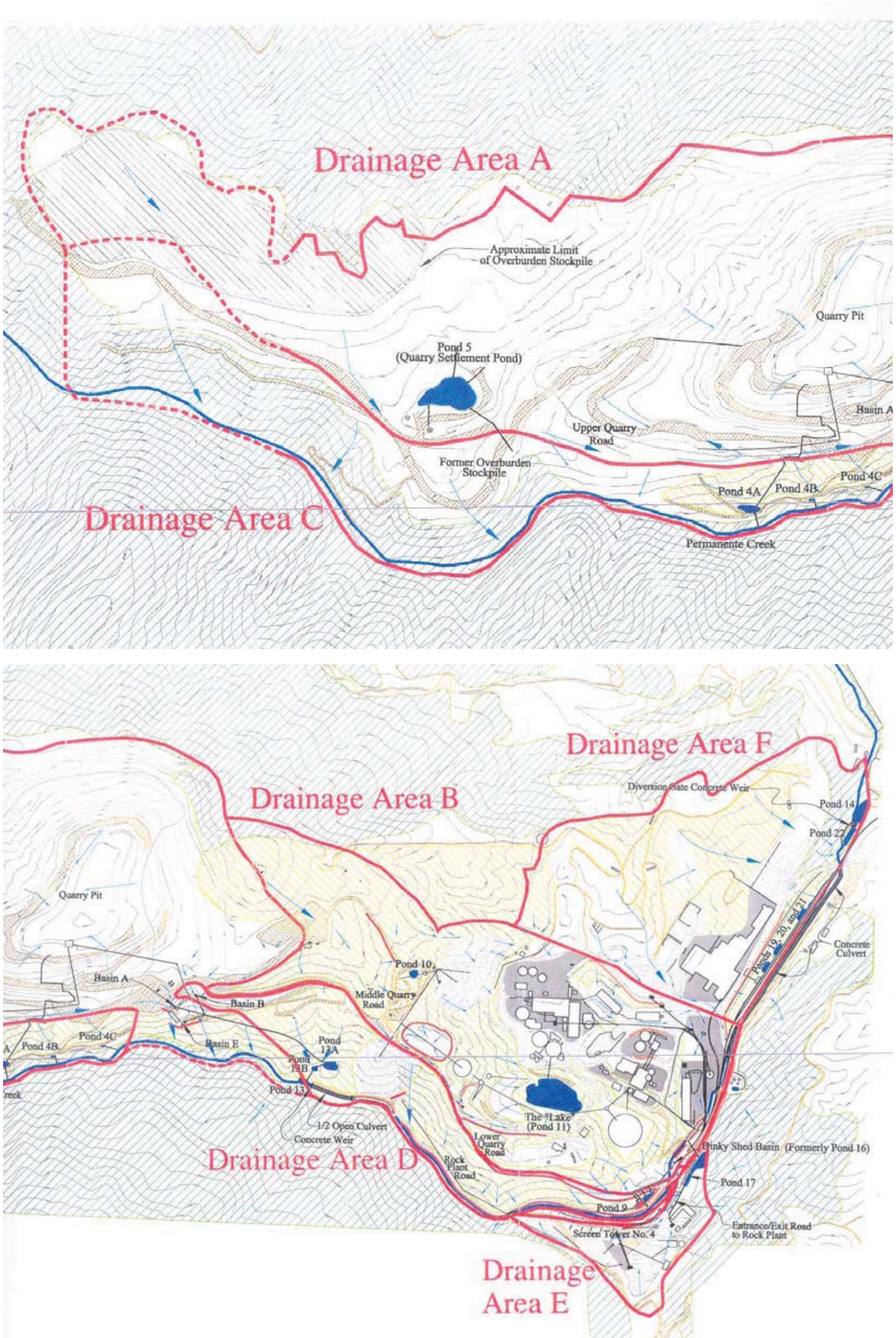

Figure 2. Location of settling ponds on the Hanson Permanente Cement Facility grounds. The top and bottom maps represent the western and eastern portions of the property.

was used to locate the eye shines of frogs during nighttime hours and I repeatedly listened for calling male CRLFs using the identifications provided by Davidson (1995).

RESULTS AND DISCUSSION

CRLFs were found only in Permanente Creek and Pond #13, 14, 21, and 22. No CRLFs were found in Pond #04A, 04B, 04C, 05, 09, 10, 11, 13A, 13B, 16, 17, 18, 19, and 20. Instead, Pacific treefrogs were found to inhabit and breed in all ponds examined, as well as many of the watercourses between the sediment ponds. Additionally, Coast Range newts were found to breed in Pond #13, and 14, as well as Permanente Creek. CRLFs were observed to successfully breed only in Pond #14 and 21 as well as the watercourse downstream of Pond #20. Each of these locations was found to have calling male CRLFs, as well as larvae and metamorphs.

The reason that CRLFs are probably not found in more of the settling ponds is due to the shallow nature of most of these water bodies. They are designed to trap sediment and this quickly results in water depths below 1 foot in depth (or drying completely on a regular basis). The resulting mud flats or cattail thickets were found to contain numerous raccoon (*Procyon lotor*) footprints and I observed raccoons almost every time during my nighttime surveys. The presence of so many CRLF predators on a regular basis probably mediates against juvenile or adult CRLFs dispersing into these shallow water habitats.

Additionally, a number of these sediment ponds are isolated from where CRLFs are known to be present. The long distance movement of CRLFs overland is probably very hazardous with all the natural predators present within the facility grounds.

In summary, these data indicate that CRLFs continue to live and reproduce on the Hanson Permanente Cement Facility property in harmony with current operations. Because CRLFs do not use Pond #13A, 13B, and 17, the proposed removal of sediment from these settling ponds have no adverse effects on the CRLF population inhabiting this part of the Permanente Creek drainage.

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APPENDIX D

Cultural Resources

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HISTORIC RESOURCE EVALUATION

Permanente Quarry Facility Comprehensive Reclamation Plan Project
Lehigh Southwest Cement Company
24001 Stevens Creek Blvd.
Cupertino, Santa Clara County, California
(APNs 351-09-013, -020, -022, -023, -025; 351-10-005, -033, -037, -038;
351-11-001, -005, -006, -007, and -012)

Prepared for:

County of Santa Clara
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Franklin Maggi, Architectural Historian
Sarah Winder, Historian
Jessica Kusz, Public Historian

October 2011
(Revised November 8, 2011)

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Photo source previous page: "Exterior Aerial View of the Permanente Cement Co., circa 1940," University of Southern California Digital Collections.

1.0 INTRODUCTION

The County of Santa Clara is preparing an Environmental Impact Report (EIR) for the Permanente Quarry Facility Comprehensive Reclamation Plan Project proposed by Lehigh Southwest Cement Company. The Permanente Quarry (Quarry) is located at 24001 Steven Creek Boulevard in unincorporated Santa Clara County, California.

The firm of Archives & Architecture, LLC conducted archival research and a site investigation of the property in September and October 2011 as part of the EIR process to identify and evaluate any potential historical resources. The purpose of this report is to provide historical information and findings to determine the potential for any impacts on historical resources as defined by the California Environmental Quality Act (CEQA), and to determine whether the demolition of any buildings, structures, and other manmade features of the landscape would have an adverse effect on the environment and would require mitigation.

1.1 PROJECT DESCRIPTION

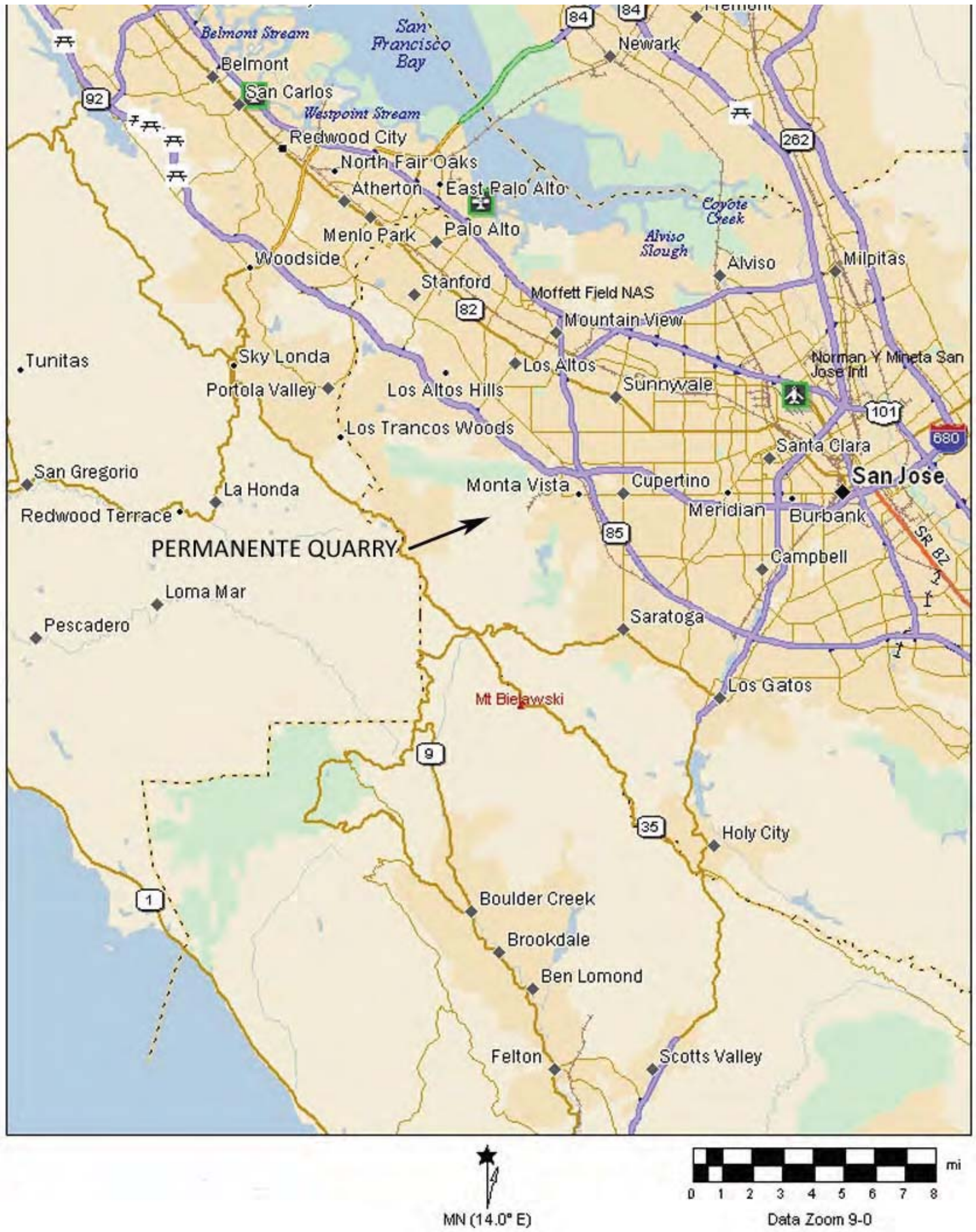
A limestone and aggregate mining and processing facility, the Quarry is currently owned by Hanson Permanente Cement, Inc. and is operated by Lehigh Southwest Cement Company. The Quarry operates pursuant to a Reclamation Plan approved by the County of Santa Clara in 1985. The larger site contains a cement plant and buildings related to an aluminum plant that is no longer in operation. The cement plant is a separate use that operates under an existing Use Permit (File No. 173.23), and is not located within the boundary of the existing or proposed reclamation plan area of the quarry.

The proposed project is an amendment to the 1985 Reclamation Plan for the Quarry to expand the reclamation boundary to reclaim the project area in a manner suitable for future open space use. The project area includes approximately 1,095 acres, consisting of approximately 543 acres that have been disturbed by prior surface mining activities, approximately 51 acres that will be disturbed by surface mining operations within the next 20 years, approximately 284 acres located south of Permanente Creek that have been subject to exploratory activities, and approximately 217 acres that would serve as a buffer area. The primary areas to be reclaimed include the existing Quarry pit (North Quarry), two overburden disposal areas referred as the West Materials Storage Area and the East Materials Storage Area, the crusher/office area, surge pile, rock plant, and an area south of Permanente Creek that has been subject to mining related exploratory activities. The reclamation includes removing the overburden in the West Materials Storage Area down to the pre-quarry grade levels, and placing it into the North Quarry pit as backfill and to stabilize the mined slopes.

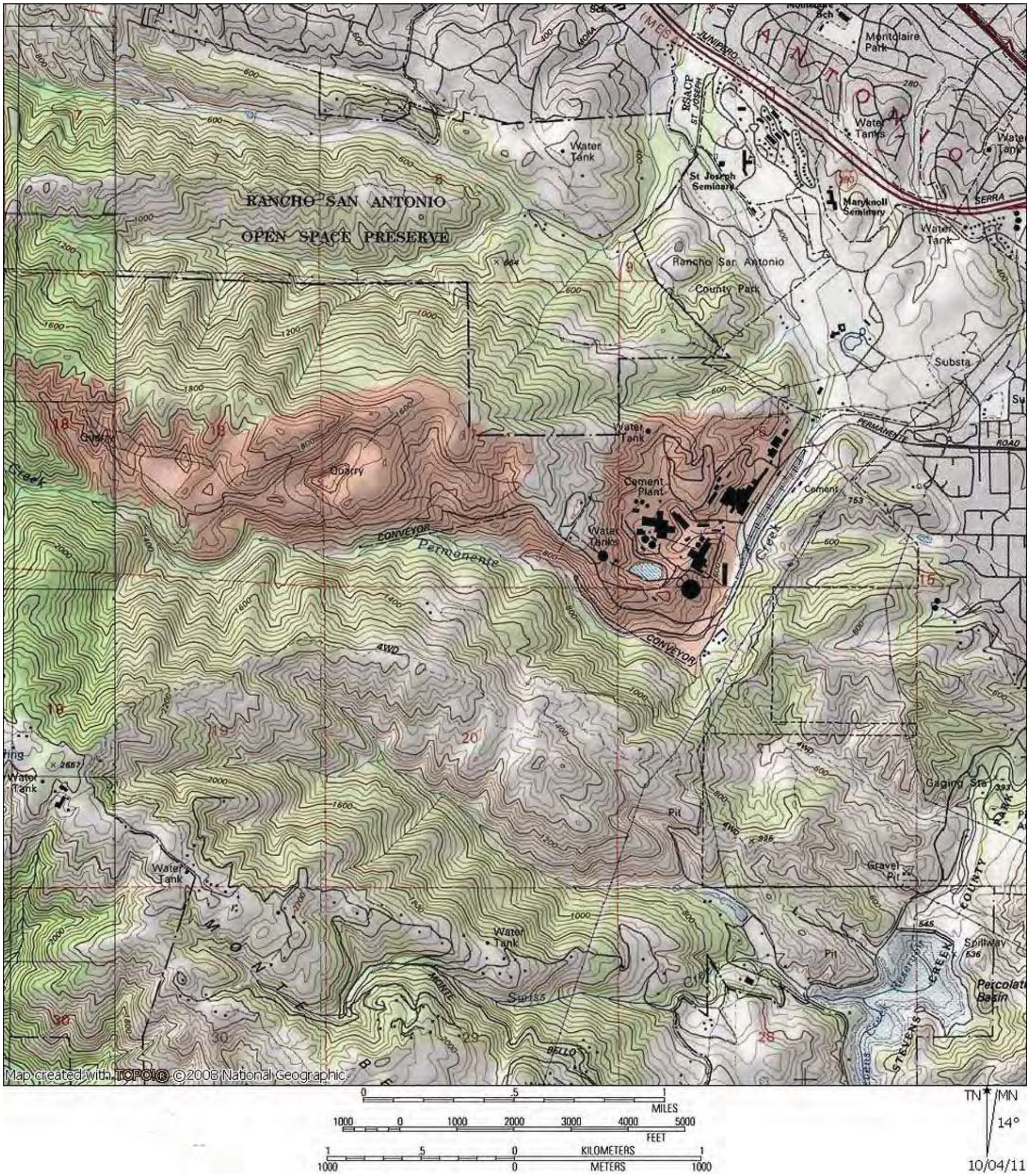
1.2 LOCATION

The Quarry is located in the Santa Clara County foothills near the City of Cupertino approximately two miles west of the intersection of Interstate 280 and State Highway 85. Access to the Quarry is provided via Stevens Creek Boulevard, which becomes Permanente Road just before and through the Quarry property. The Assessor Parcel Numbers (APNS) associated with the site are: APN 351-09-025, APN 351-09 -013, APN 351-09-020, APN 351-09 -022, APN 351-09-023, APN 351-10-005, APN 351-10-033, APN 351-10-037, APN 351-10 -038, APN 351-11-001,APN 351-11 -005, APN 351-11-006, APN 351-11-007, and APN 351-11-012. The site is located within portions of Sections 17-21 of Township 7 South, Range 2 West, of the USGS 7.5' series quadrangles Cupertino and Mindego Hill. The Quarry operations are on a portion of approximately 3,600 contiguous acres within Permanente Canyon. Most of the operations, including the Quarry, and the related cement plant and facilities, are presently located north of Permanente Creek. An aggregate processing facility is located south of Permanente Creek.

1.2.1 Regional Map



1.2.2 Area Map


RANCHO SAN ANTONIO
OPEN SPACE PRESERVE
Rancho San Antonio
County Park
St Joseph Seminary
Maryknoll Seminary
Montclaire Park
Water Tank
Water Tanks
Quarry
Cement Plant
CONVEYOR
Permanente
Creek
PERMANENTE ROAD
Substa
Cement
4WD
Pit
Gravel Pit
Gaging Sta
Spillway
Percolation Basin
STEVENS CREEK
MONTE BELLO
Swiss
Map created with TOPO! © 2008 National Geographic
MILES
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METERS
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1.3 QUALIFICATIONS OF THE CONSULTANTS

The principal author of this report and evaluator for significance was Franklin Maggi, Architectural Historian, who consults in the field of historic architecture and urban development. Franklin Maggi has a professional degree in architecture with an area of concentration in architectural history from the University of California, Berkeley.

Providing archival research for this project was Sarah Winder, Historian, and Jessica Kusz, Public Historian. Sarah Winder holds a Masters of Arts in History from San Jose State University, and Jessica Kusz has a Master of Science in Historic Preservation from the School of Art Institute of Chicago.

The principal investigator, Franklin Maggi is listed as qualified to do this work with the California Historic Resource Information System (CHRIS), which is operated under authority of the California State Office of Historic Preservation. Franklin Maggi meets the Secretary of the Interior's qualifications to perform identification, evaluation, registration, and treatment activities within the fields of Architectural History in compliance with state and federal environmental laws. CHRIS utilizes the criteria of the National Park Service outlined in 36 CFR Part 61.

1.4 METHODOLOGY

This document is presented in a report format, and addresses extant buildings and structures on the project site and also investigates prior use of the property during historic times. The Historical Overview (Section 2.1) provides historical context for the site within the County of Santa Clara beginning when the area was first occupied by non-indigenous people in 1769 and subsequently settled under authority of the Spanish government. Discussion of pre-historic settlement and use of the land and related archaeology is beyond the scope of the investigation and analysis provided within this document.

The buildings and sites within the scope of this report were examined in September 2011 by Franklin Maggi, Sarah Winder, and Jessica Kusz. The site investigation was limited to previously identified historic resources and sites within the project boundaries. Identification and access to some of the sites was limited due to the terrain and overgrowth. Photographs of the exteriors of the buildings and structures, and views of the related setting were taken where feasible. Photographs included in this report and its appendices were taken by Franklin Maggi and Sarah Winder during the September visit.

Technical descriptions within this report were written based on the site investigation. Archival research was conducted by Sarah Winder and Jessica Kusz, and included visits to major repositories of local historical source material. These repositories included the California Room at the Martin Luther King Jr. Joint Library, San José, the County of Santa Clara Recorder's and Surveyor's Offices, the County of Santa Clara Archives, California History Center at De Anza College, and the Cupertino Historical Museum. Additionally, prior survey information was reviewed and considered as a part of the archival research and evaluation for significance. These sources are discussed in Section 1.5 of this report.

This report was prepared utilizing the methodology recommended by the National Park Service (NPS), as outlined in Preservation Briefs #17 - *Architectural Character: Identifying the Visual Aspects of Historic Buildings as an Aid to Preserving Their Character* (1988), *Guidelines for Identifying, Evaluating and Registering Historic Mining Sites* (Rev. 1997), *Defining Boundaries for National Register Districts* (Rev. 1997), #32 – *Guidelines for Evaluating and Documenting Properties Associated with Significant Persons* (n.d.), and #35 - *Understanding Old Buildings: The Process of Architectural Investigation* (1994). Site recordings were prepared or amended within DPR523 series forms according to the *Instructions for Recording Historical Resources* (Office of Historic Preservation, 1995).

1.5 PREVIOUS SURVEYS AND HISTORICAL STATUS

In addition to a review of historical literature relevant to understanding the Quarry context, information related to recent surveys and investigations was reviewed in the preparation of this report. A records search was conducted in 2008 by Sean Michael Jensen for Lehigh Southwest Cement Company at the Rohnert Park Northwest Information Center (NWIC) for both recorded prehistoric and historic sites and field surveys within or near the subject property. This records search identified five prior investigations, including included Holman (1983 and 1988), Ruth and Going (1984), Busby (2002), and Jurich and Grady (2007). The non-archaeological investigations were reviewed as a part of collecting information for this report, included the prior work of Ruth and Going, Jurich and Grady; the archaeological investigations of Jensen were also reviewed as a part of this report (2008 and two reports in 2009).

The Ruth and Going report (1984) reviewed archival information and included a limited field investigation. Conducted for the County of Santa Clara, Ruth and Going identified an early road that had potential historical significance. This site feature was subsequently recorded in 2007 by Grady.

The 2007 partial survey by Jurich and Grady was conducted for the County of Santa Clara, and included intensive-level investigations into selected sites within or immediately adjacent the active quarry. Jurich and Grady prepared DPR523 series forms that record the Henry J. Kaiser's Cabin and Accessory Structure, Hanson Permanente Quarry Pumphouse, Permanente Creek Road and Permanente Creek Road Retaining Wall, and identified a historic district – the Kaiser Permanente Quarry District. Jurich and Grady found the Henry J. Kaiser's Cabin and Accessory Structure, and the Kaiser Permanente Quarry District eligible for listing in the National Register of Historic Places (National Register).

In 2008 and 2009, Sean Michael Jensen conducted a survey and inventory for Lehigh Southwest Cement Company. Jensen reviewed prior surveys and recordings, and conducted a field survey of the site. In his findings, Jensen disputed the evaluation of Jurich and Grady on eligibility of the area as an historic district (Kaiser Permanente Quarry District) and stated that the site and features are ineligible for the National Register due to a general lack of integrity related to their historic period of significance. Jensen stated that the Hanson Permanente Quarry Pumphouse and the Permanente Creek Road and Permanente Creek Road Retaining Wall are ineligible for listing in the National Register. Jensen did not re-evaluate other resources recorded by Jurich and Grady, such as Kaiser's Cabin and Accessory Structure. Jensen also surveyed and evaluated additional potential resources south of Permanente Creek. Jensen identified three (3) potential resources: 1) Cherry Orchard; 2) Sugar Shack; and 3) Homestead. Jensen considered these resources ineligible for listing in the National Register. Jensen did not evaluate these potential resources under the criteria for listing in the California Register of Historical Resources (California Register) or the County of Santa Clara Historic Preservation Ordinance.

The above recordings are identified by NWIC as:

P-43-001867	Kaiser Permanente Quarry District
P-43-001868	Permanente Creek Road and Permanente Creek Road Retaining Wall
P-43-001869	Henry J. Kaiser's Cabin and Accessory Structure
P-43-001870	Hanson Permanente Quarry Pumphouse
P-43-2264	Permanente 3 (Cherry Orchard)
P-43-2268	Permanente 5 (Sugar Shack)
P-43-2269	Permanente 6 (Homestead)

The Quarry and its buildings and structures are not listed in any local, state, or national registers of historic resources. California's "Historic Property Data File" and related state registers were reviewed, as well as other registers such as the National Register and the County of Santa Clara Heritage Resource Inventory.

1.6 SUMMARY OF FINDINGS

The Permanente Quarry is historically significant under the California Environmental Quality Act. It appears eligible for the National Register of Historic Places, the California Register of Historical Resources, and as a County of Santa Clara landmark based on significant patterns of development, the direct association of the site with Henry J. Kaiser, a person important to America's past, and for distinctive aspects of its engineering technology.

Originating during the early twentieth century along the north side of Permanente Canyon, the Quarry is Santa Clara County's largest industrial mining facility. The rural canyon was first occupied by non-indigenous people as early as the 1860s, when a small site was claimed by a local resident. By the mid-1890s three (3) sites had been developed with rural buildings. A nineteenth century landslide near the initial occupation site exposed limestone within the canyon formation. In 1903, the first recorded mining of limestone for use in the sugar beet industry began the evolution of the large quarry that exists today.

The nineteenth century occupation sites are mostly gone, including a large orchard that once existed on the crest of the hill on the south side of Permanente Canyon, east of Black Mountain. The buildings associated with these sites have deteriorated and/or have been deconstructed (or collapsed) over time. Ownership of these properties has been under control of the mining holding companies for over 60 years.

Limestone surface mining took place at the small quarry at the side of Permanente Creek for about two decades at the beginning of the twentieth century. The limestone was transported to Alviso and later to Oakland for use in processing beet sugar. During the 1920s, a holding company acquired the site and re-started the mining operation in 1933 with some site improvements to better transfer the limestone on-site.

Large-scale construction projects in the mid-to-late 1930s associated with the New Deal brought Henry J. Kaiser to the forefront as a major contractor/partner in roadway and dam projects in the West. The consortium he was a part of lost the bid to build Shasta Dam, but Kaiser won the job as cement supplier even though he lacked a manufacturing facility. The Permanente Canyon limestone deposits, along with Kaiser's ability to transform the site within a few years into the world's largest cement plant, catapulted him into one of America's greatest mid-twentieth-century industrialists.

The Quarry has evolved over the last 72 years under Permanente Cement Company and subsequent owners. The Quarry now covers over 1,000 acres on the north side of the canyon, as well as an aggregate processing facility south of Permanente Creek - across from a modern cement plant. The cement plant, built over the last 30 years, replaced much of the original facility. The original limestone quarry area contains buildings, structures, and objects associated with the historic development of the Quarry: 1) ruins of buildings and remnants of a road associated with pre-Kaiser ownership; 2) part of the 1940s quarry conveyor system; and 3) a magnesium manufacturing building and other structures located within the boundaries of the modern cement plant.

Although the Quarry has evolved and there are few extant remnants of its early development stages, the Quarry remains understandable as a historic mining facility. Under CEQA and the County of Santa Clara's policies and ordinances governing historic properties, the County should continue to review development and reclamation activities at the Quarry to identify any potentially significant impacts and mitigate adverse effects when feasible.

Potential expansions of the Quarry to areas south of Permanente Creek will likely impact sites within Permanente Canyon that are associated with the early development of the property. However, the two ranch sites have now mostly disappeared. They are no longer representative of early patterns of agricultural/ horticultural development, and are not associated with persons important to the past. These early ranch sites are not considered historic resources under CEQA.

2.0 HISTORICAL INFORMATION

2.1 HISTORICAL OVERVIEW

2.1.1 Early Founding

In 1769, the Spanish explorer Gaspar de Portolá and a company of sixty-four men were the first non-Native Americans known to visit the place that would come to be known as the Santa Clara Valley. This expedition was intended by the Spanish government to expand the frontier territory of *Nueva España*, their new world colony in North America. The Portolá Expedition first approached the south reaches of the valley near the Pajaro River, but then continued up the coast around the Monterey Bay to an encampment place north of Santa Cruz.

A small contingent of seven men, led by Sergeant José Francisco Ortega, crossed the coastal range in early November 1769 and unexpectedly came across the bay and valley. The Spanish soldiers worked their way across the southern edge of the bay and explored the shore up to the area now known as Hayward. These expeditions were soon followed by several other Spanish visitations, including that of explorer Juan Bautista de Anza in 1774. It was Anza who identified the valley as an ideal candidate for permanent settlement for the Spanish government. In 1776, Juan Bautista de Anza returned, leading a large group of settlers (*pobladores*) across the valley on the way to establishing the Presidio of San Francisco. The Anza-led group passed along the western rim of the valley along its southwesterly edge before setting up an encampment in Cupertino, on a knoll northeast of what is now Permanente Quarry.

2.1.2 Spanish Period (1777-1822)

The Spanish colonization strategy utilized three institutions: 1) military; 2) civil; and 3) religious. The military government, installed in *Las Californias* shortly after the Portolá Expedition, was intended to protect the Spanish frontier from encroachment by other countries of Europe, and more specifically was directed against Russian global advancement into North America during this historical period. The first presidios at San Francisco and Monterey were established to address this threat. The Franciscans, acting in behalf of the Roman Catholic Church, established missions to convert and proselytize the native population, a partnership with government authorities that had existed for centuries during Spain's colonial period. The missions were the dominant colonizing influence in *Las Californias,* and later *Alta California* (the renamed Upper California from 1804 onward) during the Spanish Period from 1769 to 1821. Each mission's sphere of influence radiated from its center (with buildings for worship, housing, and industries) outward to surrounding grain fields and livestock grazing lands.

In 1777, Spanish Lt. José Joaquín Moraga and Fray Tomás de la Peña of the Franciscans established *Mission Santa Clara de Asís* named after the sister saint of Assisi, Clara. Later that year under orders of Viceroy Antonio María Bucareli, a site was selected for a civilian settlement by Governor Felipe de Neve, who visited the valley in June 1777. This settlement, named *El Pueblo de San José de Guadalupe* was located on the Guadalupe River's east bank approximately one and one-half miles to the southeast of the mission.

The period of Spain's governance in the region lasted from 1770 to 1821. Little physical remains exist within Santa Clara County extant from this early development period. Sites in the outer edges of the Santa Clara Valley are associated with early agricultural or industrial development. The land within what is now the city limits of Cupertino was part of Mission Santa Clara's lands when Spain had jurisdiction in the area, and continued to be utilized by the Mission during the Mexican Period.

The cultural landscape that existed during this period is mainly remembered by the alignment of many contemporary transportation routes with routes that originated during the Spanish Period. *El Camino*

Real, connecting Mission Santa Clara, and Mission Dolores in what is present-day San Francisco, is the nearest known transportation route that passed by Permanente Canyon. To the south, the route to the coastal areas of north Monterey Bay entered the Santa Cruz Mountains at Los Gatos Canyon and is known in the foothills as Old Santa Cruz Road. Another route, Saratoga Avenue, connected the Mission Santa Clara to what is now known as Saratoga, where Mission Indians operated a dairy. No references were found in historical literature indicating a route to Permanente Canyon from either the Mission or the Pueblo. The area now known as Cupertino below the foothills was covered with thick brush called *chamisal* from the entry to Stevens Canyon northward to near the El Camino Real (Brown 2005).

2.1.3 Mexican Period (1822–1846)

The Napoleonic wars of the European continent gave France control over the Spanish navy in 1797, leading to the eventual destruction of the Spanish fleet. This destruction caused a decline in Spanish presence in the new world, but rising nationalist sentiment combined with this absence to spark a revolt in Mexico. This revolution in Mexico, beginning in 1810, eventually led to Mexican independence from Spain in 1821. Following the Mexican War of Independence, the transfer of governmental control from Spain to Mexico in 1821 brought the secularization of the missions and changing land utilization and ownership patterns. The Spanish Period had directed settlement of northwestern New Spain to be done entirely under the official policy of presidios, pueblos, and missions, while the actual land was held in trust by the Spanish crown, but Mexican Period policy directed that lands held in trust previously, be given over to individuals as land grants.

By 1833, official policy demanded that the lands be returned to the native California Indians, but in reality the lands were turned over to friends and relatives of the Mexican government in California. Governor José Figueroa had intended to uphold the bill that had been passed by the Mexican congress, but he realized that the Indian neophytes living on the mission lands were not properly prepared for immediate ownership. He decided to gradually turn over control of the land to them, but his death in 1835 negated this plan and the lands were turned over to the wealthy and politically-connected in California.

The second change in policy to have far-reaching effects in Alta California was the secularization of the Franciscan missions and the establishment of large private land grants. In 1824, Mexico passed a law for the settlement of vacant lands to try to stimulate additional colonization of the territory. Any citizen, whether foreign or native, could select a tract of unoccupied land so long as it was a specific distance away from the lands held by missions, pueblos, and Indians. The grantee petitioned the governor for a specific tract, which after investigation and if there were no objections, was granted. The Hispanic colonists had a more relaxed attitude about boundary lines between neighboring properties than the Spanish did. When *rancho* grants began to be awarded by the Mexican government, title was based on a rough verbal description and a hand drawn sketch map (known as a *diseño*) of the desired lands.

During the 1820s through early 1840s, large tracts of land were granted by the Mexican government to local residents. When a citizen was granted land for a rancho, the recipient was required to occupy the property and to build a dwelling within a certain time period. Each rancho had a *hacienda* which was in many cases a self-supporting village, composed of the main rancho house, laborers' housing, corrals, grist mill, tannery, and other ancillary buildings surrounded by vineyards and cultivated fields. Thirty-eight land grants were issued between 1833 and 1845 in the Santa Clara Valley and environs.

The subject property is located directly adjacent to and on a portion of the *Rancho San Antonio*. *San Antonio* stretched from San Antonio (now Adobe) Creek to Cupertino (Stevens) Creek along the foothills of the Santa Cruz Mountains and west of the Cupertino *chamisal*, and was granted to Juan Prado Mesa by Governor Juan Bautista Alvarado in 1839. The *Arroyo Permanente* flows through the center of the rancho, according to the original *diseño*. Mesa died in 1845, leaving a legacy of debt to his children (his wife had predeceased him), which left the rancho to be divided and sold off. William and Henry Dana purchased over 3,500 acres of the rancho and filed claim with the Land Commission in 1853, to which they were granted the patent in 1857, while the remaining nearly 900 acres was patented to the Mesa heirs in 1867. All other claims were dismissed.

With the relaxation of immigration regulations by the Mexican government in 1828, more foreigners began to settle in California. Of the approximately 700 people who lived in the San José pueblo in 1835, forty were foreigners, mostly American and Englishmen. During this period many of the foreigners lived in the foothills of the Santa Cruz Mountains in the central area known as *Sierra Morena*, outside of the ranchos, where the first logging of redwoods occurred, as well as the production of beer was undertaken (Brown 1966). These areas have been identified as the foothills west and north of the San Antonio Rancho, which heavy stands of redwood trees reached the Santa Clara Valley floor. Other foothills of Sierra Morena, such as Permanente Canyon, were identified as being covered with chaparral and scrub oak in surveys conducted during the second half of the nineteenth century by the General Land Office.

The first overland migrants arrived in Alta California in 1841, and by 1845, the American immigrants had increased the population of the pueblo to 900. The presence of the growing American population prepared the way for relatively easy occupation of Alta California by American forces in 1846.

2.1.4 Early American (1847-1875)

In May 1846, the United States declared war on Mexico; and shortly thereafter, the American flag was raised in Monterey and San José. The hostilities finally ended with the Battle of Santa Clara in January 1847. The hostilities between the United States and Mexico resulted in the creation of the American territory of California following the concession of Alta California by Mexico to the United States in 1848 in the Treaty of Guadalupe Hidalgo. Soon after was California's admittance to the Union in 1850. Subsequent American westward migration by wagon and boat set the stage for the rapid development and economic growth to follow in the ensuing decades. The frontier period was dominated by the superimposition of American culture on the Hispanic way of life.

On the heels of the acquisition of California by the United States was the discovery in 1848 of gold in the Sierra foothills, which precipitated a sudden influx of population to the state from continental United States, Europe, Mexico, South America, and Asia. Following the Treaty of Guadalupe Hidalgo, it soon became apparent to the rapidly growing, land-hungry population, that the pre-existing system of land ownership would no longer be sufficient. New American settlers did not understand or accept the Mexican concept of land tenure in the form of ranchos and they were frustrated since much of the best land in California was taken up by the large Mexican land grants.

In many cases, the boundaries of the ranchos, such as San Antonio, were only roughly identified. Throughout California, many of the new settlers believed that the territory ceded by Mexico in the Treaty was now the public domain of the United States, and in many locations they tried to make claim to lands outside the pueblos. They immediately came into conflict with landowners who had acquired title under Spain or Mexico.

Under the Treaty, the pre-existing property rights were to be preserved. To bring order out of chaos, the United States government created the California Land Claims Commission in 1851, to provide a process to validate the Mexican titles by determining legal ownership, and by establishing fixed boundaries for property granted under Spanish and Mexican authority. Intended to protect the pre-existing landowner, this process in many cases worked to their detriment. The process of title confirmation was long, cumbersome, and expensive, and many ethnic Mexican rancheros found the economic and legal difficulties insurmountable.

Until a drought in 1864, cattle-ranching was the primary economic activity in the region, including the lands of western Santa Clara Valley. During the Mexican Period, open range methods were followed since grazing lands were ample. As smaller grain farms began to spread throughout the Valley, pasture land was reduced, and cattle ranching became concentrated in the foothills.

The areas of Santa Clara County associated with the Santa Cruz Mountains of the Coast Range were historically wooded with redwood forests, although the foothills also included chaparral and some scrub oak. Clearing land and logging was a significant part of the early history of development in this area, although logging likely did not occur in Permanente Canyon. The difficulty of transportation in the steep area, coupled with its natural resources, added to the pioneering attitude of early settlers.

The agricultural potential of the Santa Clara Valley had been recognized by the mission fathers who had established small orchards and vineyards. Cuttings from these trees and vines provided the basis for the establishment of small orchards and vineyards in the Early American Period. The vineyard of Elisha Stephens at the base of Stevens Canyon is well recorded, and historical records mention that a Spaniard by the name of Novato took plantings from Stephens and started a small vineyard on the foothills near Permanente Creek. The American frontier period in California that had begun with a military excursion into *Alta California* in 1846, came to a close in the years following the completion of the Transcontinental Railroad in 1869. Within ten years, farmers were planting out new orchards and vineyards which would ultimately change the character of Santa Clara Valley.

Congress had also allowed the passage of two acts that would shape the way the American West was settled. The Homestead Act and the Pacific Railroad Act (both in 1862) were responsible for the settlement of many western states, including California, and in particular Santa Clara County. While the Homestead Act was driven by an idealistic goal to populate the west with farmers, the Pacific Railroad Act was decidedly less altruistic, granting the railroad companies immense tracts of land in exchange for their progress building the Intercontinental Railroad that would connect the western United States with the east. The Homestead Act allowed any individual to claim 160 acres of public land for a small $10 filing fee, and they would receive the title to the land if they then farmed and made improvements to the land for five years. The railroads, not satisfied with the lands they received from the Railroad Act, took advantage of the Homestead Act and bought up land across the west, which they then sold to settlers, profiting further.

2.1.5 Horticultural Expansion (1876 – 1918)

While grain crops predominated in the Santa Clara Valley and throughout California during the 1860s, agriculturists began to experiment and diversify. Given the area's mild climate, farmers imagined that many crops never before grown in California would flourish here, providing an alternative to imported agricultural products, and expanding California's role in the export market. While the sea remained the primary route for export, Californians recognized the need for a railroad network to link the state not only to seaports but also to markets in the American interior. The Santa Clara Valley anticipated the coming of the railroad in the early 1850s; however, not until 1864 did a railroad line link San Francisco and San José, and not until 1869 did San José connect with the transcontinental railroad.

By the 1870s, several key forces came together to raise the quality of life in the Santa Clara Valley. Continually rising populations led to a significant increase in the value of land, which encouraged large landholders to subdivide their holdings into smaller plots in order to make quick money, effectively pushing cattle ranching out of the Santa Clara Valley and into the foothills. Meanwhile, early agriculturalists were experimenting with various types of fruits and vegetables, to determine which varieties were most suited to the Valley's idyllic growing climate. This led to the establishment of countless orchards and farms. The expansion of the railroads only enabled local farmers to market their crops further away from San Jose, especially after the technology for fruit drying and canning was perfected. The business of fruit production - the combination of growing, packing and canning - continued to be the focus of Santa Clara County agriculture during the first half of the twentieth century. Fruit production peaked in the 1920s in the Santa Clara Valley, but left a legacy of development in its wake.

Cupertino itself underwent the same growth that was affecting the rest of Santa Clara County during this time period. The typical crossroads village comprised of a church, general store, blacksmith, and post office that dotted the West, also existed at the intersection of (now) Stevens Creek and De Anza Boulevards. In 1882, a post office was established in this small but growing area at the crossroads, and while Cupertino itself remained without fixed boundaries until its incorporation in 1955, the village here was called “West Side” for its location on the west side of the Valley. By the turn-of-the-twentieth century, residents revived the name a member of the second Anza expedition had given the area in 1776, San Joseph Cupertino, in response to the confusion that came from so many growing areas in the west sharing the same name, “West Side”. The post office was officially renamed Cupertino in 1904, and the name has remained since.

2.1.6 Interwar Period (1918-1945)

World War II, like the Gold Rush a century before, had a major effect on the changing complexion of Northern California. The San Francisco Bay Area was the gateway to the Pacific Theater from 1941 to 1945. The large naval air station at Moffett Field became a center of much activity. Thousands of military personnel were brought to the area for training and processing, and many of them would return later to seek work and raise families.

Just prior to World War II, the industrialist Henry J. Kaiser decided to locate his newest venture, a cement company, in the foothills right outside of present-day Cupertino. The limestone deposit located near Black Mountain was ideal for making cement, as well as sugar refining, which it had been used for since the early 1900s. Kaiser constructed Permanente Cement Plant beginning in 1939, and then added a magnesium plant to the site only a few years later, as World War II made magnesium a valuable commodity. Kaiser provided jobs to hundreds of workers throughout the war, and then continued to expand locally during the post-World War II boom that America experienced in the 1950s.

2.1.6 Industrialization and Suburbanization Period (1946-1970s)

Soon after World War II, the Santa Clara County business community launched an active campaign to attract new non-agricultural related industries to the area. Early industries that established plants in Santa Clara County, in addition to Permanente Cement Company, included the Chicago’s International Mineral and Chemical Corporation’s Accent plant in 1946, the General Electric plant in the early 1950s, and International Business Machines (IBM) in 1943 and again in 1952. Attracted by the increasing job market, the population of the Valley grew phenomenally after 1950. Between 1950 and 1975 the population increased from 95,000 to over 500,000.

The urbanized areas of the Santa Clara County grew correspondingly, replacing orchards with subdivisions and shopping centers. The city of Cupertino was incorporated in 1955, when it had only a few thousand citizens and when its focus was still primarily agricultural and equestrian in nature. The Apple Computer Corporation established its headquarters in Cupertino in the 1970s, increasing the pace of the city’s development. Cupertino currently consists of approximately thirteen square miles and has around 51,000 residents. The city borders Saratoga, San José, Santa Clara, Sunnyvale, Los Altos, and unincorporated Santa Clara County, including unincorporated Monte Vista.

2.2 MINING CONTEXT IN SANTA CLARA COUNTY

During the Early American Period, it quickly became clear that rancho ownership under the Mexican government did not include legal rights to mineral deposits discovered on the rancho lands. In accordance with existing mining laws for Mexican territories, the first legal right to a mineral deposit was the discovery itself. The claimant must then present all the facts and evidence before an authorized tribunal, which would then make a final legal determination. The claimant must also prove that development of the mine was occurring within a 90-day time period, or the claim would be forfeited. Under American law however, all newly acquired lands in California gave the vested rights to potential mineral discoveries to the United States, and those to which they awarded land patents. Santa Clara County was integral in the mining or extracting of asphalt and bituminous rock, chromite, clay, copper, magnesite, manganese, and quicksilver, including the oldest quicksilver mine in the United States, New Almaden Quicksilver Mine.

The Quicksilver Mine at New Almaden, located in the hills at the southern end of the Almaden Valley, was California's earliest and largest mining endeavor. Cinnabar, the ore from which quicksilver (mercury) is extracted, had long been exploited by the Native American population that lived in this portion of California. Even though the mercury was poisonous, they utilized the ground red ore as pigment. In the early 1820s, local Mexican residents discovered cinnabar while prospecting for gold, but did not recognize its potential. In 1845, Andres Castillero, a Captain in the Mexican Army, located the cinnabar on the rancho *San Vicente*, owned by José Reyes Berryessa. Castillero filed an official claim, the first mining claim ever filed in California. Castillero was trained in geology and metallurgy and recognized the potential significance of the quicksilver deposit. Called back into military service in 1846, he sold the mine to the Barron, Forbes Company, a British firm with offices in Tepic, Mexico. The mines at New Almaden were named after the famous Almaden mines in Spain. Quicksilver was the primary reduction agent for gold, making it extremely valuable during California's Gold Rush in the 1850s.

Magnesite is a mineral used as a building finish, similar in some ways to concrete or stucco. The first magnesite deposits were discovered in California in 1885 at two widely separate locations in Santa Clara County. The earliest mining activity began in 1887 on the Cochrane deposit one and one-half miles south of the confluence of Coyote Creek and San Felipe Creek. A small production of magnesite was made from this and "other deposits in the vicinity." Although these deposits were favorably situated with respect to rail transportation, they were small in size and low in grade compared to the rich deposits located in the Red Mountain area in eastern Santa Clara County. Although more remote, Red Mountain deposits were first mined in 1899, but were not extensively exploited until after 1912.

Quarrying of sandstone in the Santa Teresa Hills on the eastern slope of the Almaden Valley was begun in 1874 by Levi Goodrich, a prominent local architect. Goodrich had bought the quarry from Nathaniel Skuse in January 1874, and in 1875, Jacob Pfeiffer came to the Almaden Valley to work as a stonecutter at the Goodrich Quarry. Jacob and his sons cut the sandstone by hand and hauled it first by wagon, and then by rail in 1886 to San José where it was shipped throughout California. Buildings constructed of this stone include some at Stanford University, the Federal Post Office in San José (now the Museum of Art), and Agnew State Hospital. In 1887, Levi Goodrich died and Jacob Pfeiffer leased the quarry from his heirs. In 1901, the quarry was renamed Greystone Quarry, and operated by Pfeiffer until his death in 1905. A year later, the 1906 San Francisco earthquake led to the curtailment of sandstone as a popular building material, and the quarry closed.

Lime has had many uses throughout the history of its exploitation; lime was primarily used as a component in the industrial processing of shell and cement, but it was also used in chemical sugar processing and in fertilizers. Early sources of lime during the Spanish and Mexican Periods were from ancient shell mounds remaining from the prehistoric period. Limestone was found at several places in the mountains bordering the west side of the Santa Clara Valley, the most important deposits being those in the vicinity of Black Mountain and in the range extending southeastward from Los Gatos to the

Guadalupe mine in New Almaden as early as 1864. Other early limestone quarries were established by A.J. Bond as the Bond Limestone Deposit which operated on 80 acres adjacent to the subject property in Los Altos. During this time, the San Jose Cement Company, formerly known as the Guadalupe Portland Cement Company, operated six miles south of Los Gatos. The Los Gatos Lime Quarry operated by J.W. Taylor was located two miles southeast of Los Gatos. Bernal's California Marl Fertilizer Company operated out of the Santa Teresa Mountain. In nearby Santa Cruz County, the most extensive outcropping of limestone was near the city of Santa Cruz which was operated in the 1850s by Issac E. Davis and Albion P. Jordan and later sold to Henry Cowell and incorporated in 1898 as the Henry Cowell Lime and Cement Company. Other limestone quarries in Santa Cruz County include the Holmes Quarry in Felton, and the Santa Cruz Lime Company northeast of the city of Santa Cruz. Also in Santa Cruz County was the Davenport Cement plant established in 1906 providing cement and concrete. By 1930, lime was beginning to be extracted in Santa Clara County from oyster shells from the San Francisco Bay which were put in a kiln, pulverized and used in fertilizer feed and composts. Companies such as Bay Shell Company and W. B. Ortley Shell Company were established near the San Francisco Bay shoreline.

The site that would become Permanente Quarry was previously utilized for the mining of limestone and sat idle for some years before it was purchased by Kaiser's Permanente Corporation. The largest deposit of limestone in Santa Clara County was found at this site, in the foothills of Black Mountain, a 2,812-foot summit on the Monte Bello Ridge of the Santa Cruz Mountains. Permanente Creek, originally named Rio Permanente or Arroyo Permanente by the early Spanish explorers for its perennial waters, flows down the northeastern side of Black Mountain to the San Francisco Bay. Permanente ("permanent") is often found on Spanish maps to denote surface water that flows year-round. In his *History of Santa Clara County* (1922), Eugene Sawyer refers to this large limestone deposit as occurring from Black Mountain behind Mountain View, to as far south as the New Almaden mines. The *San Jose Mercury News*' 1896 publication of *Sunshine, Fruit and Flowers: Santa Clara County* makes reference to an 1894 State Mining Bureau report, but there is no mention of limestone being produced in Santa Clara County.

The 1906 California Mining Report is the first report that refers to the quarrying of limestone in the area of the subject property. It is referred to as the El Dorado Sugar Company's Quarry located in Section 18 of T7S, R2W. While the location is correct, the owner is incorrect, as the quarry was both owned and operated by the Alameda Sugar Company during the first part of the twentieth century. The report states that the mined limestone is hauled out via a nine-mile wagon road (Permanente Road), and then shipped by rail from Mountain View to the company's factory near Alviso. The report also states that this operation has been going on for three years, and that the limestone produced would also make a good road material as it is already finely crushed.

The 1920 California Mining Report refers to the Black Mountain limestone outcrop as being of a high grade, suitable for both sugar refining and cement manufacturing. It states that this deposit has the unfortunate coincidence of being located more than nine miles from a railroad (which could be easily constructed along the south fork of the Permanente Creek through the canyon), although it is accessible by a wagon road. The report also refers to the quarry as belonging to the Alameda Sugar Company, stating that the company conducted operations of the Black Mountain quarry, but that the quarry had been idle for the past few years.

The 1930 California Mining Report refers to the limestone quarry located in Sections 17 and 18 of T7S, R2W as currently belonging to the Santa Clara Holding Company (and formerly owned and operated by the Alameda Sugar Company) although the quarry was idle, as it had been for some time.

The 1947 California Mining Report refers to the quarry located in Sections 17 and 18 as belonging to the Permanente Cement Company, formerly operated by the El Dorado Sugar Company, the Alameda Sugar Company, and then the Santa Clara Holding Company. It states that the property was idle for many years, until limestone began to be mined again in 1934 from the Black Mountain deposit. The report also states that the Holding Company's operations mined the shallower deposits, while the Permanente Company's operations are much more developed.

The 1954 California Mining Report goes into great detail about the amounts mined at the quarry by Permanente, as well as detailing the chemical composition of the limestone mined from the quarry. The fine-grained limestone with thin chert interbeds in the Franciscan Formation of Cretaceous age had been previously utilized for extracting limestone for beet-sugar refining and was owned by El Dorado Sugar Company.

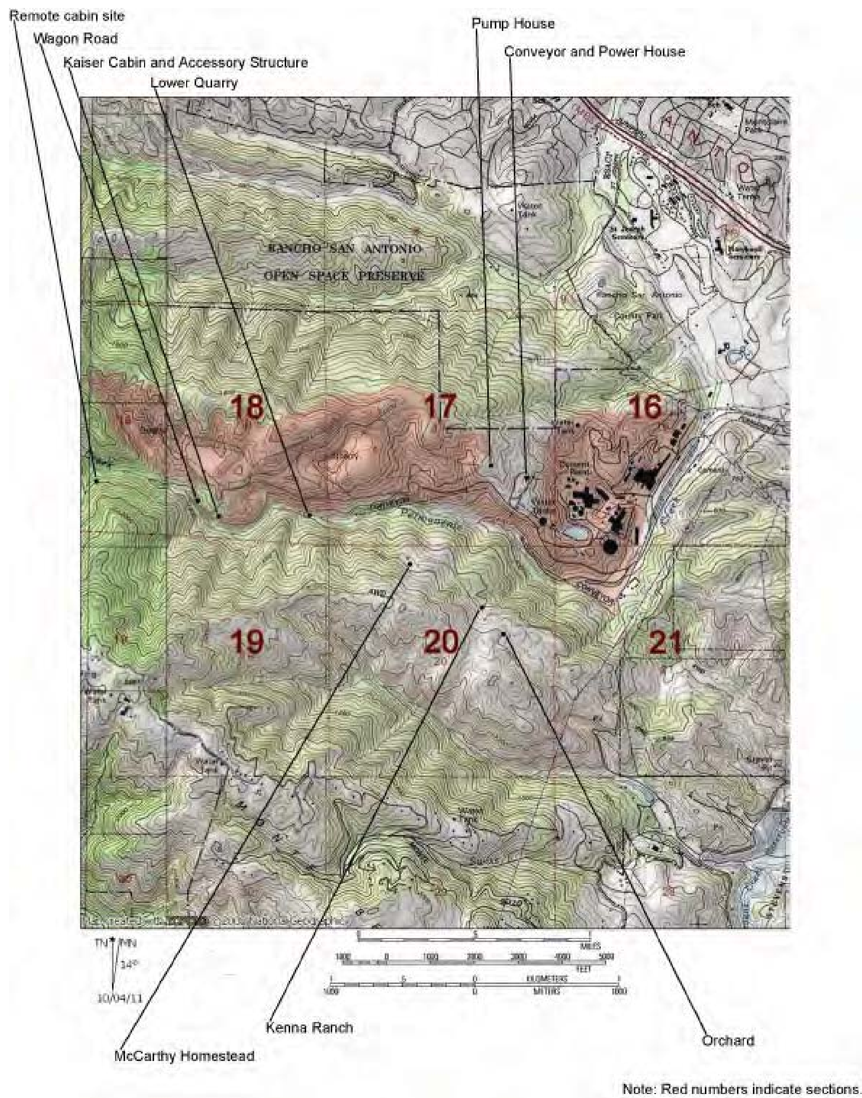
2.3 PROPERTY HISTORY (see graphic next page for Section and identified resources locations)

2.3.1 Early History Prior to Permanente Facilities

The western foothills of the Santa Cruz Mountains above present-day Cupertino were considered rough and unfit for cultivation when they were first surveyed by the United States General Land Office (GLO) in 1866. The 1876 *Thompson & West Atlas* ten years later still labels parts of the subject property as "unsurveyed", despite the fact that some parcels had owners of record. The GLO utilized a system of land description and ownership based upon a primary location, which for Santa Clara County was Mount Diablo. From the Prime Meridian, running through Mount Diablo, Townships were established, and then further divided using numbered rows. Each Township was defined as a square, measuring six miles by six miles, with 36 square mile Sections in each Township. The Sections were numbered beginning from the northeast corner and ending in the southeast corner. Cupertino is located within the Fremont Township, but was identified as the "West Side" until after the turn-of-the-twentieth century. The subject property is located with Township 7 South, Range 2 West (commonly written in documents as T7SR2W), covering some or all of the area of Sections 7, 8, 16, 17, 18, 19, 20, and 21.

One of the earliest American settlers in the Cupertino area was Captain Elisha Stephens, for whom Stevens Canyon and Stevens Creek are named (the misspelling of his name is an early historic record error). With the help of Chief Truckee in March of 1844, Captain Stephens led the Stephens-Murphy-Townsend Party to Alta California, the first wagon train to make it over the Sierras. Originally from North Carolina, Captain Stephens served under Commodore Stockton during the fight for the territory from 1846 to 1848. Captain Stephens took up a 160-acre homestead on the east side of what would become Stephen's Creek (later renamed Stevens Creek). He planted his acreage with fruit trees, grape vines from the Mission Santa Clara, and blackberries, hence the modern name of the site, Blackberry Farm. The lands owned by Captain Stephens did not include any of the subject property; however, he is the first settler on record in the area near the site.

Some of Captain Stephens' earliest neighbors were the Grant Brothers - George Henry Grant and Theodore Franklin (Frank) Grant, Boston natives whose grandfather was a participant in the Boston Tea Party. Captain Stephens even reportedly gave the wagon in which he crossed the Sierras to Frank Grant. Neighbors were few and far between on the west side in the mid-nineteeth century. Born in Boston in 1826, George Grant arrived in California by way of Panama in 1851. He spent time in San Francisco before settling in Santa Clara County. Also born in Boston in 1828, Frank Grant made his way to California by way of Maine and, arrived in San Francisco in 1850 before his brother. Frank Grant made his way to Santa Clara in 1851. He served as a clerk in a general store, then as the Postmaster and the town Treasurer until 1857, when he relocated to San Jose. Frank Grant then served as San Jose Treasurer for two years, before he moved to the West Side in 1859. George and Frank Grant purchased over 350 acres in Fremont Township, in the foothills along the Permanente Creek, and resided there until the early twentieth century.



Graphic depiction of Section locations and identified resources

In addition to the land the Grant brothers owned directly adjacent to San Antonio Rancho, early land records indicate that in 1867 Frank Grant purchased 118.67 acres of the southeast quarter of the southwest quarter in Section 18 (in the Quarry area)[1]. Various early maps show the Grant brothers owned the entire southern half (320 acres) of Section 8 (north of the Quarry), despite the property's overlap into San Antonio Rancho. Historic accounts credit the Grant brothers for the naming of Grant Road, which still runs north-south through the Cupertino area, northeast of Permanente Quarry. The Grant brothers appear to have owned over 400 acres, which stretched from San Antonio Rancho to government land. It is believed that Frank Grant built his house in the 1850s in the forest on the west fork of Permanente Creek,

[1] Robert J. Levy, *The West Side and How We Grew: A Geographic History of Cupertino* Vol. 2 (Cupertino: Bob and Louise Levy, 1996), 14.

and the dwelling was still present on the property when he died sometime after the turn-of-the-twentieth century.[2]

It is possible that what is known today as the Henry J. Kaiser Cabin and Accessory structure located along the banks of the Permanente Creek adjacent the Quarry is connected to the ownership of part of Section 18 by the Grant brothers. Therefore, it is possible these cabins date to the late-1850s or 1860s. Although Frank Grant did not record the purchase of the parcel until 1867, it is likely that he or his brother George laid claim to the land before it was officially recorded. An 1883 survey by the GLO does not show standing structures on Grant's land along Permanente Creek, although other cabin locations are evident nearby, including one located south of Permanente Creek at the west end of Section 18. The 1883 map identifies an "old road" following the alignment of Permanente Road and terminating at the early "Lower Quarry." The indication of an "old road" implies earlier settlement or use of the canyon.

Mining activity in Section 18 is not known to have occurred until the beginning of the twentieth century; therefore, any structures located in this area, including the foundations of the "Henry J. Kaiser Cabin," most likely served as hunting cabins of some sort, since the Grants were not known to be doing any cultivation of the lands within Section 18. The Grant farm and residence(s) are known to have been located outside of the present-day Quarry area, so hunting is the only other likely use the Grants would have had for the land in this Section unless they had been involved in some minor mining activity.

An article written by a historian specializing in the history of Kaiser Permanente states that when Permanente Cement Company purchased the property in 1939, a building made of stone and redwood was extant. This large building is said to have served as a speakeasy during the Prohibition Era. Its location high in the foothills on a private road may have made it an ideal location for the illegal venture. The article claimed that upon an initial visit to the property, Henry Kaiser was so taken with the beauty of the cabin's location that he had it renovated for use as a lodge that served as a getaway for himself and his wife Bess.[3] Mrs. Kaiser loved Permanente Creek and their retreat so much that she convinced her husband to name the new medical program provided to his shipyard workers in Oakland after the creek. In addition, it was the namesake for the Cement Company on the property the creek flowed through. A *San Jose Mercury News* remembrance of Henry J. Kaiser written by two older plant workers states that Mr. Kaiser "built a fancy lodge with a fireplace on the property where company officials entertained high-ranking visitors from Washington" during the early years of the plant.[4]

By 1890, the land upon which the Henry J. Kaiser Cabin stands was owned by Revillo Appleton Swain and his wife Alice H. Swain. In 1890 Revillo Swain is listed in a local directory as being a farmer in Cupertino, but most other records from the 1860s through 1900 show him as a resident of San Francisco. It is not known when Grant sold the property to the Swains, although it appears to have occurred sometime between 1880 and 1890. Permanente Road, which traverses the subject property, was dedicated to Santa Clara County for public roadway purposes on April 10, 1893. The public dedication refers to the owners of the property through which the road extends: Alice H. Swain and A. Coleman (land high in the foothills above Cupertino). This portion of Permanente Road would later be gated and presumably privatized in 1935. The road was formally vacated by the County of Santa Clara Board of Supervisors in August 2011, and the deed recorded on September 1, 2011. The 1899 United States Geologic Survey (USGS) Map shows four structures located in the area of the Henry J. Kaiser Cabin at the time of survey (presumably 1895); however, the location of these structures is inaccurate since the map shows the structures and Permanente Creek over the section line in Section 19 to the south. The cabin and accessory structure are known to be a part of the original acquisition of the Permanente Cement Company's

[2] "No. 183-Captain Elisha Steven's Snake Dinner" in Santa Clara County History Scrapbooks Part III.
[3] Steve Gilford, "Search for the Source of the Permanente" in *The Permanente Journa*l Vol. 2, No. 3 (1998).
[4] George Lajeunesse, "They Remember Permanente's 'Papa'", *San Jose Mercury News,* 1/21/1983.

purchase from the Santa Clara Holding Company in 1939, and not a part of the Company's acquisition of Section 19 in 1965.

By 1902, County Tax Maps show W.W. Brirer owned the southeastern quarter parcel of Section 18. The Alameda Sugar Company purchased the parcel shortly thereafter. A May 23, 1903 article in the *San Jose Mercury News* entitled "Santa Clara County Lime Industry Growing" states that during the past year production of limestone in the County has increased rapidly due to mining along the Permanenta (sic) Creek. The article states the mining is occurring "where a huge landslide occurred many years ago, thousands of tons of lime rock were exposed to view. This site was located on the Swain property, a few miles up the main stream of the Permanenta (sic) above the John Snyder farm. The article further states that, "No attention was paid to this rock until the Alameda Sugar Company, operating the sugar mills at Alvarado, in looking about for lime rock….learned of the deposit….they now own 320 acres, including the old landmark known as Bald Peak."

The Alameda Sugar Company was a progression of various other sugar company endeavors undertaken and operated out of a mill in Alameda County's Alvarado. At the time of its purchase and exploitation of the limestone found in Section 18, the Alameda Sugar Company had been operating under that name since 1889. Originally founded as the California Beet Sugar Manufacturing Company in 1869, the company was owned and operated on the banks of the Alvarado Creek by Ebenezer Dyer. This sugar mill was the first successful beet sugar factory in the United States, and is currently designated a California Historical Landmark (#768). The California Beet Sugar Manufacturing Company closed in 1873 and moved its operations to Soquel, California. In 1879, Ebenezer Dyer incorporated a new company known as the Standard Sugar Refining Company, and operated it out of the Alvarado plant. A boiler explosion in 1886 destroyed part of the factory and killed one worker, and the plant was forced to close. In 1887, a new plant was constructed across the street. It operated under the name of the Pacific Coast Sugar Company for just over one year until Dyer reorganized the company as the Alameda Sugar Company. Dyer operated the Alameda Sugar Company until 1924, when he sold it to the Holly Sugar Company. The plant was operated until 1975, when operations were moved to Tracy, California.

The limestone quarry, located in the southeast quarter section of Section 18 and the southwest quarter section of Section 17, provided high-grade limestone ideal for use in sugar refining. It is not known when the Alameda Sugar Company ceased mining operations at the site, although it can be assumed that the company continued through the late-teens and into the early 1920s. The Santa Clara Holding Company began operating the quarry in the early 1930s. An article featured in the August 1943 edition of *The Permanente News* (distributed to all Kaiser employees) was written by Joe Peabody, a worker at the Cement Plant since 1933. Peabody wrote that in the 1930s, the Santa Clara Holding Company was taking the limestone (called sugar rock) out of the deposit by means of a bucket line - a far cry from the state-of-the-art conveyor system belt line that the Permanente Cement Company would begin to operate a few years later.

Due to the enactment of the Homestead Act and the Pacific Railroad Act in 1862, the land in the foothills was quickly being carved up. The Central Pacific Railroad (CPRR) assumed ownership of various large parcels in the foothills of the Fremont township in January of 1865, and the Western Pacific Railroad (WPRR) also took ownership of parcels at various times between 1862 and 1870. The CPRR then used many of these parcels as partial payment of one of its primary agents, Charles McLaughlin. In 1880, Charles McLaughlin was second only to Leland Stanford in terms of being the largest landowner in California.

Charles McLaughlin was associated with the building of transportation networks in California even before his association with the CPRR. He was the founder/owner of the California Stage Company in the 1850s, he built the San Francisco and San Jose Railroad line in the 1860s (only the third railroad line in the California at that time) and by 1865, he was hard at work on the WPRR as well. The railroads provided McLaughlin with ownership of land in seven counties (including Santa Clara County). This made him a very wealthy man. Historic maps from the time period show McLaughlin owning almost every other section of the public lands in the foothills of the San Francisco Bay Area. Despite the low value typically assigned to these mountainous parcels, Charles McLaughlin was one of the San Francisco Bay Area's first millionaires. He was murdered by a former employee in 1883 and ownership of his lands was transferred to his widow Kate Dillon McLaughlin.

Within five years, Kate McLaughlin passed away, and the two million dollar estate went to her niece, Kate Dillon, and close family friend, Mary Ives Crocker. The two heiresses split the 100,000 acre estate, including the parcels found within the subject property. Mary Ives Crocker had married Henry J. Crocker, in 1889. Henry Crocker was the nephew of Charles B. Crocker, the railroad magnate and one of the founders of the CPRR. The Crocker estate was eventually willed to daughter, Marion Phyllis Crocker, who never married. Marion Crocker sold a 20-acre parcel located in the north half of the northeast quarter of Section 19 to the Permanente Cement Company in 1943 (SCC O R 1153, Page 10). Marion Crocker sold the remaining acreage (nearly 350 acres) of the northern half of Section 19 to the Kaiser Cement Company in 1965 (SCC OR 6830, Page 732).

John R. McCarthy was another one of the subject property's early Santa Clara County homesteaders. A native of Ireland who came to San Jose in 1876, McCarthy began his new life in America by picking cherries for $1.50 a day. By the early 1880s, he was renting a ranch on Permanente Creek, and in 1882 he took a homestead option on 160 acres in the foothills above Cupertino, on the northwest quarter section of Section 20 within T7S, R2W. McCarthy Road, which traverses Sections 17 and 20 on the subject property, is named for this early homesteader. The origins of the homestead site recorded in this survey and located in Section 20 make it most likely connected with McCarthy, according to a Deed dated August 16, 1890 (SCC Deeds 128, Page 616) from Henry K. Jackson to McCarthy. It is known that Henry Jackson resided and worked in Oakland at this time, so John McCarthy most likely rented the land from Jackson, and constructed any buildings on the parcel, and finally purchased/recorded his ownership of the parcel in 1890 despite his occupation of the land sometime in the 1880s (the Deed also makes a reference to buildings being located on the parcel although a description is not given). According to County Tax maps, McCarthy retained ownership of at least three quarters of this quarter section through the early twentieth century. Two structures on the homestead site are visible on the 1899 USGS map, and their remnants remain extant on the site today, in addition to an olive and walnut trees and wire fencing.

The western half of the McCarthy quadrant was purchased by George Campbell (although Campbell may have occupied part of, or the entire McCarthy parcel beginning around 1895) from John R. McCarthy on September 16, 1905 (SCC Deeds 297, Page 636). The land remained in the Campbell family until it was sold by the Estate of Sena Campbell to the Kaiser Cement & Gypsum Corporation in 1969 (SCC OR 8757, Page 470). The property rights included the right-of-way for the wagon road easement through the property.

The eastern half of the McCarthy quadrant of Section 20 was occupied by J. Bernard (in addition to George Campbell) perhaps as early as 1895, although McCarthy is still recorded as the owner of the entire parcel through at least 1902. Bernard likely rented a portion of the eastern half of the northwestern quadrant, and then eventually purchased the property sometime in the early 1900s. The deed transferring the land from Jules Bernard, Jr. to the Kaiser Cement & Gypsum Corporation in 1979 (SCC OR E 524, Page 322) refers to Lots 1 and 4 of Section 20 as having been conveyed from John R. McCarthy to Charles A. Sullivan on May 29, 1896 (SCC Deeds 190, Page 306), as well as the 83 acres in the southern half of the northeaster quarter section that other maps assign to Kenna (see discussion on the following page). Charles Sullivan is referenced as the owner of the Kenna property on the 1902 County Tax Map, even though the 1895 Survey Map and later maps reference Kenna as the owner of record. Kenna may have rented the land from Sullivan and eventually purchased the property.

The northeast quarter section in Section 20 (directly east of the homestead site) was first recorded as belonging to the CPRR in 1865, and then Henry Kennedy Jackson in 1886. The 1890 Santa Clara County Tax Map still lists Henry Jackson as the owner of the quarter section, but an 1895 Survey Map[5] shows the section had been divided into two 83-acre sections, running width-wise at an angle across the section, with the northern half of the quarter section owned by A.S. Spence, and the southern half of the quarter section owned first by P.J. and then J.R. Kenna. Kenna also owned the nearly 160-acre southeast quarter section of Section 20 connected to the southern half of the northeast quarter section. Kenna is also referenced as a property owner along the Permanente Road in the 1893 Permanente Road Dedication.

Just to the south of McCarthy Road, an orchard is recorded in the 1895 survey on the Kenna property. The survey also records multiple structures probably associated with the orchard, as well as the structure known as the Sugar Shack. The remnants of this building are still extant on the site today. The Kenna lands were eventually sold to Blanche K. Rouleau (later Morris) sometime after 1914. Morris then sold the property to the Permanente Corporation in 1942 (SCC OR 1103, Page 591).

John Snyder was another early settler who came to the area and owned part of the subject property. Snyder initially came to California to try his luck at gold mining. By the late-1850s, he had settled near Permanente Creek and purchased much of the San Antonio Rancho. Snyder's extensive lands were eventually bought by Kaiser Permanente, Maryknoll, Gates of Heaven Cemetery, Interstate 280, and Mid-Peninsula Parks. The house Snyder constructed for his daughter as a wedding present around 1881 still remains near the Gates of Heaven Cemetery entrance.

John Snyder owned the northeast quarter section of Section 17, which was a part of the first purchase Permanente Corporation made from Santa Clara Holding Company in 1939 (SCC OR 942, Page 290). The land purchased from Santa Clara Holding Company also included the parts of Section 16 not within the boundaries of San Antonio Rancho, as well as the northwestern quarter section of Section 21. Deeds indicate that Santa Clara Holding Company assumed ownership of the various parcels in 1933. When Henry Kaiser (who had been searching for a limestone source in the area) realized how abundant the limestone vein was, the Henry J. Kaiser Company signed a Use Permit and Lease and Option to Purchase agreement for the limestone quarry.

2.3.2 Permanente Cement Plant-Construction

In 1939, Kaiser lost the bid for the construction of Shasta Dam by bidding with a consortium of builders called the Six Companies who his company had worked with on other New Deal projects. In order to win the supplier contract for the cement, he ventured out without the full consent of the Six Companies to underbid the reigning cement monopolies. These cement monopolies had been winning much of the supplier contracts in the United States and abroad. Kaiser was determined to undercut the cost and win the contract. He secured the bid to supply sand and gravel for the dam. To provide the low bid of $1.19 a barrel of cement at Shasta Dam, Kaiser needed to produce cement under his own business model. Acquiring a cement plant was of paramount necessity to be successful in the Shasta Dam project. Although Kaiser was well versed in the sand and gravel business, he lacked knowledge of cement production. He instructed his key engineering people to study cement manufacturing techniques and to locate a property containing adequate amounts of high-quality limestone. Drilling at Permanente Canyon found enough limestone for the project and an anticipated production life-span of fifty years.

During initial construction of the Shasta Dam, sand and gravel was extracted from Kaiser-owned pits near Redding, about ten miles from the dam site. Moving of material during this period was generally accomplished by railroad, however, Kaiser ran into costs that were prohibitive and decided to exclude the railroad from the project. Instead, an 'ingenious' conveyor belt was built to move the sand and gravel to

[5] 1895 McMillan Survey Map for Section 20.

the construction site. This conveyor belt was built 1,500 feet up a mountain and down the other side and moved 1000 tons of material in an hour. It proved cheaper than using the railroad and the technology was subsequently transferred to the Permanente Cement Plant where a large conveyor belt system was developed in the early 1940s to transfer rock from the quarry to the crushers and cement plant.

On May 8, 1938 Santa Clara Holding Company, Ltd, and Henry J. Kaiser Company signed a Use Permit and Lease and Option to Purchase agreement to erect, construct and operate a cement mill and storage facility. The 1,300-acre site was legally described as Sections 16, 17, 18 and part of part of Section 20, T7S, R2W (Use Permit File No. 173.23). On February 13, 1939 the Amended Articles on Incorporation for Permanente Corporation were filed in the office of the Secretary of State of California along with by-laws and election of officers. On July 10, 1939 Santa Clara Holding Company formally transferred title of the land to Permanente Corporation (SCC OR 942, Page 290). Santa Clara Holding Company sold the property to Permanente Corporation for the sum of $235,000. By 1942, the site would quickly become the largest cement manufacturing plant in the world and was also regarded as one of the most efficient.

Kaiser began work at the site in June 1939 with a bank loan of $3 million to finance the building of the Permanente plant.[6] By Christmas of that year, the plant had produced its first bag of cement. The initial construction included a two-kiln plant, processing and storage buildings and a two mile conveyor belt. "A giant power shovel scoops up the raw material, six tons to the bite, and dumps it into crushers that feed a two-mile conveyor belt which carries the material by gravity down to the plant in the canyon. The brakes on the steeply inclined belt are generators which produce the power needed to harvest the limestone." [7] At the cement plant, Kaiser continued to use the conveyor belt technology that was developed at Shasta Dam for moving limestone down to the mill. The original conveyor belt began at what was initially known as the Upper Quarry and ended at the west side of the mill site where two stockpile sites were established. By the time a survey was made of the quarry in 1942-1943, the conveyor system had two long legs: 1) the original conveyor extending from the terminus northwesterly about 1300 and then westerly about 2500 feet to a crusher at the northeast corner of the Upper Quarry (no longer extant); and 2) a second conveyor extending slightly south of westerly through a 560 foot tunnel, 4500 feet total, to a crusher near Permanente Creek and the South Quarry. The second conveyor was completed by mid-1943, and included two extensions northward from the Lower Quarry to crushers mid-way to the Upper Quarry. It is not known if the two-mile long conveyor mentioned in the 1941 article included the portion through the tunnel, although a 1943 article mentioned that the tunnel had just been completed at that time. It was claimed the 48-inch belt moved 1,000 tons of material in an hour. Limestone was quarried from up to two miles back in the hills and then cascaded off the end of the conveyor belt into the backyard of the plant. Once in the yard, the limestone is crushed and powdered, turned into cement, sacked or sent directly into boxcars.

In 1943, the Permanente Cement plant formally established a post office at the plant with the new address of Permanente, California. During this year the name of the company was changed to Permanente Cement Company. In the 1944 edition of *Permanente News* and the 5-year anniversary of the founding of the company, the firm reflected on the construction of the site "The accomplishment represented a period of feverish construction with men and machine gnawing at the very foundation of Black Mountain to build roads, flatten hilltops, and erect the giant of the cement industry. Mighty rotary kilns were hauled in sections up precipitous roads in some of the most spectacular feats of modern engineering. One of the major operations was excavation of hundreds of thousands of yards of earth. Countless equipment of a specialized nature was used in dirt moving-shovel kippers, dragline buckets and bulldozers."

Shipments were moved out of the plant via railroad which paralleled the side of the plant. The railroad was constructed 1939-1940 to move the quarried material to be shipped. In late 1941, an agreement was

[6] Wood, James Playsted, "Henry J. Kaiser" in *The Journal of Marketing* Vol. 27, No 2. (April 1963): 76.
[7] Taylor, Frank, "Builder No. 1" in *The Saturday Evening Post*, 122: June 7, 1941.

signed between Permanente Corporation and the SPRR Company to extend the railroad into the Quarry (SCC OR 1087, Page 157). This railroad was served by 1,200 freight cars per month. SPRR owned three transfer tracks east of the plant, while Permanente owned a network of ten tracks inside the plant operated by two locomotives. Each day, two SPRR trains steamed into the yard to pick up freight cars of material to be delivered. By 1941, a fourth kiln was installed which one article noted "will make the mill the fastest producing cement plant in the country".[8] By 1947, the conveyor belt had been lengthened by two more miles and "after induction motors start the conveyors, generators driven by gravity flow supply enough electricity to operate a five-yard shovel in the quarry". [9]

Various articles note that when Permanente Cement Company purchased the property there was an extant stone and redwood building that he renovated as a lodge and that Kaiser built a road to the site from the plant. This building is now in ruins and is known as the Henry J. Kaiser Cabin. It is located southwest of the Quarry on the north side of Permanente Creek and what was once Permanente Road.

Permanente Cement Corporation was supplying not only Shasta Dam, but Navy construction sites in Hawaii, Guam and Wake Island. Company owned ships, the S.S. Philippa and the S.S. Permanente Cement, carried bulk cement shipments into Hawaii and the Pacific. Transporting bulk cement in the hulls of the shipping boats would lead Henry J. Kaiser into a new endeavor, the shipbuilding business and establishing of the Kaiser Shipyards in Richmond, California. Kaiser was constantly expanding the capacity of the companies he operated into new areas, mostly associated with government construction contracts or materials supply for building and transportation, particularly during World War II. After initial construction of the cement plant, the Permanente Cement Corporation constructed a magnesium processing plant on the site.

2.3.3 Magnesium Plant

Covering 30 acres of land, the Magnesium Plant was constructed in 1941, adjacent to the Cement Plant. Kaiser was interested in a myriad of different materials, including light metals that could be used for the production of war-related items such as airplanes, jeeps and automobiles. Kaiser also thought the light metals could be used as a building material. Initially, choosing aluminum to produce, he was set back by government regulations and rival aluminum manufacturer, Alcoa. In an attempt to meet the increasing demand for light metal, Kaiser chose a different material - magnesium - which could be used for aircraft, as well as an incendiary product. Germany produced most of the magnesium products at that time. In the United States, Dow-American Magnesium had a corner on the market. Kaiser utilized a new untested process by which to refine magnesium and hired the inventor of the process to oversee operations. Backed by the Todd California Shipbuilding Company, Kaiser constructed a magnesium refinery in 1941 adjacent to the cement plant. Although brucite (the raw material used to make magnesium) was not readily available nearby, the material was shipped from Nevada to the plant in Cupertino. At the Magnesium Plant, existing piped gas was used for a dual purpose. The cold gas shot through the magnesium kilns to form the metal, and then again was used for the cement operation to burn limestone in the kilns. The magnesium fabrication also produced "goop," an incendiary bomb material which was eventually used in the final air attack on Japan in World War II.[10]

The magnesium was produced under the company name of Permanente Metals. In 1943, Permanente Metals opened a plant in Natividad, Monterey County that processed pure white dolomite into magnesium. Magnesium production was somewhat volatile and not as successful as had anticipated. By 1947, the production of magnesium had ended and the company entered into the production of aluminum on the site backed by a loan from the Reconstruction Finance Corporation. Henry J. Kaiser was interested

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[8] Ibid., 124.
[9] State of California Division of Mines, *California Journal of Mines and Geology* Vol. 43, No. 3 (July 1947): 315.
[10] Kaiser Industries Corporation, 1968.

in using aluminum for boats, as well as a building material, particularly in geodesic domes which he hoped would expand the demand for aluminum. The predominant manufacturing site for aluminum for Permanente Metals was in Mead and Trentwood, Washington State. It appears the facility at Permanente Quarry was used mostly for the production of aluminum foil. In 1949, the company name was changed to Kaiser Aluminum & Chemical Corporation. Demand for aluminum increased during the Korean War and the company met the challenge to increase aluminum output which occurred mostly at a large plant in Louisiana. It is during this time that aluminum began to be used as a building material on large office buildings. At the Permanente Quarry site a new foil mill was installed in 1950 for the manufacturing of aluminum foil. Aluminum extruded products were manufactured at the site until 1990, when the plant was closed. Aluminum production would ultimately be the most profitable of all the companies started by Henry J. Kaiser, including those is the steel, cement, and gypsum industries.

2.3.4 Permanente Cement Plant –Production

In early 1941, the capacity of the Permanente Cement plant was 12,000 barrels. The capacity was increased to 16,000 barrels in late 1941 - at the beginning of the war with Japan. In 1942, the production record of 5,066,060 barrels was reached. That year's level of production made the Permanente plant the largest cement plant in the world at the time, and remained the company record for most cement produced in a year. The catalyst for achieving this record was the bombing of Pearl Harbor on December 7, 1941 and an increase in the need for cement to fortify the Pacific Island bases (*Permanente News* 1943:4). The two freighters, S.S. Permanente and S.S. Philippa were converted to bulk carriers to ship the large amounts of concrete from Redwood City to Honolulu during the war. By 1943, capacity was again increased and the plant was producing 500,000 barrels or two million sacks of cement. In one year, the quarry moved 1,500,000 tons of limestone downhill to the processing plant with a staff of 19 men. By 1945, war orders by Navy and Army contracts had put cement production into overdrive as over 18,000 barrels of cement was shipped daily. High quality raw materials and new facilities peaked production. New facilities included four coolers for the four kilns, an additional kiln fed slurry tank, new clinker conveying and crushing facilities, additional cement pumping equipment under the storage silos, and enlargement of the packhouse. The packhouse addition consisted of a four-compartment, 5,000 barrel packer bin which helped control the 17 types of cement being produced at the site. The 17 different types of cement included: Standard Portland, Modified Portland, Hi-Early Strength, Low Heat, Sulphate Resisting, Plastic, Concrete Pipe Cement, three types of oil well cement, Plastite, and Brick Mix.[11] Permanente Cement furnished the entire 6,800,000 barrels of cement used for Shasta Dam and by the end of World War II, had filled major government contracts for $25,000,000. During World War II, production increased as demand grew and many women joined the Permanente workforce as men went off to war. By 1947, Permanent Cement took over operation of plants in Seattle, Merced and Redwood City, as well as Honolulu, Hawaii.

By 1949, the plant produced 1.1 million tons of cement a year and Permanente's reach continued to expand with new distribution facilities in the Pacific Northwest. As the West began to grow after World War II, the demand for cement for new construction increased. Reinforced concrete was also in high demand for commercial and industrial uses. Cement continued to be utilized in large public work projects, such as dams and highways. Cement maintained a stable pricing level during the ten years after 1939, while other building materials costs increased due to inflation. By 1949, Permanente sold 8% to 10% of the cement produced in the United States and was second only to Atlas Portland Cement.[12]

The 1950s were an era of expansion for Kaiser Permanente Cement with distribution and manufacturing plants being constructed or acquired throughout the west coast, including the Olympic plant in Bellingham, Washington and Cushenbury plant in Southern California. By 1951, five kilns were in

[11] State of California Division of Mines, 1947:316.
[12] Ibid., 12.

operation at the Permanente Cement Plant increasing the annual output to 7,000,000 barrels. (Division of Mines: 365) In 1956, a sixth kiln was added which increased production by 20% and an aggregate plant was installed to supply material for highway construction.

By the end of the 1950s and into the early 1960s, the distribution of cement products widened as the company constructed plants in Honolulu and acquired interest in cement plants in Japan (Okinawa), Thailand and in the Southwest United States, merging with Longhorn Portland Cement Company in Texas. In 1964, Kaiser Gypsum was manufacturing wallboard and other gypsum products and with new plants in the East, the company named changed to Kaiser Cement and Gypsum Corporation. At the Permanente Cement Plant, kilns were made more efficient and a rod ball mill was added to the plant for raw grinding. On August 24, 1967, Henry Kaiser died in Honolulu, Hawaii.

In the 1970s, environmental concerns weighed heavily on the company and some of the processes in place for many years were changed to accommodate the shortage of fuel and natural gas. This included replacing the six kilns with a single dry-process kiln, which was more cost effective and environmentally sound. In early 1970s, construction began on the Preblend Dome, now a commanding feature on the Quarry landscape. In the 1980s, rebuilding of the plant began as a kiln and raw grinding mill were completely rebuilt. In 1981, the six old kilns were shut down. The two 220-foot concrete stack kilns were demolished in 1982. In 1986, Kaiser Cement was purchased by the British firm, Hanson PLC. By 1989, the plant supplied nearly one-third of the all the cement used in California. Improvements continued at the plant, including installing computerized systems to increase efficiency and a rock plant was constructed to convert excess mining rock into washed concrete aggregate. In the 1990s, Hanson Permanente Cement supplied the cement and aggregate for the construction of nearby Highway 85. In 2007, Heidelberg Cement purchased Hanson PLC and the Permanente plant was merged with Heidelberg's Lehigh Cement companies and renamed Lehigh Southwest Cement Company, Permanente Plant.

2.4 HENRY J. KAISER BIOGRAPHY

Henry J. Kaiser was born May 9, 1882 in Sprout Brook, New York to German immigrants Frank and Mary Kaiser. Henry left school at the age of 13 to work, and he was a successful traveling salesman for a photography supply company at the age of 17. By the time Henry Kaiser was 20, he had become the owner of that photography supply company. He met his future wife, Bess Fosburgh, through his work, and it was reported that her father subsequently instructed Kaiser to "go west and establish himself" before he married his daughter. Henry Kaiser relocated to Spokane, Washington in 1906. He worked in sales for McGowan Brothers Hardware, and was introduced to the construction business through his visits to construction sites as a part of his job. In 1914, Kaiser formed a road-paving firm in Vancouver, British Columbia, and pioneered the use of heavy machinery in construction. He incorporated as the Henry J. Kaiser Company, Ltd. and soon after hired A.B. Ordway, an engineer who remained with Kaiser for almost 65 years. During his career, Henry J. Kaiser founded and managed a large number of American industrial companies associated with steel, chemicals, cement, aluminum, construction, automobiles, electronics, and aviation.

Henry J. Kaiser's first major road building job was in Redding, California where he met R.G. LeTourneau, an equipment manufacturer who developed an array of haulers, scrapers, and dumpers innovative in the heavy construction industry. Kaiser and LeTourneau developed heavy equipment that was transformative within the road building and construction industries. Kaiser's job sites were some of the first that used heavy machinery, replacing mules and even men with shovels and pickaxes. This enabled Kaiser to complete his projects faster, cheaper, and better than anyone else.

Kaiser's early large-scale work was focused on road building and dams, including projects such as Hoover Dam and the Grand Coulee Dam. He also undertook construction projects involving levees, piers, pipelines, and bridges. Kaiser was the engineering contractor for the construction of pilings for portions of the San Francisco-Oakland Bay Bridge. In 1927, he won the contract to construct 200 miles of road in the center of Cuba, partnering with the large construction firm, Warren Brothers, whom he had subcontracted on other large projects. The $20-million Cuban road-building contract helped forge the expansion of Kaiser's firm. Henry Kaiser felt that one of his great Cuban achievements was hiring George Havas, an engineer who was working on a sugar plantation at the time. Havas brought engineering expertise to the Kaiser Company. Bids prepared by George Havas were developed on detailed data analysis rather than on Henry Kaiser's educated guesses. Kaiser's model for obtaining government-backed projects was to go directly to the bureau chiefs and offer bids lower than any of those of his competitors. He utilized his personal connections and was always well prepared to undercut the competition. As a master of marketing, he could convenience his clients of his capacity to undertake a project even though he did not necessarily have the production facilities in place to do the job. It is during the next few years that Henry J. Kaiser would become known as the nation's "Builder No. 1".

Many of the New Deal projects during the 1930s were too immense for one contractor to oversee. A joint venture was made between six separate companies to vie for the winning Hoover Dam bid. This consortium, called Six Companies, was composed of Kaiser and Bechtel Corporation, McDonald and Kahn of Los Angeles, Utah Construction Company of Ogden, Morrison-Knudsen of Boise, Idaho, Pacific Bridge Company of Portland, Oregon and J.F. Shea of Portland, Oregon. Kaiser-Bechtel had the largest percentage of holding in Six Companies. It was the loss of the Six Companies bid for the Shasta Dam that catapulted Kaiser into the cement business. After failing to win the bid as the prime, Kaiser was determined to win the materials supplier bid by underbidding the cement monopolies that controlled projects within the industry. The plan was challenged by the Six Companies and many of the conservative members of the group objected to Kaiser's underbidding plan, but Kaiser spearheaded the bidding process to win the cement bid. Once he received the winning contract, he was able to borrow the money needed to build the facility. Kaiser also led the construction of the cement plant at Permanente, including supervising its construction and subsequent upgrades. Henry Kaiser was personally involved in every venture he entered including the founding and supervision of the Permanente Cement Company. His dedication and management of the cement plant was illustrated in a longtime employee's comment "As a boss, there wasn't any better".[13]

The Permanente Cement Company highly publicized its assistance of the defense effort during World War II. Cement from the Permanente plant was used for pillboxes, dry docks, landing strips and other installations for the United States Navy in the Pacific and many large Army and Navy projects in the mainland. Locally, during the war, the cement was used for hangar foundations at Moffett Field, concrete runways at Hamilton Field in Marin County and battleship production at Hunters Point. In 1941, Kaiser moved into the manufacture of light metal with the construction of a magnesium plant adjacent to the cement plant. These two manufacturing companies within close proximity to one another illustrated the versatility in Kaiser's overall enterprise. He was able to predict change in demands and grow his various companies to meet that change. Reflecting back, Henry Kaiser noted that losing the Shasta Dam project was a great windfall for his company and truly grew the Permanente Corporation in innovative ways.

Permanente Cement Company spurred on Kaiser's initial venture into shipbuilding during World War II. Bulk cement was supplied to destinations such as Pearl Harbor and Guam in the hull of aged ships which were reconditioned at the Todd Pacific Shipyards in Seattle. With John Reilly of Todd Pacific, Kaiser formed the Kaiser Shipyards to meet the anticipated demands for shipbuilding and filled orders from Great Britain for ships during the early years of the war with Germany. During World War II, the Six Companies also held a majority of the ownership in the Joshua Hendy Iron Works in Sunnyvale along with early owner Charles Moore. Hendy Iron Works produced steam turbines, United States Navy torpedo-tube mounts and ship engines. The steam turbines were installed in the United States Liberty Ships at the Richmond Shipyard. Work on the Kaiser Richmond shipyard in Richmond, California began

[13] Kaiser Cement Corporation, 1989.

in 1940, using crews and equipment relocated from the Grand Coulee project to build the facility. With rotating shifts working 24 hours a day, Kaiser employees drained water, blasted rock, and built shipways. After only three months, workers laid the keel for the first of 747 vessels to be built at the shipyards- one of the most successful operations of its type in maritime history. Although the Richmond shipyard became one of the most well-known, Kaiser also had shipyards built at Ryan Point, Vancouver, on the Columbia River in Washington, at Swan Island in Portland, Oregon, and in the Washington State cities of Seattle and Tacoma. The shipbuilding efforts led Henry J. Kaiser into the steel industry, when he responded to shortages by building his own steel mill in Fontana, California.

At the Kaiser Shipyards, the Kaiser Permanente Health Care system was formally born. The Kaiser Richmond Field Hospital for the Kaiser Shipyards opened on August 10, 1942. The Field Hospital was sponsored by Henry J. Kaiser's Permanente Foundation and served employees at the individual shipyards, and the main Permanente Hospital in Oakland. By August 1944, most of the Richmond shipyard employees had joined the Kaiser Permanente Health Plan, which was the first voluntary group plan in the country to feature group medical practice, pre-payment and substantial medical facilities. In 1945, the Health Plan was opened to the public, and became one of Kaiser’s most significant and longest lasting achievements. In 1990, Kaiser Permanente was still the country's largest nonprofit Health Maintenance Organization (HMO) and today continues to be one of America’s largest.

After World War II, Henry Kaiser anticipated the need for housing, medical care, and transportation for post-war America and began expansion of his companies to address those needs. He expanded his cement and steel operations, and began manufacturing aluminum, gypsum, and appliances and other household products. In San Jose, Kaiser worked with real estate developer Fritz Burns to construct a planned development called Kaiser Community Homes. Similar developments were also built in Portland, Oregon and Southern California. One of Kaiser’s most ambitious projects was the manufacture of automobiles. Undertaken with Joseph W. Frazer under the corporation name of Kaiser-Frazer, the company manufactured cars such as the Kaiser Special, Kaiser Custom, Kaiser Deluxe and the Henry J. The venture into car manufacturing was not a success due to post-World War II and Korean War metal shortages and competition from established automobile manufactures. Kaiser-Frazer cars stopped being produced in 1955, although the Kaiser Jeep division survived.

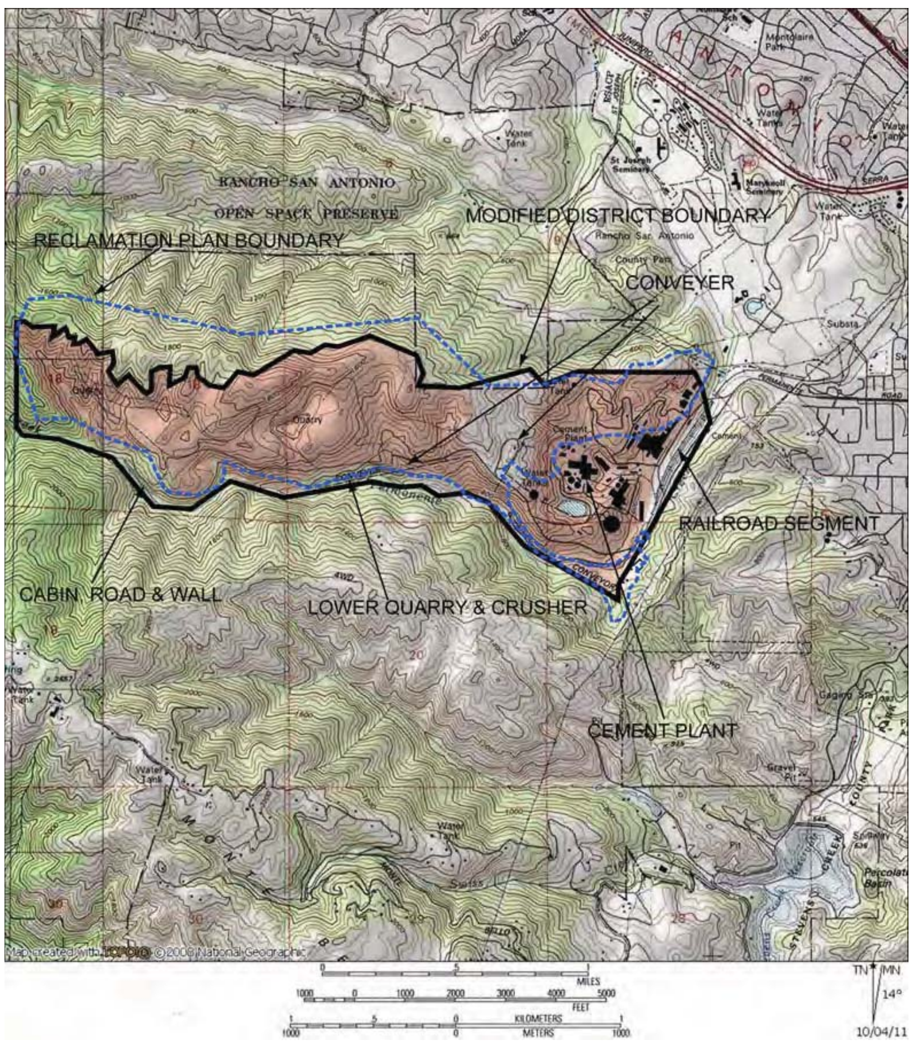
In 1954, Henry J. Kaiser began a new building project in Hawaii and left control of the company to his son, Henry J. Kaiser, Jr. The senior Kaiser remained in the islands, supervising the construction of a hotel, hospitals, plants, and housing developments. He also developed a ‘dream’ planned community called Hawaii Kai in Oahu. Henry J. Kaiser died in Honolulu on Aug. 24, 1967, at the age of 85.

3.0 PROPERTY INFORMATION

The following property information section provides detailed information on sites within Permanente Quarry that have been studied as a part of this report, and that may be potentially impacted by the project. Selected photographs are provided in the Appendix.

3.1 PERMANENTE QUARRY MINING DISTRICT

Engaged by the County of Santa Clara in 2007, Jurich and Grady identified a potential historic district at Permanente Quarry located west of Cupertino, in the eastern foothills of the Santa Cruz Mountains at the western edge of the Santa Clara Valley. Jurich and Grady recommended the boundaries of the potential historic district. This includes the extent of the Quarry, and includes eligible elements Henry J. Kaiser's Cabin and Accessory Structure, and Permanente Creek Road and related Retaining Wall. In addition, Jurich and Grady identified important elements of the Quarry setting including intact vegetation communities such as oak woodland, oak savannah, woodland/chaparral, and chaparral, and Permanente Creek, what was once a perennial stream located along the southern boundary of the Quarry.



Boundaries of proposed Kaiser Permanente Quarry District with modifications proposed as a part of this evaluation.

Jurich and Grady also investigated and recorded the related Pumphouse located between the main pit and the cement plant. Boundaries of this potential historic district as outlined by Jurich and Grady were investigated as a part of this investigation and evaluation. Additionally, within the site are the primary remains of an early 1940s rock conveyor system built during the early 1940s, as well as railroad segment and shed. A portion of the original conveyor system continues to operate today for the transport of raw material to the processing facility. The railroad segment includes areas where products of the quarry and cement plant are loaded for shipment. Permanente Quarry has continued to evolve over the last 72 years under Kaiser's companies and subsequent owners and contains a large modern cement plant as well as some remaining structures from the early cement, magnesium, and aluminum manufacturing facilities. Individual buildings, structures, and objects within the cement plant were not investigated, recorded, or evaluated as a part of this study.

The significance of the potentially eligible historic district is due to its associations with the development of the Permanente Quarry and related manufacturing facilities by Henry J. Kaiser and the companies he led, beginning in 1939, and until his death in 1969. The significance is discussed in the Evaluation section that begins on page 33.

No evidence was noted of the pre-1939 activities at the site where surface mining for limestone occurred.

The current cement plant, built over the last 30 years, replaced much of the original facility. The recently constructed buildings and structures, as well as the extent of contemporary mining activities, were not surveyed as a part of this study and evaluation.

The following subsections 3.1.1 through 3.1.5 summarize six components of the potential historic district identified by Jurich and Grady (2007) and Jensen (2009) that were investigated as a part of this report. They are recorded in the attached DPR523 series forms.

3.1.1 Permanente Railroad Segment and Dinky (contributing features)

The Permanente Railroad segment parallels the southeast side of East Storage Area (Aluminum Plant) and enters the main quarry operations as it crosses Permanente Road. The railroad segment ends at the train shed located at the base of the aggregate facility. The Permanente Railroad segment was originally constructed circa 1940 and was composed of a network of ten tracks inside the plant which was served by two locomotives. SPRR Company owned the three transfer tracks and a station just outside of the plant which connected with the Permanente rail segment. Here, freight cars would pick up material at the plant which would then be distributed via rail to various destinations.

The "dinky" that is presently operational within the railroad segment is considered part of the Permanente Railroad Segment.

3.1.2 Permanente Quarry Conveyor System and Crusher (contributing features)

The rock conveyor system at Permanente Quarry was developed during the first four years after the establishment of Permanente operations in mid-1939. The conveyor started as a rock crusher at the site of the original Upper Quarry, and dropped the material by gravity down an incline to the east and southeast to the stockpiles. By 1943 the conveyor system had been expanded westward through a 560-foot tunnel to the southwest, originating from a crusher near Permanente Creek near the Lower Quarry. The conveyor branched out northward from this location and ultimately extended for two miles. The 48-inch belt of the conveyor was initially claimed to be able to move 1,000 tons of material in an hour. According to historic accounts, the original conveyor contained brakes that generated power needed to harvest limestone,. It appears that the inline shed below the tunnel contains the original turbines used to generate electricity.

The original north leg of the rock conveyor system (approximately 4,500 feet) and the lower leg of the rock conveyor system near the creek and related feeding conveyors, are no longer extant. The current lower (east) terminus is housed in an open shed. Rock diverted southward from the terminus is dropped to a stockpile and then loaded to another conveyor that delivers the rock to the aggregate facility located at the south end of the Quarry.

The remnant of the crusher near Permanente Creek is located near what was once the Lower Quarry. The crusher was located at the upper terminus of the conveyor belt. It was here that limestone rock was crushed and then traveled on the conveyor belt to the processing plant. The conveyor branched out northward from this location to two other crushers, between the two quarry locations, and ultimately extended for two miles. The upper terminus and crusher located near the Permanente Creek remains today in ruins, with only some structural members remaining. A new larger crusher has been installed to the east of this terminus.

3.1.3 Permanente Quarry Pump House (non-contributing feature)

In 2007, Jurich and Grady identified remnants of the pump house located north of the conveyor system and east of the quarry and determined the remnants lacked integrity and did not qualify as a historic resource. Jensen concurred with those findings 2009., but Jurich and Grady's description of the resource appears to be sufficient. Their finding that the resource lacks integrity is concurred by this report.

3.1.4 Henry J. Kaiser Cabin and Accessory Structure (contributing feature)

The Henry J. Kaiser Cabin and Accessory Structure are the remains of two buildings recorded in 2007 by Grady for the County of Santa Clara as a part of *A Historic Resource Inventory of the Hanson Permanente Cement Plant*. The Henry J. Kaiser Cabin was resurveyed in September, 2011 by Franklin Maggi, Jessica Kusz, and Sarah Winder of Archives & Architecture, LLC as a part of preparation of this report. The field investigation confirmed the findings recorded by Grady in 2007. The Henry J. Kaiser Cabin remains in a deteriorated state and is presently overgrown and difficult to access. The Accessory Structure to the south across Permanente Creek was not accessed and thus is not evaluated as a part of this report. There is little evidence of the larger wood building that once rose about the stone base, aside from the extant chimney. It appears that the building may have been partially deconstructed prior to reaching its advanced state of decline.

In 2007, Grady suggested the Henry J. Kaiser Cabin could have been built as early as 1815, based on nails found at the site. No reference has been found to connect Mission Santa Clara to this site, which was under the jurisdiction of the Mission during both the Spanish and Mexican Periods. Additional archival research was conducted to investigate the origins of the structure. The 1883 GLO map does not show any extant structures on this site, although an "old road" is shown that enters into Permanente Canyon and ends to the east of the cabin site. Early ownership surveyor maps of Theodore F. Grant, George H. Grant, CPRR Company, and Revillo A. and Alice H. Swain do not clarify buildings at the site; however, when the USGS first surveyed the area in 1895 (published in 1899), it recorded four structures in the vicinity of the Henry J. Kaiser Cabin. It is likely that the Henry J. Kaiser Cabin is one of the four buildings surveyed in 1895, and may have been built as early as the early-1860s as a hunting lodge.

When Kaiser commenced operations of the Permanente Cement Plant in 1939, he rebuilt/expanded the Henry J. Kaiser Cabin that exists today on the north side of Permanente Creek. An article written by a historian specializing in the history of Kaiser Permanente states that when Kaiser purchased the property in 1939, a building made of stone and redwood was already extant; this large building served as a speakeasy during the Prohibition Era, and its location high in the foothills on a private road served to make it an ideal location for the illegal venture. The article claimed that upon an initial visit to the property, Mr. Kaiser was so taken with the beauty of the cabin's location that he had it renovated, and it became a lodge complete with a patio for a getaway for himself, and his wife Bess. In a *San Jose Mercury News* article two older plant workers remember Henry J. Kaiser and state that Kaiser "built a fancy lodge with a fireplace on the property where company officials entertained high-ranking visitors from Washington" during the early years of the plant.

3.1.5 Permanente Creek Wagon Road (contributing feature)

The Permanente Creek Wagon Road begins within the boundaries of the Quarry, down to and across Permanente Creek to the south, and continues along the creek. Most of the road have been re-graded and widened. The earliest known map which shows the road is the 1883 GLO Map which identifies an "old road" following the alignment of Permanente Road and terminating at the dividing line between Sections 18 and 19. A 1906 California Mining Report discusses the El Dorado Sugar Company's Quarry (the owner is incorrect, as the quarry was both owned and operated by the Alameda Sugar Company during the first part of the twentieth century) and the fact that mined limestone was hauled out via a nine-mile wagon road (Permanente Road), and then shipped by rail from Mountain View to the company's factory near Alviso. The report also states that the operation had been going on for three years. In later maps, the road is shown passing to the south of the Henry J. Kaiser Cabin and then terminating at a point to the west, near the west end of Section 18 where another cabin site was located. Historic accounts of Kaiser's occupation indicated that he built a road up from the cabin to the limestone quarry.

3.2 SOUTH SIDE OF PERMANENTE CANYON

3.2.1 McCarthy Homestead Site

This early ranch site first owned by homesteader, John R. McCarthy, is located on the south side of Permanente Canyon, on the south side of an unimproved access road that originates at the southwest corner of the Permanente aggregate facility south of the cement plant. The site was recorded by Sean Michael Jensen (Genesis Society) in 2009 as Permanente #6 (P-43-2269). The site is composed of two separate features which contain debris piles of two buildings.

In the late-nineteenth century, the McCarthy ranch was about 150 acres. The size of the ranch was later reduced to about 112 acres. The 1948 USGS aerial photograph of the site shows two buildings associated with the McCarthy ranch. Two building sites were identified and described by Jensen that are located about 100 feet south and above the road in a terrace. Both building pads are about 65 feet in length, and vary in width from about 25 to 30 feet. The site contains debris piles, some short lengths of wire fencing, and non-native trees (olive, English walnut and plum). Today the area consists of chaparral and some non-native vegetation remaining from the residential occupation. The main access road, referred to in the Jensen evaluation as "Sugar Shack Road," was originally called "McCarthy Road" and provided access to the ranch site.

3.3.2 Kenna Orchard/Ranch

This large ridge-top agricultural site is located on the south side of Permanente Canyon on both sides of an unimproved access road that originates at the southwest corner of the Permanente aggregate facility, south of the cement plant. The Kenna Orchard/Ranch was partially recorded by Sean Michael Jensen (Genesis Society) in 2009 as two separate sites: Permanente #3 (P-43-2264) and Permanente #5 (P-43-2268). The original agricultural property was approximately 238 acres at the time of initial development in the late-nineteenth century and was later expanded westward approximately another 40 acres. Today, the area consists of chaparral and non-native vegetation remaining from the agricultural and residential occupation. Access roads transverse the site, some appear to date to the late-nineteenth century development of the hillside, and others appear contemporary and relate to testing pads at the Lehigh

Southwest operations. The main access road, referred to by the Jensen as "Sugar Shack Road," was originally called "McCarthy Road" and provided access to both the Quarry and the McCarthy Ranch further to the west.

Historical research indicates that P.J. Kenna first owned the orchard and ranch on the site sometime in the early 1890s. The 1895 Survey Map records an orchard on the Kenna property, just south of McCarthy Road, as well as multiple structures probably associated with the orchard (most likely a residence), as well as a structure identified by Jensen in 2009 as the "Sugar Shack." A 1948 USGS aerial photograph of the site appears to show three building sites associated with the Kenna ranch. Two collapsed buildings were identified and described by Jensen (extant to the north of the road). Associated with this structure is an ancillary building (described by Jensen as being to the west and about 20 feet in length by 12 feet wide) and two large non-native trees (cedar and walnut). The structures are described as having post and beam foundations, and are believed to be built of stud wall construction clad with board and batten siding. Today, the "Sugar Shack" site consists of what appears to be two single-story wood buildings that are inaccessible, as the structures are overgrown with Poison Oak. North of the road, a turnoff contains the remains of an early truck body and frame that was identified by Jensen during his archaeological Inventory Survey report prepared in October 2009 subsequent to the site historical recordings.

Above these building sites and road was once a large orchard that extended across the bluff and onto its south side. Jensen identified the remains of this orchard as "Permanente 3," and recorded the remaining evidence of the agricultural use as five cherry trees within an area of about 200 feet in length (east-west), a maximum width of 50 feet, and covering about 9,000 square feet. The 1948 USGS aerial photograph shows most of the early 1890s orchard intact at that time, but mid-twentieth century aerial photographs do not show evidence of this agricultural site.

4.0 EVALUATION FOR SIGNIFICANCE

4.1 POLICY AND REGULATORY CONTEXT

The California Environmental Quality Act requires regulatory compliance in regard to historical resources. Under CEQA, public agencies must consider the effects of their actions on both "historical resources" and "unique archaeological resources" - a ". . . project that may cause a substantial adverse change in the significance of an historical resource is a project that may have a significant effect on the environment." CEQA Guidelines define a significant resource as any resource listed in or determined to be eligible for listing in the California Register of Historical Resources (Public Resources Code, Section §5024.1, Title 14 CCR, Section 4850 et seq. and CEQA Guidelines Section 15064.5). The California Register includes resources listed in or formally determined eligible for listing in the National Register, as well as some California State Landmarks and Points of Historical Interest.

Properties of local significance that have been designated under a local preservation ordinance (local landmarks register or landmark districts) or that have been identified in a local historical resources inventory may be eligible for listing in the California Register and are presumed to be "historical resources" for the purposes of CEQA unless a preponderance of evidence indicates otherwise (Public Resources Code, Section 21098.1). Unless a resource listed in a survey has been demolished, lost substantial integrity, or there is a preponderance of evidence indicating that it is otherwise not eligible for listing, a lead agency should consider the resource to be potentially eligible for the California Register.

4.1.1 County of Santa Clara

The County of Santa Clara, through its General Plan, considers heritage resources as those particular types of resources, both natural and man-made, which due to their vulnerability or irreplaceable nature deserve special protection if they are to be preserved for current and future generations. Heritage resources are considered important for a variety of reasons, including potential scientific value, cultural and historical value, and "place" value, in addition to their irreplaceability. Knowledge of the natural world, understanding of cultural origins, continuity with the past, and the sense of place that defines us and distinguishes Santa Clara County from all other places are all enhanced through heritage resource preservation. In the face of increasing homogenization, urbanization, and anonymity of American culture and places, resources unique to each region and locality become even more significant. More than curiosities, landmarks by which to navigate, or tourist attractions, heritage resources should be considered the birthright of successive generations of residents. If preserved and integrated with the new, our historic buildings, groves of trees, and other resources immeasurably enrich the experience of urban and rural landscapes. Rehabilitation and restoration for new uses or for commemoration, especially within older, central urban communities can also help revitalize economies and reverse urban decline in ways urban "renewal" programs of the recent past often failed to do.

Cultural heritage resource protection consists of three basic strategies in the County of Santa Clara General Plan; Inventory and Evaluate Heritage Resources, Prevent or Minimize Adverse Impacts on Heritage Resources, and Restore, Enhance and Commemorate Resources.

In keeping with the General Plan policies on cultural resources, the County of Santa Clara has adopted a Historical Preservation Ordinance (Division C17 of the Santa Clara County Code, Ordinance No. NS-1100.96, 10-17-06). The purpose of the ordinance is for the preservation, protection, enhancement, and perpetuation of resources of architectural, historical, and cultural merit within Santa Clara County and to benefit the social and cultural enrichment, and general welfare of the people. The County mains a Heritage Resource Inventory and list of designated Landmarks. Historic resources are evaluated according to criteria outlined in Article II of the Division C17, Chapter 3.50 of the Zoning Ordinance, or division C16 of the County Code. The Board of Supervisors has the authority to designate as Landmarks properties that meet the following criteria:

A. Fifty years or older. If less than 50 years old, sufficient time must have passed to obtain a scholarly perspective on the events or individuals associated with the historic resource and/or the historic resource is a distinctive or important example of its type or style; and
B. Retains historic integrity. If a historic resource was moved to prevent demolition at its former location, it may still be considered eligible if the new location is compatible with the original character of the property; and
C. Meets one or more of the following criteria of significance:
   1. Associated with events that have made a significant contribution to the broad patterns of local or regional history, or the cultural heritage of California or the United States;
   2. Associated with the lives of persons important to local, California or national history;
   3. Embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of a master or possesses high artistic values; or
   4. Yielded or has the potential to yield information important to the pre-history or history of the local area, California, or the nation.

4.1.2 California Register of Historical Resources

The California Register was created to identify resources deemed worthy of preservation and was modeled closely after the National Register. The criteria are nearly identical to those of the National Register, which includes resources of local, state, and region or national levels of significance. The California Register automatically includes properties listed in the National Register, determined eligible for the National Register either by the Keeper of the National Register or through a consensus determination on a project review, State Historical Landmarks from number 770 onward, and California Points of Interest nominated from January 1998 onward. Properties are also listed by application and acceptance by the California Historical Resources Commission

The significance criteria for the California Register are oriented to document the unique history of California. The California Register is a guide used by state and local agencies, private groups and citizens to identify historical resources throughout the state. The types of historical resources eligible for listing in the California Register include buildings, sites, structures, objects and historical districts.

Under California Code of Regulation Section 4852(b) and Public Resources Code Section 5024.1, an historical resource generally must be greater than 50 years old and must be significant at the local, state, or national level under one or more of the following four criteria:

1. It is associated with events that have made a significant contribution to the broad patterns of local or regional history, or the cultural heritage of California or the United States.
2. It is associated with the lives of persons important to local, California, or national history.
3. It embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of a master or important creative individual, or possesses high artistic values.
4. It has yielded, or has the potential to yield, information important to the prehistory or history of the local area, California, or the nation.

If nominated for listing in accordance with the procedures outlined in Public Resources Code Section 5024.1(f), the California Register may include:

(1) Individual historical resources.
(2) Historical resources contributing to the significance of an historic district under criteria adopted by the Commission.

(3) Historical resources identified as significant in historical resources surveys, if the survey meets the criteria in Public Resources Code Section 5024.1(g).
(4) Historical resources and historic districts designated or listed as city or county landmarks or historic properties or districts pursuant to any city or county ordinance, if the criteria for designation or listing under the ordinance have been determined by the State Historic Resources Officer to be consistent with California Register criteria adopted by the Commission.
(5) Local landmarks or historic properties designated under any municipal or county ordinance.

4.1.3 National Register of Historic Places

The National Park Service considers the quality of significance in American history, architecture, archeology, engineering, and culture that is present in districts, sites, buildings, structures, and objects that possess integrity of location, design, setting, materials, workmanship, feeling, and association, and are evaluated for the National Register according to the following criteria:

- Criterion A that are associated with events that have made a significant contribution to the broad patterns of our history; or
- Criterion B that are associated with the lives of persons significant in our past; or
- Criterion C that embody the distinctive characteristics of a type, period, or method of construction, or that represents the work of a master, or that possesses high artistic values, or that represents a significant and distinguishable entity whose components may lack individual distinction; or
- Criterion D that have yielded, or may be likely to yield, information important in prehistory or history.

Properties that are listed on or formally determined eligible for the National Register are automatically listed on the California Register.

4.1.4 Determining Significance under the California Environmental Quality Act

A project with an effect that may cause substantial adverse change in the significance of an historical resource is a project that may have a significant effect on the environment under CEQA. An “Historical Resource” includes those listed in or determined to be eligible by the State Historical Resources Commission, a resource included in a local register that meets the requirements for listing in the California Register, and any object, building, structure, site, area, place, record, or manuscript which an agency such as the County of Santa Clara determines to be historically significant or significant in the architectural, engineering, scientific, economic, agricultural, education, social, political, military, or cultural annals of California, provided that the determination is supported by substantial evidence in light of the whole record. Generally, the County of Santa Clara is required to consider historical significance if a resource meets the criteria for listing on the California Register under the criteria previously stated. The fact that a resource is not listed in, or determined to be eligible for listing in, the California Register - or is not included in a local register or identified in an historical resources survey meeting the specified criteria - does not preclude an agency, such as the County of Santa Clara, from determining that the resource may be an historical resource under CEQA.

4.1.5 Integrity

California Code of Regulations Section 4852(c) addresses the issue of “integrity” which is necessary for eligibility for the California Register. Integrity is defined as “the authenticity of an historical resource’s physical identity evidenced by the survival of characteristics that existed during the resource’s period of significance.” Section 4852(c) provides that historical resources eligible for listing in the California

Register must meet one of the criteria for significance defined by 4852(b)(1 through 4), and retain enough of their historic character of appearance to be recognizable as historical resources and to convey the reasons for their significance. Integrity is evaluated with regard to the retention of location, design, setting, materials, workmanship, feeling, and association. It must also be judged with reference to the particular criteria under which a resource is proposed for eligibility. Alterations over time to a resource or historic changes in its use may themselves have historical, cultural, or architectural significance. To retain historic integrity, a property must possess several, but not necessarily all of the seven aspects. Determining which of these aspects are most important to a particular property, such as a mining district, is based on knowing why, where, and when the property is significant.

It is possible that historical resources may not retain sufficient integrity to meet the criteria for listing in the National Register, but they may still be eligible for listing in the California Register. A resource that has lost its historic character or appearance may still have sufficient integrity for the California Register if it maintains the potential to yield significant scientific or historical information or specific data.

4.2 EVALUATION

Evaluation of mining properties within the framework of historical significance criteria poses many challenges. These challenges result partly from the fact that the industrial features associated with mining have not always been fully appreciated, and that typically many of the industrial features associated with early mining sites have either been demolished or neglected as they have lost their usefulness. Mining sites that have operated over extended periods of time, like other active industrial facilities, create situations where features that date to a variety of historic and contemporary periods may be contained within a single area. Additionally, early quarry sites have been completely obliterated and are now merely voids, as the scale of the activity increased, or in some cases reclaimed with fill or overburden.

An historic mining context, such as that prepared for this report, attempts to identify various threads of historic development and the related themes associated with those activities, including: evolving technology, transportation, habitation, labor, the role of ethnic groups (if relevant), and the role of prominent personages directly involved with the site. The context also addresses the role of the subject property's particular mining activity relative to other mineral extraction facilities in the region, as well as its relative significance.

Like most other mining sites in the Western United States, the early physical remains of the quarries of Permanente Canyon are barely discernible, in ruins, or are mere imprints on the landscape. Determinations of integrity are difficult to establish in order to determine levels of significance, and are subject to debate. The evaluation performed by Jurich and Grady in 2007 indicated that sufficient integrity remained for the Permanente Quarry to be considered a historic resource, and the team believed that the property is eligible for listing in the National Register as a historic district. A later evaluation by archaeologist Sean Michael Jensen in 2009 disputed the eligibility findings and argued that the site lacked sufficient integrity to be considered a historic resource.

In addition to the prior evaluations by Jurich and Grady (2007) and Jensen (2009), Archives & Architecture considered the Permanente Quarry in the historic context of early mining in Santa Clara County, the context of local and regional mid-century industrial development related to World War II, the importance of this facility within Santa Clara County's Period of Industrialization and Urbanization after World War II, the development of innovative technology at the site such as the conveyor system, and the role of Henry J. Kaiser in America's twentieth century industrial development. Within all of these themes, the Permanente Quarry stands out as a significant historic resource according to the criteria outlined in the previous section, for local, state, and national registration.

Permanente Quarry is locally and regionally significant under **National Register Criteria A and C**, and the related **California Register Criteria (1) and (3)** in the areas of engineering and industry and for its direct association with military efforts during World War II. It is also nationally significant under **National Register Criterion B** and **California Register Criterion (2)**, being the most important representative site related to the life of Henry J. Kaiser, a person important to the history of the United States.

Under **NR-A** and **CR-1**, the site represents an important event and pattern of development that is understood both locally and regionally as a significant aspect of how the contemporary industrial base of both Santa Clara County and California evolved beginning at the end of the Depression, and during World War II and the post-World War II period. The larger setting of the Quarry property remains intact, although the excavation areas have expanded greatly over the last 72 years from the early Lower Quarry near Permanente Creek.

The direct association of Permanente Quarry with Henry J. Kaiser, one of America's most prolific and successful industrialists, during a pivotal time in his career, is also important in establishing historical significance. The rapid development of Permanente Quarry and Cement Plant in the late-1930s and early-1940s catapulted Kaiser to national prominence. Permanente Quarry is nationally significant under **NR-B** and **CR-2** based on this association.

The rapid development of the site during 1939 and the early 1940s was an engineering accomplishment that was notable for its time, and within the site was perfected a unique quarry transport system (the conveyor belt) that continues to operate today, although at a reduced scale compared to its operation at mid-century. The development of the facility represents a distinctive creative act within the field of engineering, and is both locally and regionally significant under **NR-C** and **CR-3**.

The criteria of the County of Santa Clara implemented under Ordinance No. NS-1100.96 is similar by definition to the criteria for nomination to the California Register. When evaluated under these criteria, Permanente Quarry meets the requirement for designation as a local landmark site or district.

In determining integrity, the National Park Service recommends use of seven aspects (or qualities) of integrity for consideration in determining significance. These seven aspects are codified in California under the Code of Regulations, Section 4852(c). They are location, design, setting, materials, workmanship, feeling, and association. Permanente Quarry, although now greatly expanded since its operation under Henry J. Kaiser, is largely understandable within its historic context. Historic physical aspects of the quarry remain. The location, design characteristics, setting, materials in terms of its original use, evidence of industrial workmanship, feeling, and association can all be found within the boundaries of the Quarry, which has continued to be operated as a quarry and cement plant since the time of Kaiser's involvement. Historic components continue to have a sense of clarity within the larger contemporary setting that helps to visually understand how this site has developed over time.

In reviewing the boundaries of the potential historic district defined by Jurich and Grady, three areas warrant expansion to include: 1) the railroad line extension and engine barn on the site southeast of the cement plant; 2) the hillside above the easterly terminus of the conveyor system and powerhouse, which was the location of the original conveyor system; and 3) the greater area of the Henry J. Kaiser Cabin and Accessory Structure, which includes the road, area of the early Lower Quarry and crusher, and other yet unidentified ancillary buildings and structures related to the Cabin area on both sides of the creek. Although some of these features pre-date the Kaiser era, they are part of the historic landscape that is discussed in biographies of the early years of the quarry development associated with Henry J. and Bess Kaiser.

An additional object that warrants inclusion in the potential historic district includes the small "dinky" that continues to operate on the railroad tracks. The "dinky" would be classified as a historic object integral to the early development of the quarry operation. The inclusion of these potential historic district boundary extensions and the object are recommended.

The area south of Permanente Creek was also investigated as a part of this report. These two early agricultural/horticultural sites have been abandoned since the mid-twentieth century. Today, little evidence remains of their early occupation and use. The people associated with these sites have been researched, but none appear within local histories for their significance contributions. The remaining remnants of their habitation lack distinction, or have been lost in time. These two site are not eligible for listing in the California Register and do not appear to qualify as historic resources.

4.3 POTENTIAL IMPACTS

Under CEQA, a project that may cause a substantial adverse change in the significance of an historical resource is a project that may have a significant effect on the environment. Substantial adverse change in the significance of an historical resource means physical demolition, destruction, relocation, or alteration of the resource or its immediate surroundings such that the significance of an historical resource would be materially impaired. The significance of an historical resource is materially impaired when a project demolishes or materially alters in an adverse manner those physical characteristics of an historical resource that convey its historical significance and that justify its inclusion in the California Register, or in a local register of historical resources as defined by Public Resources Code Section 5020.1(k), or its identification in an historical resources survey meeting the requirements of Public Resources Code Section 5024.1(g).

As stated in **Section 1.1** (Project Description), the project proposes to reclaim large portions of the quarry in a manner suitable for future open space use, including approximately 543 acres that have been disturbed by prior surface mining activities, approximately 51 acres that will be disturbed by surface mining operations within the next 20 years, approximately 284 acres located south of Permanente Creek that have been subject to exploratory activities, and approximately 217 acres that would serve as a buffer area. The primary areas to be reclaimed include the existing Quarry pit (North Quarry), two overburden disposal areas referred as the West Materials Storage Area and the East Materials Storage Area, the crusher/office area, surge pile, rock plant, and an area south of Permanente Creek that has been subject to mining-related exploratory activities. The reclamation also includes removing the overburden in the West Materials Storage Area down to the pre-quarry grade levels, and placing it into the North Quarry pit as backfill and to stabilize the mined slopes.

The project proposes to demolish the existing Permanente Quarry Conveyor System and related tunnel, powerhouse, and structures including the remains of the early 1940s crusher. Other contributing features to the Kaiser Permanente Quarry Historic District that exist within the Reclamation Plan Area such as the Henry J. Kaiser Cabin and Accessory Structure, Permanente Quarry Wagon Road and related wall, and Railroad Segment and "dinky" will not be affected by the proposed project. Potential contributing features to the Historic District within the Cement Plant but outside of the Reclamation Plan Area were not considered in this evaluation as they are outside of the project area.

The setting within the potential historic district will also be affected as a part of implementation of the reclamation project. Historic settings within mining districts that remain active in the present are by their very nature, dynamic. Reclamation activities are a natural evolutionary step in the context of mining development. The preservation of features associated with past mining activities must be based on the significance of the historic context and its ability to illustrate the broader context of technological innovation, while at the same time returning the quarry setting to a natural state.

Because the Kaiser Permanente Quarry and its contributing features appears to be eligible for listing in the California Register as a historic district, implementation of the project according the proposed Reclamation Plan Amendment, including demolition and removal of the Conveyor System will have a significant effect on the environment. Significant adverse changes resulting from the project should be mitigated where feasible. According to CEQA Guidelines Section 15064.5(b)(3), *The Secretary of the Interior's Standards for the Treatment of Historic Properties with Guidelines for Preserving, Rehabilitating, Restoring, and Reconstructing Historic Buildings* should be followed to mitigate impacts to a less than significant level. Any selective demolition, alteration, and rehabilitation must be done in a way that is consistent with the Secretary of the Interior's Standards for the project not to have an adverse effect on the environment.

4.4 POTENTIAL MITIGATIONS

The County of Santa Clara can require feasible mitigation measures to address unavoidable adverse environmental impacts that may result from implementation of the proposed project. Mitigation measures can be included within the project to reduce the potential impact to less than significant. This may include preservation, rehabilitation, restoring or, reconstruction buildings and/or structures within the project area according to the Secretary of the Interior's Standards, or other actions pursuant to local policies regarding the preservation of historic resources and other general plan goals and policies.

4.4.1 Secretary of the Interior's Standards for the Treatment of Historic Properties

The Secretary of the Interior's Standards for the Treatment of Historic Properties were originally published in 1992. *Guidelines for Preserving, Rehabilitating, Restoring and Reconstructing Historic Buildings,* were prepared in 1995 by Kay D. Weeks and Anne E. Grimmer. The intent of the Standards and the related *Guidelines* is to assist the long-term preservation of a property's significance through the preservation, rehabilitation, restoration, and/or reconstruction of historic properties and their features. The Standards pertain to historic buildings, structures, and sites of all materials, construction types, sizes, and occupancy and encompass both exterior and interior spaces. They also pertain to related landscape features and the site and environment of the property, as well as attached, adjacent, or related new construction. The Standards are to be applied to specific preservation, rehabilitation, restoration, and/or reconstruction projects in a reasonable manner, taking into consideration economic and technical feasibility.

The Standards are neither technical nor prescriptive, but are intended to promote responsible preservation practices that help protect cultural resources. The Standards cannot, in and of themselves, be used to make decisions about which features of historic buildings, structures, and sites should be saved and which can be changed. But once a treatment is selected, the Standards provide philosophical consistency to the work.

The four treatment approaches are **Preservation**, **Rehabilitation**, **Restoration**, and **Reconstruction.**
:
The first treatment, **Preservation**, places a high premium on the retention of all historic fabric through conservation, maintenance and repair. It reflects a resource's continuum over time.
Rehabilitation, the second treatment, emphasizes the retention and repair of historic materials, but more latitude is provided for replacement because it is assumed the property is more deteriorated prior to work. (Both Preservation and Rehabilitation standards focus attention on the preservation of those materials, features, finishes, spaces, and spatial relationships that, together, give a property its historic character.)
Restoration, the third treatment, focuses on the retention of materials from the most significant time in a property's history, while permitting the removal of materials from other periods.

Reconstruction, the fourth treatment, establishes limited opportunities to re-create a non-surviving site, landscape, building, structure, or object in all new materials.

Choosing the most appropriate treatment for a building, structure, and/or site requires careful decision-making about historical significance, as well taking into account a number of other considerations: relative importance in history, physical condition, proposed use, and mandated code requirements.

Specific actions related to implementation of the project that may affect contributing resources to the potential Kaiser Permanente Historic District, such as demolition or relocation of the Conveyor System, should undergo detailed Secretary of the Interior's Standards Review to determine if preservation is feasible under one of the four treatment options.

4.4.2 Other Potential Mitigations

Other mitigation actions related to the implementation of the project could include, but are not limited to:

1. further intensive-level documentation of the physical characteristics and their historic context of the contributing features of the district, including archival photo-documentation, mapping, and recording of historical and engineering information including measured drawings about the property according to the standards of the Historic American Building Survey/Historic American Engineer Record/Historic American Landscapes Survey (HABS/HAER/HALS), to be placed in a local public archive such as the Archives of the County of Santa Clara,
2. survey and documentation of contributing features of the district within the areas of the Cement Plant that were not investigated as a part of this project,
3. preservation of buildings, structures and/or objects onsite that are not directly affected by the project,
4. salvage and/or relocation of significant building elements that constitute character defining features that would otherwise be lost as a part of implementation of the project, and
5. preparation of public information programs to educate the general public on the historic nature of the resource, including but not limited to exhibits, publications, and online presentations.

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6.0 APPENDIX

DPR523 series forms (attached):

Kaiser Permanente Quarry District Record	Jurich and Grady, 2007 (P-43-001867)
Kaiser Permanente Quarry District Record Update	Maggi, Winder, and Kusz, 2011
Permanente Railroad Segment Primary Record	Maggi, Kusz, and Winder, 2011
Permanente Quarry Conveyor System Primary Record	Maggi, Kusz, and Winder, 2011
Kaiser Permanente Quarry Crusher Primary Record	Maggi, Kusz, and Winder, 2011
Hanson Permanente Quarry Pumphouse Primary Record	Jurich and Grady, 2007 (P-43-001870)
Henry J. Kaiser's Cabin and Accessory Structure Primary and BSO Record	Grady, 2007 (P-43-001869)
Henry J. Kaiser's Cabin and Accessory Structure Update	Maggi, Kusz, and Winder, 2011
Permanente Creek Road Primary Record	Jurich and Grady, 2007 (P-43-001868)
Permanente Creek Road Linear Feature Record	Jurich and Grady, 2007 (P-43-001868)
Kenna Orchard/Ranch Primary and BSO Records	Maggi, Kusz, and Winder, 2011
McCarthy Homestead Site Primary and BSO Records	Maggi, Kusz, and Winder, 2011

APPENDIX E

Health Risk Assessment

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Permanente Quarry Health Risk Assessment

A health risk assessment (HRA) is accomplished in four steps; hazards identification, exposure assessment, toxicity assessment, and risk characterization. These steps cover the estimation of air emissions, the estimation of the air concentrations resulting from a dispersion analysis, the incorporation of the toxicity of the pollutants emitted, and the characterization of the risk based on exposure parameters such as breathing rate, age adjustment factors, and exposure duration; each depending on receptor type.

The HRA was conducted in accordance with technical guidelines developed by federal, state, and regional agencies, including US Environmental Protection Agency (USEPA), California Environmental Protection Agency (CalEPA), California Office of Environmental Health Hazard Assessment (OEHHA) *Air Toxics Hot Spots Program Guidance*[1], and the BAAQMD's *Health Risk Screening Analysis Guidelines*.[2]

TERMS AND DEFINITIONS

As the practice of conducting a HRA is particularly complex and involves concepts that are not altogether familiar to most people, several terms and definitions are provided 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 (TAC).
>
> *Cancer risk* – the probability of an individual contracting cancer from a lifetime (i.e., 70 year) exposure to TAC 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).
>
> *Hazard Index (HI)* – the unitless ratio of an exposure level over the acceptable reference dose (RfC). The HI 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 is applied to individual compounds.
>
> *Toxic air contaminants (TAC)* – any air pollutant that is capable of causing short-term (acute) and/or long-term (chronic or carcinogenic, i.e., cancer causing) adverse human health effects (i.e., injury or illness). The current California list of TAC lists approximately 200 compounds, including particulate emissions from diesel-fueled engines.
>
> *Human Health Effects* - comprise disorders such as eye watering, respiratory or heart ailments, and other (i.e., non-cancer) related diseases.
>
> *Health Risk Assessment (HRA)* – an analysis designed to predict the generation and dispersion of TAC in the outdoor environment, evaluate the potential for exposure of

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[1] Office of Environmental Health Hazard Assessment (OEHHA), 2003. *Air Toxics Hot Spots Program Guidance Manual for Preparation of Health Risk Assessments*, http://www.oehha.org/air/hot_spots/pdf/HRAguidefinal.pdf

[2] Bay Area Air Quality Management District (BAAQMD), 2005. *BAAQMD Health Risk Screening Analysis Guidelines (http://www.baaqmd.gov/pmt/air_toxics/risk_procedures_policies/hrsa_guidelines.pdf)*, June 2005.

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 baseline to future year project conditions.

Maximum exposed individual (MEI) – an individual assumed to be located at the point where the highest concentrations of TAC, and therefore, health risks are predicted to occur.

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 a number of important limitations and uncertainties commonly associated with a HRA 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 HRA 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, moving (or "mobile") "line" sources (i.e., roadways) and "area" sources (i.e., quarry onsite mobile equipment).

- TAC speciation profile data are based upon limited sampling test data. Therefore, the TAC emissions and the predicted ambient concentrations of these pollutants from emission sources are not entirely reliable.

- The HRA 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) are also of much shorter durations than was assumed in this analysis. Therefore, the results of the HRA are highly overstated for those cases.

- Other limitations and uncertainties associated with HRA and identified by the 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.

HAZARDS IDENTIFICATION

TAC emissions associated with the Project would occur from the following project activities:

- Fugitive dust emissions from drilling, blasting, and grading/loading activities
- Fugitive dust emissions from traffic on unpaved roads and wind erosion
- Diesel particulate matter (DPM) emissions from off-road equipment exhaust

- DPM emissions from haul truck exhaust

The primary TAC of interest is DPM, which is described within the following section. However, additional air toxics such as crystalline silica and certain metals are also emitted by the Project and are included in the HRA.

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 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 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 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.

EXPOSURE ASSESSMENT

Dispersion is the process by which atmospheric pollutants circulate due to wind and vertical stability. The results of a dispersion analysis are used to assess pollutant concentrations at or near an emission source. The results of this analysis allow predicted concentrations of pollutants to be compared directly to air quality standards and other criteria such as health risks.

Dispersion Modeling Approach

This section presents the methodology used for the dispersion modeling analysis. This section addresses all of the fundamental components of an air dispersion modeling analysis including:

- Model selection and options
- Receptor locations
- Meteorological data
- Source release characteristics

Model Selection and Options

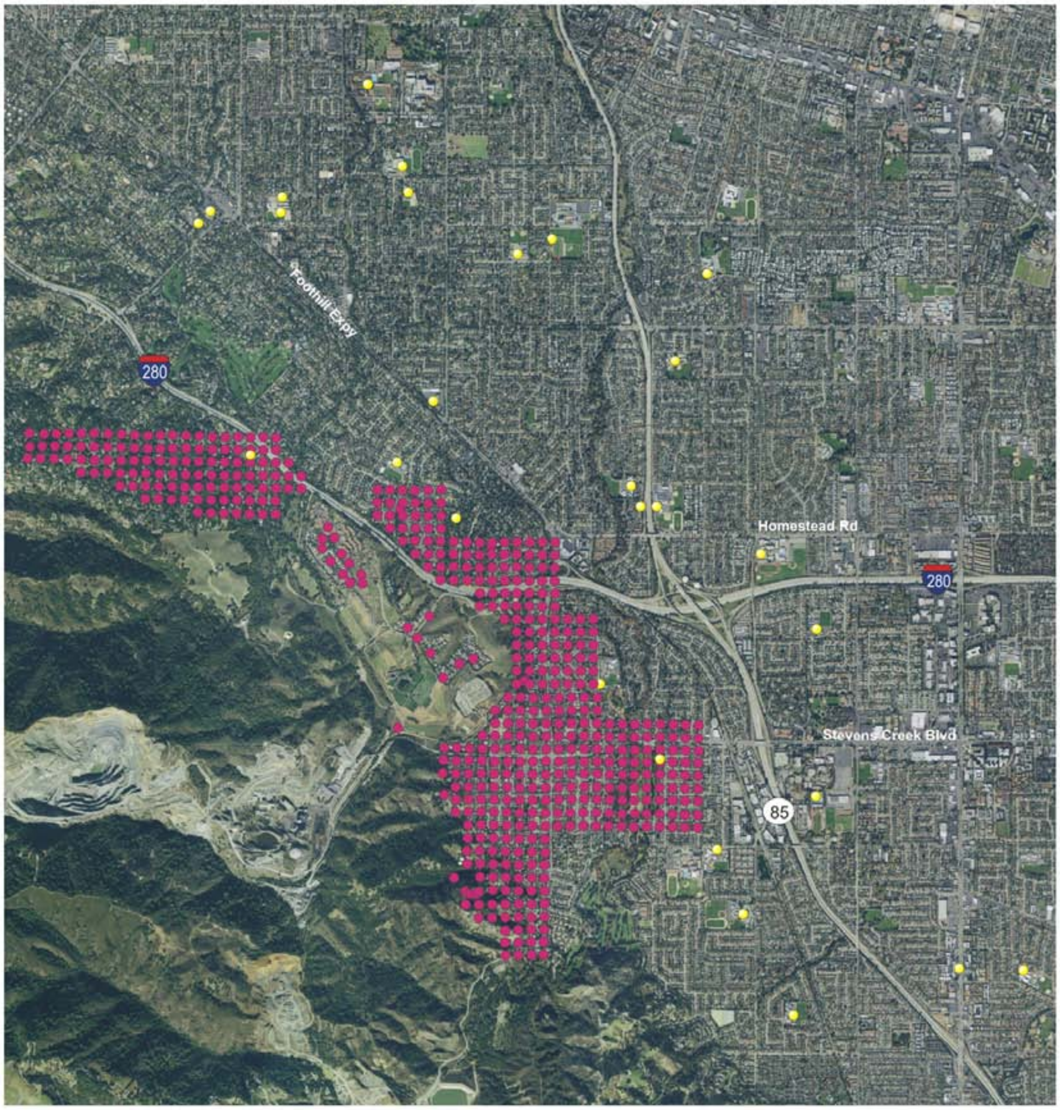
The AERMOD dispersion model (Version 11103) was used for the modeling analysis. AERMOD is the USEPA preferred dispersion model for general industrial sources. The model can simulate point, area, volume, and line sources. The AERMOD model is the appropriate model for this analysis based on the coverage 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, and final plume rise), default wind speed profile categories, default potential temperature gradients, and no pollutant decay.

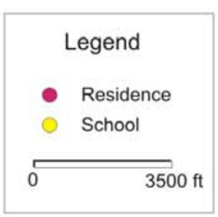
The selection of the appropriate dispersion coefficients depends on the land use within three kilometers (km) of the project site. The land use typing was based on the classification method defined by Auer (1978); using pertinent United States Geological Survey (USGS) 1:24,000 scale (7.5 minute) topographic 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 EPA *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.

Receptors

Some receptors are considered more sensitive to air pollutants than others, because of preexisting health problems, proximity to the emissions source, or duration of exposure to air pollutants. Land uses such as primary and secondary schools, hospitals, and convalescent homes are considered to be relatively sensitive to poor air quality because the very young, the old, and the infirm are more susceptible to respiratory infections and other air quality-related health problems than the general public. Residential areas are also considered sensitive to poor air quality because people in residential areas are often at home for extended periods. Recreational land uses are moderately sensitive to air pollution, because vigorous exercise associated with recreation places a high demand on respiratory system function.

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 information for the area. **Exhibit 1** displays the location of the receptors used in the HRA.





Permanente Quarry RPA Health Risk Assessment Receptors

EXHIBIT 1
HEALTH RISK ASSESSMENT RECEPTORS

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 affecting 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.

Meteorological data from the Lehigh Cement Plant (formerly Kaiser Plant) (from 1999 and 2006) were used for the modeling analysis.[3] A screening analysis was conducted and determined that data from 1999 produced the maximum concentrations and this data were used of the HRA. **Exhibit 2** provides the wind roses for the Kaiser Plant meteorological station, showing the predominance of a wind from the north, west, and west-northwest.

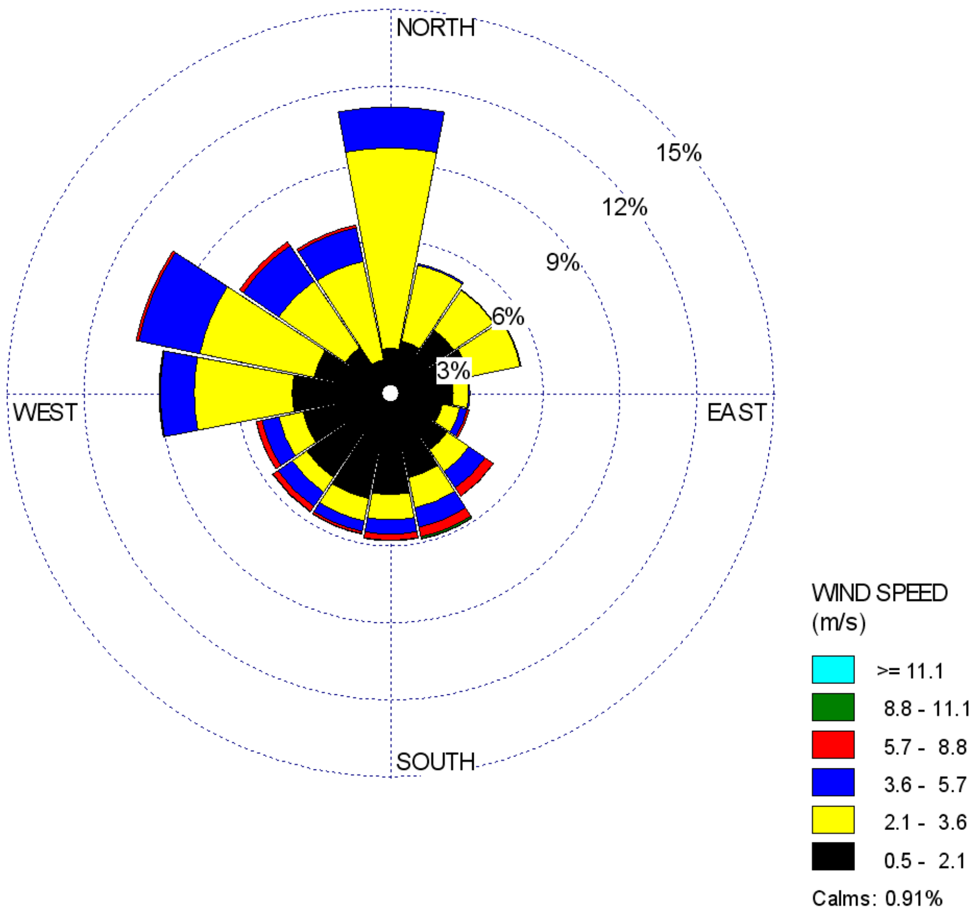


EXHIBIT 2
WINDROSE FOR LEHIGH PERMANENTE METEOROLOGICAL STATION

[3] Email from James Cordova at BAAQMD on September 23, 2010 Kaiser Cement Requested Met Data.

Emissions Estimates

The following describes the emission sources from quarrying and landfilling activities associated with the Proposed Project.

Quarry – This category encompasses the following emission sources associated with operation and reclamation of the North Quarry:

- Drilling of charge holes to allow placement of explosives for blasting
- Blasting to fracture and loosen ore, overburden and substrate through the use of explosives
- Bulldozing, scraping, and grading of topsoil, overburden, limestone, and waste material
- Loading and dumping of materials into and from transport trucks (referred to as material handling)
- Dust entrainment due to vehicle travel on unpaved roads in the vicinity of the North Quarry
- Wind erosion associated with actively disturbed unpaved areas, including unpaved roads in the vicinity of the North Quarry and active quarry operating, topsoil removal, and reclamation areas

Waste Rock Storage/Infill Areas – This category encompasses the following emission sources associated with operation of the East Material Storage Area (EMSA) and North Quarry Infill area:

- Material handling associated with waste rock from the North Quarry and reclamation of the EMSA and North Quarry Infill area
- Associated dust entrainment due to vehicle travel on unpaved roads in the vicinity of the EMSA and North Quarry Infill areas associated with transporting waste rock
- Wind erosion associated with actively disturbed unpaved areas, including unpaved roads in the vicinity of waste rock storage/infill areas and active waste rock storage/infill areas

Topsoil Storage Area – This category encompasses the following emission sources associated with operation and reclamation of the Topsoil Storage Area:

- Material handling
- Dust entrainment due to vehicle travel on unpaved roads in the vicinity of the Topsoil Storage Area

- Wind erosion associated with actively disturbed unpaved areas, including unpaved roads in the vicinity of the Topsoil Storage Area and active topsoil removal, operating, and reclamation areas

Combustion Sources – This category encompasses operation of the following equipment in conjunction with operation of Proposed Project:

- Portable diesel-fueled welders
- Off-road diesel equipment (bore/drill rigs, rubber-tired loaders, off-highway trucks, crawler-tractors, rubber-tired dozers, graders, water trucks, excavators, hydroseeders, and portable light towers)
- On-road, on-site vehicles (work trucks)
- On-road, off-site vehicles (fuel transport trucks and employee commute vehicles)

The No Project[4] and Project[5] emissions were based on information developed by ALG. The Phase 3 reclamation emissions were based on information developed by EnviroMine.[6]

Table 1 provides a key to the pertinent emission estimates. Emissions were estimated using OFFROAD2007 (for off-road equipment exhaust), EMFAC2007 (for on-road vehicle exhaust), and USEPA AP-42 emission factors or other appropriate references for fugitive dust sources. The calculations were based on the specific pieces of equipment and hours of operation for equipment to be used for the project. DPM emissions from off-road equipment were assumed to be 14 percent due to EMSA activities and the remaining 86 percent due to the North Quarry/WSMA activities.

TABLE 1
ESTIMATED EMISSIONS

	DPM Emissions (tons/year)	PM2.5 Emissions (tons/year)
No Project		
Existing	19.0	122
Phase 1A	7.0	111
Phase 1B	8.1	138
Phase 2	5.4	109
Phase 3	1.1	26.6
Project		
Existing	19.0	122
Phase 1A	12.6	43.1
Phase 1B	13.7	72.0
Phase 2	5.0	45.4
Phase 3	1.1	26.6

SOURCE: ALG, Air Quality Technical Analysis Permanente Quarry Revised Reclamation Plan Amendment, November 30, 2011
ALG, Air Quality Emission Calculation Worksheets Permanente Quarry No Project Alternative Emissions Analysis for Off-road Diesel Equipment, December 5, 2011.
EnviroMine, Financial Assurance Estimate for Permanente Quarry, April 2011

[4] ALG, Air Quality Emission Calculation Worksheets Permanente Quarry No Project Alternative Emissions Analysis for Off-road Diesel Equipment, December 5, 2011.

[5] ALG, Air Quality Technical Analysis Permanente Quarry Revised Reclamation Plan Amendment, November 30, 2011.

[6] EnviroMine, Financial Assurance Estimate for Permanente Quarry, April 2011.

The concentration of various TAC species within the fugitive dust was based on material sampling (McCampbell Analytical, October 4, 2010 and ALG, November 29, 2010). **Table 2** presents the soil sampling results which act as the basis for the emission estimates for fugitive dust activities.

TABLE 2
ESTIMATED AIR TOXICS CONTENT FOR FUGITIVE DUST SOURCES (MG/KG)

Inorganic Chemicals	Overburden	Unpaved Roads
Antimony	2.5	2.5
Arsenic	1.25	1.25
Barium	780	1000
Beryllium	0.75	0.75
Cadmium	1.25	1.25
Total Chromium	24	41
Cobalt	6.4	0.8
Copper	14	25
Lead	1.25	2.3
Mercury	0.2	0.14
Molybdenum	2.5	2.5
Nickel	23	54
Selenium	2.5	2.5
Silver	1.25	1.25
Thallium	1.25	1.25
Vanadium	19	83
Zinc	25	34
Chromium VI	0.1	1.9
Crystalline Silica	3712.8	7099.2

Source: McCampbell Analytical, Inc., October 4, 2010 and ALG, November 29, 2010.

The following describes the emission sources from reclamation activities associated with the Project.

Reclamation Activities – These activities encompass reclamation of the North Quarry and waste rock storage and infill areas, Topsoil Storage Area, and other disturbed areas as identified in the Proposed Project. Emissions associated with reclamation activities are included within the emission calculations for material handling, dust entrainment, wind erosion, and combustion sources for each of the different project areas. Activities related to reclamation include:

- Material handling associated with moving topsoil from the Topsoil Storage Area to each of the areas to be reclaimed

- Dust entrainment due to vehicle travel on unpaved roads associated with transporting topsoil from the Topsoil Storage Area

- Wind erosion associated with active reclamation within each of the areas to be reclaimed

- Combustion equipment operation due to topsoil transport for each of the reclamation areas, topsoil handling, topsoil mixing with the waste rock or other subsurface materials, and hydroseeding activities

Estimated emissions for the reclamation phases of the Proposed Project were based on information within the *Permanente Quarry Financial Assurance Estimate* (EnviroMine, 2011). **Table 3** provides the estimated annual equipment usage for the reclamation activities. **Table 4** provides the estimated annual onroad vehicle mileage for the reclamation activities. Fugitive dust emissions were estimated in a manner similar to the Phase 1 and 2 calculations.

TABLE 3
ESTIMATED OFFROAD EQUIPMENT USAGE FOR THE RECLAMATION ACTIVITIES

Subtask	Equipment	Hours	Horsepower	Load Factor
Overland Conveyor	Cat 330 w/ Steel Shear*	45	380	0.57
Overland Conveyor	Cat 330 w/ Grapple*	60	380	0.57
Overland Conveyor	Cat 966 Utility Loader	60	800	0.54
Overland Conveyor	Cat 330 w/ Breaker*	24	380	0.57
Overland Conveyor	Grove RT-635 40t Crane	60	208	0.78
Rock Plant	Cat 330 w/ Steel Shear*	48	380	0.57
Rock Plant	Cat 330 w/ Grapple*	48	380	0.57
Rock Plant	Cat 966 Utility Loader	48	800	0.54
Rock Plant	Cat 330 w/ Breaker*	80	380	0.57
Rock Plant	Cat 320 w/2.2 cy bucket	40	380	0.57
Rock Plant	Grove RT-635 40t Crane	48	208	0.78
Rough Grading	Hitachi EX1900-6	2,918	380	0.57
Rough Grading	Cat D9N Dozer	1,459	570	0.64
Rough Grading	Cat D8R Dozer	1,459	570	0.64
Rough Grading	12H Blade	1,459	327	0.57
Scarification	D8R Bulldozer	3.4	570	0.64
Finish Grading	D6R Bulldozer	393	570	0.64
EMSA Rough Grading	CAT D10 Dozer	28	570	0.64
EMSA Topsoil and Finish	CAT 330 Excavator	36	380	0.57
EMSA Topsoil and Finish	CATD6 Bulldozer	79	570	0.64
EMSA Topsoil and Finish	CAT 325 Excavator	45	380	0.57
EMSA Basin Removal	CATD8R Bulldozer	56	570	0.64
EMSA Basin Removal	CAT 446 w/ backhoe	56	800	0.54
EMSA SCARIFICATION	CAT D8R Bulldozer	2.7	570	0.64

Source: EnviroMine, *Permanente Quarry Financial Assurance Estimate, April 2011*.

TABLE 4
ESTIMATED ONROAD VEHICLE USAGE FOR THE RECLAMATION ACTIVITIES

Subtask	Equipment Category	EMFAC ID	Hours	VMT
Overland Conveyor	Truck w/low bed trailer	HDDV	70	2,450
Overland Conveyor	Truck w/Semi-End Dump	HDDV	36	1,260
Overland Conveyor	Welding Truck	MDV	60	2,100
Overland Conveyor	Pick up	LDA	120	4,200
Rock Plant	Truck w/low bed trailer	HDDV	48	1,680
Rock Plant	Truck w/Semi-End Dump	HDDV	48	1,680
Rock Plant	Welding Truck	MDV	60	2,100
Rock Plant	Pick up	LDA	80	2,800
Rough Grading	Cat 777 Haul Trucks	HDDV	20,424	134,798
Rough Grading	Water Truck	MDV	1,459	9,629
EMSA Topsoil and Finish	CAT 740 Haul Truck	HDDV	72	180
EMSA Basin Removal	Haul Truck	HDDV	25	62.5

Source: EnviroMine, *Permanente Quarry Financial Assurance Estimate, April 2011*.

Source Release Characteristics

Off-road equipment exhaust and fugitive dust from the blasting, drilling, grading/loading, wind erosion and other quarrying and landfilling activities were treated as separate area sources representing the North Quarry, EMSA, WMSA, and the PCRA. The release height of the off-road equipment exhaust was 3.05 meters, while the release height of the fugitive dust was at ground level. Haul trucks were treated as a line source (i.e., volume sources placed at regular intervals) located along the unpaved haul roads between the quarry and the storage infill areas. The haul trucks were assigned a release height of 3.05 meters and an initial vertical dimension of 4.15 meters, which accounts for dispersion from the movement of vehicles. The fugitive dust from unpaved roads was treated as a surface-based line source.

Terrain elevations for emission source locations were used (i.e., complex terrain) based on available USGS DEM for the area. AERMAP (Version 11103) was used to develop the terrain elevations, although the project site is generally flat.

Using AERMOD, the maximum 1-hour and average annual concentrations were determined for the emission sources of concern. These concentrations were estimated for a unit emission rate (1 gram per second) and adjusted based on the calculated project-related emission rate.

Table 5 displays the estimated haul truck trips associated with the Rock Plant and green waste. The cement plant trucks (approximately 45,112 per year) are a cumulative source and not directly associated with the Project.

TABLE 5
ESTIMATED ONROAD HAUL TRIPS

	No Project		Project	
Year	**Rock Plant**	**Green Waste**	**Rock Plant**	**Green Waste**
2008	43,490	-	43,490	-
2009	43,490	-	43,490	-
2010	43,490	-	43,490	-
2011	43,490	-	43,490	-
2012	43,490	-	77,800	-
2013	43,490	-	77,800	-
2014	43,490	-	77,800	-
2015	43,490	-	77,800	-
2016	43,490	-	77,800	-
2017	43,490	-	77,800	-
2018	43,490	-	77,800	-
2019	43,490	-	77,800	-
2020	43,490	-	77,800	-
2021	43,490	-	77,800	-
2022	43,490	-	77,800	-
2023	43,490	-	77,800	1,000
2024	43,490	-	77,800	1,000
2025	43,490	-	77,800	1,000
2026	43,490	-	-	-
2027	43,490	-	-	-
2028	43,490	-	-	-
2029	43,490	-	-	-
2030	43,490	1,000	-	-
2031	43,490	1,000		
2032	43,490	1,000		
2033	-	-		
2034	-	-		
2035	-	-		
2036	-	-		
2037	-	-		
Total	**1,000,270**	**3,000**	**1,263,160**	**3,000**

Source: Permanente Quarry, 2011.

TOXICITY ASSESSMENT

The HRA was conducted following methodologies in BAAQMD's *Health Risk Screening Analysis Guidelines*[7] and in the California Office of Environmental Health Hazard Assessment (OEHHA) *Air Toxics Hot Spots Program Guidance.*[8] This was accomplished by applying the highest estimated concentrations at the receptors analyzed to the established cancer risk estimates and acceptable reference concentrations (RfC) for non-cancer health effects.

The toxicity values used in this analysis were based on OEHHA guidance. These toxicity values are for carcinogenic effects and acute/chronic health impacts. The primary pathway for exposures was assumed to be inhalation and carcinogenic and non-carcinogenic effects were evaluated separately. The incremental risks were determined for each emission source of TAC and summed to obtain an estimated total incremental carcinogenic health risk.

The 80th percentile adult breathing rate of 302 L/kg-day was used to determine cancer risks to residents from exposure to TAC. The residential exposure frequency and duration was assumed to be 350 days per year and 70 years. For children, OEHHA recommends assuming a breathing rate of 581 L/kg-day to assess potential risk via the inhalation exposure pathway. This value represents the upper 95th percentile of daily breathing rates for children. The modeled TAC concentrations were used to represent the exposure concentrations in the air. The inhalation absorption factor was assumed to be 1.

Cancer risk estimates also incorporate age sensitivity factors (ASFs). This approach provides updated calculation procedures that factor in the increased susceptibility of infants and children to carcinogens as compared to adults. OEHHA recommends that cancer risks be weighted by a factor of 10 for exposures that occur from the third trimester of pregnancy to 2 years of age, and by a factor of 3 for exposures from 2 years through 15 years of age. For estimating cancer risks for residential receptors over a 70 year lifetime, the incorporation of the ASFs results in a cancer risk adjustment factor (CRAF) of 1.7.

Based on OEHHA recommendations, the cancer risk to residential receptors assumes exposure occurs 24 hours per day for 350 days per year. For children at school sites, exposure is assumed to occur 10 hours per day for 180 days (or 36 weeks) per year. Cancer risk to residential receptors based on a 70-year lifetime exposure. Cancer risk estimates for children at school sites are calculated based on 9 year exposure duration.

Table 6 provides a summary of the risk assessment exposure parameters used in the analysis.

[7] Bay Area Air Quality Management District (BAAQMD), 2005. *BAAQMD Health Risk Screening Analysis Guidelines (http://www.baaqmd.gov/pmt/air_toxics/risk_procedures_policies/hrsa_guidelines.pdf)*, June 2005.

[8] Office of Environmental Health Hazard Assessment (OEHHA), 2003. *Air Toxics Hot Spots Program Guidance Manual for Preparation of Health Risk Assessments*, http://www.oehha.org/air/hot_spots/pdf/HRAguidefinal.pdf

TABLE 6
HEALTH RISK ASSESSMENT EXPOSURE PARAMETERS

Receptor	Breathing Rate (DBR)	Cancer Risk Adjustment Factor (CRAF)	Daily Exposure	Annual Exposure	Exposure Duration (ED)
Adult	302	1.7	24 hours	350 days	70 years
Child	581	10	24 hours	350 days	3 years
School	581	3	10 hours	180 days	9 years

SOURCE: *BAAQMD Health Risk Screening Analysis Guidelines* *(http://www.baaqmd.gov/pmt/air_toxics/risk_procedures_policies/hrsa_guidelines.pdf)*, June 2005

Table 7 provides the toxicity values for each of the pollutants associated with the proposed project. The chronic REL for DPM was established by the California OEHHA[9] as 5 μg/m^3. There is no acute REL for DPM. However, diesel exhaust does contain acrolein and other compounds, which do have an acute REL. BAAQMD's DPM speciation table (based on profile 4674 within the U.S. EPA Speciate 4.2)[10] was used to assess the acute impacts. Acrolein emissions are approximately 1.3 percent of the total emissions. The acute REL for acrolein was established by the California OEHHA[11] as 2.5 μg/m^3.

TABLE 7
TOXICITY VALUES

Pollutant	Slope Factor (mg/kg-day)	Acute REL (μg/m^3)	Chronic REL (μg/m^3)
Acrolein (with DPM)		2.5	
Arsenic	12.0	0.19	0.03
Beryllium	8.4		0.003
Cadmium			0.02
Chromium VI	510		0.2
Crystalline silica			3
DPM	1.1		5
Copper		100	
Cadmium	15.0		
Lead	0.04		
Mercury		1.8	0.09
Nickel	0.91	6.0	0.05
Selenium			20
Vanadium		30.0	

SOURCE: California Office of Environmental Health Hazards Assessment Toxicity Criteria Database, 2011. http://www.oehha.ca.gov/tcdb/

RISK CHARACTERIZATION

Cancer risk is defined as the lifetime probability of developing cancer from exposure to carcinogenic substances. Cancer risks are expressed as the chance in one million of getting cancer (i.e., number of cancer cases among one million people exposed). The cancer risks are assumed to occur exclusively through the inhalation pathway. The cancer risk can be estimated by using the cancer potency factor (milligrams per kilogram of body weight per day [mg/kg-day]), the 70-year annual average concentration (microgram per cubic meter [μg/m^3]), and the lifetime exposure adjustment.

9 California Office of Environmental Health Hazards Assessment Toxicity Criteria Database, 2010. http://www.oehha.ca.gov//.

10 Provides for a speciation faction of 1.3 percent of acrolein per DPM emission rate. http://www.epa.gov////.html.

11 California Office of Environmental Health Hazards Assessment Toxicity Criteria Database, 2010. http://www.oehha.ca.gov//.

Following guidelines established by OEHHA, the incremental cancer risks attributable to the project were calculated by applying exposure parameters to modeled TAC concentrations in order to determine the inhalation dose (mg/kg-day) or the amount of pollutants inhaled per body weight mass per day. The cancer risks occur exclusively through the inhalation pathway; therefore, the cancer risks can be estimated from the following equation:

$$\text{Dose-inh} = \frac{C_{air} * \{DBR\} * A * CRAF * EF * ED * 10^{-6}}{AT}$$

Where:

Dose-inh	= Dose of the toxic substance through inhalation in mg/kg-day
10^{-6}	= Micrograms to milligrams conversion, Liters to cubic meters conversion
C_{air}	= Concentration in air (microgram (μg)/cubic meter (m^3))
{DBR}	= Daily breathing rate (liter (L)/kg body weight – day)
A	= Inhalation absorption factor
CRAF	= Cancer Risk Adjustment Factor, Age Sensitivity Factor
EF	= Exposure frequency (days/year)
ED	= Exposure duration (years)
AT	= Averaging time period over which exposure is averaged in days (25,550 days for a 70 year cancer risk)

To determine incremental cancer risk, the estimated inhalation dose attributed to the project was multiplied by the cancer potency slope factor (cancer risk per mg/kg-day). The cancer potency slope factor is the upper bound on the increased cancer risk from a lifetime exposure to a pollutant. These slope factors are based on epidemiological studies and are different values for different pollutants. This allows the estimated inhalation dose to be equated to a cancer risk. Thus, if the inhalation dose (mg/kg-day) is estimated at 2.75 per million and the slope factor ($mg/kg\text{-}day^{-1}$) is 1.1; then the cancer risk is 3.0 per million persons.

Non-cancer adverse health impacts, acute (short-term) and chronic (long-term), are measured against a hazard index (HI), which is defined as the ratio of the predicted incremental exposure concentration from the project to a published reference exposure level (REL) that could cause adverse health effects as established by OEHHA. The ratio (referred to as the Hazard Quotient [HQ]) of each non-carcinogenic substance that affects a certain organ system is added to produce an overall HI for that organ system. The overall HI is calculated for each organ system. If the overall HI for the highest-impacted organ system is greater than one, then the impact is considered to be significant.

The HI 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 REL ($\mu g/m^3$). The acute hazard index was determined using the "simple" concurrent maximum approach, which tends to be conservative (i.e., overpredicts).

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

$$HI = C/REL$$

where,

HI	Hazard index; an expression of the potential for non-cancer health effects.
C	Annual average concentration ($\mu g/m^3$) during the 70 year exposure period
REL	The concentration at which no adverse health effects are anticipated.

CUMULATIVE ANALYSIS

The BAAQMD's *CEQA Air Quality Guidelines* include new standards and methods for determining the significance of cumulative health risk impacts for individual projects (BAAQMD, 2011). The method for determining health risk requires the tallying of health risk from permitted sources and major roadways in the vicinity of a project, then adding the project impacts to determine whether the cumulative health risk thresholds are exceeded. Cumulative health impacts of cancer risks, chronic impacts, and PM2.5 concentrations are analyzed.

BAAQMD has developed a geo-referenced database of permitted TAC emissions sources throughout the San Francisco Bay Area and has developed the *Stationary Source Risk & Hazard Analysis Tool* (dated May 2011) for estimating health risks from permitted sources. One permitted source (the Permanente Quarry's cement kiln, plant baghouses, stationary generators, and fugitive sources) is located within 1,000 feet of the fenceline of the Proposed Project. Cumulative health risk information associated with these sources was developed from the *Revised AB2588 Health Risk Assessment 2005, Average 2008/2009, and 2013 Production Scenarios for the Lehigh Southwest Cement Company* (AMEC Geomatrix, 2011).[12] The HRA was approved by BAAQMD and OEHHA.

For this cumulative source, the maximum exposed individual residence cancer risk is 8.5 in a million and the maximum chronic hazard index is 0.34. The maximum acute hazard index for the average 2008/2009 production level is estimated to be 2.1 (due to mercury emissions); which is above the BAAQMD CEQA Significance threshold. As a result, in 2010 a kiln mill dust conveyance system was implemented; the maximum acute hazard index for the 2010 production was estimated to be 1.5; which is above the BAAQMD CEQA Significance threshold.

In September 2010, Lehigh began testing the injection of powdered activated carbon sorbent into the kiln fuel gas to further reduce mercury emissions. Installation of the system was expected to begin in March 2011 and be completed and operational by May 2011. With implementation, the maximum acute hazard index for the 2011 production was estimated to be 0.76; which is below the BAAQMD CEQA Significance threshold. The maximum acute hazard index for the 2013 production (including facility changes related to stack exhaust parameters) was estimated to be 0.025; which is well below the BAAQMD CEQA Significance threshold.

The cement plant also generates 45,112 truck trips per year, which are included as a cumulative source.

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[12] *Revised AB2588 Health Risk Assessment 2005, Average 2008/2009, and 2013 Production Scenarios for the Lehigh Southwest Cement Company*
http://www.sccplanning.org/SCC/docs/Planning,%20Office%20of%20(DEP)/attachments/Environmental%20Documents/2250%20Hanson%20Quarry%20Attachment%20docs%20and%20images/AMEC_11_11191.000_Rev.HRA_033011.pdf

Additional nearby sources were provided and/or verified by BAAQMD.[13] None of these sources were determined to be within 1,000 feet of the fenceline.

BAAQMD has also developed a geo-referenced database of roadways throughout the San Francisco Bay Area and has developed the *Highway Screening Analysis Tool* (dated May 2011) for estimating health risks from roadways. State Route 85 and Interstate 280 are located adjacent (to the east and north, respectively) but not within 1,000 feet of the Proposed Project. Thus, the health impacts from these roadways were not included in the analysis.

[13] Email from Jackie Winkel at BAAQMD on September 29, 2011, Stationary Source Inquiry Form Request – Permanente Quarry.