Draft Supplemental Environmental Impact Report

Prior SCH # 96061052

Volume 1 Chapters 1 through 10

Golden Queen Mining Co. Inc., Soledad Mountain Project

Conditional Use Permit No. 27, Map 196 Modification of Conditional Use Permit No. 41, Map 213 Modification of Conditional Use Permit No. 22, Map 214 Nonsummary Vacation of a Portion of New Eagle Road 191-31 3 098 (PP08210)



Kern County Planning Department Bakersfield, California

January 2010

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January 11, 2010

ADDRESSEE LIST (See Distribution List)

Re: Draft Supplemental Environmental Impact Report for the Revised Soledad Mountain Project by Golden Queen Mining Co., Inc. (Conditional Use Permit No. 27, Map No. 196; Modification of Conditional Use Permit No. 41, Map No. 213; Modification of Conditional Use Permit No. 22, Map No. 214; Nonsummary Vacation for a Portion of New Eagle Road 191-31 3 098)

Dear Interested Party:

Kern County has prepared a Draft Supplemental Environmental Impact Report (Draft SEIR) for the development of a surface mining and reclamation plan for an open pit mining operation. As proposed, the project would encompass approximately 2,500 acres, of which 905 acres will be mined, and is designed to recover precious metals from excavated ore via cyanide heap leach processing methods. Project implementation will require the modification of two Conditional Use Permits (CUP 41, Map 213 and CUP 22, Map 214) previously approved by the Kern County Board of Supervisors in 1997 and the approval of a new Conditional Use Permit (CUP 27, Map 196) to amend an existing surface mining and reclamation plan in accordance with the provisions of the Surface Mining and Reclamation Act (SMARA) of 1975. Because of the proposed mine's design, the applicant will also be required to obtain approval of a Nonsummary Vacation for a portion of New Eagle Road in accordance with the California Streets and Highway Code. The project site is located approximately two (2) miles west of State Route 14 (SR-14), generally south of Silver Queen Road, and five (5) miles south of the community of Mojave.

The Kern County Planning Department, as Lead Agency, has determined that preparation of a Supplemental Environmental Impact Report would be appropriate for the referenced projects. Enclosed is a copy of the Draft SEIR.

If we have not received a reply from you by **February 25, 2010, at 5:00 P.M.**, we will assume that you have no comments regarding this Draft SEIR.

Sincerely,

Scott F. Denney, AIC Supervising Planner Plan Development Section

Soledad Mountain Project WO #PP08210 eir01-08sfd.is sc 1/5/10

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John Rydzik 3600 Lime Street, Suite 722 Riverside, California 92501

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Nicano Reyes 14341 Lear Street Mojave, California 93501

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Carl Allen 360 Palos Verdes Drive West Palos Verdes Estates, California 90274

Michael Keliner The Torres Martinez Desert Cahuilla Indians 66-725 Martinez Road Thermal, California 92274

DRAFT SUPPLEMENTAL ENVIRONMENTAL IMPACT REPORT

NOTICE OF AVAILABILITY FOR PUBLIC REVIEW

This is to advise that the Kern County Planning Department has prepared a Supplemental Environmental Impact Report (SEIR) for the project identified below. As mandated by State law, the minimum public review period for this document is 45 days. The document and documents referenced in the Draft SEIR are available for review at the Planning Department, 2700 "M" Street, Suite 100, Bakersfield, CA 93301.

A public hearing has been scheduled with the Kern County Planning Commission to receive comments on the document on: **April 8, 2010** at 7:00 p.m. or soon thereafter, Chambers of the Board of Supervisors, First Floor, Kern County Administrative Center, 1115 Truxtun Avenue, Bakersfield, California.

The comment period for this document closes on **February 25, 2010**. Testimony at future public hearings may be limited to those issues raised during the public review period either orally or submitted in writing by 5:00 p.m. the day the comment period closes.

Project Title: Soledad Mountain Project by Golden Queen Mining Co., Inc.; Conditional Use Permit No. 27, Map 196; Modification of Conditional Use Permit No. 41, Map 213; Modification of Conditional Use Permit No. 22, Map 214 (both previously approved by the Kern County Board of Supervisors in 1997); and Nonsummary Vacation of a Portion of New Eagle Road

Project Location: Approximately two (2) miles west of State Route 14 (SR-14), generally south of Silver Queen Road, and five (5) miles south of the community of Mojave, in portions of Sections 5, 6, 7, and 8, of T10N., R12W., a portion of Section 32, of T11N., R12W., and portions of Section 1 and 12, of T10N., R13W., SBB&M, County of Kern, State of California.

Project Description: The proposed project is an open pit mining operation encompassing approximately 2,500 acres, of which 905 acres will be mined, and is designed to recover precious metals from excavated ore via cyanide heap leach processing methods. Discretionary actions include: (a) approval of CUP 27, Map 196; (b) modification of CUP 41, Map 21; and (c) modification of CUP 22, Map 214 to amend an existing Surface Mining and Reclamation Plan in accordance with the provisions of the Surface Mining and Reclamation Act (SMARA) of 1975; and (d) approval of a nonsummary vacation of a public access easement on a portion of New Eagle Road 191-31 3 098.

Anticipated Significant Impacts on Environment: Air Quality and Biological

For further information, please contact: Scott F. Denney (661) 862-8631 or ScottD@co.kern.ca.us

TED JAMES, AICP, Director Planning Department

To be published once only on next available date and as soon as possible

MOJAVE DESERT NEWS and ROSAMOND WEEKLY NEWS

SFD:pjj (1/11/10)

cc: County Clerk (2) (with fee) Environmental Status Board Sierra Club/Kern Kaweah Chapter Communities for a Better Environment Center on Race, Poverty and Environment (2)

California Native Plant Society/Kern Chapter Kern County Archaeological Society Native American Heritage Pres. Council/Kern County Supervisorial District No. 2

Soledad Mountain Project WO #PP08210 eir01-08sfd.noa sc 1/5/10

246 010 08 00 9 COLLINS EDDIE 601 21ST ST HERMOSA BEACH CA 90254-3017

246 010 14 00 6 GOLDEN QUEEN MINING CO INC 491 HARVARD DR ARCADIA CA 91007-2639

246 020 03 00 7 LIAO MING YAN 3328 HEATHER FIELD DR HACIENDA HEIGHT CA 91745-6137

246 020 08 00 2 PIERSON WAYNE L REV LIV TR 56808 KISMET RD YUCCA VALLEY CA 92284-4374

246 031 02 00 4 BLANCO FRED C & MARY A TR 1188 BISHOP ST, STE 2103 HONOLULU HI 96813-3308

246 031 10 00 7 OGAWA FAMILY TR 5188 HARVEST ESTATES SAN JOSE CA 95135

246 031 15 00 2 REIS RAYMOND J & MARJORIE E 13921 PACIFIC ST WESTMINSTER CA 92683

246 032 04 00 7 PAC STATES LAND CO P O BOX 880088 SAN DIEGO CA 92168

246 032 17 00 5 AL-QAHHAAR KHALIL R 5 NORMAN RD, U A NORWICH CT 06360-6066 246 010 01 00 8 GADZHYAN TOROS & MARGARITA 507 WEST 64TH ST INGLEWOOD CA 90302

246 010 09 00 2 HOK-SIU WU JANE P O BOX 3501 S PASADENA CA 91031

246 010 16 00 2 COLLINS ELLYN TR 491 HARVARD DR ARCADIA CA 91007-2639

246 020 06 02 4 GOLDEN QUEEN MINING CO INC BOX 5383 CARMEL CA 93921

246 020 11 00 0 ANSPACH ROSEMARY 6510 KANE WY BAKERSFIELD CA 93309

246 031 07 00 9 KOUBIK CHARLES PAUL 14 ROCKY HOLLOW RD NO STONINGTON CT 06359

246 031 12 00 3 GALEANA MIGUEL 20535 CAMINO DEL SOL RIVERSIDE CA 92508-2404

246 031 16 00 5 BUONOMO LIM FAMILY TRUST 418 NIGHTHAWK CT SUGAR LAND TX 77478

246 032 13 00 3 NEAL CLARK L 850 BEECH ST, U 805 SAN DIEGO CA 92101

246 032 19 00 1 MARTINEZ WALTER 617 EL MONTE RD EL CAJON CA 92020 246 010 05 00 0 LIAO MING YEN 3328 HEATHER FIELD DR HACIENDA HEIGHT CA 91745-6137

246 010 13 00 3 SITE GOLDEN QUEEN MINING CO INC PO BOX 1030 MOJAVE CA 93502-1030

246 010 18 00 8 COLLINS ELLYN 491 HARVARD DR ARCADIA CA 91007-2639

246 020 07 00 9 PIERSON WAYNE L TR 56808 KISMET RD YUCCA VALLEY CA 92284-4374

246 031 01 00 1 BLANCO FRED C & MARY A TR P O BOX 61235 HONOLULU HI 96839-1235

246 031 08 00 2 HOVERSTEN DAVID L & MARILYN C 3001 DONAHUE DR SIOUX FALLS SD 57105

246 031 13 00 6 WALPERT ROBERT J & DESPINA 1917 LA CRESTA RD EL CAJON CA 92021

246 031 17 00 8 WELLS BARNSDALL & VINCENZA 2529 COLUMBUS AV SANDUSKY OH 44870

246 032 15 00 9 GONZALES JAMES L & ROSABERA A 8527 WEST 76TH AV ARVADA CO 80005

246 032 20 00 3 FERNANDEZ WILLIAM & LINDA 625 CARLA AV CHULA VISTA CA 92010 246 032 21 00 6 SEMPER FIDELIS REALTY RT 1 BOX 72 AQUILLA TX 76622

246 033 06 00 0 ANTEL LILLIE 609 W COLORADO BL MONROVIA CA 91016

246 033 10 00 1 LOPEZ ALFREDO & ELODIA 14100 JOVETT ST ARLETA CA 91331

246 033 16 00 9 KHAN FAIZ A 3863 PROSPECT AV, # 1 CULVER CITY CA 90232

246 034 15 00 3 GUIST CONSTANCE L 3433 MC NARY PW, # 211 LAKE OSWEGO OR 97035-1091

246 034 22 00 3 MIKHAIL ONCY A & HAGER A 8608 LUBAO AV WINNETKA CA 91306

246 041 04 00 3 BROERS CHARLOTTE 2260 BARLOW AV SAN JOSE CA 95122

246 041 10 00 0 CALMA CELESTE S 13019 LOIRE VALLEY DR RANCHO CUCUMONG CA 91739

246 041 16 00 8 FEMATT HUMBERTO A & LUZ ALICIA C 40701 RANCHO VISTA BL, # 137 PALMDALE CA 93551

246 042 07 00 9 VOSS HOUSTON F & JUDITH L 33821 NE MARIAMA DR, #B DANA POINT CA 92629 246 032 24 00 5 LOCH EDELMIRA 1419 E CALIFORNIA AV GLENDALE CA 91206

246 033 08 00 6 SECURITY TRUST CO TRS P O BOX 880088 SAN DIEGO CA 92168

246 033 12 00 7 LONG ROBERT W & CATHERINE A P O BOX 1048 SPRINGVILLE UT 84663

246 033 17 00 2 ANWAR HASAN 10157 WEST VIEW DR, 129 HOUSTON TX 77043

246 034 16 00 6 RODRIGUEZ CARLOS A & MICHELLE 1885 E TERRACE DR LAKEWORTH FL 33460

246 034 23 00 6 CINCERA STANISLAV 836 E GLENLYN DR AZUSA CA 91702

246 041 06 00 9 HUNT RAYMOND L TR 2940 ST DENIS DR SAN RAMON CA 94588

246 041 13 00 9 ECHAVEZ CANDY 739 SANDELL RD CAMANO ISLAND WA 98282

246 041 17 00 1 NABER RUJEIH 17154 MISS GRACE DR CANYON COUNTRY CA 91387

246 042 09 00 5 MOSCINSKI LUCIEN JR & KATHLEEN 11039 COLLINGWOOD DR SANTEE CA 92071 246 032 26 00 1 TOMLINSON NORMA 12030 1/2 SATICOY ST NORTH HOLLYWOOD CA 91605-2775

246 033 09 00 9 MIKHAIL WAHIB 10410 BROOKSHIRE AV DOWNEY CA 90241

246 033 14 00 3 DURELL RAYMOND L 8311 AMSTERDAM DR HUNTINGTN BCH CA 92647

246 034 08 00 3 PYGOSCELIS GP INC 332 S PLYMOUTH BL LOS ANGELES CA 90020

246 034 18 00 2 FIELDS JOE L SR 439 E 45TH ST LONG BEACH CA 90807-1450

246 034 26 00 5 AYALA MABEL 9243 HUSTON RD CHATSWORTH CA 91311-6327

246 041 09 00 8 HOLT BEVERLY TRUST 2235 YORKSHIRE DR CAMBRIA CA 93428-3916

246 041 14 00 2 GRACEY DOROTHY MAY 400 LARSON ST GRAND SALINE TX 75410

246 041 19 00 7 NABER ALBERT I TR 17166 MISS GRACE DR SANTA CLARITA CA 91387

246 042 11 00 0 MARONYI ELOD ANDREW & IRMA J 20950 OXNARD ST, U 40 WOODLAND HLS CA 91367 246 042 12 00 3 SAMADY ABDUL R & HAKIMA 2126 SEA ISLAND PL SAN MARCOS CA 92078-5477

246 042 19 00 4 ARREGUINE JUDY 2460 CEDAR AV, # 8 LONG BEACH CA 90806

246 043 11 00 7 COMBS GARY & LEANN 5812 TEMPLE CITY BL, # 210 TEMPLE CITY CA 91780

246 043 16 00 2 DANIPOUR JOHN 22116 ALTAIR LN SAUGUS CA 91390

246 043 21 00 6 HERNANDEZ LUIS & ARACELI 18926 ELIZONDO ST WEST COVINA CA 91792

246 044 11 00 4 CHESNEY MITCHEL J TR 1845 LOCUST AV LONG BEACH CA 90806

246 044 14 00 3 KHAN SHAHNAZ 2512 BERKLEY AV LOS ANGELES CA 90026

246 044 18 00 5 TERTERIAN GRIGOR 1014 E OLIVE AV BURBANK CA 91501-1430

246 044 22 00 6 TAMAYO ARTHUR 22365 EL TORO RD LAKE FOREST CA 92630

246 051 08 00 8 SHAHINIAN VAHE & ADRINE V TR 9 HARCOURT NEWPORT COAST CA 92657 246 042 14 00 9 ARAMBULO FMLY TR 12807 INDIAN TL POWAY CA 92064

246 043 06 00 3 HUNT RAYMOND L TR P O BOX 1220 SHINGLETOWN CA 96088

246 043 13 00 3 KELLY DOROTHY E P O BOX 1303 BREA CA 92821

246 043 18 00 8 VENTURA FILIBERTO & TERESA 1025 BLUEBONNET DR COPPERAS COVE TX 76522-7666

246 044 07 00 3 REGALADO RAMON G & JOSEFINA 2439 SARANDI GRANDE DR HACIENDA HGTS CA 91745-4833

246 044 12 00 7 CHENG CHAUR-CHOU ET AL 19604 CASTLE BAR DR ROWLAND HTS CA 91748

246 044 16 00 9 KHAN QAISER ISHA 321 CARNATION DR BUENA PARK CA 90620

246 044 20 00 0 PENNINGTON MICHAEL R JR 1230 LAGUNA ST OCEANSIDE CA 92054

246 044 24 00 2 ADLIN TARA 3404 N ASHLAND AV CHICAGO IL 60657-1302

246 051 10 00 3 NICHOLSON ODIS B JR 2400 NE RED SUNSET DR, APT 203 GRESHAM OR 97030-3185 246 042 17 00 8 MEGUERDICHIAN SIRAOUSH ET AL 36961 SPANISH BROOM DR PALMDALE CA 93550-5960

246 043 09 00 2 NILAN ELIZABETH 1408 BROWNLEAF DR RICHMOND VA 23225-4106

246 043 14 00 6 DYE ROBERT C & JO ANNA R 2920 NW HAYES AV CORVALLIS OR 97330

246 043 20 00 3 HERNANDEZ GABRIELA M 20 HIGHCREST LN S SAN FRAN CA 94080-7303

246 044 09 00 9 WILDE JEANETTE A 4682 FIESTA WY LAS VEGAS NV 89121

246 044 13 00 0 PUA LINO B & ESPERANZA M 12713 BEACH ST CERRITOS CA 90703

246 044 17 00 2 MORA ROY ALLAN 1097 W DESERT SEASONS DR QUEEN CREEK AZ 85243-3435

246 044 21 00 3 MOSES YUMIKO & OTTO 6815 REMMET AV, U 225 CANOGA PARK CA 91303

246 044 25 00 5 SCHLOESSER SHIRLEY M 307 LAURELWOOD RD SANTA CLARA CA 95054-6764

246 051 15 00 8 HONOR E JOSEPH G 4725 ST ELMO DR LOS ANGELES CA 90019 246 051 17 00 4 MIEREZ KENNETH & LENA C 5060 ROCKHURST CT RIVERSIDE CA 92503

246 052 05 00 6 CHING WALLACE K 2324 MARWICK AV LONG BEACH CA 90815-2031

246 052 19 00 7 GRADY ALBERT JR & CORAL 4185 COOPER CT BOULDER CO 80303-2513

246 052 26 00 7 SARPY FAMILY LIVING TR 19645 TAROCCO LN RIVERSIDE CA 92508

246 052 29 00 6 LARA DELFINA T 624 S. GERHART LOS ANGELES CA 90022

246 053 10 00 7 GRAY BERTON M 3702 MOTOR AV, APT 9 LOS ANGELES CA 90034

246 053 15 00 2 HELBERG JOANNA 336 S EL CAMINO DR BEVERLY HILLS CA 90212

246 054 02 00 1 MAARIFA INTERNAT LLC 525 E SEASIDE WY, U 2202 LONG BEACH CA 90802-8017

246 054 14 00 6 LILLIE GEORGE & EARLINE E 408 E 92ND ST LOS ANGELES CA 90003

246 054 20 00 3 OKORO ONYEABO UMEKWE 26014 CREST RD TORRANCE CA 90505 246 051 19 00 0 BENNETT CHARLES HERBERT JR 2911 W 82ND PL INGLEWOOD CA 90305

246 052 12 00 6 GREENE FLORA L TRUST 3552 S IVANHOE ST DENVER CO 80237

246 052 21 00 2 SINGH AVTAR 8431 SAN CARLOS WY BUENA PARK CA 90620

246 052 27 00 0 CHAVEZ CANDY 739 SANDELL RD CAMANO ISLAND WA 98282

246 053 06 00 6 COOK BARBARA J 6031 FOUNTAIN PK LN, # 4 WOODLAND HILLS CA 91367

246 053 12 00 3 GHIAS JAWED 5079 SEA DRIFT WY SAN DIEGO CA 92154

246 053 16 00 5 HARRIS WILL & VANGELENE 6235 S CAMPBELL CHICAGO IL 60629

246 054 10 00 4 JOSLYN SEPARATE PROPERTY TRUST 979 HILLCREST ST HEMET CA 92545

246 054 16 00 2 CLAY JOHNNY A 18707 PARTHENIA ST, U 2 NORTHRIDGE CA 91324

246 054 21 00 6 RAMIREZ JOSUE 14309 COHASSET ST VAN NUYS CA 91405 246 051 20 00 2 RICHARDSON SIMONE MARIA 2911 W 82ND PL INGLEWOOD CA 90305

246 052 16 00 8 CRAWFORD DONALD & MARSHA 4587 LAREDO ST AURORA CO 80015

246 052 23 00 8 HOLMES BROWNIE 535 W 4TH ST, U 104 LONG BEACH CA 90802

246 052 28 00 3 JUAREZ YOLANDA 612 ORME AV LOS ANGELES CA 90023-1430

246 053 07 00 9 MC CRAY ALBERT RAY 237 HAAS AV, # 132 SAN LEANDRO CA 94577

246 053 14 00 9 GARCIA JESUS & MARITZA 11755 MONTE LEON WY NORTHRIDGE CA 91326

246 053 18 00 1 VELA JULIO FLORES & JUDITH ORREGO DE FLORES 2580 GAIL DR RIVERSIDE CA 92509

246 054 12 00 0 MC LEOD MARYANN & BRYAN 2315 STONYVALE RD TUJUNGA CA 91042-1021

246 054 17 00 5 ELHAJ ANTHONY 2170 FILLMORE CT LA VERNE CA 91750

246 061 08 00 1 ROBERTS HERBERT C 14075 OCEANVIEW DR SMITH RIVER CA 95567-9306 246 061 14 00 8 JACOB THOMAS O 322 ORCHID DR SAN RAFAEL CA 94903-2527

246 061 20 00 5 MC CULLOCH ROBERT C & GLADYS M 693 OAKWOOD DR EUGENE OR 97402-9387

246 061 26 00 3 JOHNSON BRUCE 7582 SKYLINE DR SAN DIEGO CA 92114

246 062 05 00 9 ZAMORA SALOMON REV TR PO BOX 3915 INGLEWOOD CA 90304-0915

246 062 15 00 8 LUCAS PATRICIA L 3425 TALBOT SAN DIEGO CA 92106

246 062 20 00 2 MARKARIAN SAHAG 805 E HARVARD ST GLENDALE CA 91205

246 063 13 00 9 DEES SAMUEL L & MARY L 1075 SOZIER BOAT DOCK RD CHARLOTTE TN 37036

246 063 19 00 7 MIRANDA GABRIEL & AURORA 150 N BERENDO ST LOS ANGELES CA 90004

246 064 08 00 2 MOLINA ARTURO C 8809 SYLMAR ST PANORAMA CA 91402

246 064 14 00 9 HAVIAN LORRAINE M 307 MERDIAN DR COCOA BEACH FL 32931 246 061 17 00 7 MILLER GLENN E TR 2254 DAHLIA ST DENVER CO 80207-3753

246 061 22 00 1 KELLY ELAINE D ET AL 15145 TOMBSTONE CREEK RD EL CAJON CA 92021

246 061 27 00 6 RUIZ MARIA D 622 HAZARD AV LOS ANGELES CA 90063

246 062 11 00 6 ANDERSON ELZA P O BOX 10774 SANTA ANA CA 92711-0774

246 062 17 00 4 PRATT ROBERT E 639 N 6TH ST CRYSTAL FALLS MI 49920

246 062 21 00 5 PESQUEIRA ANAHID 919 E BIRMINGHAM RD BURBANK CA 91504

246 063 15 00 5 MARKARIAN SAHAG 1332 BARRINGTON WY GLENDALE CA 91206

246 063 21 00 2 BRADWELL MINER WANDA TRUST 3005 ROADRUNNER CT HIGHLAND CA 92346

246 064 10 00 7 FUNA FRANCIS M 14743 HELEN PARK LN POWAY CA 92064-2918

246 064 18 00 1 SCHUBERT PAUL JOHN & MARY M 11295 E OHIO PL AURORA CO 80012 246 061 18 00 0 NIMON FERN TR 4646 E MOUNTAIN VIEW DR SAN DIEGO CA 92116

246 061 24 00 7 SANCHEZ ROSA M 13527 E PALM AV BALDWIN PARK CA 91706

246 062 03 00 3 LAGON FREDERICO & THEODORA 4343 N KEELER AV, APT 1 CHICAGO IL 60641-2194

246 062 13 00 2 WILLINGHAM HENRY L & DONNA C 3150 SOFT BREEZE DR, # 1192 LAS VEGAS NV 89128

246 062 18 00 7 TATEOSIAN HOVSEP & HAIGOUHI 4205 N FORESTIERE AV FRESNO CA 93722

246 063 06 00 9 CRUZ JOHN 9925 ASTER CI FOUNTAIN VALLEY CA 92708

246 063 17 00 1 MILLS EUGENE B P O BOX 9142 INGLEWOOD CA 90305-9142

246 063 24 00 1 GOMEZ GUADALUPE 13903 IMPERIAL HW WHITTIER CA 90605

246 064 12 00 3 POTTER DAVID S & BARBARA S PO BOX 2374 PARKER CO 80134

246 064 20 00 6 ZINSKI MICHAEL P PO BOX 321 WHITE SWAN WA 98952 246 064 22 00 2 ALFI ABRAHIM V 1619 N BEVERLY GLEN BL LOS ANGELES CA 90077

246 064 25 00 1 RUSSELL BILL JR 957 E 118TH PL LOS ANGELES CA 90059

246 071 10 00 9 ASKIM RODNEY W & CORRINE M 3015 LAKE AV PUEBLO CO 81004

246 071 16 00 7 DANIPOUR JOSEPH 12050 STONE GATE WY NORTHRIDGE CA 91326

246 071 21 00 1 BARRERA GREGORIO G & MAGANA MARIA I 16607 ARDMORE AV BELLFLOWER CA 90706

246 072 13 00 5 CHITALA ANTONIO RUIZ & MARIA D 1167 STRINGER AV LOS ANGELES CA 90063

246 072 21 00 8 THORP LISA A 2449 SANTA YSABEL AV FULLERTON CA 92831-4325

246 072 25 00 0 RODRIGUEZ REMBER & MARGARITA 3521 POMEROY ST LOS ANGELES CA 90063

246 073 08 00 8 NGUYEN TY QUY 12616 RIDGETON DR LAKESIDE CA 92040-5027

246 073 12 00 9 EDBLOM FMLY TR 5745 LODI ST SAN DIEGO CA 92117-1143 246 064 23 00 5 LANDAVAZO JACQUELINE 1202 FIELDVIEW AV EL CENTRO CA 92243

246 071 03 00 9 MYERS MORRIS M & HYESIN 510 BROOKSVILLE AV BROOKSVILLE FL 34601

246 071 12 00 5 SARDI HOA & GENESTA WALADANH 5917 MARKET ST SAN DIEGO CA 92114-2335

246 071 17 00 0 ANDERSON ROSCOE 6744 WELLS SPRINGS ST MIRA LOMA CA 91752-3433

246 072 09 00 4 HUFF FAMILY TRUST 4747 OAK CREST RD, SP 47 FALLBROOK CA 92028-9084

246 072 15 00 1 AGUON CRISTOBAL D & GLORIA A 28477 PORTSMOUTH DR SUN CITY CA 92586

246 072 23 00 4 SINGH AMARJIT 17651 MEEKLAND AV HAYWARD CA 94541-1314

246 073 03 00 3 OTERO JOHNNY & NORMA PO BOX 65001 LOS ANGELES CA 90065-0001

246 073 09 00 1 NGUYEN HUE QUANG TR 856 FOURTH ST EL CAJON CA 92019

246 073 13 00 2 YMCA OF SAN DIEGO 4715 VIEWRIDGE, STE 100 SAN DIEGO CA 92123 246 064 24 00 8 MARTIN HENRY N 5013 WINDFALL CT BATON ROUGE LA 70812-4047

246 071 08 00 4 DE ANDA MARIO & SYLVIA 330 CRESTVIEW DR BONITA CA 91911

246 071 15 00 4 BIBRYAN ANITA 6547 OLCOTT ST TUJUNGA CA 91042

246 071 19 00 6 PALLAH RANJIT SINGH & HARINDER KAUR 6404 BELLAIRE AV NO HOLLYWOOD CA 91606

246 072 11 00 9 HARRIS EMMITT H SR & LEOLA C 237 N COOLIDGE WY AURORA CO 80018

246 072 17 00 7 SARKISSIAN ARAMIS & ANAHID LIV TR 6230 MAYFIELD AV LA CRESCENTA CA 91214

246 072 24 00 7 SINGH THARINDER & KAUR KEWAL 1505 MONTMORENCY CT CERES CA 95307-7002

246 073 04 00 6 VESTAL MILDRED JUNE P O BOX 57 MCALESTER OK 74502-0057

246 073 10 00 3 NGUYEN KIM-CHI THI 759 VIEW LN DIAMOND BAR CA 91765-1896

246 073 15 00 8 FAITH FELLOWSHIP BAPTIST CHR 112 S LINCOLN ST, U B SANTA MARIA CA 93454 246 073 17 00 4 CASTANEDA MARIA C 4492 CAMINO DE LA PLAZA, # 312 SAN YSIDRO CA 92173

246 074 10 00 0 ROSS DRUCILLA M 912 WEST 66TH ST LOS ANGELES CA 90044

246 074 18 00 4 KERRUTT MARK A 2994 CIELO CIRCLE NORTH CLEARWATER FL 33759

246 074 21 00 2 RODRIGUEZ CLEOPATRA 5331 W 123RD PL HAWTHORNE CA 90250

246 081 08 00 7 PAC STATES LAND COMPANY P O BOX 880088 SAN DIEGO CA 92168

246 081 14 00 4 MIKHAEL EDWARD F & NORA N 832 E HACKAMORE ST MESA AZ 85203

246 081 18 00 6 FIGUEROA JUAN & JUANITA 17104 E QUEENSGLEN AV PALMDALE CA 93550

246 082 12 00 5 WHEELER ANDREA J 4524 HORNBEAM DR ROCKVILLE MD 20853-1415

246 082 20 00 8 SYLLA LUCIENNE 1431 OCEAN AV SANTA MONICA CA 90401

246 082 24 00 0 CARRILLO FRANCISCO & DALILA 14904 SHETLAND LN FONTANA CA 92336 246 073 18 00 7 COLEMAN JUDY M 351 E BRADLEY AV, # 69 EL CAJON CA 92021

246 074 12 00 6 HAWKINS HAROLD P O BOX 18883 LONG BEACH CA 90807

246 074 19 00 7 FISH LEWIS S & PAULAANN M 343 DEMARIA DR EASTON PA 18040-7937

246 074 22 00 5 GOMEZ JOSE R LOPEZ & LOPEZ SILVIA MONTEZDE 3264 COLLEGE PL SAN DIEGO CA 91945

246 081 10 00 2 SUAREZ FRANCISCO N 6039 EASTBROOK LAKEWOOD CA 90713

246 081 16 00 0 ABDELKERIM FRANCIS & RITA 5460 WHITE OAK AV, U A301 ENCINO CA 91316

246 081 20 00 1 BALDWIN ROEKMINI 985 SUNSET GARDEN LN, # C SIMI VALLEY CA 93065

246 082 15 00 4 CULLUM PRINCE E SR & BERNICE 1205 WEST AVENUE H-4 LANCASTER CA 93534

246 082 22 00 4 TEMPLE BAPTIST CHURCH INC 4210 LAKELAND HIGHLANDS RD LAKELAND FL 33813

246 083 09 00 4 MEZA RAFAEL G & ROSALIA 3020 VIA SAN CARLO MONTEBELLO CA 90640 246 074 09 00 8 ROSS REVOCABLE TRUST 912 W 66TH ST LOS ANGELES CA 90044

246 074 15 00 5 GREGWARE LLOYD S 205 LATIMER ST SAN DIEGO CA 92114-4129

246 074 20 00 9 DODES ROBERT & KISHLOCK C 740 OLIVE AV HEBRON NE 68370-1634

246 081 04 00 5 TORO ANTONIO CAMPOS 458 DRISKELL AV NEWMAN CA 95360

246 081 12 00 8 SEIFERT JOHN & SHARON L P O BOX 374 SEDALIA CO 80135

246 081 17 00 3 HARRIS OZELL 9230 LILAC RD PHELAN CA 92371

246 081 21 00 4 MC DANIEL MIRIAM 5760 W AVENUE J13 LANCASTER CA 93536

246 082 19 00 6 GASPARIAN ARAKIL 12321 LUNA PL GRANADA HILLS CA 91344

246 082 23 00 7 DIVITA JOHN J 28272 MARGARET RD COARSEGOLD CA 93614

246 083 11 00 9 REDD SIDNEY E 3176 E PHILLIPS DR LITTLETON CO 80122-3406 246 083 13 00 5 NAVARRETTE MANUEL B & PAULA M 9642 POINCIANA ST PICO RIVERA CA 90660-4242

246 083 18 00 0 CARTERA RUDY & JACOT MA THERESA 37728 LEMSFORD AV PALMDALE CA 93550

246 091 14 00 7 TORO ANTONIO C 16365 MONTEREY RD MORGAN HILL CA 95307

246 091 19 00 2 ESCOBAR HUGO K 3427 ASHFORD ST SAN DIEGO CA 92111-4814

246 091 23 00 3 ABOUZIED SALIN 4922 BELL AV CYPRESS CA 90630

246 092 09 00 0 REETZ DUANE M & GORDON D 6256 DEVINNEY CI ARVADA CO 80004-6108

246 092 15 00 7 RICHARDS SONDRA E & WENDY E 832 CHERRYWOOD WY EL CAJON CA 92021

246 093 08 00 4 HAGGARD ISABELLE L 259 TELLER ST, # 128 LAKEWOOD CO 80226-1606

246 093 14 00 1 HAMMOND GAIL 1120 N GRAPE ST ESCONDIDO CA 92026

246 093 20 00 8 CECH KAREN 55 NAVY ST, # 110 VENICE CA 90291 246 083 15 00 1 BAKER FAMILY TR 16931 MOUNT GALE CI FOUNTAIN VLY CA 92708-2901

246 091 08 00 0 ADAMS ROBERT D 12712 RIFE WY SAN DIEGO CA 92129

246 091 15 00 0 TURNER VERNON M 4162 COUNTY ROAD 340 MARBLE FALLS TX 78654-3721

246 091 20 00 4 ALEXANDER PATRICIA & RICHARD TR 7169 KAISER AV FONTANA CA 92336

246 091 25 00 9 HERNANDEZ ROMMEL 1000 N GREEN VALLEY PW, # 440 HENDERSON NV 89074

246 092 11 00 5 HYLAND DENNIS E & MARY A 20650 W M 60 HOMER MI 49245-8606

246 092 17 00 3 EUBANK SPENCER A 12314 PALM DR, # 149 DESERT HOT SPGS CA 92240

246 093 10 00 9 DEITSCHMAN GARY & CONNIE M 7792 STEAMBOAT RD SUMMERSET SD 57769

246 093 18 00 3 COLEMAN DONZELLA REVOCABLE TRUST 1210 S REDONDO BL LOS ANGELES CA 90019

246 093 21 00 1 ROSENWALD TR 23909 HAMMOND CT SANTA CLARITA CA 91354 246 083 16 00 4 SINGH JASMEL 2327 GLEN KERRY CT SE OLYMPIA WA 98513-3411

246 091 11 00 8 WEST JAMES 2410 SHAMROCK ST SAN DIEGO CA 92105

246 091 18 00 9 AGUON GEORGE & JEANNE 45082 W HORSE MESA RD MARICOPA AZ 85239-9127

246 091 21 00 7 KIRKPATRICK JANICE ET AL 2700 EAST VALLEY PKWY, #95 ESCONDIDO CA 92027-2952

246 091 26 00 2 MERCER BRETT W 545 13TH AV S NAPLES FL 34102

246 092 14 00 4 PICHARD JERRY A & ROXANNE 216 LOBLOLLY LN CHOUDRANT LA 71227

246 092 18 00 6 ASTORGA JENARO L & JOSEPHINE M P O BOX 3122 CHULA VISTA CA 91909

246 093 12 00 5 AJISAKA THOMAS T & KAZUE 7410 N DAKIN ST, U E208 DENVER CO 80221

246 093 19 00 6 DABESTAN BEHROOZ 1821 BENTLEY AV, # 203 W LOS ANGELES CA 90025

246 101 02 00 4 LEON MARK & CHRISTINE V FAMILY TR 341 E MONTANA ST PASADENA CA 91104 246 101 04 00 0 RODRIGUEZ CARLOS ALBERTO 7917 DONEY ST BAKERSFIELD CA 93307

246 101 07 00 9 GILMORE WILLIAM JOHN ET AL 2619 JURADO AV HACIENDA HTS CA 91745

246 101 13 00 6 JOHNSTON NEAL & PAULINE LIVING TRUST 7906 NANNESTAD ROSEMEAD CA 91770

246 101 19 00 4 AHMED MOHAMMED TAJUDDIN P O BOX 2874 CULVER CITY CA 90231-2874

246 102 11 00 7 GILLMORE DONALD A & JOANNE M 6395 WEST LEAWOOD DR LITTLETON CO 80123

246 102 16 00 2 HAAG LUIS W FUCHS & ANA LUISA 69 STONEHILL ST BROCKTON MA 02401-4412

246 102 23 00 2 LARIJANI BANISAD & HADJAR 2441 CHARLEMAGNE AV LONG BEACH CA 90815-1910

246 103 06 00 0 MORENO BEATRIZ & CAPERON TOMASA 2710 E 4TH ST LOS ANGELES CA 90033

246 103 14 00 3 BAWA RAJINDER PAL 2835 BALTIC AV LONG BEACH CA 90810

246 103 18 00 5 MEDINA DIONICIO 1704 W VIA BELLO DR RIALTO CA 92377 246 101 05 00 3 TARANGO FAMILY TR 249 E BEVERLY TR MONTEBELLO CA 90640

246 101 11 00 0 HENDERSON WALTON A & KATHRYN S 101 REINHARDT CT GEORGETOWN TX 78626

246 101 15 00 2 GOLDEN VALLEY PROPERTIES INC 1702 WEST JACKMAN ST LANCASTER CA 93534

246 101 20 00 6 SPRIET SCOTT A P O BOX 3951 MISSION VIEJO CA 92691

246 102 13 00 3 EPPERSON CHARLES L & WINIFRED 10 SANDY BEACH TR LEMOYNE NE 69146

246 102 18 00 8 JACKSON BRENDA C 10366 BELLWOOD AV, APT 111 LOS ANGELES CA 90064-2550

246 102 25 00 8 FLORES INGRI 15749 LASSEN ST NORTH HILLS CA 91343

246 103 09 00 9 ALI SHAKILA 14403 AUTUMN HILL LN CHINO HILLS CA 91709

246 103 16 00 9 JAVIER LAYDA 16733 SHERMAN WY, # F VAN NUYS CA 91406

246 103 19 00 8 CRUZ EDDIE W 15749 LASSEN ST NORTH HILLS CA 91343 246 101 06 00 6 TEY ALI 18535 MAYALL ST, # J NORTHRIDGE CA 91324-1404

246 101 12 00 3 WALTER HOWARD H & MARCELLA M 300 RANCH ACRES DR LOVELAND CO 80538

246 101 17 00 8 ANTONS KENNETH L & ARLENE E 24 DUNCAN LN NEWTON KS 67114

246 102 08 00 9 LEHMAN PRISCILLA & MATHIS E 8835 WEST 11TH AV LAKEWOOD CO 80215

246 102 15 00 9 LARIJANI BANISAD & HADJAR 2441 CARLEMAGNE AV LONG BEACH CA 90815-1910

246 102 22 00 9 MONCERA ADELINA V 741 N EAST ST ANAHEIM CA 92805-2134

246 103 04 00 4 ADDUS ZABIDAH 9110 SEAGROVE DR DALLAS TX 75243-7226

246 103 11 00 4 SECURITY TRUST CO FOR TRUST #14502 P O BOX 880088 SAN DIEGO CA 92168

246 103 17 00 2 CRUZ MARIANO & SYLVIA 12301 SAN FERNANDO RD, # 618 SYLMAR CA 91342

246 104 02 00 5 CHOE MYONG HWAN & JAE OHK 711 S GRAMERCY PL LOS ANGELES CA 90005-3166 246 104 03 00 8 LIND INGELA 7227 FAY AV LA JOLLA CA 92037-5515

246 104 07 00 0 FLORES LEOPOLDO E & FELIX E 812 N LAS PALMAS DR GOODYEAR AZ 85338

246 111 11 00 3 YOUNG HELENA HOPE 1401 WISCONSIN, APT D LAWTON OK 73501

246 111 16 00 8 JANSON A P 1762 SOUTH MARION DENVER CO 80210

246 111 22 00 5 APPLEWHITE CHARLES 4527 RODEO LN, # 2 LOS ANGELES CA 90016-5653

246 111 27 00 0 LABRADA GEORGE & CATALINA 3158 VERDUGO RD LOS ANGELES CA 90065

246 112 11 00 0 KSOR TUAK & K LIM 4426 HARPERS FERRY GRAND PRAIRIE TX 75052

246 112 15 00 2 DIAZ GENARO SAVEDRA 1249 N EDGEMONT, # 4 LOS ANGELES CA 90029

246 112 18 00 1 CARRILLO ABEL 2277 E RENO AV LAS VEGAS NV 89119-2237

246 113 14 00 6 KSOR KUL & MELITA M 45 AUDIA CI SACRAMENTO CA 95823-3809 246 104 04 00 1 PERREAULT CHARLES & SHIRLEY TR 3920 LIGHTHOUSE WY NEW PORT RICHEY FL 34652

246 111 07 00 2 GRIEVE WILLIAM R 6830 INDIAN CREEK DR, # 6F MIAMI BEACH FL 33141-3874

246 111 12 00 6 CHAFFEY GLORIA C 13472 BARNEY WESTMINSTER CA 92683

246 111 18 00 4 CLINTON EURIE LEE & LEOLA 2925 SILVER PINE LN SHREVEPORT LA 71108

246 111 24 00 1 CHIRINIAN BARKEV & ALICE 507 PORTER ST, # 1 GLENDALE CA 91205-1959

246 111 28 00 3 MAIDA ABDULKARIM R 3319 MONTE CARLO CT LANCASTER CA 93536-4845

246 112 12 00 3 KOUKACHE MOUINE P O BOX 85497 LOS ANGELES CA 90072-0497

246 112 16 00 5 CAPERON EDITH 2710 E 4TH ST LOS ANGELES CA 90033

246 113 02 00 1 CUNNINGHAM GEORGE 7132 LANTANA TERRACE CARLSBAD CA 92011

246 113 16 00 2 HOLT BEVERLY TR 2235 YORKSHIRE DR CAMBRIA CA 93428-3916 246 104 06 00 7 MILES JOSEPH E & SANDRA 3505 BRECONRIDGE DR WALDORF MD 20601

246 111 09 00 8 CLINE MARGERY TR 136 COLOMA WY SACRAMENTO CA 95819

246 111 13 00 9 CREVISTON ANA MARIA 9041 SW 156TH ST, APT 116 MIAMI FL 33157

246 111 20 00 9 DER KALOUSSIAN VASKEN J 419 E CYPRESS AV, # C BURBANK CA 91501

246 111 26 00 7 BLUE SKY ACQUISITIONS LLC 20437 BRIAN WAY, STE C TEHACHAPI CA 93561

246 112 09 00 5 MOOCK BRAN & CORAZON FAMILY TRUST 6336 ORANGE AV SACRAMENTO CA 95823

246 112 13 00 6 ALDERETE TIM A 21241 DOBLE AV TORRANCE CA 90502

246 112 17 00 8 LARA MARIO & NELIDA 16764 MACKENNAS GOLD AV PALMDALE CA 93591

246 113 10 00 4 ZUTI FRANK & JANET M 4215 MOCCASIN RD COEUR D ALENE ID 83815

246 113 18 00 8 BALDONADO RAMIRO C & CARMEN D 1515 WALNUT AV LONG BEACH CA 90813 246 113 19 00 1 COC MARGARITA IGLESIAS 14205 EL CONTENTO AV FONTANA CA 92335

246 114 11 00 4 CANLAS CHERRY ANN 6017 PAINTER AV WHITTIER CA 90601

246 114 17 00 2 TRUJEQUE JOSEPH R 12923 CORSAIR CT VICTORVILLE CA 92392

246 114 22 00 6 LOPEZ HECTOR & MARIA 55 HIGHLAND CI RIO RICO AZ 85648

246 121 12 00 9 CUTBIRTH KENNETH D 22811 ROUND UP WY APPLE VALLEY CA 92308

246 121 18 00 7 DELOS REYES G JR & BASILISA TR 16210 W VASQUEZ WY SANTA CLARITA CA 91390

246 121 22 00 8 HOYOS MARIA DEL ROCIO 220 E 68TH WY LONG BEACH CA 90805

246 122 02 00 7 RONEY DONALD P 25605 SAND CANYON RD TEHACHAPI CA 93561

246 122 16 00 8 SANTAGADA ROSALIE C P O BOX 861 NORTH SAN JUAN CA 95960

246 122 21 00 2 GALLAGHER MELISSA 2192 COLEMAN HILL RD ROCKVALE TN 37153 246 113 21 00 6 BORBOA MARIA L P O BOX 370154 RESEDA CA 91337

246 114 14 00 3 YAO TSU KANG & TIAN HI CHAU 542 BRONSON AV LOS ANGELES CA 90004

246 114 20 00 0 AVAKIAN EDMOND & IRIANA EDWARD 23555 CHERRY ST NEWHALL CA 91321-2507

246 121 04 00 6 TYLER MATTHEW LAWRENCE 730 DEODARA DR ALTADENA CA 91001

246 121 14 00 5 KING ELBERT A TR 500 VENICE WY INGLEWOOD CA 90302

246 121 20 00 2 MC ELROY MARTHELL DIANE 11564 HOLLY OAK DR FONTANA CA 92337-2504

246 121 24 00 4 LOPEZ JUAN & SONIA 1345 GLADYS AV LONG BEACH CA 90804-2437

246 122 10 00 0 MERCHANT DAVID A 458 N CHRISTINE ST ORANGE CA 92869

246 122 18 00 4 SILVAS CHERYL L 5566 MICHAEL ST SAN DIEGO CA 92105-3845

246 122 22 00 5 MEMARIANFARD AKBAR 2401 KITTYHAWK DR PLANO TX 75025 246 114 06 00 0 MENDOAZ TR & TORRES FRANCISCO 15710 MAGNOLIA BL ENCINO CA 91316

246 114 16 00 9 SHARIFI SHARIFEH 11444 W OLYMPIC 5TH FLOOR LOS ANGELES CA 90064

246 114 21 00 3 HERNANDEZ YOLANDA REV LIV TR 5961 PASEO ENCANTADA CAMARILLO CA 93012

246 121 07 00 5 GOODWIN JAMES J 1315 BOBRICH CI LAS VEGAS NV 89110

246 121 16 00 1 JENSEN R DALE & DOROTHY A 10933 LINDBLADE ST CULVER CITY CA 90230-4235

246 121 21 00 5 HOPE GLORIA TR 2514 S PALM GROVE AV LOS ANGELES CA 90016

246 121 25 00 7 VILLACIS OELANDO & MARIA 6016 GARDENDALE ST SOUTHGATE CA 90280

246 122 13 00 9 MC KINNEY CARL JAMES 2542 S ACOMA ST DENVER CO 80223

246 122 20 00 9 AMAN AMANULLAH 835 FILBERT PL BREA CA 92821-4111

246 122 23 00 8 SNELL KENNETH L & DEHLI LENE D 2020 VISTA MAR DR EL DORADO HILLS CA 95762 246 123 10 00 7 FORBES KIRK 2606 SOUTO 377 FEDERAL WAY WA 98003

246 123 15 00 2 ALLEN GWYN & ENGLE ARTHUR J 695 COUNTRY CLUB DR, APT 122 SIMI VALLEY CA 93065-7616

246 123 22 00 2 KASSABIAN LOUISE 322 RAYMONDALE DR, #F SO PASADENA CA 91030

246 131 05 00 2 TYLER JONATHAN JOSEPH 4086 ILLINOIS ST, # 4 SAN DIEGO CA 92104

246 131 12 00 2 TILLEY JACOB 2532 S OAKLAND ST AURORA CO 90014

246 131 18 00 0 COBURN KIRIS 2719 W. 166TH PL TORRANCE CA 90504

246 131 23 00 4 PINKARD MADELINE 28078 THORUP LN HAYWARD CA 94541

246 132 17 00 4 WALKER DANIEL 204 W 82ND ST LOS ANGELES CA 90003

246 132 23 00 1 LARSON BETH & LARRY TR 6303 WILSHIRE BL, # 201 LOS ANGELES CA 90048

246 133 04 00 3 CAMACHO MARIA 2435 E 115TH PL LOS ANGELES CA 90059 246 123 12 00 3 GONZALES ABELARDO P 1743 DAHLIA AV SAN DIEGO CA 92154

246 123 17 00 8 MANZANARES RAMOS & BARBARA L 1933 CHIPETA CT GRAND JUNCTION CO 81501-7933

246 123 23 00 5 AZIMI ARYA 1075 VUELTA OLIVOS FREMONT CA 94539

246 131 06 00 5 TYLER MARGUERITE L & EVANS H K 3004 ALLENTON AV HACIENDA HTS CA 91745

246 131 14 00 8 VALENCIA NESTOR G & ELEANOR V 11509 ARGUELLO DR MIRA LOMA CA 91752-3030

246 131 20 00 5 DE FRIES SHANNON & DEBORAH 24128 GROVEN LN MORENO VALLEY CA 92557

246 132 13 00 2 VIVAS JAMES A & OLGA 25421 ESHELMAN AV LOMITA CA 90717

246 132 19 00 0 SPRAGUE LAWRENCE M & JANET K 2020 WALLACE ST CLOVIS NM 88101-4733

246 132 26 00 0 HINTZ EARL EUGENE & MARY JANE FMLY TR 21301 SANTA BARBARA DR TEHACHAPI CA 93561-8750

246 133 10 00 0 COTTON ROBERT L JR & BETTY L HC-63 BOX 185 LENORA KS 67645-9711 246 123 13 00 6 SNEARY RAYMOND L 724 NANCY ST ESCONDIDO CA 92027

246 123 19 00 4 WATSON JERRY & DEBRA T P O BOX 360862 LOS ANGELES CA 90036

246 123 24 00 8 LOPEZ JOSE JESUS 7219 MARCELLE ST PARAMOUNT CA 90723

246 131 07 00 8 EVANS JOHN W 623 JOHNSTON ST HALF MOON BAY CA 94019

246 131 16 00 4 AGUON JUNIOR D 630 CARLSBAD ST SPRING VALLEY CA 91977-5505

246 131 22 00 1 DANIELS GARY MICHAEL 4421 AUTUMN GLOW CT CHINO HILLS CA 91709

246 132 15 00 8 JOHNSON MARVIN S & DONNA C 41554 67TH ST PALMDALE CA 93551

246 132 21 00 5 MC KOWN DANNY 1400 S BUSSE RD, APT 1F MOUNT PROSPECT IL 60056-4735

246 132 28 00 6 CASTRO SALVADOR 1718 FLORENCE AV LOS ANGELES CA 90001

246 133 14 00 2 ROBERTS JIM 611 N HOWARD ST, APT 109 GLENDALE CA 91206-2336 246 133 16 00 8 AYVAZIAN HAYRABED & AGHAVNI 5626 LEMON GROVE AV LOS ANGELES CA 90038-3104

246 133 20 00 9 LOCANDER JAMES J 746 N 15TH ST GLADSTONE MI 49837

246 141 08 00 4 GARCIA GLADYS M 144 N ALVARADO ST LOS ANGELES CA 90026-5303

246 141 15 00 4 AVAKIAN TINA 345 N JACKSON ST, # 303 GLENDALE CA 91206

246 142 10 00 6 LESEMAN MARK H & JUDITH L 20682 N ENFIELD AV FOREST LAKE MN 55025

246 142 14 00 8 DE COSTER FRANK T & DONNA M 63 ALTON PARK LN FRANKLIN TN 37069

246 142 19 00 3 ECHAVEZ ADRIAN J 1101 N MARYLAND AV, APT H GLENDALE CA 91207

246 144 03 00 0 CAMERON A 1832 FLOWER ST BAKERSFIELD CA 93305-4144

246 144 07 00 2 WHIPPLE JOANNE L 9164 W 64TH AV ARVADA CO 80004-3111

246 144 14 00 2 KEITER RONALD E & SANDRA L 1669 BAHAMA ST AURORA CO 80011-5211 246 133 17 00 1 JACOBSEN ALFRED G IV 1250 POWDER SPRINGS RD MARIETTA GA 30064-5201

246 141 04 00 2 DEL CID EDGAR ROLANDO ARODY 2423 CAMINO DEL RIO SOUTH, STE 203 SAN DIEGO CA 92108

246 141 11 00 2 HOUSE TR 21814 CAROLDALE AV CARSON CA 90745

246 141 19 00 6 CORNEJO BERTHA ALICIA 572 RHEA ST LONG BEACH CA 90806

246 142 11 00 9 BENDER MARGARET J 6289 MARION WY CENTENNIAL CO 80121

246 142 15 00 1 FOSTER JUDIE A 1165 HUNTINGTON PL MANTECA CA 95336-2914

246 142 20 00 5 BOND IAN & KIM 1802 COPPERFIELD DR TUSTIN CA 92680

246 144 04 00 3 BYKOWSKI ALBA 1454 OPECHEE WY GLENDALE CA 91208

246 144 09 00 8 MARROQUIN DANIEL & MARTHA L PO BOX 1032 GUILDERLAND NY 12084-1032

246 144 15 00 5 PROBERT ART & LOIS 435 APACHE PL HENDERSON NV 89015 246 133 18 00 4 JACOBSEN DOUGLAS ERIK 1733 DERRS SQUARE WEST FREDERICK MD 21701

246 141 06 00 8 KARRIS PROP INC 42263 W 50TH ST, # 107 QUARTZ HILL CA 93536

246 141 13 00 8 CRESWELL ELEANOR 1213 LEIGH CT LONG BEACH CA 90806

246 141 20 00 8 REYES ESTELA HURTADO PO BOX 13603 LA JOLLA CA 92039-3603

246 142 13 00 5 HEMPEL MACHIKO I TRUST B 1131 7TH ST NOVOTO CA 94945

246 142 17 00 7 WALTERS CURLA SYBIL 8404 11TH AV SILVER SPGS MD 20903

246 144 02 00 7 DEWEY GEORGE F 13432 LOCHRIN LN SYLMAR CA 91342

246 144 06 00 9 HOLT BEVERLY P O BOX 503 CAMBRIA CA 93428-0503

246 144 11 00 3 HARKNESS JOYCE G FAMILY TRUST 22231 N 22ND WY PHOENIX AZ 85024

246 144 17 00 1 DU SHANE JAMES A & NINA R P O BOX 327 YUMA AZ 85366-0327 246 144 20 00 9 ZIMMER ALISA 1511 S MILLS AV, APT 136 LODI CA 95242-4244

246 145 07 00 9 ARMSTRONG DONALD W & ESTHER H 12168 MELODY DR, # 303 DENVER CO 80234-2097

246 145 11 00 0 RAHMAN SYED L 4816 WOODBRIDGE WY ANTIOCH CA 94531

246 145 18 00 1 AIJAZ SALEEM 6229 DEWEY ST HOLLYWOOD FL 33023

246 145 22 00 2 YUNUS SAMI SAGED 728 N ELECTRIC AV ALHAMBRA CA 91801-1225

246 146 06 00 3 STAFFORD ETHEL MAE 43327 ECHARD AV LANCASTER CA 93536

246 146 11 00 7 SANCHEZ CRUZ FLORES 10941 ROME BEAUTY DR CALIFORNIA CITY CA 93505

246 146 15 00 9 GONZALEZ JORGE 4032 MARTIN LUTHER KING LYNWOOD CA 90262

246 151 12 00 8 LOPEZ HUMBERTO & ROSE TR ET AL 609 FIRST ST MONTEBELLO CA 90640

246 151 20 00 1 GUZMAN ELIZABETH 816 MC KELLIGON DR EL PASO TX 79902 246 145 02 00 4 ROGERS RHONDA 196 WEST HARRIET ST ALTADENA CA 91001

246 145 09 00 5 WILLIAMS DAVID H 6116 VERDUN AV LOS ANGELES CA 90043

246 145 13 00 6 KHAN IHTESHAM MUHAMMED 1601 AMBERWOOD DR, APT E S PASADENA CA 91030

246 145 20 00 6 RAHMAN SYED I 14033 FT ROSS CT FONTANA CA 92336

246 146 02 00 1 MORIOKA JAMES & IRENE H 1817 NAIO ST HONOLULU HI 96817-2046

246 146 07 00 6 REBUYACO FRANKLIN P 25326 CLARK ST STEVENSON RANCH CA 91581

246 146 12 00 0 GRANT LUIS A 33600 WILLOW HAVEN LN, APT 103 MURRIETA CA 92563-3471

246 151 06 00 1 MURRAY RUTH E 6332 SILVERWOOD PL ALTA LOMA CA 91737

246 151 16 00 0 GUZMAN VICENTE JR P O BOX 3001 MONTEBELLO CA 90640

246 151 21 00 4 PERRY STEVE 6158 VERDEMONT RANCH RD SAN BERNARDINO CA 92407 246 145 05 00 3 MEDROW ROBERT A 1322 HIGHLAND DR ROLLA MO 65401-3609

246 145 10 00 7 BANK OF A LEVY P O BOX 880088 SAN DIEGO CA 92168

246 145 16 00 5 TOVAR LORENZO JR 6557 GROVES CT CHINO CA 91710

246 145 21 00 9 SYED WAHED 1148 W HUNTINGTON DR, APT 14 ARCADIA CA 91007-1622

246 146 03 00 4 AGUILAR TRINIDAD & FRANCISCA 206 MOUNTAINSIDE DR PALMDALE CA 93550

246 146 08 00 9 DE VITERBO BERT 10620 BALBOA BL, # 121 GRANADA HILLS CA 91344

246 146 13 00 3 DIAZ PEDRO & GUILLERMINIA 9341 EAST AVENUE R8Q LITTLE ROCK CA 93543

246 151 10 00 2 QUESENBERRY JOSEPHINE R P O BOX 1035, RR 5 GRAFTON WV 26354

246 151 18 00 6 MARTINEZ JUVENTINO 2119 HAUSER BL LOS ANGELES CA 90016

246 152 05 00 5 VEGAGOMEZ GRACIELA 4109 LYCEUM AV LOS ANGELES CA 90066
246 152 08 00 4 DREIBELBIS JAMES & STEDDOM KAY 312 CHURCH ST AUDUBON IA 50025

246 152 16 00 7 DISACCO ANGELA 1661 S INEZ WY ANAHEIM CA 92802-2419

246 153 13 00 5 LASSNER ERIC & MARIA I 9835 W 81ST AV ARVADA CO 80005

246 153 17 00 7 NADJEM MOHAMMAD & SUHAILA 45761 CAMINO RUBI TEMECULA CA 92592-3387

246 153 22 00 1 SANTANA EFRAIN & ANNA L 545 QUANDT RANCH RD SAN JACINTO CA 92583-2342

246 154 14 00 5 HERRON REBECCA 6231 E ROSE CIRCLE DR SCOTTSDALE AZ 85251

246 154 20 00 2 MAKAAIJ ROY A J PO BOX 1334 TEHACHAPI CA 93581

246 154 23 00 1 KUEHLER MARY J 9929 GRANDVIEW DR DENTON TX 76207

246 155 13 00 9 KOYAMA ROY M & DENISE K 1750 PIIKEA ST HONOLULU HI 96818-1847

246 155 22 00 5 RUIZ HUGO L SANTIZO 3809 S CIMARRON ST LOS ANGELES CA 90062 246 152 10 00 9 DUDAKLIAN VREZH & BAYDZAR P 14443 PALM AV HACIENDA HTS CA 91745

246 153 05 00 2 ESCOBEDO RICHARD & PAULINE 405 E CARLIN ST. COMPTON CA 90222

246 153 15 00 1 GINES BETTIE JEAN ET AL 3865 MADISON ST DENVER CO 80205-3744

246 153 19 00 3 PEPE ROBERT A & IDA K P O BOX 1696 ARCADIA CA 91077

246 153 24 00 7 NAZEER AZRA 7539 FRANKLIN BL, # 12 SACRAMENTO CA 85823

246 154 18 00 7 GAYDEN GREGORY 18409 N CAVE CREEK RD S2, # 317 PHOENIX AZ 85032

246 154 21 00 5 ABRAMIAN ARIN 8350 POOLE AV SUN VALLEY CA 91352

246 154 24 00 4 CASIBANG DINNAH M & EDMUND T 1444 DAVID LN MILPITAS CA 95035

246 155 17 00 1 MIRAKYAN GRIGOR 13167 CONSTABLE AV GRANADA HILLS CA 91344

246 156 12 00 3 NELSON JOHN H & MARY J 336 SANTA ROSALIA SAN DIEGO CA 92114 246 152 11 00 2 DE CROCE BARBARA I 942 SOUTH PENNSYLVANIA DENVER CO 80209

246 153 11 00 9 HEYMANN ROBERT L & BEVERLY A 311 CUNNINGHAM DR DAVENPORT FL 33837-4575

246 153 16 00 4 OTA JOHN M & JUANITA L 10885 WEST 47TH AV WHEATRIDGE CO 80033

246 153 20 00 5 LEAR SCOTT 4427 W 170TH ST LAWNDALE CA 90260

246 154 11 00 6 GUTIERREZ IRMA & RONDEAU G 6570 HOMEWOOD AV HOLLYWOOD CA 90028

246 154 19 00 0 CASANAS DOMINGO P O BOX 8427 PITTSBURG CA 94565

246 154 22 00 8 AGUILAR DANELIA 3927 EL MONTE RD EL SOBRANTE CA 94803

246 154 25 00 7 LEE HYON J 30 BEECH HILL RD EXETER NH 03833

246 155 19 00 7 KOUKACHE MOUINE M CUSTDN P O BOX 85497 LOS ANGELES CA 90072

246 156 15 00 2 ORAHIM ASHOUR 18030 ORANGE WY FONTANA CA 92335 246 156 16 00 5 TUTUNDZHYAN MANUK & OLGA 514 N KENILWORTH AV GLENDALE CA 91203

246 162 06 00 1 BRUCH DONALD L & CLARE A 2601 PALOMA MEDFORD OR 97504

246 162 15 00 7 NASIM MOHEMMED & KHAN SHAHNAZ 2512 BERKLEY LOS ANGELES CA 90026

246 163 13 00 8 CEJA VICTOR & MARIA 14730 PLANE AV, 5 BELLFLOWER CA 90706

246 163 19 00 6 LLAMAS BARBARO A 14730 SUNDANCE PL CANYON CNTRY CA 91351

246 173 13 00 1 MARROQUIN MARGARITA 7820 W FLOWER ST PHOENIX AZ 85033

246 173 22 00 7 SARITI ROBERT & SUSAN P O BOX 603 TOPANGA CA 90290

326 131 06 00 8 TUMALAD BENJAMIN F & EVELYN E 2955 WINDING FENCE WY CHULA VISTA CA 91914

326 132 04 00 9 INONG MICHAEL V JR 9455 ALIGOTE PL ELK GROVE CA 95624-4627

326 132 07 00 8 MEDINA JOSE C & BELEN M 8811 LITTLESTONE DR SAN GABRIEL CA 91776-2137 246 156 19 00 4 BUONYA Y-MLO 14358 1/2 JEANETTE LN BALDWIN PARK CA 91706-5111

246 162 08 00 7 SAFSTROM ROY C 4640 S GALAPAYO ENGLEWOOD CO 80110

246 162 16 00 0 BOGHOSIAN ABNOS 1129 E LOMITA AV GLENDALE CA 91205

246 163 15 00 4 TATARYAN ADRINE 6641 DE CELIS PL VAN NUYS CA 91406

246 163 21 00 1 FLORES MAYRA 9764 VENA ST ARLETA CA 91331

246 173 19 00 9 VALENCIA JOAQUIN M & ELSA M 1686 PALERMO DR RIVERSIDE CA 92507

246 173 23 00 0 BURNETT MARIO 748 W 21ST ST SAN BERNARDINO CA 92405

326 131 07 00 1 DOWLEN JAMES E & DOROTHY M LIVING TRUST 881 JULIET AV SAN JOSE CA 95127-3621

326 132 05 00 2 SITAR MAY MICHELLE 3537 HUNTSMAN DR SACRAMENTO CA 92526

326 132 08 00 1 RAMOS ROY 5309 GLADSTONE DR STOCKTON CA 95219 246 156 23 00 5 HOVSEPIAN ARARAT S 10250 HAINES CANYON AV TUJUNGA CA 91042

246 162 10 00 2 ROMERO NORMA L 622 DAVENPORT LN CHULA VISTA CA 91911

246 163 12 00 5 LEON ARMANDO 2600 N GOLDEN AV SAN BERNARDINO CA 92404

246 163 17 00 0 TATARYAN ADRINE 6641 DECELIS PL VAN NUYS CA 91406

246 173 02 00 9 ZINSKI MICHAEL P P O BOX 321 WHITE SWAN WA 98952

246 173 20 00 1 FLORES CLEMENTE H 1540 W BALL RD, APT G-2 ANAHEIM CA 92802-1607

326 010 01 00 1 SILVR QUEEN EST PROP OWNR ASSO 42225 W 10TH ST, STE F LANCASTER CA 93534-7080

326 131 08 00 4 SUNG MARITA M 11380 CARRIAGE AV MONTCLAIR CA 91763

326 132 06 00 5 VALENTON GERONIMO & LEOGARDA T 6600 GOLF VIEW DR SACRAMENTO CA 95822

326 133 01 00 7 RABANAL INOCENCIA A 233 E BANBURY DR. STOCKTON CA 95207 326 133 03 00 3 PORTICOS ANNA MARCIA LOU O 706 MOUNT ERRIGAL PL LINCOLN CA 95648

326 133 08 00 8 BANGLOY IRINEO R & LAURENA L 25404 BARBARA ST. ARVIN CA 93203

345 041 08 00 7 BULL JACK W 1301 EAST AVE I SP 2 LANCASTER CA 93535

345 041 11 00 5 MYERS FAMILY TRUST 2033 PORT PROVENCE PL NEWPORT BEACH CA 92660

345 042 08 00 4 HARRIS HAROLD T & JOYCE C TRUST 25231 NUEVA VISTA LAGUNA NIGUEL CA 92677

345 042 11 00 2 CLAPPER JAMES A & ELIZABETH A FMLY TR 80-090 VIA VALEROSA LA QUINTA CA 92253

345 051 11 00 8 WALSH GEORGE F LIVING TRUST 10732 ANDASOL AV GRANADA HILLS CA 91344

345 051 16 00 3 MEIJER FAMILY TRUST 773 S TONAPAH CT SAN DIMAS CA 91773

345 051 19 00 2 DYAS ROBERT KEITH P O BOX 687 ROSAMOND CA 93560

345 051 24 00 6 MATSUBARA TAMEKI 93 RIO SERENA AV CAMPBELL CA 95008-1518 326 133 04 00 6 YU GO JOHNNY 808 HIGATE DR DALY CITY CA 94015-4219

345 041 06 00 1 MC GIBBONS PAUL S & JUDITH TR 5848 TOPANGA CYN PL WOODLAND HILLS CA 91367

345 041 09 00 0 TIELMAN ARNOLDA J FAMILY TRUST 18953 KESWICK ST RESEDA CA 91335

345 042 06 00 8 RISTOW STEVEN C & GAIL R 396 LOMBARDY LN RICHLAND WA 99352

345 042 09 00 7 WINSTON FAMILY TR 6521 VIA COUNTA RANCHO PLS VERD CA 90275

345 051 08 00 0 LAKTZIAN AARAN 10241 QUEENS CHURCH AV LAS VEGAS NV 89135

345 051 13 00 4 DYAS DAVID L 20600 BLACK OAK ST TEHACHAPI CA 93561

345 051 17 00 6 JIBILIAN THERESA 7226 ARIZONA AV LOS ANGELES CA 90045

345 051 20 00 4 COPYAK IRA LLC P O BOX 231686 ENCINITAS CA 92023

345 051 27 00 5 FOX FAMILY TR 80 COUNTY ROAD 157 BREMEN AL 35033 326 133 06 00 2 DELA PENA D & T FAMILY TRUST 9843 AVENIDA RICARDO SPRING VALLEY CA 91977-5267

345 041 07 00 4 BROVER VYACHESLAV V & KIRA A 12664 TORREY BLUFF DR, APT 213 SAN DIEGO CA 92130-4259

345 041 10 00 2 CARLSON GRANT 1381 CALWAY LN COSTA MESA CA 92626

345 042 07 00 1 HENSON FAMILY TRUST 3748 KING PALM AV LAS VEGAS NV 89115

345 042 10 00 9 LEAVITT LIVING TRUST 6611 S NEW HAVEN AV TULSA OK 74136

345 051 10 00 5 KASPERICK DAVID P & MARILYN E TRUST 3367 CORTE TIBURON CARLSBAD CA 92009-9315

345 051 15 00 0 HECHANOVA LOUVELL F 28 RADFORD RD HASTINGS MN 55033-3908

345 051 18 00 9 MARTIN SURVIVOR'S "A" TRUST 20528 PESARO WY NORTHRIDGE CA 91326

345 051 23 00 3 RENNIE FAMILY TR 2078 S WEST ST ANAHEIM CA 92802-4000

345 051 29 00 1 BALDWIN MARLENE E REVOCABLE TRUST 19946 AVENUE OF THE OAKS NEWHALL CA 91321 345 051 42 00 8 STOLL PAUL JAMES & NANCY V 2559 LEAFWOOD DR CAMARILLO CA 93010-2220

345 052 26 00 9 GUPTA PRAVEEN CORP PENSION PL 9435 VENICE BL CULVER CITY CA 90232

345 361 04 00 8 KOCVARA FRANK L & ANNA M 3531 E MAULE AV LAS VEGAS NV 89120

345 361 07 00 7 WEISSMAN RICHARD RECEIVER 12121 WILSHIRE BL, STE 600 LOS ANGELES CA 90025

345 361 28 00 8 DAVIS JOHN E 53 SAVITC RD MOSCOW PA 18444

345 361 31 00 6 MILLER ROBERT A 548 IRELAN DR BUELLTON CA 93427-9796

345 362 02 00 9 ANA PROPERTIES LLC P O BOX 1510 LA MIRADA CA 90637

345 362 05 00 8 DUTKO FAMILY TR 1562 SPRUCE CANYON DR PRESCOTT AZ 86303

345 362 08 00 7 GREATER PACIFIC HOLDINGS LTD 2968 EVERGREEN ST SAN DIEGO CA 92106

345 362 12 00 8 SHAFFER TRUST 2728 LAKERIDGE LN WESTLAKE VLG CA 91361 345 051 43 00 1 ANTOLINI EDWIL & MARJORIE ET AL 14 BUTTERWICK CT SACRAMENTO CA 95838-2154

345 361 01 00 9 CUNNINGHAM J H & MILLER M V 120 HART LN ARROYO GRANDE CA 93420-2631

345 361 05 00 1 DIAZ JESUS P O BOX 2495 INDIO CA 92202

345 361 26 00 2 MALONEY JAY JOHN 8400 EDINGER AV, # R207 HUNTINGTON BCH CA 92647

345 361 29 00 1 RIVERA RUBEN BUGARIN & MIRLA E BUGARIN 41034 W 40TH ST PALMDALE CA 93551

345 361 32 00 9 BANDY WILLIE T 9379 MARINA SPRING LN EL CAJON CA 92021-2854

345 362 03 00 2 MC GRAW GRACE L & GAIL SHANNON 3480 SANTA CLARA CI COSTA MESA CA 92626

345 362 06 00 1 PFAU DELORIS & COSTILOE DELVER P O BOX 993 SMITH RIVER CA 95567

345 362 09 00 0 CARTER ELIZABETH ALICE 16 MAIN ST DEXTER ME 04930

345 362 14 00 4 FROMAN FMLY CREDIT SHELTER B TR 5315 GOODLAND AV NORTH HOLLYWOOD CA 91607 345 051 45 00 7 MARTIN JOHN H & SHIRLEY J EAGLE LAKE LN SAN RAMON CA 94583

345 361 03 00 5 RAMOS JOSE & PEREZ DENNISE 36519 PALIO CT PALMDALE CA 93550-8610

345 361 06 00 4 REDMAN MARSHALL & DORIS E 12121 WILSHIRE BL, STE 600 LOS ANGELES CA 90025

345 361 27 00 5 HAWK FAMILY TR 7924 NE MARIETTA CT LACEY WA 98516-6327

345 361 30 00 3 WOOLF JOEL MARTIN 12256 OJAI RD OJAI CA 93023

345 362 01 00 6 TRAN DO REVOCABLE LIVING TRUST 2330 OAK FLAT RD SAN JOSE CA 95131

345 362 04 00 5 KLEIN JAMES EDWARD 589 HASSAN ST SE HUTCHINSON MN 55350-2909

345 362 07 00 4 GOLDEN QUEEN MINING CO INC 74 BELL CANYON RD BELL CANYON CA 91307

345 362 11 00 5 GREEN JANET L LIVING TRUST 123 POPPY LN ASHEVILLE NC 28803

427 030 01 00 3 SIEMON BENNETT ET AL P O BOX 2206 BAKERSFIELD CA 93303 427 030 02 00 6 G V H CO 1201 S OLIVE ST LOS ANGELES CA 90015

427 030 26 00 6 SZLADOWSKI RICHARD T W P O BOX 4455 MISSION VIEJO CA 92690

427 130 03 02 6 THAGARD GEORGE F JR 23751 VIA ROBLE COTO DE CAZA CA 92679

427 140 01 00 5 LANSDALE A LIVING TR 543 VIA LIDO SOUD NEWPORT BEACH CA 92660

427 282 02 00 3 FORECAST LAND CORP 4741 HAZELTINE AV SHERMAN OAKS CA 91413

427 282 07 00 8 BENNETT BENNETT & RHONDA 4839 ROSE AV YORBA LINDA CA 92886

427 292 13 00 8 BENNETT WILLIAM STERLING & RHONDA ANN 4839 ROSE DR YORBA LINDA CA 92886

427 301 09 00 2 BAUTISTA FMLY TR 1907 YVONNE ST WEST COVINA CA 91792-2355

427 302 01 00 5 DIVINAGRACIA TR 13227 SE 28TH AV MILL CREEK WA 98012

427 302 07 00 3 BAUTISTA WILLIAM M & MARIA W 3018 MINFORD ST LANCASTER CA 93536-8393 427 030 04 00 2 STANDARD HILL MINES CO P O BOX 4854 HOUSTON TX 77210-4854

427 130 01 00 2 YELLOW DOG MINING CO 947 AMHERST AV LOS ANGELES CA 90049

427 130 06 00 7 STANDARD HILL MINES CO P O BOX 2099 HOUSTON TX 77252

427 152 06 00 7 BONGIORNO JOANN M TR 3126 TRUENO HENDERSON NV 89015

427 282 04 00 9 TAM PAMELA MAY HO LEUNG 21324 E FORT BOWIE DR WALNUT CA 91789

427 282 11 00 9 LIM JOYCE 2000 FERNBANK AV MONTEREY PARK CA 91754-6605

427 292 15 00 4 PATEL BHUPENDRA & VIJAYALAXMI 4505 STONEYHAVEN WY SAN JOSE CA 95111

427 301 10 00 4 TSENG KEVAN TSI LOON 7472 DENROCK AV LOS ANGELES CA 90045-1022

427 302 02 00 8 WILLCOX SCOTT DUNCAN 2900 RACCOON DR LAKE ISABELLA CA 93240

427 302 08 00 6 DE LEON CARLOS A & BAUDILIA G P O BOX 78775 LOS ANGELES CA 90016-0775 427 030 25 00 3 SMITH GREGORY R & BARRY R P O BOX 401 LINDSAY CA 93247

427 130 02 00 5 SITE SOUTHWESTERN REFINING CORP 700 BUENOS TIEMPOS DR CAMARILLO CA 93012

427 130 12 00 4 KARMA WEGMANN CORP 714 VALITA ST VENICE CA 90291-2804 SITE

427 152 07 00 0 MOSS JOYCE A 2845 W NEWGROVE ST LANCASTER CA 93536

427 282 05 00 2 PRESSMAN BARRY K 2261 MONACO DR OXNARD CA 93035-2915

427 292 02 00 6 REED ALFRED JR 2541 WEST 112TH ST INGLEWOOD CA 90303

427 292 17 00 0 YERKEY EDWARD T P O BOX 3631 WEST LAKE VLG CA 91359

427 301 14 00 6 LP EQUITY RESOURCES II INC P O BOX 8159 CALABASAS CA 91372-8159

427 302 03 00 1 SLATON L CLYDE & LORETTA N 2294 VIA PUERTA, STE O LAGUNA HILLS CA 92653

427 302 10 00 1 ZAPANTA TRUST 177 SCHWERIN ST SAN FRANCISCO CA 94134-2744 427 302 11 00 4 PELAYO LEONEL & ROXANA 18118 CAIRO AV CARSON CA 90746

427 302 15 00 6 VON ZEE CHANG K EST 30 LIVE OAK LN HILLSBOROUGH CA 94010

427 311 05 00 3 HAIKEN M L & BERG N & A 3610 GARDENS PW, U 501A PALM BEACH GARD FL 33410-2771

427 311 13 00 6 LOZA LUIS & ADELINA 14337 E SNOWDALE ST LA PUENTE CA 91746

427 312 11 00 7 FANG HARRY & LAURA 9 SEABLUFF NEWPORT BEACH CA 92660 SITE

427 331 04 00 6 GRODZEN RUDOLF & VERA A 18541 BRYMER ST NORTHRIDGE CA 91326

427 332 06 00 9 BRISARD PIERRE 573 PAOKANO PL KAILUA HI 96734-3421

427 334 01 00 8 FLYNN THOMAS J & MARIA D P O BOX 699 MOJAVE CA 93502

427 342 04 00 6 FORECAST LAND CO P O BOX 5553 SHERMAN OAKS CA 91413

427 400 07 00 8 SMITH GREGORY R & BARRY R P O BOX 159 LINDSAY CA 93247-0159 427 302 12 00 7 AYALA MAURICIO & JACKELINE DEPT 511, PO BOX 4172 WOODLAND HILLS CA 91365

427 311 01 00 1 MOORE ARCHIE & ZELDA 3480 CRESCENT AV MOJAVE CA 93501

427 311 10 00 7 LOZA FRANCISCO 12121 WILSHIRE BL, STE 600 LOS ANGELES CA 90025

427 312 03 00 4 FANG HARRY S Y & LAURA 9 SEABLUFF NEWPORT BEACH CA 92660

427 320 01 00 7 TRACT 3554 OWNERS ASSOC 1825 WESTCLIFF DR NEWPORT BEACH CA 92660-5503

> 427 331 08 00 8 YOUNG FAMILY REVOCABLE TRUST 19252 CORALWOOD LN HUNTINGTN BCH CA 92646

427 332 07 00 2 FORECAST LAND CORP P O BOX 5553 SHERMAN OAKS CA 91413

427 334 03 00 4 LISTIADJI REVI 9641 ASPEN HILL CI LONE TREE CO 80124

427 343 01 00 4 BRISARD PIERRE FRANCOIS 573 PAOKANO PL KAILUA HI 96734-3421

429 020 01 00 4 SOLEDAD-MOJAVE MINING SYN P O BOX 1548 RANCHO SANTA FE CA 92064-1548 427 302 13 00 0 JIM SHING & JIM WONG SOU CHING 2216 QUEBEC CT MODESTO CA 95356

427 311 03 00 7 DYAS ROBERT K P O BOX 687 ROSAMOND CA 93560

427 311 12 00 3 LOZA BLANCA 3417 E FLORAL DR LOS ANGELES CA 90063

SITE

427 312 08 00 9 GOLDEN QUEEN MINING CO PO BOX 1030 MOJAVE CA 93502-1030

427 331 03 00 3 VESTAL JANET 6511 NE 21ST DR FT LAUDERDALE FL 33308

427 332 02 00 7 LAND PARCEL LIQUIDATORS INC 16260 VENTURA BL, STE LL50 ENCINO CA 91436-2203

427 332 09 00 8 PACIFIC STATES LAND CO P O BOX 880088 SAN DIEGO CA 92168

427 334 06 00 3 BUI KHANH TU 15929 MT MITCHELL FOUNTAIN VALLEY CA 92708

427 344 07 00 9 TIVENS RANDY L & LISA B P O BOX 5553 SHERMAN OAKS CA 91413

429 020 02 00 7 HATCH DE ANN AKIN 20360 STRAWLINE RD BEND OR 97702-2627 SITE

SITE

429 020 04 00 3 LINCOLN TR CO P O BOX 5831 DENVER CO 80217

429 181 16 00 2 DISCOUNTLAND INC 74 BELL CANYON RD BELL CANYON CA 91307

429 181 22 00 9 PARKER JOHN L & KETHLEEN K 108 PALOMA PT GEORGETOWN TX 78628-6917

429 183 08 00 3 ALZHEIMERS DISEASE RES ASSN VENTURA 1339 DEL NORTE RD CAMARILLO CA 93010-7478

429 183 13 00 7 P & V ENTERPRISES INC 13743 VENTURA BL, STE 290 SHERMAN OAKS CA 91423

429 184 16 00 3 KIM FAMILY TRUST 1731 HAYDN DR CARDIFF CA 92007

429 184 19 00 2 PERRAULT FAMILY TR 18 OUTRIDER RD ROLLING HILLS CA 90274

429 190 10 00 0 WESTERN CENTENNIALS INC P O BOX 2183 GRAND JNCT CO 81502

SITE

429 190 12 00 6 SITE BENSON EDITH ANNETTE ET AL 1700 S 5TH AV YUMA AZ 85364-5507

429 190 29 03 3 SITE THAGARD GEORGE F JR TRUST 60 LINDA ISLE NEWPORT BEACH CA 92660 429 020 05 00 6 FARLEY JACK P 1996 TRUST 3861 MISSOURI RD PLACERVILLE CA 95667

429 181 17 00 5 WHEELRIGHT TR 2119 S PECAN TRAIL DR RICHMOND TX 77469-6797

429 181 23 00 2 JAY FAMILY TRUST PO BOX 1080 LITTLEROCK CA 93543-1080

429 183 11 00 1 BERTSCHINGER DANIEL 13183 KELLAM CT, APT 86 SAN DIEGO CA 92130

429 183 14 00 0 OGAWA NORMAN N 8123 AVINGER DR ROSEMEAD CA 91770

429 184 17 00 6 NAZARIAN ROBERT 3700 EAST AVENUE S-12 PALMDALE CA 93550

429 184 20 00 4 KIM HYUN HEE LIVING TRUST 970 S KINGSLEY DR, # 106 LOS ANGELES CA 90006

429 190 11 01 2 BOYLE JAMES T 1418 PASQUALITO DR SAN MARINO CA 91108-2337

SLAYTON DEBORAH J ET AL

CRAVEN HENRY D & ELEISE

LOS ANGELES CA 90044

26 MORNING VIEW DR

429 190 16 00 8

KIRBY AR 71950

429 200 01 00 6

823 W 99TH ST

SITE

SITE

429 190 11 02 1 MUDD ALEXANDRA R 924 WESTWOOD BL, FLR 10 LOS ANGELES CA 90024

429 190 28 00 3 U S A 2800 COTTAGE WY RM E-2841 SACRAMENTO CA 95825

429 200 02 00 9 ALLEN PEARLINE 10217 1ST AV INGLEWOOD CA 90303

429 181 15 00 9 MANLEY BRIAN T & LINDA G 1908 SILVER QUEEN RD MOJAVE CA 93501-7022

429 181 19 00 1 ANTELOPE VALLEY E KERN WTR AG P O BOX 3176 QUARTZ HILL CA 93534

429 181 26 00 1 VALENCIA VICENTE ANTONIO 14915 BERG ST SYLMAR CA 91342

429 183 12 00 4 TRAYLOR THOMAS 389 E 116TH PL LOS ANGELES CA 90061

429 184 14 00 7 B & M GREEN ENT INC 43121 VENTURE ST LANCASTER CA 93535-4526

429 184 18 00 9 SUNG SHAO CHUE & KUO PEI LIN 1569 SPREADING OAK DR PITTSBURGH PA 15220

429 184 21 00 7 MURPHY CAROL LYNN 246 NIAGARA ST BURBANK CA 91505

SITE

SITE

429 200 03 00 2 HANCOCK WILLIAM R & PRAKONGSAP ATCHARA 4569 KUKUI ST, # 200 KAPAA HI 96746

429 200 06 00 1 GREEN RICHARD DEE P O BOX 6686 KETCHUM ID 83340-6686

429 200 09 00 0 MARSHALL DWAYNE & KARL A 323 GRAPE ST LOCK HAVEN PA 17745-3979

429 200 12 00 8 HANZMANN ROBERT & ANN M 28312 KLEVINS CT SANTA CLARITA CA 91387

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429 200 07 00 4 MATROS BARBARA L 2556 WEST N-4 PALMDALE CA 93551

429 200 10 00 2 PHAM SY KHAC & KY DUC LUC THI CUSTDN 242 N WINDOSOR BL LOS ANGELES CA 90004

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Notice of Completion & Environmental Document Transmittal

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SCH # 1996061052

Project Tit	le: <u>EIR 01-08 SFD</u> ,	Revised Soledad Mountain Proje	ct by Golden Queen Mining Co., Inc.		
Lead Agenc	cy: Kern County Pla	anning Department	Contact Perso	on: Scott F. Denney	
Mailing Address: 2700 "M" Street Suite 100			Phone: 661	-862-8631	
City: Bakersfield			Zip: 93301-2323 County: Ke	rn	
Project Loc	cation: County: K	Kern	City/Nearest Community: Moja	we	
Cross Street	ts: Silver Queen Ro	ad and Holt Street		Zip Code: 93501	
Lat. / Long.	: 34° 59' 15" N/ 118	8° 11′ 43″ W	Total Acres: 2	2,500	
Assessor's P	Parcel No.: Various		Section: Various Twp.: $10N / \overline{11}$	N Range: 12W / 13W Base: SBB&M	
Within 2 M	iles: State Hwv #:	14	Waterways: N/Δ		
	Airports: <u>N</u>	//A	Railways: BNSF and UP/SP	Schools: N/A	
Document '	Туре:		_		
CEQA:	 NOP Early Cons Neg Dec Mit Neg Dec 	Draft EIR Supplement/Subsequer (Prior SCH No.) 96061052 Other	NEPA: NOI nt EIR EA 2 Draft EIS FONSI	Other: Joint Document Final Document Other	
Local Actio	·				
General	Plan Undate	Specific Plan		☐ Annexation	
General	Plan Amendment	Master Plan		Redevelopment	
General 🗌	Plan Element	Planned Unit Develop	nent 🛛 Use Permit	Coastal Permit	
Commu	inity Plan	Site Plan	Land Division (Subdiv	vision, etc.) 🛛 Other Str Vacation	
– – – – Developme					
Resident	tial: Units	Acres	Water Facilities: Type	MGD	
	Sq.ft.	Acres Employees	Transportation: Type		
Commer	rcial: Sq.ft.	Acres Employees	Mining: Minera	Precioius metals / aggregate by-product	
Industria	ıl: Sq.ft	Acres Employees	Power: Type	MW	
Educatio	onal		Waste Treatment: Type	MGD	
	onai		Hazardous waste: Type	ation of a portion of New Fagle Road	
			Source: Monsummary vaca	ation of a portion of New Lagie Road	
Project Issu	ies Discussed in Doc				
Aestheti	c/Visual	🕅 Fiscal	Recreation/Parks	⊠ Vegetation	
Agricult	ural Land	Flood Plain/Flooding	Schools/Universities	Water Quality	
🛛 Air Qual	lity	Forest Land/Fire Hazard	Septic Systems	Water Supply/Groundwater	
Archeolo	ogical/Historical	Geologic/Seismic	Sewer Capacity	Wetland/Riparian	
Biologic	al Resources	Minerals	Soil Erosion/Compaction/Grad	ding 🛛 Wildlife	
∐ Coastal 2	Zone	Noise	Solid Waste	Growth Inducing	
Drainage	e/Absorption	N Population/Housing Balance	Traffic/Hazardous	XI Land Use	
Conomi	IC/JODS	Public Services/Facilities			

Present Land Use/Zoning/General Plan Designation:

Mining / A-1 (Limited Agriculture) and E(2-1/2)RS (Estate 2.5 Acres, Residential Suburban Combining) / General Plan: 1.1 (Federal Land) and Specific Plan: mineral extraction and processing, public lands, and low-density residential development

Project Description: (please use a separate page if necessary)

The proposed Revised Soledad Mountain Project is an open pit mining operation encompassing approximately 2,500 acres, of which 905 acres will be mined, and is designed to recover precious metals from excavated ore via cyanide heap leach processing methods. Project implementation will require the modification of two Conditional Use Permits (CUP 41, Map 213 and CUP 22, Map 214) previously approved by the Kern County Board of Supervisors in 1997 and the approval of a new Conditional Use Permit (CUP 27, Map 196) to amend an existing surface mining and reclamation plan in accordance with the provisions of the Surface Mining and Reclamation Act (SMARA) of 1975. Because

of the proposed mine's design, the applicant will also be required to obtain approval of a Nonsummary Vacation for a portion of New Eagle Road in accordance with the California Streets and Highway Code.

Reviewing Agencies Checklist

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	_ Air Resources Board		_ Office of Emergency Services
	Boating & Waterways, Department of		Office of Historic Preservation
<u> </u>	_ California Highway Patrol		_ Office of Public School Construction
	CalFire		Parks & Recreation
S	Caltrans District # 6 and 9		_ Pesticide Regulation, Department of
	_ Caltrans Division of Aeronautics	<u></u> S	Public Utilities Commission
	_ Caltrans Planning (Headquarters)	S	_ Regional WQCB # Lahontan
	_ Central Valley Flood Protection Board		_ Resources Agency
	Coachella Valley Mountains Conservancy		_ S.F. Bay Conservation & Development Commission
	Coastal Commission		_ San Gabriel & Lower L.A. Rivers and Mtns Conservancy
	Colorado River Board		San Joaquin River Conservancy
S	Conservation, Department of		Santa Monica Mountains Conservancy
	Corrections, Department of	S	State Lands Commission
	Delta Protection Commission		SWRCB: Clean Water Grants
	Education, Department of		SWRCB: Water Quality
	Energy Commission		SWRCB: Water Rights
S	Fish & Game Region # Fresno		Tahoe Regional Planning Agency
	Food & Agriculture, Department of		Toxic Substances Control, Department of
	General Services, Department of	S	Water Resources, Department of
	- Health Services, Department of	<u></u>	-
	Housing & Community Development		Other
S	Integrated Waste Management Board		Other
	Native American Heritage Commission		
		encv)	
Starti	ng Date January 11 2010	Ending	Date February 25 2010
otarti			
– – Lead	Agency (Complete if applicable):		
Lead	Agency (Complete if applicable):	Applic	ant:
– – Lead Cons Addro	Agency (Complete if applicable): ulting Firm:	Applic	ant: s:
Lead Const Addro City/S	Agency (Complete if applicable): ulting Firm:	Applic Addres City/St	ant: ss: ate/Zip:
Lead Const Addro City/S Conta	Agency (Complete if applicable): ulting Firm: ess: State/Zip: act:	Applic Addres City/St	ant:s:ate/Zip:
Lead Const Addro City/S Conta Phone	Agency (Complete if applicable): ulting Firm: ess:	Applic Addres	ant: s: ate/Zip:

Authority cited: Section 21083, Public Resources Code. Reference: Section 21161, Public Resources Code.

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Draft Supplemental Environmental Impact Report

Prior SCH # 96061052

Volume 1 Chapters 1 through 10

Golden Queen Mining Co. Inc., Soledad Mountain Project

Conditional Use Permit No. 27, Map 196 Modification of Conditional Use Permit No. 41, Map 213 Modification of Conditional Use Permit No. 22, Map 214 Nonsummary Vacation of a Portion of New Eagle Road 191-31 3 098 (PP08210)

Kern County Planning Department

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January 2010

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Appendices

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Appendix A: August 2008 Initial Study/Notice of Preparation (IS/NOP) and comment letters

Appendix B: Revised Surface Mining and Reclamation Plan (GQM 2009c)

Appendix C: Project Description document (GQM 2009b)

Appendix D: Air Quality & Health Risk Assessments (Air Sciences 2009b)

Appendix E: Greenhouse Gas Emissions (Air Sciences 2009c)

Appendix F: AERMOD PM₁₀ and PM_{2.5} Modeling Protocol (Air Sciences 2009a)

Appendix G: Desert Tortoise Focused Survey Report (Sunrise Consulting 2009)

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Appendix H:	Conditional Letter of Map Revision (Rivertech 2009b)
Appendix I:	SR-14 Ramps at Silver Queen Road Traffic Study (T.J. Cross 2009b)
Appendix J:	Silver Queen Road Traffic Study (T.J. Cross 2009a)
Appendix K:	Environmental Site Assessment (ARCADIS & GQM 2008)
Appendix L:	Flood Hazard Evaluation Report (Golder 2008)
Appendix M:	Human Health Risk Assessment (ARCADIS 2008b)
Appendix N:	Hydrogeology Study (Golder 2007a)
Appendix O:	Baseline Soil Characterization Report (ARCADIS 2007b)
Appendix P:	Domestic Water Well Chemistry Assessment (ARCADIS 2007a)
Appendix Q:	Bat Surveys of Mines in Soledad Mountain (Brown-Berry 2007)

Volume 4

Appendix R: Report of Waste Discharge (GQM et al. 2007)

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Appendix S:	Water Supply Report (GQM 2006b)
Appendix T:	Disturbed and Reclaimed Areas Report (GQM 2006c)
Appendix U:	Archaeological Phase III Data Recovery (W&S 2007)
Appendix V:	1997 FEIR/EIS Volumes 1-2 (County of Kern & BLM 1997)

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CHAPTER 1 EXECUTIVE SUMMARY

Chapter 1 Executive Summary

1.1 Project History and Background

In 1997, the County of Kern and the U.S. Department of the Interior, Bureau of Land Management (BLM) approved the Soledad Mountain Project and its requested discretionary approvals, including Conditional Use Permit (CUP) No. 41, Map No. 213; CUP No. 22, Map No. 214 for a Surface Mining and Reclamation Plan (SMRP); and non-summary vacation of a portion of New Eagle Road. The 1997 Soledad Mountain Project ("1997 Project") was an open pit mining operation designed to recover precious metals from excavated ore via conventional heap leach processing methods.

At that time, the County prepared a joint Environmental Impact Report/ Environmental Impact Statement (EIR/EIS) document pursuant to the California Environmental Quality Act (CEQA) and the National Environmental Policy Act (NEPA), respectively, to provide the necessary environmental analyses and clearances for the Soledad Mountain Project and its requested discretionary approvals. The County certified the "Soledad Mountain Project Final Environmental Impact Report/Environmental Impact Statement, State Clearinghouse [SCH] No. 1996061052" (1997 FEIR/EIS), which provided the CEQA and NEPA environmental clearances for BLM's issuance of its Record of Decision (ROD), which approved the Plan of Operations. The 1997 FEIR/EIS is Appendix V of this document.

The Applicant, Golden Queen Mining Co., Inc. (GQM), was also required to conduct air quality analyses to show compliance with applicable air quality regulations and standards, and acquire "Authority to Construct (ATC)" permits from the KCAPCD. In March 2002, seven ATC permits were issued for the Soledad Mountain Project. Also in 2002, the State of California introduced new backfilling requirements for certain types of open pit metal mines. In response, the Applicant began evaluating various alternative designs to the mining project. By undergoing this process, the ATCs expired in March 2004. Accordingly, construction of the mining project that was approved in 1997 did not commence.

Since 2004, the Applicant has conducted additional environmental studies, financial evaluations, and feasibility analyses which have resulting in the project being re-engineering and re-designed. In 2009, the Applicant submitted an application to the County for a revised SMRP that addressed the required backfilling and described the re-engineered and re-designed Revised Project.

The Kern County Planning Department, as lead agency, has determined that a Supplemental Environmental Impact Report (SEIR) must be prepared for the proposed revised Soledad Mountain Project ("Revised Project").

1.2 **Project Summary**

1.2.1 **Project Location**

The Revised Soledad Mountain Project ("project" or "proposed project") site is located in unincorporated eastern Kern County, California, approximately two miles west of State Route 14 (SR-14), generally south of Silver Queen Road, and five miles south of the community of Mojave. SR-14 is the major route connecting Mojave, Rosamond, Lancaster, and the Los Angeles area. Figure 1-1 provides a Regional Location Map.

Routes from SR-14 to the Project site are Mojave-Tropico Road from the south and Silver Queen Road from the north, both existing paved roads. Mojave-Tropico Road runs north-south on the west side of the Project site and curves east just north of the Project site, becoming Silver Queen Road. Silver Queen Road intersects SR-14 approximately two miles east of the Project site. The primary route for vehicular and truck traffic will be from SR-14 and Silver Queen Road. Figure 1-2 provides a Vicinity Map on a U.S. Geological Survey (USGS) quadrangle map.

1.2.2 Project Site and Surrounding Land Uses

In November 1985, GQM was formed specifically to acquire the Project property. GQM currently controls approximately 2,500 acres of land in the area, which includes all of Section 6 and portions of Sections 5, 7, 8 and 18, T10N/R2W; portions of Sections 1 and 12, T10N/R13W; portions of Section 18, T9N/R12W; and portions of Section 32, T11N/R12W, San Bernardino Base and Meridian (SBBM). Property holdings in the immediate project vicinity total 1,506 acres, of which approximately 1,440 acres comprise the Project site. Detailed landholder and property information are included in Attachment B of the Surface Mining and Reclamation Plan (GQM 2009c).

The approximate 1,440-acre Project site is situated within the 2,500-acres controlled by GQM. The bulk of the project facilities and activities will be located in Section 6, T10N/R12W. The project will result in direct physical impacts to approximately 905 acres, of which approximately 839 acres will be reclaimed at the end of the mine life. The Project site boundary and disturbance footprints are shown on Figure 1-2 (*Vicinity Map*).


Source: Golden Queen Mining Co. Inc.

Figure 1-1 Regional Location Map



Source: USGS 7.5-Minute Map Series, Soledad Mountain and Mojave quadrangles.

Figure 1-2 Vicinity Map

Draft Supplemental Environmental Impact Report Golden Queen Mining Co. Inc. – Soledad Mountain Project Land uses in the general project vicinity include sparsely scattered single-family residences, open space, and various industrial facilities including other historical precious metals open pit mining activities. Mining uses include Standard Hill (aggregate – idle), Cactus Gold (heap-leach gold – undergoing reclamation), Holliday Rock Company (aggregate and asphalt batch plant – active), and the California Portland Cement Mojave Plant (aggregate and cement plant – active).

Approximately eight individual residences are located north of Silver Queen Road and within about 450 to 1,000 feet of the Project site. To the southwest, a single residence is located along Mojave Tropico Road, approximately 0.5 mile from the site boundary. Of these nine existing residences, six are within a mile of the historical tailings pile and are identified as potential sensitive receptor locations for the purposes of health risk assessment.

1.2.3 **Project Objectives**

The project Applicant is the Golden Queen Mining Co., Inc. (GQM). The Applicant's objectives for the proposed project are as follows:

- Construct and operate mining, ore processing and project support facilities to recover precious metal (gold and silver) from the Soledad Mountain mineral resource. The proposed project will occur on and within fee lands, mining leases, patented mining claims and unpatented mining claims owned and/or controlled by Golden Queen Mining Co. Inc.
- Develop and operate a mine to recover gold from the Soledad Mountain Project ore deposit within the boundary of the property controlled by Golden Queen Mining Co. Inc.
- Meet the market demand for precious metal.
- Recover precious metals in a manner that is environmentally responsible and to comply with applicable laws and regulations while optimizing precious metal production, maximizing the utilization of the resource and meeting the financial expectations of its shareholders.

The revised Surface Mining and Reclamation Plan also contains additional specific objectives and implementation techniques. The following are design and/or operations components that will ensure proper reclamation and revegetation:

- Maximize backfill in mined-out phases of the open pit with no, or a minimum of, double-handling of waste rock at the end of the mine life.
- Use waste rock disposed of outside the open pit perimeter primarily for the construction of access roads and the pad required for the production and sale of aggregate.
- Minimize the footprint of any remaining waste rock dumps outside the open pit perimeter.
- Minimize re-sloping required for closure and reclamation by using appropriate techniques to build the waste rock management facilities or dumps.

- Cover as much of the benched pit wall as feasible by backfilling.
- Attempt to create a reclaimed surface that will be similar to either the original or surrounding natural ground surfaces.
- Locate waste rock management units on shallow slopes to ensure stability.
- Provide reclamation and revegetation plans in accordance with Surface Mining and Reclamation Act requirements.

The following additional design components are intended to support an overall objective of minimizing environmental and nuisance impacts:

- Remove existing tailings piles to minimize the recurring levels of fugitive dust.
- Utilize pipe conveyors where feasible to minimize haul distances for trucks used in the open pit operation.
- Minimize the number of affected drainage basins.
- Preserve corridors for the pipe conveyor, the use of which will reduce fugitive dust emissions.
- No soil stockpile or waste rock shall be placed in the Joshua tree grove west of the Northwest Pit (Phase 1 area).
- No waste rock shall be placed south of Soledad Mountain to avoid a visual impact.
- Establish a "green" fund to promote green technologies in the greater Mojave area.

1.2.4 Project Operations and Phasing

The Revised Project that is now being proposed and evaluated in this draft Supplemental EIR will also be an open pit, heap leach mining operation on the same project site, but will be significantly smaller in scope than the previously approved 1997 Project. The primary differences between the 1997 Project and Revised Project are detailed in Chapter 3 (*Project Description*). Figure 1-3 provides an illustrative comparison of the 1997 Project and the Revised Project boundaries and disturbance areas. Table 3-3 in Chapter 3 (*Project Description*) provides a comparative summary of the differences in the scope of mining operations.

Operations associated with the Revised Project will consist of:

- Construction
- Mining to include open-pit operation, ore processing, aggregate production, waste rock management, and sequential backfilling of mined-out areas; and
- Reclamation to include structure renovation, revegetation, weed control, and monitoring.

Construction is scheduled to commence in mid-2010. The proposed mine will produce two different types of materials with overlapping time frames. Mine life is presently defined as:

- 1 year of construction
- 12 years of mining (Phase 1 Phase 5)
- 15 years of leaching for the production of gold and silver to overlap the 12 years of mining
- 2 years of rinsing and draindown upon cessation of leaching
- 30 years of aggregate production (to overlap with the years of mining, leaching, rinsing and draindown)
- 2 years of reclamation upon cessation of mining
- 3 years of post-closure monitoring

The mining, production and sale of aggregate and construction materials is expected to commence fairly early in the mine life and continue for up to 30 years or until the stockpile of quality waste rock has been exhausted.

Reclamation will proceed concurrently where feasible but is expected to require two years following cessation of all mining and an additional three years of postclosure monitoring. Monitoring will continue until the reclamation success criteria are met. The projected termination date is April 10, 2041. In total, the mine life will be approximately 30 years from construction to completion of aggregate processing to reclamation.

Within this total project life, there is a Phase 1 heap leach pad that will serve the operations described above. In addition, there is a future Phase 2 heap leach pad that could extend the total life by up to 4 years, as explained below.

The total quantity of ore to be mined, crushed and stacked on the Phase 1 heap leach pad is estimated to be 51.2 million tons. This includes only the measured and indicated resource estimates. When estimating ore production, the inferred mineral resource estimates are treated as waste rock. As rock is excavated, and tested, it is possible that a portion of the inferred resources could be reclassified to a higher category thereby increasing the total quantity of ore available for leaching and therefore creating a need for the Phase 2 heap leach pad.

Performance of the heap leach process depends upon an adequate percolation rate of process solutions through the crushed and agglomerated ore stacked on the heap. Extensive test work has been done to determine design parameters for the Revised Project. Operating experience will, however, be required to ultimately confirm the best operating procedures. This may affect the number of lifts (and the quantity of ore) in the Phase 1 heap leach pad, thus creating a need for the Phase 2 pad.

Many elements of the Revised Project are intended to address specific environmental regulations and guidelines, some of which were not in force in 1997. Those features are described in Section 3.12 (*Environmental Controls*).



Sources: 1997 FEIR/EIS, Exhibit 1.0-2 (Property Boundaries and Federal Lands) 1997 FEIR/EIS, Exhibit 2.2-2 (Conceptual Plot Plan)

Figure 1-3 Comparison of 1997 and Revised Projects

Draft Supplemental Environmental Impact Report Golden Queen Mining Co. Inc. – Soledad Mountain Project

1.2.5 Requested Discretionary Actions

In December 2002, the State of California instituted new backfilling requirements (California Code of Regulations, Title 14, Division 2, Chapter 8, Subchapter 1, Article 9, Section 3704.1) for open pit metal mines. As the Soledad Mountain Project had not commenced operation by that time, the State Mining and Geology Board (SMGB) concluded adherence to the referenced regulation was necessary.

The Revised Project proposes modification of the two previously approved conditional use permits (CUPs) and approval of a new CUP, based on project boundary changes, to amend the Surface Mining and Reclamation Plan originally approved (1997), on both private and federally administered land, to demonstrate compliance with current State requirements.

Similar to the 1997 Project, the Revised Project also includes vacating a portion of New Eagle Road, a paved public access road which extends into the project area in the northwest one-quarter of Section 6, Township 10 North, Range 12 West, SBBM. New Eagle Road presently connects to the south side of Silver Queen Road extends southward to its terminus in Section 6, Township 10 North, Range 12 West, SBBM.

The affected mining and reclamation plan permits are:

- Conditional Use Permit #27, Map 196
- Modification of CUP #41, Map 213
- Modification of CUP #22, Map 214
- Non-summary Vacation 191-31 3 098 for a portion of New Eagle Road in accordance with the California Streets and Highway Code.

Additional permits, approvals, and clearances are also required by other federal, State and County agencies. Each is listed in Table 1-1 below, along with the current status as supplied by the Applicant.

TABLE 1-1. PROJECT PERMITS AND APPROVALS

Agency	Permit/Approval	Status
Federal		
Bureau of Land Management	Plan of Operations	Approved by the ROD issued November 3, 1997
	Cultural/Paleontological Resource Permit (National Historic Preservation Act, 16 USC §470)	Complete
Fish and Wildlife Service	Informal Consultation	Complete
Bureau of Alcohol, Tobacco, Firearms and Explosives	Purchase, Storage or Transportation of Explosives Permit	To be obtained by contractor

Agency	Permit/Approval	Status
Environmental Protection Agency	Toxic Chemical Release Inventory System	To be obtained
Mine Safety and Health Administration (MSHA)	Mine Identification Number	MSHA ID # 0405319
Federal Emergency Management Agency (FEMA)	Conditional Letter of Map Revision (CLOMR)	Submitted to FEMA
State		
State Water Resources Control Board, Regional Water Quality Control Board	General Construction Activity Stormwater Permit	To be obtained
(RWQCB)	Waste Discharge Requirements	Report of Waste Discharge submitted
	Spill Prevention Control and Countermeasure Plan	To be completed
California Department of Fish and Game	Informal Consultation	Complete
State Office of Historic Preservation	Section 106, (National Historic Preservation Act, 16 USC §470); Designation, survey, determination of effect	Complete
Department of Industrial Relations,	Blasting License	To be obtained
Division of Occupational Safety and Health/ Cal/OSHA Program	Miscellaneous	To be obtained
California Department of Conservation	Financial Assurance Estimate and Instrument Approvals	To be obtained
Kern County		
Planning Department	Surface Mining and Reclamation Plan and Financial Assurances	To be amended
	Conditional Use Permit	To be amended
Roads Department	Request for Street Vacation	To be completed
	Silver Queen Road Changes	Design is currently being completed
	Construction of New Access Road	To be completed
Engineering and Survey Services Department	Building Permits	To be obtained
Environmental Health Services Department	Sewage Disposal System Permit	Submitted, approval pending
	Water Well Drilling Permit	Issued (on file)
	Hazardous Materials Business Plan	To be completed
	Hazardous Materials Inventory	To be completed
	Risk Management Plan	To be completed

Agency	Permit/Approval	Status
Fire Department	Fire Protection Plan	To be completed
Kern County Air Pollution Control District	Authority to Construct	Submitted, approval pending
	Permit to Operate	To be issued when construction is complete and approved

1.3 Purpose and Use of the Draft EIR

As described in the State CEQA Guidelines Section 15121(a), an EIR is a public informational document that assesses potential environmental effects of the proposed project and identifies mitigation measures and alternatives to the proposed project that could reduce or avoid its adverse environmental impacts. Public agencies are charged with the duty to consider and minimize environmental impacts of proposed development where feasible, and they are obligated to balance a variety of public objectives including economic, environmental, and social factors.

The Kern County Planning Department, as lead agency, has determined that a Supplemental Environmental Impact Report (SEIR) must be prepared for the proposed revised Soledad Mountain Project ("Revised Project"). The Revised Project that is now being proposed and evaluated in this draft Supplemental EIR will also be an open pit, heap leach mining operation on the same project site, but will be smaller in scope than the previously approved 1997 Project.

Neither CEQA nor NEPA establishes any expiration time limit for a certified Project EIR such as the 1997 FEIR/EIS, which environmentally evaluated and cleared the original Soledad Mountain Project. However, if conditions that were analyzed in a particular EIR resulted in changes after the EIR was certified, but before all lead or responsible agency discretionary approvals have been granted, additional environmental documentation may be required, according to CEQA.

Determination of whether additional CEQA documentation was required to evaluate any changes was based on the criteria contained in Sections 15162(a) (*Subsequent EIRs and Negative Declarations*) and 15163 (*Supplement to an EIR*) of the CEQA Guidelines. The process by which the County determined the scope of this SEIR is explained in Section 2.5 (*Decision to Prepare the Supplemental EIR*).

This draft Supplemental EIR will be circulated for review and comment to appropriate agencies and additional individuals and interest groups who have requested to be notified of EIR projects. Per Section 15105 of the CEQA Guidelines, this draft Supplemental EIR will be circulated for a 45-day public review period. A Notice of Completion (NOC) will be prepared with the draft Supplemental EIR in accordance with Section 15085 (Notice of Completion) of the CEQA Guidelines. The purpose of the NOC is to notify reviewing agencies

and the public that a draft Supplemental EIR has been prepared and completed for public review. The County's steps to CEQA compliance are described in Section 2.4 (*Decision-Making Process*).

1.4 Environmental Impacts

The County reviewed the Revised Project under State CEQA Guidelines Section 15162 to determine the adequacy of the use of the 1997 FEIR/EIS. While the 1997 FEIR/EIS discussed some of the Revised Project parameters under the Partial Backfill alternative, impacts were not quantified nor mitigation identified at a sufficient level for compliance with CEQA on this Revised Project. The County determined that new information in the form of legislation requiring the backfill "to the extent feasible," could result in potentially significant impacts that were not previously known.

While the Revised Project presents a reduction in surface disturbance area, it also includes some modifications to facilities locations with potential ramifications to a recorded access easement and a delineated floodplain. The Revised Project proposes numerous other design modifications and new technologies, some of which are the result of regulatory requirements, while others have been determined necessary during the course of ongoing monitoring and site data collection in recent years. Combined with the addition of several new residences in close proximity to this operation, these changes and recent site studies constitute new information that require evaluation for potential impacts and mitigation in a Supplemental EIR.

1.4.1 Environmental Effects Found to be Less Than Significant

Impacts Found to Have No Significance

The 1997 FEIR/EIS (pages S-23 to S-37) found that the following impacts would have no significance. Section 4.1 (*Effects Not Found to be Significant*) of this Supplemental EIR confirms the applicability of the listed findings from the 1997 FEIR/EIS, and the Revised Project does not change those conclusions.

Geology and Seismology

There would be no impacts resulting from liquefaction. The Revised Project does not change these conclusions, as described in Section 4.1.

Vegetative Resources

There would be no impact to environmentally sensitive habitat areas or "specimen trees." The Revised Project does not change these conclusions, as described in Section 4.1.

Land Use

The 1997 Project does not conflict with existing land uses. The 1997 Project does not contain prime agricultural land. The Revised Project does not change these conclusions, as described in Section 4.1.

Impacts Mitigated to a Level of Less Than Significant

Significant impacts are defined as impacts which would cause substantial adverse changes to existing environmental conditions which can be reduced to less than significant by mitigation measures. The following significant impacts have been reduced to less than significant by mitigation measures included in the 1997 FEIR/EIS. See Chapter 5 (*Consequences of Project Implementation*) for further detail on these mitigation measures.

Cultural and Historical Resources

The loss of four historical sites to disturbance will be mitigated by the performance of Phase III Data Recovery work.

Geology and Seismology

The impacts due to seismic activities would be less than significant because of regulatory requirements and conditions of approval.

The impact from slope failure would be less than significant because of regulatory requirements and conditions of approval.

Subsidence due to old mining properties would be less than significant because of regulatory requirements and conditions of approval.

Soils

The permanent loss of soil would be less than significant, as a result of regulatory requirements and project design features.

Surface Hydrology

The impact to surface water quality, as a result of the placement of overburden directly on the ground surface, would be less than significant.

Impacts to surface drainage would be less than significant because of regulatory requirements and conditions of approval.

The potential for discharge of hazardous materials to land would be less than significant because of regulatory requirements and conditions of approval.

The 1997 FEIR/EIS found that there would be no impact related to flooding. Section 4.1 of this Supplemental EIR finds that the Revised Project will result in

impacts requiring mitigation. With mitigation, these impacts are reduced to below a level of significance.

Groundwater

Impacts to the groundwater supply would be less than significant, as demonstrated by hydrogeology studies.

Impacts to the quality of groundwater would be less than significant because of regulatory requirements and conditions of approval.

Air Quality

As shown by dispersion modeling, PM_{10} emissions from the proposed project would not cause or contribute to a violation of the NAAQS or CAAQS for PM_{10} in the project area, and the impact would be less than significant.

The proposed project would not violate any approved plan for achieving or maintaining compliance with NAAQS or CAAQS, local or regional growth or congestion plans or local CEQA significance standards for air quality, and the impact would be less than significant.

The proposed project would not result in toxic air contaminant emissions which would cause a significant short- or long-term health risk or cause an increase cancer risk of greater than 10 per million, and the impact would be less than significant.

The proposed project would not concentrate vehicle trips or motor vehicle-related emissions in a localized area which would cause a violation of any CO ambient air quality standard, and the impact would be less than significant.

The proposed project would not cause an odor, visibility or other problem which would create a public nuisance condition, and the impact would be less than significant.

Vegetative Resources

The project would result in the loss of natural vegetation. This impact would be less than significant because of revegetation during reclamation and because no rare or unique habitats will be affected.

Wildlife Resources

The 1997 FEIR/EIS found that impacts to the small numbers of bats would be reduced by placing gates or grates at the entrance to some existing shafts and adits to allow bat access for roosting. Other impacts to wildlife will be reduced by reclamation of disturbed surfaces to restore habitats.

Section 4.3 (*Biological Resources*) of this Supplemental EIR finds that the Revised Project will result in impacts; specifically with regard to the burrowing

owl, which requires mitigation. With mitigation, these impacts are reduced to below a level of significance.

The project would not interfere substantially with the movement of any resident or migratory fish or wildlife species.

The project would not cause any wildlife population to drop below self-sustaining levels.

The project would not cause a net loss of any riparian lands, wetlands, marshes or other environmentally-sensitive habitat areas.

Impacts to wildlife resources would be less than significant after regulatory requirements and conditions of approval are implemented and monitored.

Visual Resources

The long-term impact to visual resources would be less than significant after reclamation.

Noise

The project will not raise noise levels above standards set by Kern County, and the impact would be less than significant.

Socioeconomics

The project will not conflict with population, employment or housing projects; therefore, the impact would be less than significant.

The project will not cause substantial growth or concentration in the population beyond current levels directly or indirectly therefore, the impact would be less than significant.

The project will not cause a decrease in jobs; therefore, the impact would be less than significant.

The project will not require additional police/sheriff staff or equipment to maintain acceptable service ratios; therefore, the impact would be less than significant.

The project will not require additional fire department staff or equipment to maintain an acceptable level of service; therefore, the impact would be less than significant.

The project will not result in an increase in the population of school-age children; therefore, the impact would be less than significant.

The project will not create or exacerbate a housing shortage; therefore, the impact would be less than significant.

Health Hazards

The project would not create a significant hazard to the public or the environment through routine transport, use or disposal of hazardous materials.

The project would not create a significant hazard to the public or the environment through a reasonably foreseeable upset or accident condition involving the likely release of hazardous materials to the environment.

The project would not interfere with community response plans or emergency evacuation plans in the event of a reasonably foreseeable upset or accident condition involving a hazardous material release, and the impact would be less than significant.

The project will not have any problems with respect to the availability of facilities for hazardous waste reuse, treatment or disposal, and the impact would be less than significant.

Transportation

The project will not cause a new violation of a goal relating to traffic LOS. By the year 2014, the LOS on State Route 14 is estimated to be E as a result of regional traffic growth. The proposed project will add slightly to the growth, but the overall impact would be less than significant.

Notwithstanding the County's mitigation measure requiring improvements to the Silver Queen Road pavement section, the proposed traffic use is compatible with the existing road designs; therefore, the impact would be less than significant.

The project will be designed for adequate parking and circulation, including entrance and exit routes; therefore, the impact would be less than significant.

1.4.2 Significant Environmental Effects That Cannot Be Avoided

Significant and unavoidable adverse impacts are those which constitute a substantial adverse change to existing environmental conditions that cannot be fully mitigated by implementing all feasible mitigation measures. The following are significant and unavoidable adverse impacts as a result of the project.

Mineral Resources

Precious metals resources would be extracted from a known ore body, reducing the resource. Additionally, insufficient identification of those resources could cause them to be covered by overburden or heap piles. While a mitigation measure (Condition of Approval No. 5) was adopted to reduce this impact through exploration activity, drilling boreholes and analysis of rock samples, the measure would only minimize the impact. The 1997 FEIR/EIS found that the loss of mineral resources from mining is a significant and unavoidable impact, and the Revised Project is subject to the same finding. Further, as indicated in Chapter 6 (*Alternatives*), specific economic and other considerations make the alternatives that would eliminate or reduce this effect infeasible.

Topography

The 1997 FEIR/EIS found that the topography of Soledad Mountain within the mine disturbance areas would be permanently changed, and that a change in the natural ground contours is a significant and unavoidable impact. Though reduced in acreage from the 1997 Project, and despite conditions of approval on final reclamation, the Revised Project is subject to the same impact finding. Further, as indicated in Chapter 6 (*Alternatives*), specific economic and other considerations make the alternatives that would eliminate or reduce this effect infeasible.

Air Quality Emissions

As indicated in Section 4.2 (*Air Quality*), emissions of all pollutants will be reduced by the Revised Project, with the exception of NO_x from mobile sources. Incorporation of all feasible mitigation will not eliminate this new significant impact.

1.4.3 Irreversible Impacts

Section 15126.2(c) of the State CEQA Guidelines provides the following direction for the discussion of irreversible changes:

"Uses of nonrenewable resources during the initial and continued phases of the project may be irreversible since a large commitment of such resources makes removal or nonuse thereafter unlikely. Primary impacts and, particularly, secondary impacts (such as highway improvement which provides access to a previously inaccessible area) generally commit future generations to similar uses. Also, irreversible damage can result from environmental accidents associated with the project. Irretrievable commitments of resources should be evaluated to assure that such current consumption is justified."

Determining whether the Revised Project would result in significant irreversible impacts requires a determination of whether key resources would be degraded or destroyed with little possibility of restoration.

As with the 1997 Project, implementation of the Revised Project would result in the conversion of parcels of land that are primarily vacant to a surface mining use. Similarly, the Revised Project would also be consistent with the site's designation under the Kern County General Plan and its zoning classification and conditionally permitted uses.

Development of the project site would irretrievably commit building materials and energy to the construction and maintenance of the plants and infrastructure proposed. Renewable, nonrenewable, and limited resources that would likely be consumed as part of construction and operation of the proposed project would include, but are not limited to: oil, diesel fuel, gasoline, asphalt, water, steel, and similar materials. Any utilities extended to the project site would not be extended to adjacent parcels, and therefore, would not commit future generations to any similar uses on adjacent or nearby parcels.

1.4.4 Significant Cumulative Impacts

According to Section 15355 of the State CEQA Guidelines, the term cumulative impacts "...refers to two or more individual effects which, when considered together, are considerable or which compound or increase other environmental impacts." Individual effects that may contribute to a cumulative impact may be from a single project or a number of separate projects. Individually, the impacts of a project may be relatively minor, but when considered along with impacts of other closely related or nearly projects, including newly proposed projects, the effects could be cumulatively significant. A list of projects used in the cumulative analysis is contained in Chapter 3 (Project Description) and a full discussion of all cumulative impacts for each impact is contained in Chapter 4.

As identified in Section 4.2 (*Air Quality*), the Revised Project's individual exceedance of the NO_x threshold would likewise contribute to an air quality impact that is considered cumulatively considerable and significant and unavoidable for mobile source NO_x .

Although implementation of all regulatory, statutory, and feasible and reasonable mitigation measures would minimize project-specific impacts to burrowing owl, the effects on burrowing owl within the cumulative projects' area of influence were determined in Section 4.3 (*Biological Resources*) to be cumulatively considerable and, therefore, significant.

1.5 Alternatives to the Proposed Project

CEQA requires that an EIR address "a range of reasonable alternatives to the project, or to the location of the project, which are ostensibly feasible and could attain the basic objectives of the project, and evaluate the comparative merits of the alternatives" (CEQA Guidelines Section 15126.6). Several project alternatives have been developed for this project. A brief discussion of these alternatives is provided below; refer to Chapter 6 (*Alternatives*) for more detail.

1.5.1 Alternatives Considered and Rejected

This section describes alternatives that were considered but were eliminated from further evaluation because they were determined infeasible, not capable of substantively reducing or eliminating environmental impacts, or not capable of satisfying the Purpose and Need. The alternatives evaluated and rejected are:

- Alternative A2 No Project/Implementation of Existing General Plan Uses
- Alternative D Alternative Mining Techniques
- Alternative E Mine Backfilling Alternatives

- Alternative F Alternative Gold Extraction Techniques
- Alternative G Alternative Project Location and Configurations
- Alternative H Alternative Power Supply

The following discussions of each alternative include a brief description of the comparable aspect of the Revised Project to provide a basis for comparison.

1.5.2 Alternatives Analyzed in the Draft EIR

Alternative	Description	Summary of Analysis
ALTERNATIVE A1 No Project/ No Development	Existing land use to continue (no mining).	Avoids need for new CUP, CUP modifications, and vacation of roadway.
		Environmentally superior alternative.
		Does not meet project objectives.
ALTERNATIVE B Alternative Mining and Ore Processing Rates	Changes to mining and ore processing rates (both increased and decreased rates analyzed).	Increased processing rates: Higher levels of air pollution and water usage while project is operational; however, total period of operations is reduced.
		Reduced processing rates: Lower levels of air pollution and water usage while project is operational; however, total period of operation is increased.
		Changes in the mining and ore processing rates will not result in an environmentally superior project.
ALTERNATIVE C Reduced Project Size	Amount of ore mined reduced to 17.4 million tons (reduction of 70 percent).	Some beneficial environmental effects, but does adequately meet project objectives.
	Overburden will total 44 million tons (reduction of 70 percent).	Potentiany economicany infeasible.
	Mining life of about three years.	

1.5.3 Environmentally Superior Alternative

Because it has several beneficial environmental benefits, Alternative A1 (No Project/No Development) is environmentally superior to the Revised Project. However, the selection of the No Project/No Development alternative would not be consistent with federal mining laws and regulations (1976 FLPMA and 43 CFR 3809), unless operations of the Revised Project were found to result in

undue and unnecessary degradation of the subject lands. Such a finding was not made in the 1997 FEIR/EIS and no such finding is presently supported by the information in this Supplemental EIR.

When the No Project alternative is determined to be the environmentally superior alternative, CEQA Guidelines Section 15126.6(e)(2) requires that another alternative also be identified as environmentally superior. Alternative C (Reduced Project Size) generally reduces more impacts than the other possible alternatives; thus, it is the environmentally superior alternative to the Revised Project. Overall, a reduction in project size would be slightly beneficial with respect to topographic profiles and vegetative resources. Even so, the benefits of reducing existing hazards and reclamation of previously disturbed mining activities would not be fully realized.

1.6 Areas of Controversy

Written agency and public comments received during the public review period for the IS/NOP are provided in Appendix A. Although not controversial, key issues were identified during scoping as necessitating further description or evaluation. Those issues are discussed as they relate to the various environmental topics in Section 4.1 (*Effects Not Found to be Significant*).

1.7 Issues to Be Resolved

Section 15123(b)(3) of the State CEQA Guidelines requires that an EIR contain issues to be resolved, which includes the choices among alternatives and whether or how to mitigate significant impacts. The major issues to be resolved regarding the proposed project include decisions by the lead agency as to whether or not:

- The SEIR adequately describes the environmental impacts of the proposed project;
- The recommended mitigation measures should be adopted or modified; or
- Additional mitigation measures need to be applied.

Table 1-2 below summarizes all the identified environmental impacts, their level of significance before mitigation, proposed mitigation measures to reduce significance levels, and their level of significance after implementation of proposed mitigation measures. Table 1-2 uses the County's Initial Study checklist to organize and summarize the 1997 FEIR/EIS findings and mitigation, and relate them to the new or updated information in this SEIR. The summaries for air quality and biological resources follow the impact and mitigation numbering used in Sections 4.2 (*Air Quality*) and 4.3 (*Biological Resources*).

The mitigation measures from the 1997 FEIR/EIS are identified in Table 1-2. The detailed mitigation monitoring and implementation procedures and responsibilities are contained in Exhibit "D" (*Mitigation Monitoring Program*) of Appendix W. Each of the 1997 FEIR/EIS mitigation measures, along with new or revised mitigation identified in this SEIR, will be incorporated into an updated Mitigation Measure Monitoring Plan (MMMP).

TABLE 1-2. SUMMARY OF IMPACTS, MITIGATION MEASURES, AND LEVEL OF SIGNIFICANCE AFTER MITIGATION

Impact	Level of Significance Before Mitigation	Mitigation Measures	Level of Significance After Mitigation
Aesthetics			
a) Have a substantial adverse effect on a scenic vista.	Less than significant	No mitigation is required.	Less than significant
b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway.	Less than significant	No mitigation is required.	Less than significant
c) Substantially degrade the existing visual character or quality of the site	Potentially significant	1997 FEIR/EIS MM #39: Surface disturbance will be minimized to that required for safe and efficient operation.	Less than significant
and its surroundings.		1997 FEIR/EIS MM #40: Historical mining disturbance will be reclaimed.	
		1997 FEIR/EIS MM #41: Buildings and structures will be painted with non-reflective earthtone colors to blend with the predominant background.	
		1997 FEIR/EIS MM #42: Outdoor lighting for the mine pit and other areas of nighttime activities will be shielded and directed downward to reduce fugitive light. Light poles will be no higher than necessary for safe and efficient lighting. Low-pressure sodium bulbs or other appropriate technology will be used for outdoor lighting.	
d) Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area.	Potentially significant	Implementation of 1997 FEIR/EIS MM #39 through #42	Less than significant

Impact	Level of Significance Before Mitigation	Mitigation Measures	Level of Significance After Mitigation
Agriculture Resources			
a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to nonagricultural use.	Less than significant	No mitigation is required.	Less than significant
b) Conflict with existing zoning for an agricultural use or a Williamson Act Contract.	Less than significant	No mitigation is required.	Less than significant
c) Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland to non- agricultural use.	Less than significant	No mitigation is required.	Less than significant
d) Result in the cancellation of an open space contract made pursuant to the California Land Conservation Act of 1965 or Farmland Security Zone Contract for any parcel of 100 or more acres (Section 15206(b)(3) Public Resources Code).	Less than significant	No mitigation is required.	Less than significant
Air Quality			
Impact 4.2-1: The Project would not conflict with or obstruct implementation of applicable air quality management plans, including the Ozone Attainment Plan.	Less than significant	No mitigation is required.	Less than significant

Impact	Level of Significance Before Mitigation	Mitigation Measures	Level of Significance After Mitigation
Impact 4.2-2: The Project would not violate an air quality standard or contribute substantially to an existing or projected air quality violation.	Less than significant	No mitigation is required.	Less than significant
Impact 4.2-3: The Project would result in a cumulatively considerable net increase for a criteria pollutant for	Potentially significant	1997 FEIR/EIS MM #17: Onsite equipment and vehicles will be maintained on a routine basis, as recommended by manufacturer manuals, to reduce exhaust emissions.	Significant and Unavoidable
which the project region is nonattainment.		1997 FEIR/EIS MM #18: Monitoring stations for PM_{10} will be established upwind and downwind from the processing facilities.	
		1997 FEIR/EIS MM #19: A mercury retort will be installed to control mercury emissions.	
		1997 FEIR/EIS MM #20: The size and number of blasts in the mine will be limited by good engineering design.	
		1997 FEIR/EIS MM #21: The existing tailings piles will be removed, thereby reducing the long-term fugitive emissions from the site.	
		1997 FEIR/EIS MM #22: The adopted reclamation plan shall include reclamation of previously disturbed areas.	
		MOBILE SOURCE NOx MITIGATION	
		Mitigation Measure 4.2-1: The following vehicle emission control measures shall be implemented:	
		a) Properly maintain and tune all internal combustion engine powered equipment, with maintenance checks being performed on all mechanical equipment once every four months.	
		b) Require employees and subcontractors to comply with California's idling restrictions for compression ignition engines.	
		c) Require the use of low sulfur (CARB) diesel fuel.	
Impact 4.2-4: The Revised Project would not expose sensitive receptors to substantial pollutant concentrations.	Potentially significant	Implementation of 1997 FEIR/EIS MM #17 through #22	Less than significant

Impact	Level of Significance Before Mitigation	Mitigation Measures	Level of Significance After Mitigation
Impact 4.2-5: The Project would not create objectionable odors affecting a substantial number of people.	Less than significant	No mitigation is required.	Less than significant
Impact 4.2-6: The Project is consistent with the Kern Council of Governments' Final Air Quality Conformity Analysis.	Less than significant	No mitigation is required.	Less than significant
Impact 4.2-7: The Project would contribute to global greenhouse gas emissions.	Potentially significant	Implementation of 1997 FEIR/EIS MM #17 through #22, and implementation of Mitigation Measure 4.2-1	Less than significant
Biological Resources			
Impact 4.3-1: The Revised Project could have a substantial adverse effect, either directly or through habitat modifications, on a species identified as a candidate, sensitive, or special-status species in local or regional plans, policies or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service.	Potentially significant	 PLANT SPECIES MITIGATION 1997 FEIR/EIS MM #23: Project disturbance will be minimized to that necessary for safe and efficient operation. The limits of the construction areas will be clearly marked and vehicles and equipment will be confined to these areas. 1997 FEIR/EIS MM #24: Mature Joshua trees which may be disturbed will be salvaged and replanted in undisturbed areas within the property boundary. 1997 FEIR/EIS MM #25: The use of seedlings for revegetation will be investigated in test plots. 1997 FEIR/EIS MM #26: Fencing around the heap leach pile will remain in place until vegetation is established or as otherwise specified in the Reclamation Plan. WILDLIFE SPECIES MITIGATION 1997 FEIR/EIS MM #27: Grading for the project will be minimized to the extent consistent with safe and efficient operations to limit the total area of surface disturbance. 1997 FEIR/EIS MM #28: Routine distribution of cyanide solution on the ten of the heap leach pade will occur via a drin irrigation 	Less than significant

Impact	Level of Significance Before Mitigation	Mitigation Measures	Level of Significance After Mitigation
		system and the heap leach pads will be contoured to prevent surface ponding which could attract birds and small animals.	
		1997 FEIR/EIS MM #29: Containers of reagents will be stored within controlled reagent storage areas and kept closed, stored in enclosed areas, or otherwise managed to prevent access by wildlife.	
		1997 FEIR/EIS MM #30: Project waste will be properly managed at the site to control garbage that could attract wildlife.	
		1997 FEIR/EIS MM #31: The maximum vehicle speed will be 25 mph.	
		1997 FEIR/EIS MM #32: Wildlife habitat awareness will be included in the workers education program.	
		1997 FEIR/EIS MM #33: Some of the mine adits will be retained and gated and some of the mine shafts will be covered by grates to allow access by bats, while excluding people.	
		BURROWING OWL MITIGATION	
		Mitigation Measure 4.3-1: A pre-construction survey shall be conducted by a qualified biologist for burrowing owl activities to assess owl presence and need for implementation of Mitigation Measures 4.3-2 through 4.3-4 within thirty (30) days prior to ground disturbing activities using California Department of Fish and Game and California Burrowing Owl Consortium guidelines (CBOC 1993). The breeding period for burrowing owls is February 1 - August 31 with the peak being April 15 - July 15, the recommended survey window. Winter surveys may be conducted between December 1 and January 31. If construction of each phase of the project is delayed or suspended for more than 30 days after the survey, the area shall be resurveyed.	
		• Surveys shall be completed for occupied burrows within all construction areas and within 150 meters (500 feet) from the project work areas (where possible and appropriate based on habitat). All occupied burrows will be mapped on an aerial photo for submittal to California Department of Fish and Game and the Kern County Planning Department.	

Impact	Level of Significance Before Mitigation	Mitigation Measures	Level of Significance After Mitigation
		• At least 15 days prior to the expected start of any project-related ground disturbance activities, or restart of activities, the project proponent shall provide the burrowing owl survey results and mapping to California Department of Fish and Game and the Kern County Planning Department.	
		Mitigation Measure 4.3-2: If burrowing owl presence is indicated or assumed in required surveys, the following actions shall be taken by the project proponent to offset impacts during construction:	
		• If paired owls are present in areas scheduled for disturbance or degradation (e.g. grading) or within 50 meters (160 feet) of a permanent project feature, and nesting is not occurring, owls shall be relocated to a California Department of Fish and Game-approved relocation.	
		• If paired owls are present within 50 meters (160 feet) of a temporary project disturbance (i.e. parking areas) then active burrows shall be protected with fencing/cones/flagging and monitored by a qualified biologist throughout construction to identify losses from nest abandonment and/or loss of reproductive effort (e.g., killing of young).	
		• If paired owls are nesting in areas scheduled for disturbance or degradation, nest(s) shall be avoided from February 1 through August 31 by a minimum of a 75 meters (250-foot) buffer or until fledging has occurred. Following fledging, owls may be passively relocated according to California Department of Fish and Game guidelines.	
		Mitigation Measure 4.3-3: If any protected burrows are discovered during surveys, the project proponent shall implement all avoidance and mitigation currently stipulated by California Department of Fish and Game. No work would be completed within 500 feet of the nest without approval from California Department of Fish and Game and an authorized raptor biologist monitoring the nesting birds. These measures shall be initiated prior to the initiation of ground disturbance activities in the vicinity of the nest.	

Impact	Level of Significance Before Mitigation	Mitigation Measures	Level of Significance After Mitigation
		Mitigation Measure 4.3-4: If burrows cannot be avoided, the project proponent shall implement mitigation measures from the California Burrowing Owl Consortium's Burrowing Owl Survey Protocol and Mitigation Guidelines (CBOC 1993), including, but not limited to, "passively relocating" owls during pre-construction surveys. The timing of the burrowing owl relocation is critical and shall not occur during this species' breeding season (February 1 through August 31).	
Impact 4.3-2: The Revised Project will not have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies or regulations, or by the California Department of Fish and or U.S. Fish and Wildlife Service.	Less than significant	No mitigation is required.	Less than significant
Impact 4.3-3: The Revised Project will not have a substantial adverse effect on federally protected wetlands, as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal wetlands, etc.), through direct removal, filling, hydrological interruption or other means.	Less than significant	No mitigation is required.	Less than significant
Impact 4.3-4: The Revised Project will not interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites.	Less than significant	No mitigation is required.	Less than significant
Impact 4.3-5: The Revised Project will not conflict with any local policies or ordinances protecting	Less than significant	No mitigation is required.	Less than significant

Impact	Level of Significance Before Mitigation	Mitigation Measures	Level of Significance After Mitigation
biological resources, such as a tree preservation policy or ordinance.			
Impact 4.3-6: The Revised Project will not conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional or State habitat conservation plan.	Less than significant	No mitigation is required.	Less than significant
Impact 4.3-7: The Revised Project will contribute to an adverse cumulative impact on biological resources, habitats, and the movement of wildlife species.	Potentially significant	Implementation of Mitigation Measures 4.3-1 through 4.3-4 related to burrowing owl, and implementation of 1997 FEIR/EIS MM #27 through #32	Significant and Unavoidable
Cultural Resources			
a) Cause a substantial adverse change in the significance of a historical resource as defined in Section 15064.5.	Potentially significant	1997 FEIR/EIS MM #34: Artifacts from the historical sites will be used to establish a small display of historical mining activities onsite. After conclusion of the project, the items on display will be donated to a museum located in Kern County.	Less than significant
		1997 FEIR/EIS MM #35: As part of the worker education program, construction contractors and operations personnel will be instructed regarding the sensitivity of cultural resources and the presence of laws against unauthorized collection and disturbance.	
		1997 FEIR/EIS MM #36: If any unknown archaeological/cultural resources are discovered on private land during the course of mining or reclamation, work in the area of discovery shall be stopped and a qualified archeologist contacted to evaluate the find and, if necessary, mitigate impacts prior to resumption of work.	
		1997 FEIR/EIS MM #37: A Phase III Data Recovery (salvage excavation and architectural recording) will be conducted at four sites.	
		1997 FEIR/EIS MM #38: Seven sites will have an archaeological monitor review the area during grading activity.	

Impact	Level of Significance Before Mitigation	Mitigation Measures	Level of Significance After Mitigation	
b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to Section 15064.5.	Potentially significant	Implementation of 1997 FEIR/EIS MM #34 through #38	Less than significant	
c) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature.	Less than significant	No mitigation is required.	Less than significant	
d) Disturb any human remains, including those interred outside of formal cemeteries.	Less than significant	No mitigation is required.	Less than significant	
Geology and Soils				
a) Expose people or structures to	TOPOGRAPHY	TOPOGRAPHY	TOPOGRAPHY	
potential substantial adverse effects, including the risk of loss, injury, or death involving:	Potentially significant	1997 FEIR/EIS MM #2: During final reclamation, overburden will be graded to break up the unnatural angles at the top edges.	Significant and Unavoidable	
i. Rupture of a known earthquake	MINE SAFETY	MINE SAFETY	MINE SAFETY	
Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known	Less than significant	1997 FEIR/EIS MM #3: Mine pit slopes will be evaluated by the applicant throughout operations to assure that excavation occurs at a slope angle that is safe, considering actual rock strength and structural conditions encountered.	Less than significant	
Geology Special Publication 42.		1997 FEIR/EIS MM #4: Old underground mining areas will be excavated or remediated		
ii. Strong seismic groundshaking.		1997 FFIR/FIS MM #5. Historical structures will be stabilized or		
iii. Seismic-related ground failure, including liquefaction.		removed by the applicant prior to site disturbance.		
iv. Landslides.				
b) Result in substantial soil erosion or the loss of topsoil.	Potentially significant	Implementation of 1997 FEIR/EIS MM #6 through #10	Less than significant	

Impact	Level of Significance Before Mitigation	Mitigation Measures	Level of Significance After Mitigation
c) Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse.	Less than significant	No mitigation is required.	Less than significant
d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property.	Less than significant	No mitigation is required.	Less than significant
e) Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater.	Less than significant	No mitigation is required.	Less than significant
Hazards and Hazardous Materials			
a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials.	Potentially significant	 1997 FEIR/EIS MM #46: Fences will be erected around potentially hazardous areas to discourage entry by unauthorized mine personnel or visitors. 1997 FEIR/EIS MM #47: Historical mining operations will be removed or closed to the extent feasible. 	Less than significant
		1997 FEIR/EIS MM #48: Former mine waste will be removed.	
		1997 FEIR/EIS MM #49: Project design will be in accordance with a preconstruction design study.	
b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment.	Less than significant	No mitigation is required.	Less than significant

Impact	Level of Significance Before Mitigation	Mitigation Measures	Level of Significance After Mitigation
c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within 1/4 mile of an existing or proposed school.	Less than significant	No mitigation is required.	Less than significant
d) Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would create a significant hazard to the public or the environment.	Less than significant	No mitigation is required.	Less than significant
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, result in a safety hazard for people residing or working in the project area.	Less than significant	No mitigation is required.	Less than significant
f) For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area.	Less than significant	No mitigation is required.	Less than significant
g) Impair implementation of, or physically interfere with, an adopted emergency response plan or emergency evacuation plan.	Less than significant	No mitigation is required.	Less than significant
h) Expose people or structures to a significant risk of loss, injury, or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands.	Less than significant	No mitigation is required.	Less than significant

Impact	Level of Significance Before Mitigation	Mitigation Measures	Level of Significance After Mitigation
i) Generate vectors (flies, mosquitoes, rodents, etc.) or have a component that includes agricultural waste.	Less than significant	No mitigation is required.	Less than significant
Hydrology and Water Quality			
a) Violate any water quality standards or waste discharge requirements.	Less than significant	No mitigation is required.	Less than significant
b) Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there	Potentially significant	1997 FEIR/EIS MM #15: The evaporation of water and, therefore, the need for makeup water will be minimized by the use of enclosed solution storage.	Less than significant
would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted).		1997 FEIR/EIS MM #16: Golden Queen will monitor the groundwater level on a monthly basis and compare the water level data collected by the monitoring program to water levels predicted by the groundwater drawdown model. In the event that the monitoring program shows that the actual water drawdown in the well, when corrected for well conditions, exceeds the predicted model for six consecutive months, Golden Queen will supplement the water supplied by the production wells with up to 300 gallons per minute (gpm) of water from Antelope Valley - East Kern Water Agency.	
c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on site or off site.	Potentially significant	1997 FEIR/EIS MM #6: Surface disturbance outside the project area will be kept to a minimum by clearly delineating operating areas to limit roads and vehicle traffic outside designated areas.	Less than significant
		1997 FEIR/EIS MM #7: Growth media stockpiles will be stabilized by allowing germination of seeds naturally contained in the soil.	
		1997 FEIR/EIS MM #8: The feasibility of inoculation of soil with biological components will be investigated in test plots.	
		1997 FEIR/EIS MM #9: Site drainage will be inspected periodically to assure that excessive erosion is nor occurring. In the event excessive erosion is identified, the drainage plan will be revised in consultation with the Kern County Planning Department.	

Impact	Level of Significance Before Mitigation	Mitigation Measures	Level of Significance After Mitigation
		1997 FEIR/EIS MM #10: Additional erosion prevention techniques include:	
		a) Site drainage will be retained onsite;	
		b) Site roads and drainages will be inspected by Golden Queen personnel after rainfall events which result in surface flow to ensure erosion prevention is maintained and upgraded as needed;	
		c) Drainage from the tops of overburden piles will be directed away from the slopes toward the pit;	
		 d) Salvaged growth media will be stockpiled away from areas of concentrated drainage; 	
		e) Reclamation of disturbed areas will occur as soon as possible.	
d) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on site or off site.	Less than significant	No mitigation is required.	Less than significant
e) Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff.	Less than significant	No mitigation is required.	Less than significant
f) Otherwise substantially degrade water quality.	Potentially significant	1997 FEIR/EIS MM #11: The overliner protective material placed in direct contact with the HDPE liner will not exceed one and one- half inches in diameter, and will not contain hard, sharp, angular pieces.	Less than significant
		1997 FEIR/EIS MM #12: A cyanide destructing compound (e.g., hydrogen peroxide or calcium hypochlorite) will be maintained onsite for use in the event that a spill occurs.	

Impact	Level of Significance Before Mitigation	Mitigation Measures	Level of Significance After Mitigation
		1997 FEIR/EIS MM #13: Historical mining wastes and tailings will be tested and processed with the ore on the heap leach pad or, if indicated, disposed of at an offsite permitted disposal facility, removing any future threat of surface water contamination.	
		1997 FEIR/EIS MM #14: The Lahontan Regional Board will be consulted prior to the use of dust suppression or soil stabilization chemicals.	
		1997 FEIR/EIS MM #15: The evaporation of water and, therefore, the need for makeup water will be minimized by the use of enclosed solution storage.	
g) Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map.	Less than significant	No mitigation is required.	Less than significant
h) Place within a 100-year flood hazard area structures which would impede or redirect flood flows.	Potentially significant	Mitigation Measure 4.1-1: Prior to commencement of mining operations or issuance of building or grading permits, the project proponent shall demonstrate the project's adherence with the Kern County Floodplain Management Ordinance and applicable Standards and Title 44 of the Code of Federal Regulations, Section 65.10 of the National Flood Insurance Program regulations. Compliance with this measure will necessitate that the project's design be recognized as providing protection from the base flood and the following maintenance criteria:	Less than significant
		a) Levee systems must be maintained in accordance with an officially adopted maintenance plan, and a copy of this plan must be provided to Federal Emergency Management Agency by the owner of the levee system when recognition is being sought or when the plan for a previously recognized system is revised in any manner.	
		b) All maintenance activities must be under the jurisdiction of a Federal or State agency, an agency created by Federal or State law, or an agency of a community participating in the National Flood Insurance Program that must assume ultimate responsibility for maintenance.	

Impact	Level of Significance Before Mitigation	Mitigation Measures	Level of Significance After Mitigation
		c) The maintenance plan must document the formal procedure that ensures that the stability, height, and overall integrity of the levee and its associated structures and systems are maintained.	
		 d) At a minimum, the maintenance plan shall specify the maintenance activities to be performed, the frequency of their performance, and the person by name or title responsible for their performance. 	
		Should the project proponent be unable to obtain the requisite public maintenance entity or maintenance plan approval from the Federal Emergency Management Agency, the approved surface mining and reclamation plan shall be amended to eliminate the project's encroachment into the 100-year floodplain in accordance with the applicable provisions of the Surface Mining and Reclamation Act of 1975.	
i) Expose people or structures to a significant risk of loss, injury, or death involving flooding, including flooding as a result of the failure of a levee or dam.	Less than significant	No mitigation is required.	Less than significant
j) Inundation by seiche, tsunami, or mudflow.	Less than significant	No mitigation is required.	Less than significant
Land Use and Planning			
a) Physically divide an established community.	Less than significant	No mitigation is required.	Less than significant
b) Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to, the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect.	Potentially significant	Implementation of 1997 FEIR/EIS MM #39 through #42	Less than significant

Impact	Level of Significance Before Mitigation	Mitigation Measures	Level of Significance After Mitigation
c) Conflict with any applicable habitat conservation plan or natural community conservation plan.	Less than significant	No mitigation is required.	Less than significant
Mineral Resources			
a) Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state.	Potentially significant	1997 FEIR/EIS MM #1: Exploration activity, consisting of drilling boreholes and analysis of rock samples, has been conducted to ensure mineral resources will not be covered by overburden or heap piles.	Significant and Unavoidable
b) Result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan.	Potentially significant	Implementation of 1997 FEIR/EIS MM #1	Significant and Unavoidable
Noise			
a) Exposure of persons to, or generation of, noise levels in excess of standards established in the local general plan or noise ordinance or applicable standards of other agencies.	Potentially significant	 1997 FEIR/EIS MM #43: Approximately 75 to 80 percent of construction activities will take place during daylight. 1997 FEIR/EIS MM #44: Blasting will occur during daylight, one time per day, and will be engineered to minimize the amount of explosives used, according to United States Bureau of Mines guidelines. 	Less than significant
b) Exposure of persons to, or generation of, excessive ground borne vibration or ground borne noise levels.	Potentially significant	Implementation of 1997 FEIR/EIS MM #43 and #44	Less than significant
c) A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project.	Potentially significant	Implementation of 1997 FEIR/EIS MM #43 and #44	Less than significant

Impact	Level of Significance Before Mitigation	Mitigation Measures	Level of Significance After Mitigation
d) A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project.	Potentially significant	Implementation of 1997 FEIR/EIS MM #43 and #44	Less than significant
e) For a project located within the Kern County Airport Land Use Compatibility Plan, would the project expose people residing or working in the project area to excessive noise levels.	Less than significant	No mitigation is required.	Less than significant
f) For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels.	Less than significant	No mitigation is required.	Less than significant
Population and Housing			
a) Induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure).	Potentially significant	1997 FEIR/EIS MM #45: Golden Queen has committed to hiring from the local population.	Less than significant
b) Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere.	Less than significant	No mitigation is required.	Less than significant
c) Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere.	Less than significant	No mitigation is required.	Less than significant

Impact	Level of Significance Before Mitigation	Mitigation Measures	Level of Significance After Mitigation	
Public Services				
 a) Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or to other performance objectives for any of the public services: Fire Protection Police Protection Schools Parks Other Public Facilities 	Less than significant	No mitigation is required.	Less than significant	
Recreation				
a) Increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated.	Less than significant	No mitigation is required.	Less than significant	
b) Include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment.	Less than significant	No mitigation is required.	Less than significant	
Impact	Level of Significance Before Mitigation	Mitigation Measures	Level of Significance After Mitigation	
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Transportation and Traffic				
a) Cause an increase in traffic which is substantial in relation to the existing traffic load and capacity of the street system (i.e., result in a substantial increase in either the number of vehicle trips, the volume to capacity ratio on roads, or congestion at intersections).	Potentially significant	 1997 FEIR/EIS MM #50: The entrance road from Silver Queen Road to the office area will be paved. Revised 1997 FEIR/EIS MM #51: Prior to commencement of mining operations as authorized by this permit, the project proponent shall cause: a) Provide a <u>A</u> left-turn lane on Silver Queen Road at the entrance to the project site to be constructed. b) <u>An overlay of 0.36 feet, 32 feet wide (two 12-foot travel lanes</u> with two four-foot shoulders), and 6,500 feet in length along Silver Queen Road to be constructed. c) In lieu of constructing the requisite overlay improvements to Silver Queen Road, the project proponent may provide in-lieu payment to the Kern County Roads Department based upon cost estimates submitted to that department for review and approval. Fees received would be used specifically for the future overlay of Silver Queen Road and would be collected prior to the issuance of any building or grading permits for the project. 	Less than significant	
b) Exceed, either individually or cumulatively, a Level of Service standard established by the County congestion management agency or adopted County threshold for designated roads or highways.	Less than significant	No mitigation is required.	Less than significant	
c) Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks.	Less than significant	No mitigation is required.	Less than significant	
d) Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment).	Less than significant	No mitigation is required.	Less than significant	

Impact	Level of Significance Before Mitigation	Mitigation Measures	Level of Significance After Mitigation		
e) Result in inadequate emergency access.	Less than significant	No mitigation is required.	Less than significant		
f) Result in inadequate parking capacity.	Less than significant	No mitigation is required.	Less than significant		
g) Conflict with adopted policies, plans, or programs supporting alternative transportation (e.g., bus turnouts, bicycle racks).	Less than significant	No mitigation is required.	Less than significant		
Utilities and Service Systems					
a) Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board.	Less than significant	No mitigation is required.	Less than significant		
b) Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects.	Less than significant	No mitigation is required.	Less than significant		
c) Require or result in the construction of new stormwater drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects.	Less than significant	No mitigation is required.	Less than significant		
d) Have sufficient water supplies available to serve the project from existing entitlements and resources, or new or expanded entitlements would be needed.	Less than significant	No mitigation is required.	Less than significant		
e) Result in a determination by the wastewater treatment provider which serves or may serve the project that it	Less than significant	No mitigation is required.	Less than significant		

Impact	Level of Significance Before Mitigation	Mitigation Measures	Level of Significance After Mitigation
has inadequate capacity to serve the project's projected demand in addition to the provider's existing commitments.			
f) Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs.	Less than significant	No mitigation is required.	Less than significant
g) Comply with federal, state, and local statutes and regulations related to solid waste.	Less than significant	No mitigation is required.	Less than significant

CHAPTER 2 INTRODUCTION

Chapter 2 Introduction

2.1 Intent of the California Environmental Quality Act

The Kern County Planning Department, as lead agency, has determined that a Supplemental Environmental Impact Report (EIR) must be prepared for the proposed Golden Queen Mining Co. Inc., Revised Soledad Mountain Project ("project" or "proposed project"). The 1,440-acre site is located in eastern Kern County (County), approximately two miles west of State Route 14 (SR-14), generally south of Silver Queen Road, and five miles south of the community of Mojave. The proposed project is described in detail in Chapter 3 (*Project Description*).

This draft Supplemental EIR (SEIR) has been prepared in accordance with requirements of the following documents:

- The California Environmental Quality Act (CEQA), Public Resources Code (PRC) Section 21000 et seq., as amended in 2008.
- State CEQA Guidelines, California Code of Regulations (CCR), Title 14, Chapter 3, Section 15000 et seq., as amended July 27, 2007.
- The Kern County CEQA Implementation Document, dated June 2004.
- The County of Kern Guide for the Preparation of Environmental Impact Reports, dated June 2006.

In general, CEQA is intended to:

- Ensure that the environment and public health and safety are protected in the face of discretionary projects initiated by public agencies or private concerns.
- Identify the significant effects to the environment of a project, identify alternatives and to indicate the manner in which those significant effects can be avoided or mitigated;
- Provide for full disclosure of the project's environmental effects to the public, the agency decision-makers who will approve or deny the project, and responsible and trustee agencies charged with managing resources (e.g. wildlife, air quality) that may be affected by the project.
- Provide a forum for public participation in the decision-making process with respect to environmental effects.

2.2 Purpose of this Supplemental Environmental Impact Report

2.2.1 Decision-Making and Public Disclosure

An EIR is a public informational document used in the planning and decision making process. The purpose of this SEIR is to comparatively analyze the environmental impacts of the proposed Project in light of the original project evaluated in the County-certified "Soledad Mountain Project Final Environmental Impact *Report/Environmental* Impact Statement. State Clearinghouse [SCH] No. 1996061052" (1997 FEIR/EIS). The Kern County Planning Commission and Board of Supervisors will consider the information in the SEIR, including the public comments and staff response to those comments, during the public hearing process. As a legislative action, the final decision will be made at the Board of Supervisors' public hearing, where the project may be approved, conditionally approved or denied. The purpose of an EIR is to identify:

- The significant potential impacts of the proposed project on the environment and indicate the manner in which those significant impacts can be avoided or mitigated;
- Any unavoidable adverse impacts that cannot be mitigated; and
- Reasonable and feasible alternatives to the project that would eliminate any significant adverse environmental impacts or reduce the impacts to a less than significant level.

An EIR also discloses growth-inducing impacts; impacts found not to be significant; and significant cumulative impacts of past, present, and reasonably anticipated future projects.

CEQA requires an EIR to reflect the independent judgment of the lead agency regarding the impacts, the level of significance of the impacts both before and after mitigation, and mitigation measures proposed to reduce the impacts. A Draft EIR (DEIR) is circulated to responsible agencies, trustee and responsible agencies who manage resources affected by the project, and interested agencies and individuals. The purposes of public and agency review of a DEIR include sharing expertise, disclosing agency analyses, checking for accuracy, detecting omissions, discovering public concerns, and soliciting counter proposals.

Reviewers of a SEIR should focus on the sufficiency of the document in identifying and analyzing new significant environmental effects or a substantial increase in the severity of previously identified significant effects, and ways in which the significant effects of the project might be avoided or mitigated. Comments are most effective when they suggest additional specific alternatives or mitigation measures that would provide better ways to avoid or mitigate significant environmental effects.

2.2.2 Issues to Be Resolved

Section 15123(b)(3) of the State CEQA Guidelines requires that an EIR contain issues to be resolved, which includes the choices among alternatives and whether or how to mitigate significant impacts. The major issues to be resolved regarding the proposed project include decisions by the lead agency as to whether or not:

- The SEIR adequately describes the environmental impacts of the proposed project;
- The recommended mitigation measures should be adopted or modified; or
- Additional mitigation measures need to be applied.

2.3 Terminology

To assist readers in understanding this SEIR, terms used are defined in the following manner:

- *"Project"* means the whole of an action that has the potential for resulting in a physical change in the environment, directly or ultimately.
- *"Environment"* means the physical conditions in the project area, including land, air, water, minerals, flora, fauna, ambient noise, and objects of historical or aesthetic significance. The area involved is the area in which significant direct or indirect impacts would occur as a result of the project. The environment includes both natural and man-made conditions.
- *"Impacts"* analyzed under CEQA are changes to the physical environment anticipated from a development proposal. Impacts are:
 - Direct, or primary, impacts that are caused by the proposed project and occur at the same time and place of project implementation, or,
 - Indirect, or secondary, impacts that are caused by the proposed project at a later time or farther removed in distance but are still reasonably foreseeable. Indirect or secondary impacts may include growth-inducing impacts and other effects related to induce changes in the pattern of land use; population density or growth rate; or related effects on air, water, and other natural systems, including ecosystems.
- "Significant impact on the environment" means a substantial, or potentially substantial, adverse change in any of the physical conditions in the project vicinity affected by the proposed project, including land, air, water, minerals, flora, fauna, ambient noise, and objects of historical or aesthetic significance. An economic or social change by itself is not considered a significant impact on the environment. A social or economic change related to a physical change may be considered in determining whether the physical change is significant.

- "Mitigation" consists of measures to avoid or substantially reduce the proposed project's significant environmental impacts by:
 - Avoiding the impacts altogether by not taking a certain action or parts of an action;
 - Minimizing impacts by limiting the degree or magnitude of the action and its implementation;
 - Rectifying the impact by repairing, rehabilitating, or restoring the affected environment;
 - Reducing or eliminating the impact over time by preservation and maintenance operations during the life of the actions; or
 - Compensating for the impacts by replacing or providing substitute resources or environments.
- "Cumulative Impacts" are two or more individual impacts that, when considered together, are considerable or that compound or increase other environmental impacts. The following statements also apply when considering cumulative impacts:
 - The individual impacts may be changes resulting from a single project or separate projects.
 - The cumulative impact from several projects is the change in the environment that results from the incremental impact of the project when added to other closely related past, present and reasonably foreseeable probable future projects. Cumulative impacts can result from individually minor but collectively significant projects taking place over time.

This EIR uses a variety of terms to describe the level of significance of adverse impacts. These terms are defined as follows:

- Less than significant: An impact that is adverse but that does not exceed the defined thresholds of significance. Less-than-significant impacts do not require mitigation.
- Significant: An impact that exceeds the defined thresholds of significance and would or could cause a substantial adverse change in the environment. Mitigation measures are recommended to eliminate the impact or reduce it to a less-than-significant level.
- *Significant and unavoidable:* An impact that exceeds the defined thresholds of significance and cannot be eliminated or reduced to a less-than-significant level through the implementation of mitigation measures.

2.4 Decision-Making Process

In general, CEQA requires:

- Lead agencies to solicit and consider input from interested agencies, citizen groups, and individual members of the public;
- The lead agency to provide the public with a full disclosure of the expected environmental consequences of the proposed project and the opportunity to comment; and
- The project to be monitored after it has been permitted in order to ensure that mitigation measures are implemented.

In accordance with CEQA, public participation and solicitation of input are built into the decision-making process through preparation of the following documents and steps:

■ Initial Study (IS)/Notice of Preparation (NOP)

Kern County prepared and circulated an IS/NOP to the State Clearinghouse; public agencies; special districts; and responsible, trustee, and local agencies for review and comment on August 18, 2008. The purpose of the IS/NOP was to formally convey that the Kern County Planning Department, as the lead agency, was preparing a Supplemental EIR for the Revised Project and to solicit input regarding the scope and content of the Supplemental EIR. The IS/NOP was prepared in accordance with CEQA Guidelines Section 15082(a) (*Determination of Scope of EIR*) and the County's Guidelines. In conjunction with this public notice, Kern County held a scoping meeting on September 12, 2008 to provide a forum for public comments on the scope of the EIR. Agencies that commented on the NOP are listed in Section 2.5. The IS/NOP and comment letters received are included in Appendix A of this document.

Preparation of Supplemental Draft EIR/Notice of Completion (NOC)

This draft Supplemental EIR was prepared in accordance with CEQA Guidelines Section 15163 (*Supplement to an EIR*) and will be circulated for review and comment to appropriate agencies and additional individuals and interest groups who have requested to be notified of EIR projects. Per Section 15105 of the CEQA Guidelines, this draft Supplemental EIR will be circulated for a 45-day public review period. A Notice of Completion will be prepared with the Draft Supplemental EIR in accordance with Section 15085 (*Notice of Completion*) of the CEQA Guidelines. The purpose of the NOC is to notify reviewing agencies and the public that a draft Supplemental EIR has been prepared and completed for public review.

Preparation of Supplemental Final EIR

In accordance with Section 15088 (*Evaluation of and Response to Comments*) of the CEQA Guidelines, following completion of the 45-day public review period, received comment letters will be reviewed and responded to in the Kern County's "Response to Comments" document. Written responses will be provided to each commenting agency or person at

least two weeks before the scheduled Kern County Planning Commission hearing.

• Certification of Supplemental Final EIR (Supplemental FEIR)

Acting as an advisory body to the Kern County Board of Supervisors, the Planning Commission will consider Kern County and make recommendations on the Supplemental FEIR and the Revised Project. Upon receipt of the Planning Commission's recommendations, the Board of Supervisors will consider the Supplemental FEIR, all public comments, and the Revised Project before taking final action on the Revised Project. At least one public hearing will be held by both the Planning Commission and the Board of Supervisors to consider the Supplemental FEIR, take public testimony, and either approve, conditionally approve, or deny the Revised Project.

Preparation of Notice of Determination (NOD)

In accordance with CEQA Guidelines Section 15094 (*Notice of Determination*), within five working days following certification of the Supplemental FEIR, Kern County shall prepare and file the NOD with the State Clearinghouse. The NOD, which notifies the public that Kern County had certified the Supplemental FEIR, will be posted for at least 30 days.

2.5 Decision to Prepare the Supplemental EIR

The Kern County Planning Department, as lead agency, has determined that a Supplemental Environmental Impact Report (SEIR) must be prepared for the proposed revised Soledad Mountain Project ("Revised Project"). The Revised Project that is now being proposed and evaluated in this draft Supplemental EIR will also be an open pit, heap leach mining operation on the same project site, but will be smaller in scope than the previously approved 1997 Project.

Neither CEQA nor NEPA establishes any expiration time limit for a certified Project EIR such as the 1997 FEIR/EIS, which environmentally evaluated and cleared the original Soledad Mountain Project. However, if conditions that were analyzed in a particular EIR resulted in changes after the EIR was certified, but before all lead or responsible agency discretionary approvals have been granted, additional environmental documentation may be required, according to CEQA.

Determination of whether additional CEQA documentation was required to evaluate any changes was based on the criteria contained in Sections 15162(a) (*Subsequent EIRs and Negative Declarations*) and 15163 (*Supplement to an EIR*) of the CEQA Guidelines.

2.5.1 Conditions Requiring a Subsequent EIR

CEQA Guidelines Section 15162(a) states the following about the conditions under which subsequent environmental analysis is necessary:

- (a) "When an EIR has been certified or negative declaration adopted for a project, no subsequent EIR shall be prepared for that project unless the lead agency determines, on the basis of substantial evidence in the light of the whole record, one or more of the following:
 - (1) Substantial changes are proposed in the project which will require major revisions of the previous EIR or negative declaration due to the involvement of new significant environmental effects or a substantial increase in the severity of previously identified significant effects;
 - (2) Substantial changes occur with respect to the circumstances under which the project is undertaken which will require major revisions of the previous EIR or negative declaration due to the involvement of new significant environmental effects or a substantial increase in the severity of previously identified significant effects;
 - (3) New information of substantial importance, which was not known and could not have been known with the exercise of reasonable diligence at the time the previous EIR was certified as complete or the negative declaration was adopted, shows any of the following:
 - (A) The project will have one or more significant effects not discussed in the previous EIR or negative declaration;
 - (B) Significant effects previously examined will be substantially more severe than shown in the previous EIR;
 - (C) Mitigation measures or alternatives previously found not to be feasible would, in fact, be feasible and would substantially reduce one or more significant effects of the project, but the project proponents decline to adopt the mitigation measure or alternative; or
 - (D) Mitigation measures or alternatives that are considerably different from those analyzed in the previous EIR would substantially reduce one or more significant effects on the environment, but the project proponents decline to adopt the mitigation measure or alternative."

The overall purpose of project review under CEQA Guidelines Section 15162(a) is the identification of new significant environmental effects or a substantial increase in the severity of previously identified significant effects. Therefore, the Kern County Planning Department evaluated each of the criteria in Section 15162(a) to determine the necessity of a subsequent EIR. The County found that the conditions described in Section 15162(a) would require the preparation of a subsequent EIR due to the potential for significant impacts to result from the following:

- Substantial changes in the Revised Project, as compared to the 1997 Project;
- Substantial changes with respect to the circumstances of project implementation; and
- Analysis of new information not previously available when the 1997 FEIR/EIS was certified.

Substantial Changes in the Proposed Project

In determining what environmental clearance document was most appropriate, the County began process by conducting a comparative review of the 1997 Project versus the Revised Project. The County then prepared an Initial Study/Notice of Preparation (IS/NOP) to assess whether the revised Surface Mining and Reclamation Plan would result in any new significant environmental impacts that were not evaluated in the 1997 FEIR/EIS. The IS/NOP included a description of the environmental setting, the applicant's project objectives, the Revised Project description, and the Initial Study checklist as required by CEQA Guidelines and the County's *"Guide for the Preparation of Environmental Impact Reports,"* dated June 2006. The County issued the IS/NOP on August 19, 2008 with a 30-day public review period that ended on September 30, 2008.

The following public agencies submitted comment letters on the Initial Study/Notice of Preparation. Section 4.1 (*Effects Not Found to be Significant*) of this document summarizes and responds to each of the comments received.

- Native American Heritage Commission, August 25, 2008
- California State Lands Commission, September 5, 2008
- Kern County Resource Management Agency, Roads Department, September 10, 2008
- California Department of Transportation, District 9, September 12, 2008
- California Regional Water Quality Control Board, Lahontan Region, September 15, 2008
- State of California Public Utilities Commission, September 15, 2008
- Kern County Air Pollution Control District, September 16, 2008
- State Department of Conservation, Division of Land Resource Protection, September 17, 2008
- U.S. Department of the Interior/Bureau of Land Management, September 17, 2008
- U.S. Department of the Interior, Fish and Wildlife Service, September 27, 2008
- State Department of Conservation, Office of Mine Reclamation, September 30, 2008
- Southern California Gas Company, Southern Region Transmission, November 26, 2008

The County also engaged the public and sought community participation in the scoping process for the environmental document by conducting a scoping meeting on September 12, 2008 to receive comments on the forthcoming Supplemental EIR.

Comments received during scoping have been considered in the process of identifying issue areas that should receive attention in the EIR. Thus, the contents of this Draft SEIR were established based on further review of the Initial Study

information, as well as public and agency input received during the scoping process.

Through the 2008 IS/NOP and scoping process, the County found that the revisions to the 1997 Project, as embodied in the Revised Project, were "minor" but could result in potentially new or increased project-related impacts. The conclusion reasoned that the Revised Project would involve limited alterations to the original mining project that was approved in 1997. Further, the volume of material and the footprint of the mining operations would be smaller than the 1997 Project. However, given changes in project circumstances and new information (see discussions below), the County determined that the Revised Project could result in "substantial changes," "new significant environmental effects" or "substantial increase in the severity of previously identified significant effects." The screening-level Initial Study checklist analysis found that the Revised Project may have a "potentially significant" impact, or "potentially significant unless mitigated" impact on the environment, and an environmental impact report was required.

Substantial Changes in Project Circumstances

Circumstances under which the project will be undertaken have changed since certification of the 1997 FEIR/EIS, as summarized below.

■ Amendments to Surface Mining and Reclamation Act of 1975 (SMARA)

In 2002, the State Mining and Geology Board (SMGB) adopted backfilling regulations Title 14, Article 9, California Code of Regulations (CCR) 3704.1, pertaining to Performance Standards for Backfilling Excavations and Recontouring Lands Disturbed by Open Pit Surface Mining Operations for Metallic Minerals.

In 2006, the SMGB determined that the Soledad Mountain project was not exempt from the "grandfather" provision of the Board's backfilling regulation CCR Section 3704.1(i).

State Climate Change Legislation

In 2006, the Legislature passed and Governor Schwarzenegger signed AB 32, the Global Warming Solutions Act of 2006, which set the 2020 greenhouse gas emissions reduction goal into law. It directed the California Air Resources Board (ARB) to begin developing discrete early actions to reduce greenhouse gases while also preparing a scoping plan to identify how best to reach the 2020 limit.

In 2007, Public Resources Code Section 21083.05 was added to CEQA by Senate Bill 97 (Chapter 185, Statutes of 2007), stating that greenhouse gas emissions and the effects of greenhouse gas emissions are subject to CEQA.

In April 2009, the Governor's Office of Planning and Research (OPR) submitted to the Secretary for Natural Resources its proposed amendments to the State CEQA Guidelines for greenhouse gas emissions, as required by Senate Bill 97 (Chapter 185, 2007). These proposed CEQA Guideline

amendments provide guidance to public agencies regarding the analysis and mitigation of the effects of greenhouse gas emissions in draft CEQA documents.

Detection of Special Status Wildlife Species

Evidence of the western burrowing owl, a California Bird Species of Special Concern, was found onsite in areas where disturbance would occur. The effects of the Revised Project on this wildlife resource are important in determining whether it has significant environmental impacts under CEQA.

New Information of Substantial Importance

New information has been derived from additional studies that are directly related to the changes in project circumstances described above. This information includes analysis of the Revised Project changes related to CCR 3704.1 backfilling compliance; impacts related to greenhouse gas emissions and global climate change; and impacts on burrowing owl.

The concepts of climate change and human contribution to that phenomenon do not constitute "new information" within the meaning of Public Resources Code Section 21166 because information relating to these concepts was widely available and publicly debated as early as 1988, when the United Nations established the Intergovernmental Panel on Climate Change.

As required by CEQA, these issues will be evaluated in this document since they have the potential to result in one or more significant effects not discussed in the 1997 FEIR/EIS. However, given that mining operations proposed with the Revised Project will be greatly similar to the original mining operations (1997 Project), the County has determined that potential impacts would not be substantially more severe than shown in the 1997 FEIR/EIS. Therefore, the Revised Project would not meet all the criteria established in Section 15162(a), which determines when a Subsequent EIR requires preparation.

2.5.2 Conditions Requiring a Supplemental EIR

Given the decision to prepare subsequent environmental analysis, the Kern County Planning Department determined the type of EIR to be prepared by applying the criteria in Section 15163, which states in part:

- (a) "The lead or responsible agency may choose to prepare a supplement to an EIR rather than a subsequent EIR if:
 - (1) Any of the conditions described in Section 15162 would require the preparation of a subsequent EIR, and
 - (2) Only minor additions or changes would be necessary to make the previous EIR adequately apply to the project in the changed situation.
- (b) The supplement to the EIR need contain only the information necessary to make the previous EIR adequate for the project as revised."

With certain conditions of Section 15162 satisfied, as described above, the Kern County Planning Department determined that the revisions to the project, changes to project circumstances, and new information could be presented through minor additions and changes to the 1997 FEIR/EIS. Accordingly, as allowed by Section 15163 of the CEQA Guidelines, the County has determined this Supplemental EIR to be the appropriate environmental clearance document for evaluation of the Revised Project. As per Section 15163(b), this draft Supplemental EIR contains the information necessary to make the 1997 FEIR/EIS adequate for the project as revised. CEQA does not require re-examination of those same environmental issues that were evaluated in the 1997 FEIR/EIS. This draft Supplemental EIR focuses on those additional environmental impacts that would result from those new elements and features being proposed with the Revised Project. Those new elements and features are described in Chapter 3 (*Project Description*) and as appropriate throughout Chapter 4 (*Supplemental Environmental Analysis*).

This supplement to the 1997 FEIR/EIS is also subject to the following additional requirements under CEQA Guidelines Section 15163, which states in part:

- (c) "A supplement to an EIR shall be given the same kind of notice and public review as is given to a draft EIR under Section 15087.
- (d) A supplement to an EIR may be circulated by itself without recirculating the previous draft or final EIR.
- (e) When the agency decides whether to approve the project, the decisionmaking body shall consider the previous EIR as revised by the supplemental EIR. A finding under Section 15091 shall be made for each significant effect shown in the previous EIR as revised."

With regard to Section 15163(e) and the significant effects shown in the 1997 FEIR/EIS, Section 4.1 (*Effects Not Found to be Significant*) analyzes each of those effects and their current disposition in light of the proposed project, changed project circumstances, and new information.

2.6 Contents of the Supplemental EIR

State CEQA Guidelines Section 15163(b) [Supplement to an EIR] states, "The supplement to the EIR need contain only the information necessary to make the previous EIR adequate for the project as revised." Therefore, this draft Supplemental EIR evaluates only those potentially significant environmental impacts that could result with the Revised Project. Determination of those potentially significant environmental impacts was based on:

- Significance thresholds established by CEQA and the County of Kern.
- Conclusions made in the 1997 FEIR/EIS entitled, "Soledad Mountain Project Final Environmental Impact Report/Environmental Impact Statement" that was certified for the original Soledad Mountain project.
- Conclusions made in those various technical studies that have been recently prepared for the proposed project.

- Comments received on the Notice of Preparation prepared for this Supplemental EIR.
- Compliance with those mitigation measures established with the 1997 FEIR/EIS entitled, "Soledad Mountain Project Final Environmental Impact Report/Environmental Impact Statement" that was certified for the original Soledad Mountain project.

Chapter 4 (*Supplemental Environmental Analysis*) of this document provides an analysis of those potentially significant environmental impacts that warranted further evaluation in this document. Evaluation of impact significance was based on each environmental significance threshold that was included in the County's Initial Study Checklist, as established in the "County of Kern Guide for the Preparation of Environmental Impact Reports," dated June 2006. In responding to each environmental significance threshold, the sections in Chapter 4 cite applicable conclusions from the 1997 FEIR/EIS and from technical studies that were recently prepared for the Revised Project. In order to assess impact significance, the discussion also references and responds to comments received on the Notice of Preparation for this draft Supplemental EIR. Finally, the analysis describes the 1997 FEIR/EIS mitigation measures, which were adopted as conditions of approval and required of the original mining project. The Revised Project's continued compliance with these mitigation measures/conditions of approval is shown to reduce the level of significance for environmental impacts.

Based on the analysis contained in Section 4.1 (*Effects Not Found to be Significant*) of this document, it was concluded that potential impacts associated with air quality, greenhouse gas emissions, roadway degradation, floodplain encroachment and the presence of burrowing owl could result with the Revised Project and therefore, required further evaluation and/or mitigation. Air quality and climate change are evaluated in Section 4.2 (*Air Quality*), and burrowing owl impacts are evaluated in Section 4.3 (*Biological Resources*). Roadway and floodplain issues are adequately addressed in Section 4.1 through minor text additions and additional mitigation measures. It was determined that the Revised Project would <u>not</u> result in any new, additional, or potentially significant impacts under the following environmental categories:

- Aesthetics
- Agricultural Resources
- Cultural Resources
- Geology and Soils
- Hazards and Hazardous Materials
- Hydrology and Water Quality
- Land Use and Planning

- Mineral Resources
- Noise
- Population and Housing
- Public Services
- Recreation
- Transportation and Traffic
- Utilities and Service Systems

2.7 Organization of Supplemental EIR

The content and organization of this draft Supplemental EIR are designed to meet the requirements of CEQA, the State CEQA Guidelines, and the County of Kern Guidelines as well as to present issues, analysis, mitigation, and other information in a logical and understandable way. This draft Supplemental EIR is organized as follows:

Chapter 1, Executive Summary

Presents a summary of the Revised Project and its potential impacts and mitigation measures.

Chapter 2, Introduction

Describes the purpose and overview of the EIR process and the scope and organization of this draft Supplemental EIR. This chapter also cites relevant sections of CEQA that explain why a Supplemental EIR was prepared.

Chapter 3, Project Description

Describes the location, details, and objectives of the proposed Revised Project. It also provides a comparison between the various operational components and features of the 1997 Project, which was approved by the County in 1997, and the Revised Project.

Chapter 4, Supplemental Environmental Analysis

Subject to the requirements for a Supplemental EIR (see Section 2.6), this section generally describes existing conditions for each environmental issue before project implementation; methods and assumptions used in the impact analysis; criteria for determining significance; impacts that would result from the proposed Revised Project; and applicable mitigation measures that would eliminate or reduce significant impacts. Based on the analysis contained in Chapter 4, it was concluded that potential impacts associated with air quality, greenhouse gas emissions, and burrowing owl could result with the Revised Project and therefore, required further evaluation in Sections 4.2 (*Air Quality*) and 4.3 (*Biological Resources*).

Chapter 5, Consequences of Project Implementation

Provides mandatory CEQA sections and evaluates or summarizes the following elements: (1) environmental effects of combined recent past, present, or reasonably foreseeable future projects in the area that have the potential to contribute to cumulative impacts; (2) the proposed project's contribution to cumulative conditions and whether that contribution would be cumulatively considerable; (3) discussion of direct and indirect growth-inducing impacts that could be caused by the proposed project; and (4) significant irreversible changes caused by the project.

Chapter 6, Alternatives

Evaluates the environmental effects of project alternatives, including the No-Project Alternative. It also identifies the environmentally superior project alternative.

Chapter 7, Responses to Comments

Reserved for responses to comments on this draft Supplemental EIR.

Chapter 8, Organizations and Persons Consulted & List of Preparers

Includes agencies and people contacted during, and individuals involved in, preparation of this document.

Chapter 9, Bibliography

Identifies those documents referenced or cited in this document.

Chapter 10, Acronyms and Abbreviations

Lists all acronyms and abbreviations mentioned throughout the draft Supplemental EIR with corresponding definitions.

2.8 Availability of the Draft Supplemental EIR

This draft Supplemental EIR was distributed directly to agencies, organizations, and interested members of the public for comment during a 45-day review period in accordance with Section 15087 of the CEQA Guidelines. This draft Supplemental EIR and the full administrative record for the project, including all studies, are available for review during normal business hours, Monday through Friday, at the Kern County Planning Department, located at:

Kern County Planning Department 2700 M Street, Suite 100 Bakersfield, California 93301-2370 Phone: (661) 862-8600 Fax: (661) 862-8601 Contact: Mr. Scott F. Denney, AICP

2.9 **Responsible and Trustee Agencies**

Projects or actions undertaken by the lead agency, in this case, the Kern County Planning Department, could require subsequent oversight, approvals, or permits from other public agencies in order to implement the project and/or action. Other such agencies are referred to as *"responsible agencies"* and *"trustee agencies."* Pursuant to Sections 15381 and 15386 of the State CEQA Guidelines, as amended, responsible agencies and trustee agencies are defined as follows:

A "*responsible agency*" is a public agency that proposes to carry out or approve a project, for which a lead agency is preparing or has prepared an EIR or Negative Declaration. Responsible agencies include all public agencies other than Kern County that have discretionary approval power over the project. (Section 15381 of CEQA Guidelines).

A "*trustee agency*" is a State agency having jurisdiction by law over natural resources affected by a project that are held in trust for the people of the State of California (Section 15386 of CEQA Guidelines).

Permits, consultations, and other required approvals by responsible and trustee agencies are described in Chapter 1 (*Executive Summary*). Those agencies include, but are not be limited to, the following:

- KERN COUNTY
 - Roads Department
 - Engineering and Survey Services Department
 - Environmental Health Services Department
 - Fire Department
 - Kern County Air Pollution Control District
- STATE
 - State Water Resources Control Board, Regional Water Quality Control Board
 - California Department of Fish and Game
 - State Office of Historic Preservation
 - Department of Industrial Relations, Division of Occupational Safety and Health/Cal/OSHA Program
 - Department of Conservation, Office of Mine Reclamation

FEDERAL

- Bureau of Land Management
- U.S. Fish and Wildlife Service
- Bureau of Alcohol, Tobacco and Firearms
- Environmental Protection Agency
- Mine Safety and Health Administration
- Federal Emergency Management Agency

Other public agencies, private entities, and political agencies and jurisdictions that had a particular interest in the proposed Revised Project were sent a copy of the IS/NOP. The list of NOP recipients is included in Appendix A, along with the 12 letters received by the County as comments on the NOP.

2.10 Incorporation by Reference

CEQA Guidelines encourage reduction of the size of environmental reports and allow for information and discussions from previously certified environmental documents to be "incorporated by reference" into Supplemental environmental documents. Section 15150(a) of the CEQA Guidelines states, "An EIR or negative declaration may incorporate by reference all or portions of another document which is a matter of public record or is generally available to the

public." For purposes of this draft Supplemental EIR, information and discussions from the following documents were incorporated by reference.

1997 Soledad Mountain Project Final Environmental Impact Report/ Environmental Impact Statement (SCH No. 1996061052)

The 1997 FEIR/EIS is incorporated by reference into this draft Supplemental EIR pursuant to CEQA Guidelines Section 15150(a). Information and discussions from the 1997 FEIR/EIS continue to apply to the Revised Project for the following reasons. The Revised Project would only have limited alterations to the original mining project and the footprint of the original mining operations that were approved in 1997. The majority of the mining operations would remain greatly unchanged. Therefore, conclusions and findings from the 1997 FEIR/EIS that were made for the various environmental issues and impacts would continue to apply to the Revised Project.

Chapter 4 of this draft Supplemental EIR provides an analysis to determine which potentially significant environmental impacts warranted further evaluation in this document. As part of the analysis, relevant findings and conclusions from the 1997 FEIR/EIS are cited and referenced. These findings and conclusions are incorporated by reference into this document.

Kern County General Plan (September 2009)

The Kern County General Plan is a policy document with planned land use maps and related information that are designed to give long-range guidance to those County officials making decisions affecting the growth and resources of the unincorporated Kern County jurisdiction, excluding the metropolitan Bakersfield planning area. This document, originally adopted on June 15, 2004, and last amended on September 22, 2009, helps to ensure that day-to-day decisions conform to the long-range program designed to protect and further the public interest as related to Kern County's growth and development and mitigate environmental impacts. The General Plan also serves as a guide to the private sector of the economy in relating its development initiatives to the public plans objectives, and policies of the County. Those new environmental impacts that were evaluated in this document have referenced goals and policies from the Kern County General Plan that applied to the Revised Project. The intent was to discuss project consistency with the County's General Plan.

Kern County Zoning Ordinance – Title 19 (March 2009)

The Kern County Zoning Ordinance (Title 19) was adopted to promote and protect the public health, safety, and welfare through the orderly regulation of land uses throughout the unincorporated area of Kern County. The County Zoning Ordinance is intended to:

- Provide the economic and social advantages resulting from an orderly planned use of land resources.
- Encourage and guide development consistent with the Kern County General Plan.

- Divide Kern County into zoning districts of a number, size, and location deemed necessary to carry out the purposes of the Kern County General Plans and this title.
- Regulate the size and use of lots, yards, and other open spaces.
- Regulate the use, location, height, bulk, and size of buildings and structures.
- Regulate the intensity of land use.
- Regulate the density of population in residential areas.
- Establish requirements for off-street parking.
- Regulate signs and billboards.
- Provide for enforcement of the Zoning regulations.

The Revised Project and its revised Surface Mining and Reclamation Plan would require approval of one new and two modified Conditional Use Permits in addition to the nonsummary vacation of a road (public access easement). These discretionary applications will be reviewed and processed in accordance with procedures and requirements contained in the County Zoning Ordinance and the California Streets and Highways Code.

2.11 Sources

This draft SEIR is dependent upon information from many sources, including studies and reports that have been prepared specifically for the Revised Project. Others are studies or reports that may provide background information related to one or more issue areas that have been discussed in this document.

The sources and references used in the preparation of this draft SEIR are listed in Chapter 9 (*Bibliography*), and are available for review during normal business hours at the:

Kern County Planning Department 2700 M Street, Suite 100 Bakersfield, California 93301-2370

CHAPTER 3 PROJECT DESCRIPTION

Chapter 3 Project Description

3.1 **Project Overview**

3.1.1 **Project Location**

The Revised Soledad Mountain Project ("project" or "proposed project") site is located in unincorporated eastern Kern County, California, approximately two miles west of State Route 14 (SR-14), generally south of Silver Queen Road, and five miles south of the community of Mojave. SR-14 is the major route connecting Mojave, Rosamond, Lancaster, and the Los Angeles area. Figure 3-1 provides a Regional Location Map.

Routes from SR-14 to the Project site are Mojave-Tropico Road from the south and Silver Queen Road from the north, both existing paved roads. Mojave-Tropico Road runs north-south on the west side of the Project site and curves east just north of the Project site, becoming Silver Queen Road. Silver Queen Road intersects SR-14 approximately two miles east of the Project site. As discussed later in this chapter under *Site Access*, the primary route for vehicular and truck traffic will be from SR-14 and Silver Queen Road. Figure 3-2 provides a Project Vicinity Map.

3.1.2 Site History

The proposed project is located in Kern County, approximately five miles south of the town of Mojave, California. Gold mining in the area began in the early 1900s. Between 1935 and 1942, approximately 1,180,000 tons of ore was mined using underground mining methods. All mining activities ceased during the Second World War. Some remnants of the historical mine workings are still present at the Site, including the Gold Fields tailings deposit, which dates to the 1930s and is the largest and most recent of the historical tailings piles at the Site. Existing disturbance at the project site totals about 117 acres. Most of the historical mine features at the Site will be removed or reclaimed by the Applicant during the construction of the planned mine and ore processing facilities (ARCADIS 2008b).



Source: Golden Queen Mining Co. Inc.

Figure 3-1 Regional Location Map



3.1.3 **Project Background**

In September 1997, the Kern County Board of Supervisors (County) and Bureau of Land Management (BLM) certified a Final Environmental Impact Report/ Environmental Impact Statement (1997 FEIR/EIS) for the Soledad Mountain Project. The County approved two Conditional Use Permits to allow development of the Soledad Mountain Project (1997 Project) as a 930-acre conventional, open pit mining operation. The project applicant was Golden Queen Mining Co., Inc.

The purpose of the 1997 Project was to profitably mine ore while producing aggregate and construction materials, process ore to recover precious metals (gold and silver), and reclaim the project area. The 1997 Project was designed to recover gold and silver from crushed, agglomerated ore using cyanide heap leach and Merrill-Crowe processes. This permitted mining operation was to last a maximum of 15 years with processing continuing for approximately two years after cessation of mining. The existing Soledad Mountain Project FEIR/EIS was adopted in September 1997.

The applicant was also required to conduct air quality analyses that showed compliance with applicable air quality regulations and standards, and acquire Authority to Construct (ATC) permits from the KCAPCD. In March 2002, seven ATC permits were issued for the Soledad Mountain Project. However, in December 2002, the State of California instituted new backfilling requirements (California Code of Regulations, Title 14, Division 2, Chapter 8, Subchapter 1, Article 9, Section 3704.1) for open pit metal mines. Subsequently, the Applicant began evaluating various alternative designs to the mining project and the permits expired in March 2004. Accordingly, construction of the project did not commence.

The project analyzed in the 1997 FEIR/EIS would have mined an estimated 225 million tons of "overburden material" and up to 60 million tons of ore. The quantities of waste rock and ore in the Revised Project are 108.4 million tons and 51.2 million tons, respectively.

Since 2004, the Applicant has conducted additional environmental studies, financial evaluations, and feasibility analyses that have resulted in the project being re-engineered and re-designed. While similar in terms of their mining plans, the Revised Project is smaller in scope than the previously approved 1997 Project, and the revised Surface Mining and Reclamation Plan is intended to comply with the State's backfilling requirements.

3.2 **Project Objectives**

The project Applicant is the Golden Queen Mining Co., Inc. (GQM). The Applicant's objectives for the proposed project are as follows:

 Construct and operate mining, ore processing and project support facilities to recover precious metal (gold and silver) from the Soledad Mountain mineral resource. The proposed project will occur on and within fee lands, mining leases, patented mining claims and unpatented mining claims owned and/or controlled by Golden Queen Mining Co. Inc.

- Develop and operate a mine to recover gold from the Soledad Mountain Project ore deposit within the boundary of the property controlled by Golden Queen Mining Co. Inc.
- Meet the market demand for precious metal.
- Recover precious metals in a manner that is environmentally responsible and to comply with applicable laws and regulations while optimizing precious metal production, maximizing the utilization of the resource and meeting the financial expectations of its shareholders.

The revised Surface Mining and Reclamation Plan also contains additional specific objectives and implementation techniques. The following are design and/or operations components that will ensure proper reclamation and revegetation:

- Maximize backfill in mined-out phases of the open pit with no, or a minimum of, double-handling of waste rock at the end of the mine life.
- Use waste rock disposed of outside the open pit perimeter primarily for the construction of access roads and the pad required for the production and sale of aggregate.
- Minimize the footprint of any remaining waste rock dumps outside the open pit perimeter.
- Minimize re-sloping required for closure and reclamation by using appropriate techniques to build the waste rock management facilities or dumps.
- Cover as much of the benched pit wall as feasible by backfilling.
- Attempt to create a reclaimed surface that will be similar to either the original or surrounding natural ground surfaces.
- Locate waste rock management units on shallow slopes to ensure stability.
- Provide reclamation and revegetation plans in accordance with Surface Mining and Reclamation Act requirements.

The following additional design components are intended to support an overall objective of minimizing environmental and nuisance impacts:

- Remove existing tailings piles to minimize the recurring levels of fugitive dust.
- Utilize pipe conveyors where feasible to minimize haul distances for trucks used in the open pit operation.
- Minimize the number of affected drainage basins.
- Preserve corridors for the pipe conveyor, the use of which will reduce fugitive dust emissions.
- No soil stockpile or waste rock shall be placed in the Joshua tree grove west of the Northwest Pit (Phase 1 area).

- No waste rock shall be placed south of Soledad Mountain to avoid a visual impact.
- Establish a "green" fund to promote green technologies in the greater Mojave area.

3.3 Environmental Setting

The following are selective discussions of the overall environmental setting.

The environmental setting of the project area has been documented in a number of comprehensive baseline studies done from 1990 onward and in the 1997 FEIR/EIS. The 1997 FEIR/EIS environmental setting discussions remain applicable since the Site and surroundings are relatively unchanged between 1997 and 2009. If site-specific environmental conditions have changed, the pertinent changes are described in Section 4.1 (*Effects Not Found to be Significant*), most notably in addressing the affected environmental baseline for traffic and hydrology/water quality. The air quality and biological resources baseline conditions are discussed separately in Sections 4.2 (*Air Quality*) and 4.3 (*Biological Resources*), respectively.

3.3.1 Topography

The western Mojave Desert regional topography varies from relatively flat alluvial areas to steep mountains. The Project site is located in the historic Mojave Mining District. Soledad Mountain is a volcanic peak approximately three miles in diameter that rises to an elevation of 4,190 feet above mean sea level (MSL). The topography varies from steep (upwards of 70 percent slopes), rugged hillsides in the middle to upper elevations to a gently sloping desert floor around the toe of Soledad Mountain.

The Project site is composed of rugged outcrops and ridges with intervening drainages that grade to alluvial slopes and flat areas on the flanks of Soledad Mountain. Elevations in the site disturbance footprint range from about 2,700 to 3,900 feet above MSL.

The Project site and primary operations areas are shown on a USGS topographical map in Figure 3-3. An aerial photograph of the Project site is shown in Figure 3-4.





Source: Aerial map from Google Earth.

Figure 3-4

3.3.2 Geology and Minerals

The project is located in the western Mojave Desert Geomorphic Province of Southern California. The Mojave Desert is a wedge-shaped fault block. The Garlock Fault Zone separates the Mojave Desert from the Sierra Nevada Mountains to the north. The San Andreas Fault Zone separates the Mojave Desert from the Transverse Ranges and central coastal areas to the southwest.

Mineral deposits dictate the methods that will be used to recover gold, silver, and construction aggregates. Soledad Mountain deposits are located in a volcanic sequence of rhyolite porphyries, quartz latites, and bedded pyroclastics. High-grade precious metals mineralization is associated with steeply dipping epithermal fissure veins in faults and fracture zones that cross cut the rock units. The veins are contained within siliceous envelopes of lower grade material that form the bulk of the mineral resources.

Gold is present as native ore and electrum (i.e., gold with more than approximately 20 percent silver) with the silver content of the electrum as high as 25 percent. Silver is also present as the mineral acanthite with some native silver, pyrargyrite and polybasite.

3.3.3 Climate

This portion of the western Mojave Desert is subject to extreme temperatures and climate. During the summer months, maximum average daily temperatures commonly exceed 100 degrees Fahrenheit. The project area is subject to very low humidity and dry winds from the west and southwest, typical of the interior California deserts. During the winter months, the average minimum and maximum temperatures are approximately 30 and 60 degrees Fahrenheit, respectively. Based on the Mojave meteorological monitoring station run by the Western Regional Climate Center, the maximum and minimum recorded annual rainfall in the project area are 15.51 inches in 1983 and 1.02 inches in 1989, respectively.

3.3.4 County General Plan and Zoning

Figure 3-5 shows the General Plan Map Code Designations for the Project site. Most of the Project site is in the "Specific Plan for Soledad Mountain – Elephant Butte and Vicinity – South of Mojave" area, which designates the Project site for mineral extraction and processing, public lands, and low-density residential development. Portions of the Project site are also designated 1.1 (Federal Land) by the Kern County General Plan. General Plan amendments are neither required nor proposed as part of the Revised Project.

Figure 3-6 shows the existing zoning classifications for the Project site, the majority of which is zoned A-1 (Limited Agriculture) with some areas zoned E(2-1/2)RS (Estate 2.5 Acres, Residential Suburban Combining). The Revised Project does not require or propose a change of zone.

County of Kern



Draft Supplemental Environmental Impact Report Golden Queen Mining Co. Inc. – Soledad Mountain Project January 2010
County of Kern



Draft Supplemental Environmental Impact Report Golden Queen Mining Co. Inc. – Soledad Mountain Project January 2010

3.3.5 Surrounding Land Uses

Land uses in the general project vicinity include sparsely scattered single-family residences, open space, and various industrial facilities including other historical precious metals open pit mining activities. Mining uses include Standard Hill (aggregate – idle), Cactus Gold (heap-leach gold – undergoing reclamation), Holliday Rock Company (aggregate and asphalt batch plant – active), and the California Portland Cement Mojave Plant (aggregate and cement plant – active).

Approximately eight individual residences are located north of Silver Queen Road and within about 450 to 1,000 feet of the Project site. To the southwest, a single residence is located along Mojave Tropico Road, approximately 0.5 mile from the site boundary. Of these nine existing residences, six are within a mile of the historical tailings pile and are identified as potential sensitive receptor locations for the purposes of health risk assessment.

The nearest large cluster of residential development is Camelot, a 109-unit single-family residential development and golf course located approximately two miles north of the Project site, southwest of the intersection of Camelot Boulevard at Holt Street.

3.3.6 Public Services and Facilities

Services such as a hospital, ambulance, fire-protection, garbage and hazardous waste disposal, schools, motels and housing, shopping, airport and recreation are available in Mojave and its surroundings. Telephone service is available on the Project site.

3.4 Property and Site Descriptions

3.4.1 Prior Mining Activities

As indicated previously, Soledad Mountain has been an area for precious metals mining and ore processing since the early 1900s. The largest mine production occurred in the late 1930s and early 1940s. Between 1935 and 1942, approximately 1,180,000 tons of ore were mined using underground mining methods. All mining activities ceased during World War II (late 1930s - 1945).

The Project site contains numerous mine adits (i.e., a tunnel driven horizontally into a hillside for the purpose of mining), shafts, small quantities of waste rock, as well as tailings (i.e., gravel, dirt, and rocks with no gold) from three historical mining and milling operations. Combined with roads, exploration trails and miscellaneous working areas, the existing disturbances at the site total about 117 acres. Figures 3-7 and 3-8 show photographs of onsite historical tailings and mine structures, respectively.



Figure 3-7 Historical Tailings



Figure 3-8 Historical Mine Structures

3.4.2 Project Site

In November 1985, GQM was formed specifically to acquire the Project property. GQM currently controls approximately 2,500 acres of land in the area, which includes all of Section 6 and portions of Sections 5, 7, 8 and 18, T10N/R2W; portions of Sections 1 and 12, T10N/R13W; portions of Section 18, T9N/R12W; and portions of Section 32, T11N/R12W, San Bernardino Base and Meridian (SBBM). Property holdings in the immediate project vicinity total 1,506 acres, of which approximately 1,440 acres comprise the Project site, as shown on Figure 3-9. Detailed landholder and property information are included in Attachment B of the Surface Mining and Reclamation Plan (GQM 2009c).

The approximate 1,440-acre Project site is situated within the 2,500-acres controlled by GQM. The bulk of the project facilities and activities will be located in Section 6, T10N/R12W. The project will result in direct physical impacts to approximately 905 acres, of which approximately 839 acres will be reclaimed at the end of the mine life. The Project site boundary and disturbance footprints are shown on Figure 3-10 (*Project Site Boundary*).

3.5 Requested Discretionary Actions

In December 2002, the State of California instituted new backfilling requirements (California Code of Regulations, Title 14, Division 2, Chapter 8, Subchapter 1, Article 9, Section 3704.1) for open pit metal mines. As the Soledad Mountain Project had not commenced operation by that time, the State Mining and Geology Board (SMGB) concluded adherence to the referenced regulation was necessary. The Revised Project proposes modification of the two previously approved conditional use permits (CUPs) and approval of a new CUP, based on project boundary changes, to amend the Surface Mining and Reclamation Plan originally approved (1997), on both private and federally administered land, to demonstrate compliance with current State requirements.

Similar to the 1997 Project, the Revised Project also includes vacating a portion of New Eagle Road, a paved public access road which extends into the project area in the northwest one-quarter of Section 6, Township 10 North, Range 12 West, SBBM. New Eagle Road presently connects to the south side of Silver Queen Road extends southward to its terminus in Section 6, Township 10 North, Range 12 West, SBBM.

The affected mining and reclamation plan permits are:

- Conditional Use Permit #27, Map 196
- Modification of CUP #41, Map 213
- Modification of CUP #22, Map 214
- Non-summary Vacation 191-31 3 098 for a portion of New Eagle Road in accordance with the California Streets and Highway Code.

Other discretionary actions by responsible agencies are identified in Table 3-2 in Section 3.14 (*Other Permits and Approvals*).







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3.6 Mine Life and Phasing

3.6.1 Total Project Life

Operations associated with the Revised Project will consist of:

- Construction
- Mining to include open-pit operation, ore processing, aggregate production, waste rock management, and sequential backfilling of mined-out areas; and
- Reclamation to include structure renovation, revegetation, weed control, and monitoring.

Construction is scheduled to commence in mid-2010. The proposed mine will produce two different types of materials with overlapping time frames. Mine life is presently defined as:

- 1 year of construction
- 12 years of mining (Phase 1 Phase 5)
- 15 years of leaching for the production of gold and silver to overlap the 12 years of mining
- 2 years of rinsing and draindown upon cessation of leaching
- 30 years of aggregate production (to overlap with the years of mining, leaching, rinsing and draindown)
- 2 years of reclamation upon cessation of mining
- 3 years of post-closure monitoring

The mining, production and sale of aggregate and construction materials is expected to commence fairly early in the mine life and continue for up to 30 years or until the stockpile of quality waste rock has been exhausted.

Reclamation will proceed concurrently where feasible but is expected to require two years following cessation of all mining and an additional three years of postclosure monitoring. Monitoring will continue until the reclamation success criteria are met. The projected termination date is April 10, 2041. In total, the mine life will be approximately 30 years from construction to completion of aggregate processing to reclamation.

Within this total project life, there is a Phase 1 heap leach pad that will serve the operations described above. In addition, there is a Future Phase 2 heap leach pad that could extend the total life by up to 4 years, as explained below.

The total quantity of ore to be mined, crushed and stacked on the Phase 1 heap leach pad is estimated to be 51.2 million tons. This includes only the measured and indicated resource estimates. When estimating ore production, the inferred mineral resource estimates are treated as waste rock. As rock is excavated, and tested, it is possible that a portion of the inferred resources could be reclassified to a higher category thereby increasing the total quantity of ore available for leaching and therefore creating a need for the Phase 2 heap leach pad.

Performance of the heap leach process depends upon an adequate percolation rate of process solutions through the crushed and agglomerated ore stacked on the heap. Extensive test work has been done to determine design parameters for the Revised Project. Operating experience will, however, be required to ultimately confirm the best operating procedures. This may affect the number of lifts (and the quantity of ore) in the Phase 1 heap leach pad, thus creating a need for the Phase 2 pad.

These Heap Leach Facility phases are distinct from the mining phases described below.

3.6.2 Open Pit Mining Phases

The total quantity of ore to be mined, crushed and stacked on the Phase 1 heap leach pad is estimated at 51.2 million tons. Total waste rock mined is estimated at 108.4 million tons, of which 19.0 million tons is expected to be sold as aggregate and construction materials and 89.4 million is expected to be managed on site.

To achieve those ore and waste rock yields, balanced with concurrent backfilling of the mined out phases of the open pit(s) where feasible, mining of the open pit(s) will occur in five linked mining phases (see Figure 3-11, *Mining Phase Boundaries*). The open-pit design will continue to be refined to include more detail regarding each mining phase in an effort to reduce the quantity of waste rock that has to be mined to expose ore (i.e., to reduce the stripping ratios) and to determine a detailed backfilling schedule that will permit reclamation at the earliest feasible time.

The maximum anticipated mining depth will be 600 feet below existing ground surface. The lowest elevation reached in mining Phase 1 through Phase 5 is in Phase 1 at 2,780 feet above MSL. By way of comparison, the elevation at the main portal is 3,030 feet and a typical elevation along Silver Queen Road is 2,800 feet above MSL.

Phase 1 – Mining of the Northwest Pit

Waste rock from the Northwest Pit (Phase 1) will be used to construct on-site access roads. Any waste rock not used for this purpose will be stockpiled in the storage area south of the Northwest Pit to provide raw material for the aggregate operation.

Estimated quantities: 2.5 million tons ore / 6.1 million tons waste rock.

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Phase 2 – Mining of the East Pit

Waste rock from the East Pit (Phase 2) will be used for the construction of a pad east of the East Pit to serve as the base for the aggregate operation. It is projected that approximately 19.0 million tons of quality waste rock will be stockpiled on this pad and processed and sold as aggregate and construction material. This will largely be quartz latite and rhyolite from the East Pit. The mined-out phases of the open pit will be backfilled with waste rock, and this process is the key to waste rock management for the Revised Project.

Estimated quantities: 23.0 million tons ore / 37.7 million tons waste rock.

Phase 3 – Mining of Main Pit

Phase 3 will continue mining in the Main Pit. Waste rock from Phase 3 will be backfilled into Phases 1 and 2.

Estimated quantities: 9.8 million tons ore / 31.1 million tons waste rock.

Phase 4 – Mining of the Main Pit - Continued

Phase 4 will continue mining in the Main Pit. The mined-out phases of the open pit will be backfilled with waste rock. Waste rock from Phase 4 will be backfilled into Phases 1 and 3.

Estimated quantities: 8.1 million tons ore / 15.7 million tons waste rock.

Phase 5 – Mining of the West Pit

Phase 5 will create the West Pit. Waste rock from Phase 5 will be backfilled into Phases 3 and 4.

Estimated quantities: 7.7 million tons ore / 17.7 million tons waste rock.

Reclamation and revegetation of each Phase will proceed concurrently where feasible, but is expected to require two years following the termination of all mining, and a further three years of post-reclamation monitoring. Monitoring will continue until the reclamation success criteria are met, at which time the operator may petition the Office of Mine Reclamation (OMR) for a closure inspection and release of financial assurance instruments. Refer to Section 3.9 (*Reclamation and Revegetation*) for more information on the proposed reclamation and revegetation processes.

3.7 **Proposed Processes and Facilities**

The 905-acre Revised Project will be an open pit mining operation using conventional open pit mining methods and the cyanide heap leach and Merrill-Crowe processes to recover gold and silver from crushed, agglomerated ore. Precious metals production is projected to be 893,700 ounces of gold and 10,137,000 ounces of silver. The project will also mine and process approximately 19.0 million tons of waste rock as aggregate.

The applicant has prepared a revised Mine Design and Backfilling Plan (GQM 2009a), which is part of EIR Appendix B, the project's Revised Surface Mining and Reclamation Plan (GQM 2009c). Due to the extensive technical detail in those plans, the sections that follow provide summary descriptions of construction activities, processes and facilities, mining design and operations, reclamation and revegetation activities, and project access.

Following initial construction, the ore extraction and refinement processes include the following general steps:

- Open Pit Mining
- Crushing and Screening Plant
- Heap Leach Facility (Phase 1 Pad)
- Merrill-Crowe Plant and Refinery
- Waste Rock Management
- Aggregate Production
- Future Heap Leach Pad area (Phase 2 Pad)

Figure 3-12 (*General Site Layout*) presents the locations of the facilities and uses, each of which is further discussed in the following sections. Figure 3-13 (*Overall Project Flow Diagram*) illustrates the various processes involved in the project, from mining to final product.

3.7.1 Initial Construction Operations

Construction will commence when all permits and approvals have been granted, presently anticipated for mid-2010. Construction is estimated to last one year depending on weather conditions and inspection and permit schedules.

Short-term construction personnel will be a combination of contractor and GQM employees and are estimated at 200 individuals at peak. Construction activities will include earthwork, road construction, and building and infrastructure installation. Pre-production mining of an estimated 1.1 million tons of waste rock and some ore will be necessary to prepare access roads, pads, and benches for the start of operations.

Facilities to be constructed include the crushing and screening plant, heap leach facilities, Merrill-Crowe plant, assay laboratory, storage facilities for explosives, office buildings, warehouse, and maintenance shop.

Infrastructure will include haul roads to the mining areas and site facilities, staging areas, ore conveyors and conveyor equipment, crusher and screening equipment, fluid pipelines and handling facilities, surge and storage ponds, electrical and water distribution systems, storm water and drainage structures, and chemical and fuel handling storage tanks.



Source: Golden Queen Mining Co. Inc.

Figure 3-12 General Site Layout

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3.7.2 Open Pit Mining, Loading, and Hauling

Standard open pit mining methods will be used to mine ore and waste rock, including drilling, blasting, loading, and hauling.

Blast holes will be drilled on an engineered grid to allow for the placement of blasting agents within the deposit and the collection of drill cutting samples for assay and mine development. Blasting will be strictly conducted in accordance with Mine Safety & Health Administration (MSHA) regulations. Blasting will occur during daylight, one time per day, and will be engineered to minimize the amount of explosives used.

Ore and waste rock will be loaded by front-end loaders into 100-ton trucks from the Northwest Pit (Phase 1 area), then will be hauled to the primary crusher. In Phases 2 through 4, an in-pit crusher will be used to crush a portion of the ore. This portion of the crushed ore will then be conveyed to the crushing-screening plant by pipe conveyor, thus reducing ore hauling by trucks. Ore hauling with trucks may be reemployed for Phase 5.

3.7.3 Aggregate Production

The average rate at which waste rock will be processed to produce aggregate and construction materials is 2,000 tons per day (500,000 tons per year at a rate of 5 working days per week at 50 weeks per year). The following are the unit operations that will be required:

- Load waste rock with a rubber tired loader;
- Feed waste rock to a portable crusher;
- Screen waste rock on a portable screen to produce final products;
- Stockpile final products ready for shipment to the market and
- Load trucks for hauling products to market.

3.7.4 Waste Rock Management

Waste rock will be hauled to and dumped at one of the designated waste rock storage areas or backfilled in mined-out phases of the open pit. Dozers will be used in the open pit and for waste rock management. The grader and water truck will be used to maintain the haul roads and suppress fugitive dust from hauling and around the processing areas.

Section 3.8 (*Waste Rock Management Plan*) provides additional information about proposed waste rock management goals and techniques.

3.7.5 Crushing-Screening Plant

The crushing-screening plant will be located north of the open pit. Dust control will be provided (see Section 3.12, *Environmental Controls* for details). The crushing-screening plant will include a primary crusher and coarse ore stockpile;

a primary screen, cone crusher, and fine ore bin; High Pressure Grinding Roll (HPGR), fine ore stockpile, and overland conveyor.

Primary Crusher and Coarse Ore Stockpile

The run-of-mine ore will be dumped into the receiving hopper and will be fed by a vibrating grizzly feeder to a primary jaw crusher. The primary crushed material will then be conveyed to the coarse ore stockpile. The layout makes allowance for feeding the stockpile with pipe conveyors from the two main mining areas. The stockpile has a total capacity of 44,000 tons and a live capacity of 6,600 tons.

The coarse ore will be fed to the primary screen by two vibratory feeders located in the reclaim tunnel below the coarse ore stockpile. A hood has been designed to enclose trucks when dumping at the primary crusher receiving hopper. The hood is oriented with the closed end toward the prevailing wind direction. Dust emissions in the primary crusher will be controlled with water sprays. Sonic foggers will also be provided to control dust emissions at the transfer points.

Primary Screen, Cone Crusher, and Fine Ore Bin

The secondary crushing stage includes the primary screen and the cone crusher, which prepare the feed for the High Pressure Grinding Roll. Crushed product is conveyed to a fine ore bin prior to entry into the HPGR circuit. The screen includes a dust enclosure, and the transfer points will also be enclosed with dust hoods. Dust emissions in the secondary crushing stage will be controlled with a wet scrubber. Sonic foggers to control dust emissions will also be located at the transfer points.

HPGR, Fine Ore Stockpile, and Overland Conveyor

The HPGR circuit further reduces the size of fine ore and thoroughly mixes cement with the ore. Cement will be added to the HPGR feed conveyor as a binder and for alkalinity control. Cement will be stored in a cement silo and a backup cement storage vessel, both located beside the fine ore bin. Both the cement silo and the backup cement storage vessel will be equipped with bin vent filters for dust control.

The HPGR consists of two counter-rotating rolls: a fixed roll and the other a floating roll. The floating roll is mounted on and can move freely on two slides. The grinding forces are applied to the floating roll by four hydraulic rams. Ore is choke-fed to the gap between the rolls. Water is added to the HPGR feed to maintain a target moisture content of three percent. The HPGR discharge will be conveyed to a sampler and then conveyed to a fine ore stockpile.

The fine ore stockpile is included in the HPGR circuit to provide flexibility in the operation of the crushing-screening plant. The live capacity of the fine ore stockpile is large enough to permit the operators to move and reposition the grasshopper conveyors and the stacker on the heap every day without interrupting the operation of the plant and the HPGR. The fine ore stockpile has a

nominal live capacity of 3,300 tons. Fine ore is conveyed by the overland conveyor and a series of grasshopper conveyors to a stacker and the heap. Dust emissions from the HPGR discharge and transfer points will be controlled with a wet scrubber.

3.7.6 Heap Leach Facility

The Heap Leach Facility (HLF) consists of the facilities that receive ore for leaching with dilute sodium cyanide solution (NaCN) and includes the heap leach pads, solution conveyance channel, pump box, and overflow pond. Figure 3-12 (*General Site Layout*) shows the proposed locations of the primary components of the heap leach facility.

Pad Design

Two heap leach pads are proposed for the HLF, the Phase 1 pad and Phase 2 pad. The Phase 1 and Phase 2 pads are dedicated, single-use, conventional pads. The Phase 1 pad will be constructed first, followed by the Phase 2 pad once the Phase 1 pad nears its capacity. As illustrated on Figure 3-14 (*Heap Leach Pad Design*), the Phase 1 pad is designed to contain approximately 51.2 million tons of ore on a 2,100-foot wide by 4,900-foot long footprint, which covers an area of approximately 205 acres. The Phase 1 pad will be built in three stages. Fine, agglomerated ore will be stacked on the Phase 1 heap leach pad to an ultimate height of 200 feet above the liner in 33-foot high lifts (see cross-sections on Figure 3-14).

The Phase 2 pad covers an area of approximately 92 acres and is designed to contain the balance of potential future ore reserves with a heap height of 200 feet and a capacity of 25 million tons of ore. Detailed design of the Phase 2 pad will occur after consideration of the operational experience gained from the Phase 1 pad. The Phase 2 pad will be constructed in stages as required once the Phase 1 pad has been loaded to its full capacity.

Solution Containment

During construction of the heap leach pad, organic or unsuitable soils from the foundation area will be stripped and the site graded for positive drainage. This step will be followed by installation of leak detection systems and placement of a low permeability composite liner system to provide solution containment with the following components (from top down):

- Leachate collection and recovery system comprised of a two-foot thick protective drain cover fill layer of crushed waste rock or ore with a solution collection piping system.
- 0.08 inch thick linear low-density polyethylene (LLDPE) geomembrane.
- One-foot thick soil liner underlying the LLDPE geomembrane. The soil liner will be constructed using a blend of onsite historical tailings and native clayey soils. This may be amended with bentonite as needed.

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The HLF is designed as a closed system with zero discharge of solutions. Dilute cyanide solution will be applied to the ore heaps via drip emitters at a design flow rate of approximately 4,400 gallons per minute (gpm) and an application rate of 0.004 gpm per square foot, with cyanide concentrations ranging from 150 to 300 milligram per liter and pH values higher than 10.5. Drip lines and drip emitters will be buried. The processed solution that percolates through the heap is termed "pregnant solution" and it will be collected at the base of the heap in a network of pipes that will flow by gravity to the pump box. An overflow pond, located downstream of the pump box, will provide operational flexibility and contingency capacity for upset conditions. The pregnant solution will be pumped to the Merrill-Crowe plant.

As described in Section 3.11 (*Utility Systems*), the HLF accounts for about 75 percent of the total operational water usage, requiring approximately 425 gpm of the 650 gpm total.

3.7.7 Merrill-Crowe Plant and Refinery

Gold and silver will be recovered from the pregnant solution in the Merrill-Crowe plant and refinery. In the Merrill-Crowe process, gold and silver are precipitated with zinc from the pregnant solution as micron-sized metallic particles, then filtered in the refinery. The solution from which gold and silver have been stripped is called the "barren solution," which will flow by gravity to the pump box and pumped back to the heap for reuse in the HLF process.

The gold and silver precipitate is removed manually from the filters and stored in mercury retort pans. The ore is expected to contain incidental concentrations of mercury, and any mercury leached from the ore will be precipitated with the gold and silver. A mercury retort will be used to remove mercury from the precipitate by heating it to volatilization. Water vapor and mercury are condensed and collected in the retort condensing system and the mercury trap. The mercury will be drained from the trap as required and stored in flasks for sale to the commercial market. The mercury retort exhaust fumes are cooled and cleaned in a sulfur-impregnated carbon scrubber before being discharged. Used carbon is typically regenerated by the vendor and any spent carbon is sent to an approved facility for final disposal.

The dried precipitate is mixed with selected fluxes, typically silica, borax, and soda ash, and melted in an induction furnace. The furnace exhaust fumes flow via a collection hood to a cartridge-type, dry dust collector and are further cleaned in a sulfur-impregnated carbon scrubber. Impurities in the melt combine with the fluxes to form slag, which is tapped as required and poured into slag pots. The slag is cooled and crushed, and occluded particles of gold and silver are recovered by gravity for further processing. The molten mix of gold and silver is poured into molds. The mix is cooled, cleaned, and shipped to a commercial refinery where gold and silver bullions are produced for final sale.

A diesel-powered generator will provide standby power adjacent to the Merrill-Crowe plant. Power will be available to operate the barren and recycle solution pumps in case of a power failure.

3.8 Waste Rock Management Plan

3.8.1 Goals

The Revised Project proposes waste rock management with the following concepts and goals:

Operational Efficiency

- Maximize backfill in mined-out phases of the open pit with no or a minimum of double handling of waste rock at the end of the mine life.
- Preserve corridors for the pipe conveyor.
- A flexible approach to backfilling will be essential for a financially viable project.

Support Reclamation Objectives

- Minimize re-sloping required for closure and reclamation by using appropriate techniques to build the waste rock management facilities or dumps.
- Locate waste rock management units on shallow slopes to ensure stability.
- Cover as much of the benched pit wall as possible by backfilling.
- Attempt to create a reclaimed surface that will be similar to either the original or natural ground surfaces.

Control Environmental Effects

- Remove existing tailings piles in order to minimize the recurring levels of fugitive dust.
- Minimize the footprint of the waste rock outside the pit perimeter.
- Minimize the number of affected drainage basins.
- Utilize pipe conveyors where feasible to minimize haul distances for trucks used in the open pit operation.
- No soil stockpile or waste rock shall be placed in the Joshua tree grove west of the Northwest Pit (Phase 1 area).
- No waste rock will be placed south of Soledad Mountain as a means of avoiding a visual impact.

The waste rock management plan will create a defined surface that provides a target for maximum backfill. In addition, the management plan addresses safety and environmental issues by providing roads for access across the backfill for large equipment; slope contouring to reduce visual impacts; providing erosion control measures; and promoting revegetation. The management plan also addresses leachate and leached and rinsed residues from waste rock, as discussed in the following sections.

3.8.2 Waste Rock Leachate Control

Weathering of the waste rock will occur very slowly. There is no indication that precipitation percolating through the waste rock will degrade groundwater quality. Samples of ore and waste rock have tested negative for acid rock drainage (ARD). The area's low annual precipitation and high evaporation rates make it unlikely that there will be sufficient seepage through the waste rock dumps to initiate any chemical reactions for ARD and to transport the products from such reactions, such as elevated concentrations of metals and arsenic, to a receiving resource. The nearest body of surface water is an intermittent stream located approximately three miles west of the project. It is not expected that the waste rock will require mitigation or remedial measures. Regardless, the applicant will conduct an ongoing geotechnical monitoring program to confirm these conclusions, as proposed in the Report of Waste Discharge (ROWD) (GQM et al. 2007).

3.9 Reclamation and Revegetation

3.9.1 Reclamation Plan

The Revised Project's Surface Mining and Reclamation Plan (SMRP) proposes to meet the requirements of Surface Mining and Reclamation Act (SMARA) Section 3704(d) (final reclaimed fill slopes shall not exceed 2:1 [horizontal to vertical] except under specified circumstances). The ultimate goal of reclamation will be to return the area to an open space end use. The Revised Project will reclaim approximately 839 acres of the 905 acres disturbed, or 93 percent. The 1997 Project would have disturbed 930 acres and reclaimed 419 acres, or approximately 45 percent.

Disturbed areas that will be reclaimed include the Heap Leach Facility, waste rock pad constructed as a base for the aggregate operation, waste rock backfilled in mined-out portions of the open pits, processing and support facilities, access roads, exploration roads and drill pads. The steep slopes in the open pits that are not covered by backfilled waste rock and the permanent access road to the top of Soledad Mountain will not be reclaimed. Figure 3-10 (*Land Disturbance Areas*) shows the expected disturbed areas, including the portions to be reclaimed.

Concurrent reclamation will be feasible with the current approach to waste rock management, as discussed previously. However, reclamation is still expected to require two years following cessation of all mining and an additional three years of post-reclamation monitoring. Monitoring will continue until the reclamation success criteria are met and the operator has petitioned OMR for closure and financial assurance release.

Backfill in the mined-out phases of the open pit will typically consist of loose, coarse waste rock. The tops of the waste rock dumps will be graded or sloped inwards to control runoff and erosion. The crests of the waste rock dumps will be reworked with a dozer to eliminate straight lines and to blend with the natural topography. The dumps will be re-sloped to 2.0 horizontal to 1.0 vertical, or

approximately 27 degrees, to ensure long-term stability, lesser visual impacts, improve erosion control, and promote revegetation. Surfaces will then be ripped to break up residual compaction. Occasional slopes and remnant pit slopes will remain as talus-like slopes to resemble the surrounding rock hillsides. Typical ripping and dozing patterns will be used on waste rock dump surfaces.

As discussed below, reclamation will also be applied to permanent structures and roads and drill pads. In addition, growth media will be salvaged to the greatest extent feasible.

Reclamation of the Heap Leach Facility

Reclamation of the HLF requires neutralization and closure processes. The Merrill-Crowe zinc precipitation process will be used throughout the majority of the operating period and early into the reclamation portion of the project. A carbon adsorption process will be used when the pregnant solution becomes low in gold content, making the Merrill-Crowe process inefficient. Also, the carbon adsorption process will assist in the removal of other metals, such as copper, which may be found in the process solutions during neutralization. Since neutralization of the heaps will proceed on a phased plan, the two processes would operate in parallel for a portion of the life of the project. A flow diagram showing both processes is provided on Exhibit 17.a.1 (*Generalized Process Flowsheet*) in the SMRP (GQM 2009c).

Neutralization and reclamation will be accomplished as per a Final Closure and Post-Closure Maintenance Plan that will be submitted to the Regional Water Quality Control Board prior to beginning any final closure activities. The Final Plan will be prepared in accordance with accepted and then current environmental engineering practices and industry standards, and implemented to meet the requirements of the pending Board Order to be issued by the Regional Water Quality Control Board (RWQCB) prior to initiation of operations. The Final Closure and Post-Closure Maintenance Plan will meet the requirements established by the project CUP.

The basic approach to reducing the cyanide concentrations is to allow natural processes to occur and to do a staged rinse with fresh water. The leached residues on the heap leach pad will be rinsed and neutralized until the limits for the residual cyanide content set by the RWQCB have been met. Cyanide concentrations in the solutions must be reduced to the weak acid dissociable (WAD) standard of 0.2 mg/L (0.2 ppm) and a pH ranging from 6.0 to 8.5. Hydrogen peroxide or an equivalent oxidizing agent can be used to speed up the neutralization process if required. The hydrogen peroxide can be injected into any of the solution distribution lines with a chemical feed pump. Some amount of liquid is lost through the process throughout operations. Toward the end of mining, make-up water is no longer added and what ultimately becomes a fresh water solution evaporates.

Ultimately, the leached and rinsed residues will be reclaimed in place on the lined heap leach pads, in accordance with an approved Surface Mining and Reclamation Plan and the Waste Discharge Requirements (WDRs). The rinsed residues will, therefore, not be available or required for backfilling.

Reclamation of Permanent Structures

All process equipment will be removed. Permanent structures will be dismantled and removed. This includes the crushing-screening plant, the Merrill-Crowe plant and assay laboratory, the facilities required for the processing of aggregate, the workshop and warehouse building, the security building, and the bulk fuel storage facility. Some foundations will be broken up and all foundations and any rubble will be covered with waste rock or growth media, if available, to a minimum depth of one foot and reseeded.

The three production wells and five monitoring wells will be abandoned according to applicable requirements once no longer required for the operation. All surplus materials and storage containers will be recycled or disposed of offsite. Any remaining reagents not used in the process will be returned to vendors or properly disposed of at an approved offsite facility. Any remaining garbage will be transported to the Mojave landfill. Any waste products will be removed from the site and disposed of according to all applicable regulations. Septic tanks and piping will be removed with no further reclamation of the septic leach field required.

Reclamation of Exploration Roads and Drill Pads

Most of the existing exploration roads and drill pads will be removed during mining. It is expected that the remaining exploration roads and drill pads will be reclaimed during the life of the mine. Compacted surfaces will be ripped with a dozer or scarified with a grader. An excavator will be used to stockpile waste rock that was dozed over the side during road construction.

3.9.2 Revegetation Plan

Revegetation Techniques

The proposed revegetation plan is expected to reduce visual impacts and provide wildlife habitat. The following components are proposed:

- Quantifiable goals for density and diversity of species or success criteria will be agreed upon with the Kern County Planning Department as the lead agency and included in the approved Surface Mining and Reclamation Plan.
- A seed mix of native seeds will be specified for two zones on Soledad Mountain and application rates per acre determined. One or more commercial seed companies will be contacted about collecting native seeds onsite, processing the seed, and testing the seed for viability before reblending and sowing on site.
- Seeds will be collected locally and a seed library will be established.
- Seeds collected onsite will be supplemented by seed contained in topsoil and growth media.
- Revegetation will be monitored to demonstrate that seed collected and prepared locally can be an effective source of seed.

- Surfaces will be prepared to provide textures suitable for desert plants and micro-basins and will trap moisture and seeds.
- Hand seeding has been found to be effective in most areas and aerial (crop duster or helicopter) seeding can be used in areas that are inaccessible by vehicle or foot.
- Seeded areas will not require fertilizer and watering.
- Reclamation of disturbed areas will occur as soon as possible during the mine-life.
- Control and channeling of runoff will be necessary to ensure successful revegetation.

California Code of Regulations (CCR) Section 3705(a) requires that revegetation standards be established with reference to the vegetative density, cover and species richness of the site as documented in baseline studies prior to initiation of the proposed mining activities. Since non-native species and weeds are already part of the "natural plant communities" on Soledad Mountain, the revegetation standards or success criteria established for the Revised Project took the baseline into account.

Salvage of Growth Media

CCR Section 3711(e) requires that topsoil and growth media be redistributed in a manner that results in a stable, uniform thickness "consistent with the approved end use, site configuration, and drainage patterns." The proposed end use will be open space consistent and compatible with the current use and surrounding uses. The topsoil and growth media are not currently distributed in a consistent thickness across the site or the surrounding area, due to the occurrence of steep slopes, areas of talus slopes, drainage patterns and other harsh conditions. It is proposed that topsoil and growth media be applied as irregular mounds or rows creating "garden spots," and also blended with waste rock during reclamation.

3.10 Vehicular Access Improvements

The maximum average daily trip generation will occur once the mine is in full production, as shown in Table 3-1 below. The number of heavy and light loads per day are based upon GQM in-house projections and includes shipping the aggregate and construction materials by truck to market. Additional details about vehicle loads and fuel usage are provided in GQM's Project Description document (2009b), which is included in Appendix C of this EIR.

	Average I	.oads/Day
Trip Purpose	Heavy Trucks	Light-Duty Vehicles
Reagents		
NaCN	0.33	
Binder	2.08	
Other	0.14	0.14
Fuel & Lubricants		
Diesel fuel	0.39	
Diesel fuel for explosives	0.02	
Gasoline	0.06	
Lubricants	0.14	0.07
Explosives (ammonium nitrate prill)	0.29	
Maintenance		
Maintenance supplies	0.50	1.00
Cat service truck		1.00
Miscellaneous supplies		0.14
Couriers & Miscellaneous		1.00
Consultants/Contractors		2.00
Golden Queen Mining Co., Inc. personnel		98.00
Subtotal	3.95	103.35
Aggregate		
Final product	60.00	
Supplies	0.14	1.00
Personnel		15.00
Subtotal	60.14	16.00
Grand Total	64.09	119.35

TABLE 3-1. VEHICLE TRIP GENERATION

1. The operation will receive supplies 7 days per week but only for 50 weeks per year.

2. Aggregate production is likely to start in Year 5 of production.

Source: Table 9 (GQM 2009b)

State Route 14 (SR-14) is the major route connecting Mojave, Rosamond, Lancaster and the Los Angeles area. Silver Queen Road intersects State Highway 14 approximately two miles east of the site. Mojave-Tropico Road runs north/south along the west side of the Project site and curves east just north of the project, turning into Silver Queen Road. Both existing routes are paved.

Truck access from SR-14 to the Project site is proposed via Silver Queen Road. While light-duty trucks and passenger vehicles will likely use the same route since it is the shortest route from SR-14, some may also access the site from SR-14 via Mojave-Tropico Road.

For all vehicles, the access road to the site will turn south from Silver Queen Road, approximately 1,000 feet east of the intersection of Silver Queen Road and Gold Town Road. Section 4.1.3 (*Effects Not Found to Be Significant - XV. Transportation and Traffic*) describes Condition of Approval No. 55, which requires paving the entrance road from Silver Queen Road to the office area. Condition of Approval No. 56 addresses left-turn vehicle movements from Silver Queen Road at the site entrance.

During construction, the existing dirt road to the old offices and the existing paved road (New Eagle Road) to the underground portal on the 3,025-foot level, both off Silver Queen Road, will be used for immediate access. Among the project actions, a portion of New Eagle Road will be vacated when the project is approved.

3.11 Utility Systems

3.11.1 Domestic and Process Water

It is expected that the estimated average water requirement for the Revised Project will be 650 gallons per minute (gpm) and this accounts for losses due to evaporation and the residual moisture content of the ore on the heap leach pad. An estimated 425 gpm is required to support the heap leach operation, 133 gpm for dust control, and approximately 50 gpm for aggregate operation. However, water usage could ultimately be between 650 to 750 gpm depending on a number of factors. The Lead Agency notes that 750 gpm was the basis for the original hydrological study prepared for the 1997 Project.

The planned water source is groundwater that will be pumped from two existing production wells, and a third well that was drilled in October 2008. The 1997 Project was predicated upon the usage of up to three water supply wells which were to be located in Section 32, Township 11 North, Range 12 West, SBBM. Subsequent to the completion of a hydrology analysis prepared by WZI (2004), the applicant questioned the sustainability of locating three wells along Silver Queen Road as originally proposed. Consequently, a third well was drilled further away from the two original wells than initially proposed. The two original, existing wells are located approximately 1,900 feet and 3,000 feet north of Silver Queen Road, just east of Gold Town Road. The third well is located in Section 1 Township 10 North, Range 13 West, SBBM, on the west side of Mojave Tropico Road approximately 1 1/3 mile to the southwest of the two original wells.

Water will be pumped from the wells to the concrete pump box at the Merrill-Crowe plant and to the 20,000 gallon, main water storage tank. A small pump station will be located beside the main storage tank to supply the plant and to fill the firewater storage tanks.

A firewater loop, with hydrants at key locations, will be constructed as a component of the overall fire protection system. Three firewater storage tanks with capacities of 20,000 gallons each are planned to store water exclusively for fire protection and to supply the firewater loop in the area of the

crushing/screening plant. As a precautionary measure, the main water storage tank will also have a fire hose connection. The firewater loop will function as a gravity system.

GQM will supply bottled water in all areas for drinking water. Therefore, a domestic water loop will not be installed.

As a Condition of Approval of the Conditional Use Permits, and as a mitigation measure adopted for the Project by Kern County in 1997, GQM will monitor the groundwater level on a monthly basis and compare the water level data collected by the monitoring program to water levels predicted by the groundwater drawdown model. In the event the monitoring program shows that the actual water drawdown in the wells exceeds the predicted model for six consecutive months, the 1997 conditions of approval require that GQM supplement the water supplied by the production wells with up to 300 gpm of water from Antelope Valley – East Kern Water Agency (AVEK). GQM filed and application for a water service connection in a letter to AVEK dated February 8, 2008. The initial engineering for a connection to the AVEK system has been completed.

3.11.2 Wastewater Disposal

Toilet facilities will be provided in the workshop and warehouse and in the crushing/screening plant control room. Effluent from the sanitary facilities will flow by gravity from a set of septic tanks to a single engineered leach field designed according to applicable standards and located just north of the workshop-warehouse. GQM will obtain permits for the septic system from the Kern County Environmental Health Services Department. Portable toilets will be placed in areas not directly served by the permanent facilities, and moved periodically as operations dictate. Wastes will be removed on an as-required basis.

3.11.3 Solid Waste Disposal

Handling and disposal of solid waste produced on-site will be in accordance with all applicable regulations. Portions (small cells) of the waste rock dumps may function as a solid waste facility for disposal of certain general, non-hazardous wastes such as debris from the demolition of miscellaneous, old structures.

During construction and once the mine is in production, recurring domestic waste will be collected and removed from the site by the local contractor hired to clean offices, the first aid station and the toilet facilities. The waste materials will be disposed at the Mojave landfill.

Solvents, waste oil, contaminated fuel and other similar residues from the workshop will be collected in a waste oil tank located in the immediate vicinity of the workshop and will be recycled or disposed of in an approved manner. Used oil filters will be drained and recycled.

3.11.4 Electrical Power

The Applicant has completed a feasibility level design for power supply and distribution. Power consumption for a typical year in which the maximum power is consumed is estimated at 28,294,744 kilowatt hours per year (kW.h/yr). Of that total, the crushing-screening section of the plant demands the most power at 17,524,816 kW.h/yr. Approximately two-thirds of the power consumed in the plant is consumed by the HPGR. The second-highest power demand is for conveying and stacking machinery, which require about 3,042,578 kW.h/yr.

The crushing-screening plant design has evolved since the 1997 Project (designed in 2000), and the present design provides substantial energy efficiency improvements, as shown below.

	Crushing-Screening Design Year		
Power Consumption	2000	2009	
Power consumed per year at design throughput	38,654,000 kW.h/y	14,392,000 kW.h/y	
Power consumed per ton of throughput	6.14 kW.h/ton	2.81 kW.h/ton	
Source: GQM 2009b			

Power will be supplied by Southern California Edison (SCE). A main power line with two sets of conductors currently reaches the eastern property boundary. The top set of conductors carries 66 kilovolts (kV) while the bottom set of conductors carries 12,460 V.

GQM will install and own the utility tie sub-station, which will transform the incoming voltage of 66 kV to 4.16 kV and this will be the mine distribution voltage. Overhead transmission lines will distribute power from the utility tie sub-station to the areas where power will be required and this will include any power that may be required for the aggregate operation.

As indicated previously, a diesel-powered generator will provide standby power adjacent to the Merrill-Crowe plant. Power will be available to operate the barren and recycle solution pumps in case of a power failure.

Additionally, the Applicant anticipates a power credit due to the proposed use of a variable frequency drive with regenerative braking capability for the downhill pipe conveyor. Power generated by the drive would be absorbed by the mine load.

3.11.5 Drainage and Flood Control

FEMA Floodplain Modification

The project's boundary with Silver Queen Road/Mojave Tropico Road demarcates a topographic low point that is the confluence of a 1,636-acre off-site watershed from the northwest and 510 acres of on-site drainage. Runoff from the off-site drainage area is conveyed through twin 54-inch culverts under Silver Queen Road that are located nearly one mile west of Holt Road. Additional drainage from the north is conveyed through twin 72-inch (wide) by 48-inch (tall) pipe-arch culverts under Silver Queen Road, immediately west of Holt Road.

Although the existing facilities are adequate to convey flood flows beneath Silver Queen Road, they are tributary to a potential downstream flooding condition that begins approximately 1,900 west of Holt Road and continues east/southeast past SR-14. The narrow, linear 100-year floodplain has been mapped and defined as Zone A by the Federal Emergency Management Agency (FEMA) in Flood Insurance Rate Map (FIRM) Panel 06029C3675E dated September 26, 2008.

A portion of the Revised Project's Phase 1 heap leach pad and processing facilities encroaches into the FEMA 100-year floodplain. In order to address this issue, the Revised Project proposes access road and channel improvements that would remove the site from the Zone A, Special Flood Hazard designation. Modifications to the FEMA FIRM in the form of a Conditional Letter of Map Revision (CLOMR) are proposed. The CLOMR (Rivertech 2009b) proposes to modify the 100-year floodplain with the construction of the new mine access road, culverts, and the drainage channel between the Phase 1 heap leach facilities and Silver Queen Road. A copy of the CLOMR has been submitted to Kern County for concurrence prior to a formal FEMA submittal.

Proposed Channel Improvements

A drainage channel has been designed to receive and safely convey the existing 100-year, 3-hour peak storm discharge, estimated to be on the order of 1,265 cfs, from both the offsite and onsite areas as required by FEMA. Designed according to Kern County's Public Improvements Standards, the proposed channel would be constructed with grade control structures to maintain the velocity and depth of flow at acceptable levels to protect the channel from erosion and avoid excessive velocities and depths of flow for both the existing peak discharge and the future developed peak discharge of 1,362 cfs. The proposed channel improvement is depicted in Figure 3-15 for the Phase 1, Stage 1, heap leach pad channel construction of approximately 3,800 lineal feet. Figure 3-16 shows the ultimate channel length of approximately 7,000 lineal feet.

Pursuant to Code of Federal Regulations, Title 44, Section 65.10 (44 CFR 65.10), (d) (maintenance plans and criteria) the aforementioned drainage system will need to demonstrate:

- Levee systems must be maintained in accordance with an officially adopted maintenance plan, and a copy of this plan must be provided to FEMA by the owner of the levee system when recognition is being sought or when the plan for a previously recognized system is revised in any manner.
- All maintenance activities must be under the jurisdiction of a(n)
 - Federal or State agency;
 - an agency created by Federal or State law; or
 - an agency of a community participating in the NFIP [National Flood Insurance Program] that must assume ultimate responsibility for maintenance.
- The plan must document the formal procedure that ensures that the stability, height, and overall integrity of the levee and its associated structures and systems are maintained.
- At a minimum, maintenance plans shall specify:
 - Maintenance activities to be performed;
 - Frequency of their performance; and
 - Person by name or title responsible for their performance.

If the applicant is unable to remove the site from the Zone A, Special Flood Hazard designation, the approved surface mining and reclamation plan would need to be amended to reflect that no heap leach pad or processing facilities would encroach into the FEMA 100-year floodplain.

The *Site Drainage Plan* (Golder 2009) indicates that the new mine access road will be constructed with four 103-inch by 71-inch corrugated metal arch culverts to convey discharge from the 10-year storm event under the access road without overtopping. Runoff from the 100-year storm event may be permitted to overtop the access road to a depth less than 1.5 feet without flooding Silver Queen Road, in accordance with Kern County Standard. The final design of the access road and culverts will be submitted to the Kern County Roads Department for approval prior to construction.



Stage 1 Channel Construction Plan

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Source: Golden Queen Mining Co. Inc.

Post-Mining Drainage Plan

Sitewide Stormwater Controls

The *Site Drainage Plan* (Golder 2009) and its supporting technical appendices provide extensive detail about the design of stormwater runoff and erosion controls across the Project site. Following are summaries of its primary objectives and provisions.

Runoff and Erosion Controls

Runoff from mining operations will be separated from the runoff from nonmining operations. All runoff from disturbed areas will be diverted directly into the sediment ponds. The storage volumes of the sediment ponds are based on Kern County's Floodplain Management Ordinance 100-year, 24-hour intensity requirements in lieu of the 20-year, one-hour intensity storm event as required by section 3706(d) of SMARA, because the former is more restrictive. Stormwater diversion channels are designed to convey the estimated 100-year peak flow with erosion control best management practices (BMPs). The general locations of the channels are shown on Figure 3-15 for the Stage 1, Phase 1, heap leach pad configuration and Figure 3-16 for the post-mining (reclaimed) conditions.

The main drainage channels will be constructed as part of initial mine development and project construction. Smaller, interim drainage ditches and maintenance activities will be completed as part of ongoing mine operations. Erosion control will primarily be provided by placing riprap in key areas, though alternative technologies may be used.

Sediment will be managed through BMP alternatives such as placing straw bales in the collection channels at select locations. Golder (2009) recommends that actual locations and details for BMP installations be determined at the time of construction rather than presented in detail in design and construction drawings. Therefore only typical details and approximate locations are presented in the figures.

Runoff from mining operations such as the plant area, pads and crushing and screening facility will be collected within each facility boundary and routed into the surface water collection system or stored within the pad solution control system in order to meet zero discharge criteria for these areas. As mining operations progress, temporary sediment ponds may be required. Requirements and locations for such cases will be determined as part of the ongoing mine design and operation.

Runoff from non-contact disturbed and reclaimed areas will be dissipated through evaporation, through use in dust control, or through controlled release as allowed under the SWPPP and NPDES permits. Sediment will be removed as necessary to maintain the design storage capacity and disposed of within the open pits or within a waste rock disposal area in a manner that does not cause a release or impact the stability of the waste rock slope.

3.12 Environmental Controls

Many elements of the Revised Project are intended to address specific environmental regulations and guidelines, some of which were not in force in 1997. Those features are described below.

3.12.1 Hazardous Materials

An all-encompassing Environmental, Safety and Health Policy is included as an attachment to the Surface Mining and Reclamation Plan application (GQM 2009c). The reader is directed to that Policy document for detailed information.

At the process plant, all cyanide solution storage tanks, pumps, piping, equipment, transfer and handling systems are designed with secondary containment for protection of human health and the environment. Varied forms of secondary containment will be used, including synthetic liner, concrete slabs, curbed concrete containment areas and piping within piping systems. A liner system installed beneath the plant and its surrounding area and seamlessly connected to the overflow pond will contain potential spills. Hoods will collect and direct all furnace exhaust fumes to a dry dust suppression system (i.e., baghouse).

3.12.2 Air Quality

- Various particulate emissions control methods will be implemented with the Revised Project, including:
 - **Hood** to enclose trucks when dumping at the primary crusher receiving hopper.
 - Water Sprays to control dust emissions in the primary crusher
 - Sonic Foggers to control dust emissions at the transfer points.
 - Wet Scrubber to control dust emissions at the HPGR discharge and transfer points.
 - **Bin Vents/Filters** for dust control at the cement silo and the backup cement storage vessel
 - Wet Material to minimize stockpile fugitive dust emissions.
 - **Dust Collection System** for drilling operations
 - Additive Application/Watering to minimize fugitive dust during material hauling
 - **Highly Maintained Haul/Access Roads** to minimize fugitive dust from vehicle travel over unpaved roads (Air Sciences 2009b, p. 24)
- Historical tailings will be incorporated in the construction of the Phase 1 heap leach pad and this will remove one source of fugitive dust in the area. (GQM 2006c) The Revised Project will comply with Condition of Approval No. 17 from the 1997 Project approval specifying that historical mining wastes and tailings will be tested and processed with the ore on the heap leach pad or, if indicated, disposed of at an offsite permitted disposal facility.

Additionally, Condition of Approval No. 25 requires that the existing tailings piles be removed, thereby reducing the long-term fugitive emissions from the site.

3.12.3 Water Quality

- Placement of a low permeability composite liner system during heap leach pad construction to provide solution containment.
- The lined heap leach pad will be equipped with leak detection systems.
- The Surface Mining and Reclamation Plan application (GQM 2009c) incorporates a Stormwater Pollution Prevention Plan (SWPPP) that provides erosion control measures and monitoring requirements that would also satisfy the surface water quality and sediment and erosion control requirements of SMARA.

3.12.4 "Green" Fund

GQM is prepared to contribute to a "Green" fund with a target of \$5 million. The contribution will be made on the basis of an agreed number of cents per gallon of diesel fuel and per kilowatt hour consumed by the operation. The fund will be used to investigate/promote "green" technologies specifically in the greater Mojave area.

3.13 **Operational Characteristics**

The mine will operate 24 hours per day, 7 days per week, and 50 weeks per year to meet the required annual ore production and move the associated waste rock. Condition of Approval No. 46 from the 1997 Project approval applies to the Revised Project and requires that outdoor lighting for the mine pit and other areas of nighttime activities will be shielded and directed downward to reduce fugitive light. Light poles will be no higher than necessary for safe and efficient lighting. Low-pressure sodium bulbs or other appropriate technology will be used for outdoor lighting. Additionally, Condition of Approval No. 47 will ensure that approximately 75 to 80 percent of construction activities will take place during daylight.

As indicated previously, construction manpower is expected to peak at 200. Fulltime production workforce is expected to be 150 employees but could be as high as 165. The projected manpower required for the aggregate and construction materials operation is 15 and these will be sub-contractor employees. Once the mine is in full production, the maximum number of employees on-site at any one time is estimated to be 64 during the day shift and 30 during the second shift.

Table 6 (*Mining Equipment and Support Equipment*) of the Soledad Mountain Project Description (GQM 2009b) provides detailed duty schedules in miles per year and/or hours per year for each vehicle and equipment type onsite. These figures were used a basis for calculating the project air emissions in Section 4.2 (*Air Quality*).

3.14 Other Permits and Approvals

Project implementation will require the modification of two Conditional Use Permits (CUP 41, Map 213 and CUP 22, Map 214), which were previously approved by the Kern County Board of Supervisors in 1997. The Revised Project also includes a new Conditional Use Permit (CUP 27, Map 196) to amend the existing Surface Mining and Reclamation Plan in accordance with the provisions of SMARA.

Additional permits, approvals, and clearances are also required by other federal, State and County agencies. Each is listed below, along with the current status as supplied by the Applicant.

TABLE 3-2. PROJECT PERMITS AND APPROVALS

Agency	Permit/Approval	Status	
Federal			
Bureau of Land Management	Plan of Operations	Approved by the ROD issued November 3, 1997	
	Cultural/Paleontological Resource Permit (National Historic Preservation Act, 16 USC §470)	Complete	
Fish and Wildlife Service	Informal Consultation	Complete	
Bureau of Alcohol, Tobacco, Firearms and Explosives	Purchase, Storage or Transportation of Explosives Permit	To be obtained by contractor	
Environmental Protection Agency	Toxic Chemical Release Inventory System	To be obtained	
Mine Safety and Health Administration (MSHA)	Mine Identification Number	MSHA ID # 0405319	
Federal Emergency Management Agency (FEMA)	Conditional Letter of Map Revision (CLOMR)	Submitted to FEMA	
State			
State Water Resources Control Board, Regional Water Quality Control Board (RWQCB)	General Construction Activity Stormwater Permit	To be obtained	
	Waste Discharge Requirements	Report of Waste Discharge submitted	
	Spill Prevention Control and Countermeasure Plan	To be completed	
California Department of Fish and Game	Informal Consultation	Complete	
State Office of Historic Preservation	Section 106, (National Historic Preservation Act, 16 USC §470); Designation, survey, determination of effect	Complete	
Agency	Permit/Approval	Status	
--	---	--	
Department of Industrial Relations, Division of Occupational Safety and Health/ Cal/OSHA Program	Blasting License	To be obtained	
	Miscellaneous	To be obtained	
California Department of Conservation	Financial Assurance Estimate and Instrument Approvals	To be obtained	
Kern County			
Planning Department	Surface Mining and Reclamation Plan and Financial Assurances	To be amended	
	Conditional Use Permit	To be amended	
Roads Department	Request for Street Vacation	To be completed	
	Silver Queen Road Changes	Design is currently being completed	
	Construction of New Access Road	To be completed	
Engineering and Survey Services Department	Building Permits	To be obtained	
Environmental Health Services Department	Sewage Disposal System Permit	Submitted, approval pending	
	Water Well Drilling Permit	Issued (on file)	
	Hazardous Materials Business Plan	To be completed	
	Hazardous Materials Inventory	To be completed	
	Risk Management Plan	To be completed	
Fire Department	Fire Protection Plan	To be completed	
Kern County Air Pollution Control District	Authority to Construct	Submitted, approval pending	
	Permit to Operate	To be issued when construction is complete and approved	

3.15 Comparison of 1997 and Revised Projects

Figure 3-17 provides an illustrative comparison of the 1997 Project and the Revised Project boundaries and disturbance areas. Table 3-3 provides a comparative summary of the differences in the scope of mining operations.



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TABLE 3-3. COMPARATIVE SUMMARY OF 1997 AND REVISED PROJECTS

1997 PROJECT	REVISED PROJECT	
PROJECT ACREAGE	PROJECT ACREAGE	
Project Site: 1,690 acres	Project Site: 1,440 acres	
Total Disturbance Area: 930 acres	Total Disturbance Area: 905 acres	
Total Reclaimed Area: 419 ac. of 930 ac. (45%)	Total Reclaimed Area: 839 ac. of 905 ac. (93%)	
EFFECTS OF PROJECT FOOTPRINT	EFFECTS OF PROJECT FOOTPRINT	
As analyzed in the 1997 FEIR/EIS	Revised Project reduces surface disturbance; however, it also includes modifications to the leaching process. Changes in the location and extent of the Phase 1 heap leach pad result in placement over a recorded access easement, siting within a floodplain, and reduced distance to a County-maintained roadway.	
MINERALS MINED	MINERALS MINED	
Gold, silver, aggregate, and construction by-products	No change	
PROJECT TONNAGE	PROJECT TONNAGE	
Overburden: 225 million tons	Overburden: 108.4 million tons (19.0 million tons sold as aggregate and construction materials and 89.4 million tons managed on-site)	
Ore: 60 million tons	Ore: 51.2 million tons	
Overburden sold for aggregate and construction material use	No change	
Total ore reserve of 60 million tons	Total ore reserve of 43.9 million tons	
Mining rate up to 6 million tons ore per year	Mining rate up to 4.55 million tons ore per year	
Up to 30 million tons combined ore and overburden per year	Up to 14 million tons combined ore and overburden per year	
MINE PHASING	MINE PHASING	
None Proposed (i.e., no reclamation will take place until mining operations are completed in a given area)	Five phases of mining with concurrent reclamation	

1997 PROJECT	REVISED PROJECT
MINE LIFE	MINE LIFE
Mining operations will be expected to continue for up to 15 years (10 years operations, 5 years reclamation)	 12 years of mining 14 years of leaching 2 years of rinsing and draindown 2 years of reclamation 3 years of post-closure monitoring Production and sale of aggregate and construction materials for up to 30 years
Project will operate 24 hours per day, 7 days per week, 52 weeks per year	No change
Approximately 230 long-term employees	Approximately 156 long-term employees
MINING PROCESS	MINING PROCESS
Open pit mining operation (gold and silver) with heap leach processing methods	No Change
 Mining process is conventional open pit with hard rock mining methods that include: Drilling of blast holes Blasting Loading haul trucks with shovels or front-end loaders Hauling ore to the processing area Hauling overburden to the overburden piles 	No Change
No backfill	Sequential backfilling of mined-out phases of the open pit
CONSTRUCTION ACTIVITIES	CONSTRUCTION ACTIVITIES
Time = 1 Year	Time = 1 Year
 Activities would include: Improving site access and creation of a construction staging area Building access and haulage roads to the open pit mining areas and other site facilities Preparation of the initial open pit mine production areas Site preparation of and construction of crushing, conveying, and agglomeration facilities Site preparation of and construction of the heap leach solution processing and precious metals recovery plant Site preparation and installation of the first stage of the heap leach pad 	No Change, but Phase 2 of the mining process will include construction of a coarse ore pipe conveyor to haul ore to the primary crusher.

1997 PROJECT	REVISED PROJECT
 liner and leak detection system Site preparation and construction of parking, office, maintenance, and other ancillary facilities 	
RECLAMATION PLAN	RECLAMATION PLAN
The project area will be returned to open space for wildlife habitat as the primary land use objective.	No Change
 Reclamation will include: Salvage and storage of top soils for use as growth media Slope reduction of the overburden piles Contouring and surface preparation of top horizontal surfaces of the overburden piles Contouring and surface preparation of top and sides of the heap leach piles Contouring and surface preparation of exploration disturbances and production support facilities sites Revegetation of prepared surfaces of the overburden piles, heap leach pads ands support facilities sites Revegetation with seeds collected from the site vicinity Neutralization of the process components Dismantling and removal of structures Preserving evidence of the mineralization and the mineral resources Reducing risk to public health and safety 	No Change, except sequential backfilling of mined-out phases of the open pit will occur.

3.16 Cumulative Projects

CEQA requires that an EIR evaluate a project's cumulative impacts. Cumulative impacts are the project's impacts combined with the impacts of other related past, present, and reasonably foreseeable future projects. As set forth in the State CEQA Guidelines, the discussion of cumulative impacts must reflect the severity of the impacts, as well as the likelihood of their occurrence; however, the discussion need not be as detailed as the discussion of environmental impacts attributable to the project alone. As stated in CEQA, Title 14, Section 21083(b), "a project may have a significant effect on the environment if the possible effects of a project are individually limited but cumulatively considerable."

According to the State CEQA Guidelines:

"Cumulative impacts refer to two or more individual effects which, when considered together, are considerable and which compound or increase other environmental impacts.

- (a) The individual effects may be changes resulting from a single project or a number of separate projects.
- (b) The cumulative impact from several projects is the change in the environment, which results from the incremental impact of the project when added to other closely related past, present, and reasonable foreseeable probable future projects. Cumulative impacts can result from individually minor but collectively significant projects taking place over a period of time." (CCR, Title 14, Division 6, Chapter 3, §15355)

In addition, as stated in the State CEQA Guidelines, it should be noted that:

"The mere existence of significant cumulative impacts caused by other projects alone shall not constitute substantial evidence that the proposed project's incremental effects are cumulatively considerable." (CCR, Title 14, Division 6, Chapter 3, Section 15064[I][5])

Cumulative impact discussions for each environmental topic area are provided at the end of each technical analysis contained within Chapter 4, under "Impacts and Mitigation Measures." As previously stated, and as set forth in the State CEQA Guidelines, related projects consist of "closely related past, present, and reasonable foreseeable probable future projects that would likely result in similar impacts and are located in the same geographic area" (CCR, Title 14, Division 6, Chapter 3, Section 15355).

Table 3-4 lists nearby residential, commercial, natural resource and solar energy projects. The Kern County Planning Department reviewed all known projects within a six-mile radius of the project site.

Kern County Case ID	Project Name	Project Location	Case Type	Acreage
12787; 12788	Airstreams, LLC by Don Ward	Willow Springs & Jameson Road	General plan amendment and zone change to industrial	33.12
12053	Aptaker, Stanley by Bruce Barton	North side SR-14, 2 miles north of California City Boulevard	General plan amendment to residential	74.18
11607	Av Design Group by Abe Nejim	Rosamond Boulevard Between 70th & 80th Streets	Zone change to commercial	160
11957	Av Design Group by Abe Nejim	Rosamond Boulevard at 70th Street West	Zone change to commercial	160
12000; 12001	Barton, Larry by Pinnacle Civil Engineering	North side Knox Ave, 250 feet west of 40th St West	Specific plan amendment and zone change to residential	2.98
10778	Bittner, Edward/Jeane Harrigal	1400 W Orange St - Rosamond	Conditional use permit for salvage yard	8.64
11111	Blue Eagle Lode Mining Company	7 miles north of Willow Springs	Conditional use permit for reclamation plan for underground mine	1.75
11118	Blue Eagle Lode Mining Company	Tropico Mine located near Rosamond Blvd. and Mojave Tropico Road	Conditional use permit for ore crushing and processing	99.2
11113	Blue Eagle Lode Mining Company	Tropico Mine located near Rosamond Blvd. and Mojave Tropico Road	Zone change to natural resource	35.68
11115	Blue Eagle Lode Mining Company	Tropico Mine located near Rosamond Blvd. and Mojave Tropico Road	Zone change to natural resource	179.9
11116	Blue Eagle Lode Mining Company	Tropico Mine located near Rosamond Blvd. and Mojave Tropico Road	Zone change to natural resource	1.72
11117	Blue Eagle Lode Mining Company	Tropico Mine located near Rosamond Blvd. and Mojave Tropico Road	Zone change to natural resource	56.39
12351; 12375	Brite Valley Estates/ Eldwin Kennedy	Arosa Road, Tehachapi	General plan amendment and zone change to residential	35
12470	California Builders/Jess Rim	South side of Poplar Street	Zone change to residential	1.26
11743	Curry James	18955 Arosa Road	Zone change to agriculture	5
11149	Eisenberg, Donald/Cornerstone	Southwest corner Holiday Avenue & 55th Street West	Zone change to residential	20
11631; 11630	EK Development / HFM Group	N Rosamond Boulevard 400' W of 50th Street W	General plan amendment and zone change to residential	13

TABLE 3-4. RELEVANT CUMULATIVE PROJECTS IN KERN COUNTY

Vom			<u></u>	
County				
Case ID	Project Name	Project Location	Case Type	Acreage
12283	Fisher Sand & Gravel Co.	Southwest corner of 75th Street West & Reed Avenue	Conditional use permit for surface mine & reclamation plan	80
12407	Garcia, German by Ward Engineering	North side Banducci West of Alps	Zone change to estate	24.52
12930	GE Energy by Ty Remington	South of SR-58, East Chantico Road	Conditional use permit for ten 20 megawatt (MW) solar voltaic panels	820
12823; 12089	Gholam R Saidi	20th and Patterson - Rosamond	General plan amendment and zone change to industrial	10
12888	Ioshpe, Motel	3783-В Sierra Hwy.	Conditional use permit for country club/tennis club	3.84
10978	Julien, H E & Associates	8684 Sweetser Rd - Rosamond	Zone change to agriculture	60
12299	Justin Holmberg	West side Tehachapi Willow Springs Road, approximately ½ mile south of SR-58	General plan amendment to residential	8.54
12506	Kelly, Randall	West of 30th Street West, Rosamond	Zone change to estate	10
11216; 11217	King, Karl/ Richard Beigle	Northwest corner & Northeast corner of Sopp Road & Hwy 14	General plan amendment and zone change to estate	135
11875; 11469	Kjelstrom & Assoc/ Service Rock Products	South side SR-58, ¹ /4 mile east of Janata Street	General plan amendment and zone change to industrial	24.52
12713; 12662	Lane, Charlene by Cornerstone Engineering	Northwest corner Eagle Way & Poplar Street	Specific plan amendment and zone change to commercial	5.02
12225; 12226	Michael Richardson by Donald E. Ward	Southeast corner of Transvaal & Pretoria	General plan amendment and zone change to estate	20.02
12551; 12552	Monterey Homes LLC	Elder and 30th Street West, Rosamond	General plan amendment and zone change to residential	7.75
12178	Monterey Homes, Inc.	West side 52nd Street W ¹ / ₄ mile south of Holiday	Zone change to residential	2.5
11680; 12278	Nickie Lee Silk by WRA Engineering	SR-14 and SR-58, Mojave	General plan amendment and zone change to residential	510
10815; 10816	Pannon Design & Development	East side Tehachapi-Willow Springs Road	Specific plan amendment and zone change to residential	226
12974	Paul Dhanens Architect	Woodford Tehachapi Road	Commercial development for medical buildings	20
12051; 12052	PG Projects, Inc. by Cornerstone Eng.	West side SR-14, one mile south of Dawn Road	General plan amendment and zone change to residential	460
11170	Platner, James by HMF Group	25th Street and Willow	General plan amendment to residential	9

Kern				
County Case ID	Project Name	Project Location	Case Type	Acreage
12926	Powers, Richard/Glass Architects	SR-58, Mojave	Commercial development of CHP office	5
12142	Regal Development LLC by Providence Residential	Southwest corner Avenue A and SR-14, Rosamond	General plan amendment to highway commercial	74
12392	Reynolds, Charles	18812 Old Ranch Road	Conditional use permit for agriculture supply service	19
9361; 9362	Rosamond & 40th Street LLC/Moreland Consulting	Southeast corner Rosamond Boulevard & 40th Street W	Specific plan amendment and zone change to commercial	78.20
12360	Rosamond 135 LLC/Hertz	Southwest corner Holiday at 50th Street West	Zone change to residential	30
11651; 11652	Rosamond Acres LLC, by Wiley D Hughes Surveying	Northwest corner 40th Street West & Hook Avenue	General plan amendment and zone change to residential	20
11653; 11654	Rosamond Acres LLC, by Wiley D Hughes Surveying	Northeast corner 40th Street West & Hook Avenue	General plan amendment and zone change to residential	20
11273	Rosamond Acres LLC/Wiley Hughes	North side Holiday, Between 40th & 45th Streets	Zone change to residential	35
11530	Superior Real Estate, Inc.	Northwest corner 25th Street West & Avenue A	General plan amendment to residential	78.79
10760; 12084	Terra Five, LLC by Hall & Foreman, Inc.	Southwest corner of George Avenue & 70th Street West	General plan amendment and zone change to residential	75.55
12459; 12864	United Engineering Group	East side Sierra Hwy, 1 mile north of Rosamond	General plan amendment and zone change to residential	536
10605	United Recycling Technology	1050 Sierra Hwy - Rosamond	Conditional use permit for medical waste treatment facility	39.28
10924	Villa Holdings by Dewalt	Northeast corner Holiday & 30th St West	Zone change to residential	20.25
10544	V-Mark Dev & Lilco Financial/De Walt Corp	Southeast corner Rosamond Boulevard & 10th St West	Zone change to residential	167
12581	Wilson, James	1634 SR-58, Mojave	Zone change to commercial	6.49
10534, 10535	Aero Energy/Cash Long	Northwest of Cameron Canyon & Tehachapi Willow	Zone change to allow wind turbines. Environmental compliance ended 11/27/08.	1007
12973	Coram California	Oak Creek Road	Zone change to allow wind turbines.	3
1296812973	Coram California/Tony Guisiana Coram California	Oak Creek Road	Zone change to allow wind turbines.	603

Kern County Case ID	Project Name	Project Location	Case Type	Acreage
1275012664	Eagle Energy/ Cornerstone Coram California Development	Sand Canyon/Tehachapi Cameron Canyon Road	Zone change to allow wind turbines. Total project site is 296 acres; zone change affects 95 acres. Awaiting completion of environmental studies.	9569
1259012968	Sinarpower/Leong Coram California/Tony Guisiana	South of Oak Creek Road Oak Creek Road	Conditional use permit for two wind turbines.	1060
1204112750	Trywhitt, Phil Eagle Energy/Cornerstone	17401 Orrick Avenue Sand Canyon/Tehachapi	Small wind energy permit. Zone change to allow wind turbines. Total project site is 296 acres; zone change affects 95 acres. Awaiting completion of environmental studies.	2.4295
12590	Sinarpower/Leong	South of Oak Creek Road	Conditional use permit for two wind turbines	10
12041	Trywhitt, Phil	17401 Orrick Avenue	Small wind energy permit	2.42

Three additional residential/commercial development projects located in Kern and Los Angeles Counties were considered for inclusion in the project's cumulative analysis due to their large size. These projects are discussed below. However, because these projects are distant from the project site and are not in the same air basin, they are only included in the Chapter 4 cumulative analysis for relevant environmental topics.

Tejon Mountain Village Specific Plan (GPA 1, Map 218) (Kern County)

The Tejon Mountain Village project is approximately 19 miles to the southwest of the project site and would consist of a mixed use development on approximately 28,000 acres. This project will be located east of Interstate 5 at the Lake Tejon exit, with a small portion west of Interstate 5. Approximately 23,000 acres of the site would be a nature reserve, and approximately 5,000 acres will be developed with a mix of residential, commercial, and recreational uses. The uses include up to 3.450 residences (both single-family and multi-family units) and up to 160,000 square feet of commercial development. This resort development would include various hotel, spa, and resort facilities, with up to 750 lodging units at up to seven locations. There would be a number of recreational and educational facilities, including a nature center, farmers' market, day camps, equestrian facilities, a sporting clays course, parks, play lawns, swimming and boating facilities, docks on the lake, up to four 18-hole golf courses, and riding and hiking trails. A Draft Specific Plan, Special Plan and EIR have being circulated for public comment and approved by the Kern County Board of Supervisors in September 2009. Build-out is expected 10-12 years from the start of construction.

Frazier Park Estates (Specific Plan Amendment, Case No. 136) (Kern County)

The Frazier Park Estates development is being proposed approximately 30 miles southwest from the project site. The project proposes a housing and retail development 30 miles south of Bakersfield at the southern boundary of the County in the Frazier Park/Lebec Specific Plan. The proposed master planned community would consist of 705 single-family homes; 41 multi-family units; approximately 36 acres of commercial and community facilities; and other community support facilities, such as a wastewater treatment plant and a park. Although this development is not located near the proposed project, some impacts are considered in the cumulative analysis under specific environmental topics.

Centennial Specific Plan (Los Angeles County)

This project is proposed approximately 24 miles to the southwest of the project site. The proposed project site consists of 12,000 acres located one mile east of Interstate 5 and adjacent to State Highway 138 in Los Angeles County. The project would include a specific plan and subdivision entitlements (i.e., tract maps and conditional use permits) for a master planned community. The specific plan proposes a maximum of 23,000 dwelling units and 14 million total square feet of non-residential development of employment areas (12,233,390 square feet) and retail serving centers (1,986,336 square feet), anticipated to be built over approximately 20 years, with build-out expected in 2030. If approved by Los Angeles County, it is estimated that the non-residential development may generate approximately 31,000 jobs.

Tehachapi Wind Resource Area

The Tehachapi Wind Resource Area (TWRA) is the state's largest wind energy resource area and currently responsible for over 40% of California's wind energy generation. The TWRA currently consists of approximately 3,400 wind turbines that produce approximately 710 MW of power. The Sky River Ranch wind facility is just northeast of the wind resource area. Wind plants in this area produce more power than any other wind development in the United States. Most of the TWRA's existing turbines were installed between 1981 and 1986. Between 1986 and 1989, about another 100 MW worth of turbines were developed. Between 1990 and 2000 very few additional wind turbines were installed. During the late 1990s, wind power plant owners started repowering their existing turbines by removing the older turbines and replacing them with newer models.

Alta-Oak Creek Mojave Project

The Alta-Oak Creek Mojave Project is a wind energy development project with a generating capacity of 800 MW. The project will be located in Kern County along Oak Creek Road and Tehachapi-Willow Springs Road, approximately 3 miles northwest of the Revised Soledad Mountain project site. The Final EIR for

this project was completed in October 2009 and was certified by the Kern County Board of Supervisors on December 15, 2009.

Additional Alta Facilities

At this time, the Alta-Oak Creek Mojave Project proponents are in the early planning stages for construction of additional wind energy facilities that would be located within the (Tehachapi Wind Resource Area) TWRA within the general vicinity of the proposed project and would generate approximately 700-900 MW of electricity. No applications have been filed for these additional wind projects and there is no specific information to conduct a full environmental evaluation. The proponents of the Alta project intend to file an application for a 54 MW project on land adjacent and to the west of the Alta-Oak Creek Mojave Project. This project is known as the ChiPs Infill Project and will be located on land already zoned WE as well as on two BLM parcels. Since this land is already zoned WE, no discretionary permits from Kern County will be required, except potentially for a conditional use permit for a temporary batch plant.

Pine Tree Wind Development Project

The Pine Tree Wind Development Project is an approved project that would result in construction of a wind energy development with a generating capacity of 120 MW. The project would be located in Kern County approximately six miles west of SR-14, 12 miles north of the community of Mojave, and 15 miles northeast of the city of Tehachapi. Primary access to the project property is from SR-14 via Jawbone Canyon Road. A Final EIR was completed for this project in April 2005. This Pine Tree Wind Development Project site is located approximately 17 miles north of the proposed project site.

Pine Canyon Wind Project

The Pine Canyon Wind Project is expected to be constructed on 12,000 acres of land adjacent to the Pine Tree Wind Development Project and is proposed to produce 150 MW of wind energy. To date no CEQA documentation is publicly available for the Pine Canyon Wind Project.

PdV Wind Energy Project

The proposed PdV Wind Energy Project is located approximately 4.5 miles southwest of the proposed project site at the southern end of the TWRA, just north of the proposed Whirlwind Substation. It is proposed to be located on 5,820 acres of land with up to 300 wind turbines to produce up to 300 MW of wind energy. The project would also include a substation to increase the voltage generated by the turbines to meet the electrical system's 220 kV or 500 kV voltage. The Final EIR for this project was completed in February 2008 and was certified by the Kern County Board of Supervisors on July 29, 2008.

Pacific Wind Energy Project

The Pacific Wind Energy Project, proposed by Enxco, Inc. would be constructed on approximately 9,750 acres near or contiguous to the PdV Wind Energy Project. Exact boundaries of the project site have not yet been defined. This project proposes a zone change to a suitable base district which is compatible with and includes the WE Combining District. The Applicant anticipates that the Pacific Wind Energy Project would consist of up to 250 1-MW or 84 3-MW wind turbines with a 39 MW solar photovoltaic generation facility. The Kern County Planning Department circulated the Notice of Preparation of a Draft Environmental Impact Report for 30 days commencing on September 30, 2009. A consultant has subsequently been retained to write the environmental document.

Antelope Transmission Project (Segments 1 – 3)

Construction of SCE's Antelope Transmission Project is currently underway, and will occur in three sequential segments: Segment 1, Antelope-Pardee 500 kV Transmission Line; Segment 2, Antelope-Vincent 500 kV Transmission Line; and Segment 3, Antelope-Tehachapi Transmission Line.

Segment 1 of the Antelope Transmission Project involves the construction of a new 25.6-mile 500 kV transmission line between SCE's existing Antelope and Pardee Substations, located in the city of Lancaster and the city of Santa Clarita, respectively. This project includes modifications to Antelope and Pardee Substations and the expansion of Antelope Substation. Segment 1 is a 500 kV single-circuit transmission line within an existing SCE 66 kV transmission line ROW for 22.8 miles and establishes a new 500 kV ROW for approximately three miles. The line would initially be energized at 220 kV to serve the existing transmission needs determined by SCE and, as energy demand increases, it would be upgraded to 500 kV. Implementation of Segment 1 would facilitate and accommodate the construction of Segment 2 and Segment 3. Segment 1 has been under construction since March 2008 and is anticipated to be completed by August 2009.

Segment 2 (Antelope-Vincent 500 kV T/ L) consists of a new 17.8-mile 500 kV transmission line connecting SCE's existing Antelope Substation with the Vincent Substation, located near Acton, California. This line would be constructed to deliver electricity from new wind farms to communities in southern California. Similarly to Segment 1, this segment would initially be energized at 220 kV.

Segment 3 (Antelope-Tehachapi T/L) consists of two phases. The first phase includes construction of a new 26.1-mile, 500 kV transmission line connecting SCE's existing Antelope Substation to a proposed substation (Substation 1) in the Mojave Area. This transmission line would initially be energized at 220- kV. The second phase would consist of a new 9.4-mile, 220 kV transmission line from the proposed Substation 1 to a proposed substation in the Monolith Area (Substation 2). The transmission line and proposed Substation 2 would be constructed to transmit electricity from the wind farms to communities in southern California.

Construction of Segment 2 and Segment 3 began in 2009 and is projected to be completed by 2010.

Tehachapi Renewable Transmission Project (Segments 4 - 11)

The Tehachapi Renewable Transmission Project (TRTP), as proposed by SCE, would involve the construction, operation, and maintenance of new and upgraded transmission infrastructure along approximately 173 miles of new and existing ROW in southern Kern County, portions of Los Angeles County, including the Angeles National Forest (ANF) and U.S. Army Corps of Engineers lands, and southwestern San Bernardino County, California. The description of major components for the TRTP begins with Segment 4. Segments 4 through 8, as well as Segments 10 and 11 of the TRTP are transmission facilities, while Segment 9 addresses the addition and upgrade of substation facilities. The proposed transmission lines would be constructed primarily within existing ROWs. The major components would consist of the following:

- Building a new single-circuit 500-kilovolt (kV) T/L traveling approximately 17 miles over new ROW between the Windhub Substation and the proposed new Whirlwind Substation (Segment 10);
- Two new single-circuit 220-kV T/Ls traveling approximately 4 miles along new ROW from the Cottonwind Substation to the proposed new Whirlwind Substation (Segment 4 220-kV);
- A new single-circuit 500-kV T/L, traveling approximately 16 miles along new ROW from the proposed new Whirlwind Substation to the existing Antelope Substation (Segment 4 500-kV);
- Rebuilding approximately 18 miles of the existing Antelope-Vincent 220-kV T/L and the existing Antelope-Mesa 220-kV T/L to 500-kV standards along existing ROW between the existing Antelope and Vincent Substations (Segment 5);
- Rebuilding approximately 19 miles of existing 220-kV T/L to 500-kV standards between the existing Vincent and Gould Substations. Also adding a new 220-kV circuit on the vacant side of the existing double-circuit structures of the Eagle Rock-Mesa 220-kV T/L, between the existing Gould and Mesa Substations (Segment 11);
- Rebuilding of approximately 32 miles of existing 220-kV T/L to 500-kV standards from the existing Vincent Substation to the southern boundary of the ANF, including approximately 27 miles of the existing Antelope-Mesa 220-kV T/L and approximately 5 miles of the existing Rio Hondo-Vincent 220-kV No. 2 T/L (Segment 6);
- Rebuilding approximately 16 miles of the existing Antelope-Mesa 220-kV T/L to 500-kV standards from the southern boundary of the ANF to the existing Mesa Substation. This segment would replace the existing Antelope-Mesa 220-kV T/L (Segment 7);

- Rebuilding approximately 33 miles of existing Chino-Mesa 220-kV T/L to 500-kV standards from a point approximately 2 miles east of the existing Mesa Substation (the "San Gabriel Junction") to the existing Mira Loma Substation. Also rebuilding approximately 7 miles of the existing Chino-Mira Loma No. 1 line from single-circuit to double-circuit 220-kV structures (Segment 8);
- Building the new Whirlwind Substation, a 500/220-kV substation located approximately 4 to 5 miles south of the Cottonwind Substation near the intersection of 170th Street and Holiday Avenue in Kern County near the TWRA (Segment 9);
- Upgrading the existing Antelope, Vincent, Mesa, Gould, and Mira Loma Substations to accommodate new T/L construction and system compensation elements (Segment 9); and
- Installation of associated telecommunications infrastructure.

The Draft EIR for the TRTP is currently in public review. Construction of the project is proposed to begin in July 2009 and end in November 2013.

Solar Projects

The County is currently processing a total of six solar PV projects with the desert region of the County. The six projects are owned by four individual companies and if approved would generate more than 130 MW of electricity. The total acreage of the six sites is 2,291. The closest solar project is located north of the proposed project along Purdy Avenue, west of SR-14.

CHAPTER 4 SUPPLEMENTAL ENVIRONMENTAL ANALYSIS

Section 4.1 Effects Not Found to be Significant

4.1.1 Overview of the Supplemental EIR

As explained in Chapter 1 (*Executive Summary*), this SEIR focuses on potential environmental effects associated with elements of the Soledad Mountain Project that have changed since its approval in 1997. The rationale for an EIR supplement is summarized by the following:

- The Revised Project description has been updated in response to newer mining and reclamation regulations.
- The majority of the 1997 FEIR/EIS analysis remains applicable to the Revised Project.
- The County has evaluated the updated elements of the Revised Project and has determined that the 1997 FEIR/EIS can be updated with relatively minor modifications. Although minor, those modifications to the previous analysis cover issues that are technically complex and the County has endeavored to be as concise as possible in this SEIR. Although CEQA does not require a full EIR for the Revised Project, it does nonetheless require a full accounting of the reasoning behind the County's decision-making process as it pertains to environmental issues.

Section 15163(b) (Supplement to an EIR) of the CEQA Guidelines states, "The supplement to the EIR need contain only the information necessary to make the previous EIR adequate for the project as revised."

As such, this SEIR focuses only on those potentially significant environmental impacts that would result from the new or modified elements being proposed under the Revised Project. According to the State CEQA Guidelines, the environmental impacts that are considered insignificant are <u>not</u> required to be further evaluated in this SEIR. This section identifies and provides explanations for environmental effects that are deemed less than significant and identifies potential effects that have been analyzed further. Only those potentially significant environmental impacts that may result with the Revised Project will be further evaluated.

4.1.2 Purpose and Organization of This Section

As indicated above, Section 15128 (*Effects Not Found to be Significant*) and Section 15163(b) (*Supplement to an EIR*) of the CEQA Guidelines indicate that environmental impacts that are considered insignificant do <u>not</u> require further evaluation in this SEIR. Accordingly, the following identifies the particular environmental issues that do not require further evaluation in this SEIR, since the Revised Project would not result in any new, potentially significant impacts associated with these environmental issues.

Section 15358 of the State CEQA Guidelines defines effects, or impacts, as being related to a physical change. Types of physical environmental effects under CEQA may include: 1) direct or primary effects that are caused by the project and occur at the same time and place, or 2) indirect or secondary effects that are caused by the project and are later in time or farther removed in distance.

As they pertain to the Revised Project, primary effects include those related to the range of land disturbance and mining activities on the Project Site. Secondary effects are caused by the project and generally are later in time or farther removed in distance, but are still reasonably foreseeable. Such effects include those related to off-site vehicle travel and roadway use, as well as effects on nearby land uses (i.e., air emissions impacts on sensitive receptors).

The August 2008 Initial Study/Notice of Preparation (IS/NOP) preliminarily evaluated the potential significance of each environmental issue contained in the County's Environmental Checklist. The IS/NOP concluded that various impacts would require further analysis in this SEIR. Following the same organizational format as the County's IS/NOP, this section subjects each environmental issue to further review in light of previous and updated information. The determinations of environmental impact significance are based on the following information sources:

• Kern County Significance Thresholds adopted by the County of Kern.

The "County of Kern Guide for the Preparation of Environmental Impact Reports," dated June 2006, contains guidelines that incorporate policy and legal requirements as contained in CEQA. The Guide also includes the County's Initial Study Checklist. Evaluation of impact significance will be based on <u>each</u> environmental significance threshold contained in the County's Initial Study Checklist.

■ **1997 FEIR/EIS Analysis and Conclusions** regarding the original Soledad Mountain project.

In responding to each environmental significance threshold, references are made to applicable conclusions in the 1997 FEIR/EIS and to the technical studies that were recently prepared for the Revised Project. Given that this document is a Supplement to the 1997 FEIR/EIS that was certified for the 1997 Soledad Mountain mining project, many evaluations and conclusions from that particular document will continue to apply to the Revised Project. As allowed by CEQA, these evaluations and conclusions are incorporated by

reference into this SEIR in support of any finding regarding impact significance.

• Compliance with 1997 FEIR/EIS Mitigation Measures, as provided in the Mitigation Monitoring Plan (MMP) that was adopted by the County for the original Soledad Mountain project.

Each summary impact from the 1997 FEIR/EIS is restated in this section. The Revised Project will be required to comply with the mitigation measures that were adopted with the 1997 FEIR/EIS for the original mining project unless those measures are substituted in conjunction with this SEIR pursuant to the provisions specified in Section 15074.1 of the CEQA Guidelines. For purposes of this SEIR, the mitigation measures from the 1997 FEIR/EIS include "Regulatory Requirements." All 1997 FEIR/EIS mitigation measures were restated and adopted as Conditions of Approval for the 1997 Project. Insofar as those measures remain applicable to the Revised Project and are carried forth in the MMP and associated Conditions of Approval for the Revised Project, they are referenced and described herein for their capacity to minimize or avoid significant environmental impacts.

• **Comments Received on the Notice of Preparation (NOP)** prepared for this SEIR in August 2008.

The NOP circulated from August 18, 2008 through September 17, 2008. Comments received on the NOP for this SEIR will be referenced and responded to in order to assess impact significance. NOP comment letters were received from the following agencies:

- Native American Heritage Commission, August 25, 2008
- California State Lands Commission, September 5, 2008
- Kern County Resource Management Agency, Roads Department, September 10, 2008
- California Department of Transportation, District 9, September 12, 2008
- California Regional Water Quality Control Board, Lahontan Region, September 15, 2008
- State of California Public Utilities Commission, September 15, 2008
- Kern County Air Pollution Control District, September 16, 2008
- U.S. Department of the Interior/Bureau of Land Management, September 17, 2008
- State Department of Conservation, Division of Land Resource Protection, September 17, 2008
- U.S. Department of the Interior, Fish and Wildlife Service, September 27, 2008
- State Department of Conservation, Office of Mine Reclamation, September 30, 2008
- Southern California Gas Company, Southern Region Transmission, November 26, 2008

• **Technical Study Analyses and Findings** in reports recently prepared for the Revised Project.

The technical studies listed below have been prepared as technical guidance for design of the Revised Project; to support preparation of this Supplemental Environmental Impact Report; and/or for compliance with mitigation, regulatory requirements and conditions that were adopted as part of the 1997 Project. The reports are grouped by environmental topics, as follows:

Air Quality/Health Risk and Hazards/Hazardous Materials

- WZI Inc. 2006. Air Quality Assessment, Golden Queen Mining Company Soledad Mountain Project, Kern County, California; August 2006.
- ARCADIS U.S., Inc. (ARCADIS). 2007b. Baseline Soil Characterization Report; April 9, 2007.
- ARCADIS. 2008b. Soledad Mountain Project Human Health Risk Assessment; May 2008.
- ARCADIS and Golden Queen Mining Co., Inc. 2008. Soledad Mountain Project Environmental Site Assessment; September 2008.
- Air Sciences Inc. 2009b. *Soledad Mountain Project Air Quality and Health Risk Assessments*. July 2009.

Biological Resources

- Bamberg, Samuel A., Ph.D. and S. Lynn Bamberg LLC. 2006. Addendum to the Biological and Soil Resource Evaluation for Soledad Mountain Project; June 2006.
- Bamberg, Samuel A., Ph.D. 2007. *Revegetation Plan for Soledad Mountain Project*; prepared March 1997, revised March 2007.
- Brown-Berry Biological Consulting. 2007. Bat Surveys of Mines in Soledad Mountain, Kern County, California (May through December 2006); March 21, 2007.
- Bamberg, S. Lynn, LLC and Golder Associates Inc. 2008. Soil Salvage, Stockpiling, and Use Plan for the Soledad Mountain Project; November 2008.
- Sunrise Consulting. 2009. Desert Tortoise Focused Survey Report, Soledad Mountain Project, Kern County, California; May 2009.

Cultural Resources

• W&S Consultants. 2007. Phase III Data Recovery CA-KER-4446H, - 4447H, -4448H, and -4449H; February 25, 2007.

Hydrology/Water Quality and Water Supply

- Golden Queen Mining Co. Ltd. 2006. *Soledad Mountain Project Water Supply*; September 28, 2006.
- Golden Queen Mining Company, Inc., et al. 2007. Report of Waste *Discharge for the Soledad Mountain Project*; March 8, 2007, revised May 2, 2007.

- ARCADIS. 2007a. Technical Memorandum Soledad Mountain Project: Domestic Water Well Chemistry Assessment December 2006 Monitoring Event; March 27, 2007.
- Golder Associates Inc. 2007a. *Soledad Mountain Project Hydrogeology Study*; March 8, 2007, revised May 2, 2007.
- ARCADIS. 2008a. Soledad Mountain Project Water Quality Monitoring and Data Management Procedures Manual; February 2008.
- Golder Associates Inc. 2008. *Soledad Mountain Project Flood Hazard Evaluation Report*; June 2008.
- Golder Associates Inc. 2009. *Soledad Mountain Project Site Drainage Plan*; January 25, 2007, revised May 28, 2009.

Applicable conclusions and findings from the aforementioned technical studies will be referenced in support of any finding regarding impact significance.

4.1.3 Environmental Analysis

I. Aesthetics

Kern County Significance Thresholds

The County's Environmental Checklist Form indicates that a project would have significant adverse Aesthetics effects if it would:

- a) Have a substantial adverse effect on a scenic vista.
- b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway.
- c) Substantially degrade the existing visual character or quality of the site and its surroundings.
- d) Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area.

1997 FEIR/EIS Analysis and Conclusions

For **Aesthetics thresholds of significance a and b** above, the 1997 FEIR/EIS concluded:

Operations under the Proposed Action would cause some visual contrast with the surrounding land from more distant viewpoints, even after reclamation. However, when the Proposed Action is view in relationship to other current and historical activities there is only a weak contrast. The project area, with the implementation of the Proposed Action, would contrast slightly with the existing environmental. Due to the viewing distance from the major travel routes, viewer sensitivity to the visual resources is considered to be low to moderate. All the mining projects in the area are subject to reclamation procedures which would reduce the impact to the visual resources. The proposed project would not alter the existing appearance to the casual viewer because the type of activities outlined in the Proposed Action are consistent with past activities in the area.

The visual impacts from the Proposed Action would be Less Than Significant when compared to the currently existing conditions and surrounding views. (1997 FEIR/EIS, pp. 249-250)

There has been no new or significant change in the visual conditions in the project vicinity since the original mining project was approved in 1997. Furthermore, the Revised Project does not include any significantly new or modified design features that would conflict with the 1997 FEIR/EIS conclusions. There are no new unique scenic resources within the project area or vicinity. Therefore, the Revised Project's impacts will remain less than significant. No further analysis in this SEIR is required.

For **Aesthetics thresholds of significance c and d** above, the 1997 FEIR/EIS concluded that, "*The visual character of the site could be altered by the project activities.*" (1997 FEIR/EIS, p. S-34) It was further explained in the 1997 FEIR/EIS that this general impact statement pertained to impacts that could result from the visibility of surface disturbance associated with construction and operation of project facilities, the creation of overburden piles, the creation of the heap leach facilities, the creation of the open pit mine and the occasional dust plumes resulting from blasting in the open pit mines. (1997 FEIR/EIS, p. 248) The 1997 FEIR/EIS found that visual character alterations could also result from the potential visibility of fugitive light during nighttime; color contrasts between structural features and natural landscapes; and historical mining disturbances, if not reclaimed. (1997 FEIR/EIS, p. 248-250)

With the mitigation described below, however, 1997 FEIR/EIS concluded that reclamation of the site would reduce the long-term impacts of surface disturbance, and the use of earthtone colors would mitigate effects related to visual contrast. (1997 FEIR/EIS, p. 251) Additionally, the 1997 FEIR/EIS concluded:

The operations plan calls for portable lighting units which will be used in the active working areas in the mine and on the overburden piles. The facilities will be lighted for safety 24-hours per day. The lights would be visible from the KOP's (Key Observations Points); however, all lighting will be directed toward the working areas and shield. Project design features will reduce the level of impact to Less Than Significant. (1997 FEIR/EIS, p. 250)

The Revised Project's reclamation, requisite structural painting, and lighting plans employ the same characteristics as the original 1997 Project's plans. Therefore, the Revised Project's visual impacts will remain less than significant. No further analysis in this SEIR is required.

Compliance with 1997 FEIR/EIS Mitigation Measures

Visual Impact 1. The visual character of the site could be altered by the project activities.

Regulatory Requirements

- A Reclamation Plan approved by Kern County will include:
 - The removal of all buildings and foundations at the end of the project;
 - Grading of overburden piles and heap leach piles to fit in with the surrounding topography; and
 - Revegetation of the disturbed areas with native species of plants.
- Dust control measures required in the air permit to control particulate emissions will minimize the potential visual impact of fugitive dust.

Existing Mitigation Measures/Conditions of Approval

- Surface disturbance will be minimized to that required for safe and efficient operation. (Condition of Approval No. 27)
- Historical mining disturbance will be reclaimed (Condition of Approval No. 44)
- Buildings and structures will be painted with non-reflective earthtone colors to blend with the predominant background. (Condition of Approval No. 45)
- Outdoor lighting for the mine pit and other areas of nighttime activities will be shielded and directed downward to reduce fugitive light. (Condition of Approval No. 46)
- Light poles will be no higher than necessary for safe and efficient lighting. (Condition of Approval No. 46)
- Low-pressure sodium bulbs or other appropriate technology will be used for outdoor lighting. (Condition of Approval No. 46)

Comments Received on the Notice of Preparation

None received.

Technical Study Analyses and Findings

Technical studies were not prepared to further assess Aesthetic impacts.

II. Agriculture Resources

Kern County Significance Thresholds

The County's Environmental Checklist Form indicates that a project would have significant adverse Agriculture Resources effects if it would:

- a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to nonagricultural use.
- b) Conflict with existing zoning for an agricultural use or a Williamson Act Contract.
- c) Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland to non-agricultural use.
- d) Result in the cancellation of an open space contract made pursuant to the California Land Conservation Act of 1965 or Farmland Security Zone Contract for any parcel of 100 or more acres (Section 15206(b)(3) Public Resources Code).

1997 FEIR/EIS Analysis and Conclusions

For **Agriculture Resources thresholds of significance a and c** above, the 1997 FEIR/EIS concluded:

The existing and historical land use within the project site is mineral exploration, mining and open space....There is no prime agricultural land within the project area, therefore, there is no impact....Agriculture is not considered feasible on the project site due to the lack of soil and steep slopes. (1997 FEIR/EIS, p. 264)

The 1997 FEIR/EIS concluded that there is no prime agricultural land or agricultural production within the project area and therefore, there is no opportunity to disturb any agricultural or farmland cultivation. Furthermore, the project site has already been disturbed with past mining operations and is not being utilized for any agricultural cultivation. Further discussion in this SEIR is not required.

For **Agriculture Resources thresholds of significance b and d** above, there is no Williamson Act Contract or other open space contract on the project site or in the project vicinity. Therefore, there is no opportunity for the Revised Project to cancel any Williamson Act Contract or affect any other open space contract. Further discussion in this SEIR is not required.

Compliance with 1997 FEIR/EIS Mitigation Measures

The 1997 FEIR/EIS determined that impacts related to agricultural resources were less than significant; therefore, no mitigation measures were necessary.

Comments Received on the Notice of Preparation

From State Department of Conservation, Division of Land Resource Protection, September 17, 2008:

1. Describe type, amount, and location of farmland lost to project implementation.

<u>EIR Response</u>: The 1997 FEIR/EIS found no impacts to agricultural resources. There will be no farmland lost due to project implementation because the project site has never been farmed. Agricultural uses are limited by lack of soils and steep slopes per the 1997 FEIR/EIS.

2. Impacts to agricultural resources must be quantified and qualified, based on CEQA Guidelines.

<u>EIR Response</u>: Impacts to agricultural resources were evaluated in the 1997 FEIR/EIS, and no impacts to agricultural resources were identified.

3. This Division encourages use of agricultural conservation easements on land of at least equal quality and size as partial compensation.

<u>EIR Response</u>: This comment is not applicable because there is no farmland on the project site. The 1997 FEIR/EIS concluded that there is no agricultural land within the project area and therefore, there was no opportunity to disturb any agricultural or farmland cultivation within the vicinity. Further discussion in this SEIR is not required because the 1997 FEIR/EIS adequately addressed these comments from the State Department of Conservation, Division of Land Resource Protection.

Technical Study Analyses and Findings

Technical studies were not prepared to further assess Agriculture Resources impacts.

III. Air Quality

Kern County Significance Thresholds

The County's Environmental Checklist Form indicates that a project would have significant adverse Air Quality effects if it would:

- *a)* Conflict with or obstruct implementation of the applicable air quality plan.
- b) Violate any air quality standard as adopted in (c)i, (c)ii, or as established by EPA or air district or contribute substantially to an existing or projected air quality violation.
- c) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is nonattainment under an applicable federal or

state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors). Specifically, a significant impact would occur if a project exceed any of the following adopted threshold

Kern County Air Pollution Control District:

- Operational and area sources:

ROG – 25 tons per year.

 $NO_X - 25$ tons per year.

 $PM_{10} - 15$ tons per year.

- Stationary sources (determined by District rules):

25 tons per year.

- *d)* Expose sensitive receptors to substantial pollutant concentrations.
- e) Create objectionable odors affecting a substantial number of people.

Kern County has not developed a quantified threshold of significance for GHG emissions, but a project found to contribute to a net decrease in GHG emissions and found to be consistent with the implementation of the CARB Scoping Plan (2008) is presumed to have less-than-significant GHG impacts.

1997 FEIR/EIS Analysis and Conclusions

Overall, the 1997 FEIR/EIS made the following summary findings regarding Air Quality:

District air quality standards and regulations will be met. A health risk assessment for the project has indicated that no significant risk from projectrelated toxic contaminants or activities would occur. Operations will be conducted using Best Available Control Technology under permits issued by the Kern County Air Pollution Control District. United States Environmental Protection Agency-approved air quality modeling methods indicate that the environmental impact upon air quality would meet district air quality standards and would be Less Than Significant. Existing ambient air quality will be improved in the long-term through reclamation of existing tailings piles that contribute a calculated 136,000 pounds of PM_{10} emissions per year. (p. S-15)

For **Air Quality thresholds of significance a, b, and e** above, the 1997 FEIR/EIS concluded:

The proposed project will obtain permits, as applicable, from the Kern County Air Pollution Control District and comply with all applicable rules and regulations designed to achieve or maintain compliance with NAAQS or CAAQS...The proposed project would not violate any approved plan for achieving or maintaining compliance with NAAQS or CAAQS, local or regional growth or congestion plans or local CEQA significance standards for air quality...The proposed project would not concentrate vehicle trips or motor vehicle-related emissions in a localized area which would cause a violation of any CO ambient air quality standard...Therefore, the proposed project would have a Less Than Significant Impact on air quality in the project area....The proposed project would not cause an odor, visibility, or other problem which would create a public nuisance condition. (1997 FEIR/EIS, pp. 219 and 220)

The 1997 FEIR/EIS evaluated air quality impacts for construction activities, normal operations, and reclamation activities and concluded that air quality impacts were less than significant. The Revised Project does not include any significantly new or modified construction and/or operational activities that would conflict with the 1997 FEIR/EIS conclusions. Though it could be concluded that significant air quality impacts would not result with the Revised Project, an updated Air Quality/Health Risk Assessment has been prepared, findings and conclusions of which are discussed in Section 4.2 (*Air Quality*) of this SEIR.

For Air Quality threshold of significance c above, the 1997 FEIR/EIS concluded, "The impact to air quality from the cumulative projects is considered Less Than Significant" (1997 FEIR/EIS, pp. 217).

The 1997 FEIR/EIS evaluated cumulative impacts based on those residential and industrial projects proposed within the general vicinity. Short- and long-term impacts were factored into the cumulative analysis, based on KCAPCD requirements. The 1997 FEIR/EIS concluded that significant cumulative impacts would not result. The Revised Project would not propose new or different mining operations or activities that would generate substantially more emissions. Furthermore, area-wide development has not occurred in the general vicinity since 1997. Therefore, those conclusions made in the 1997 FEIR/EIS would continue to apply. As discussed, an updated Air Quality/Health Risk Assessment has been prepared for the Revised Project. Its findings and conclusions relating to cumulative impacts are discussed in Section 4.2 of this SEIR.

For **Air Quality threshold of significance d** above, the 1997 FEIR/EIS concluded:

The proposed project would not result in toxic air contaminant emissions which would cause a significant short- or long-term health risk or cause an increase [in] cancer risk.... The proposed project would not concentrate vehicle trips or motor vehicle-related emissions in a localized area which would cause a violation of any CO ambient air quality standard. The proposed project would not cause an odor, visibility, or other problem which would create a public nuisance condition. (1997 FEIR/EIS, pp. 219 and 220)

In the vicinity, there are residential uses that are considered sensitive receptors. The 1997 FEIR/EIS, however, concluded that the project would not create any significant health risks or excessive air quality emissions that would potentially impact these receptors. The Revised Project would not propose new or different mining operations or activities that would adversely affect these neighboring receptors. Those conclusions made in the 1997 FEIR/EIS would continue to apply. As discussed, an updated Air Quality/Health Risk Assessment has been prepared for the Revised Project. Findings and conclusions from the updated Air

Quality/Health Risk Assessment relating to impacts on sensitive receptors are discussed in Section 4.2 of this SEIR.

Global warming and greenhouse gases are assessed in this SEIR. Global warming/climate change regulation is continuing to evolve and is often the focus for CEQA litigation. The 2006 Air Quality Assessment briefly discussed global warming impacts but did not provide a qualitative or quantitative analysis, since CEQA thresholds of significance have not yet been formally adopted for assessing the significance of global warming impacts. Since 2006, CEQA now requires more detailed analysis. Accordingly, an analysis of greenhouse gases and global warming impacts is included in the updated Air Quality/Health Risk Assessment (Air Sciences 2009b) and Greenhouse Gas Emissions study (Air Sciences 2009c), as discussed in Section 4.2 of this SEIR.

Compliance with 1997 FEIR/EIS Mitigation Measures

Air Quality Impact 1. Potential impact to visibility and air quality.

Regulatory Requirements

- The Kern County Air Pollution Control District (KCAPCD) will review facility designs and operations for compliance with Federal and California regulations for the protection of air quality. An application for Authority to Construct has been submitted to the KCAPCD.
- As required by the KCAPCD, permitted sources of emissions will be equipped with Best Available Control Technology (BACT).
- Roads will be maintained on a routine basis. Appropriate dust suppression techniques will be used on roads and disturbed surfaces to minimize fugitive emissions.
- As required by the KCAPCD, sources of emissions will be controlled to ensure compliance with California Health and Safety Code §41700 (i.e., nuisance) and §41701 (i.e., visible emissions).

Existing Mitigation Measures/Conditions of Approval

- Onsite equipment and vehicles will be maintained on a routine basis, as recommended by manufacturer manuals, to reduce exhaust emissions. (Condition of Approval No. 21)
- Monitoring stations for PM₁₀ will be established upwind and downwind from the processing facilities. (Condition of Approval No. 22 condition satisfied)
- A mercury retort will be installed to control mercury emissions. (Condition of Approval No. 23)
- The size and number of blasts in the mine will be limited by good engineering design. (Condition of Approval No. 24)
- The existing tailings piles will be removed, thereby reducing the long-term fugitive emissions from the site. (Condition of Approval No. 25)
- The adopted reclamation plan shall include reclamation of previously disturbed areas. (Condition of Approval No. 26)

Air Quality Impact 2. Potential impact to short-or long-term health risks.

Regulatory Requirements

- Cyanide concentrations at leach pads and processes will be monitored.
- Kern County APCD will be notified prior to demolition of any existing structures, as required under National Emission Standards for Hazardous Air Pollutants (NESHAPS) Subpart M National Emission Standard for Asbestos.

Existing Mitigation Measures/Conditions of Approval

- A cyanide-destructing compound (e.g., hydrogen peroxide or calcium hypochlorite) will be maintained onsite for use in the event that a spill occurs. (Condition of Approval No. 16)
- Routine distribution of cyanide solution on the top of the heap leach pad will occur via a drip irrigation system and the heap leach pads will be contoured to prevent surface ponding which could attract birds and small animals. (Condition of Approval No. 32)
- The applicant shall make available for public review mine sampling and analytical data for mercury and cyanide during regular business hours. (Condition of Approval No. 63)

Comments Received on the Notice of Preparation

From Kern County Air Pollution Control District, September 16, 2008:

The KCAPCD letter supported the Revised Project and provided minimal comments. Their letter stated the following:

- 1. After review of the subject NOP most air quality issues were addressed. Minor items not addressed in the NOP will be addressed by the District permitting process.
- 2. Air District staff will complete a health risk assessment based on proposed emissions, because of possible toxic air contaminant emissions. Real wind (air-flow) data will be utilized by the Air District.
- 3. The Air District is requesting that the Applicant proceed with downwind monitoring so District staff can complete its modeling prior to issuance of District permits and the Planning Department's final environmental determination.

<u>EIR Response</u>: Comments noted. Regarding Comment 3, Section 4.2 (*Air Quality*) of this SEIR responds to the KCAPCD's concerns and request.

Technical Study Analyses and Findings

Technical studies were prepared to provide updated assessments of air emissions and potential airborne health risk issues associated with the Revised Project. This section cites relevant findings and conclusions from the following technical studies:

- WZI Inc. 2006. Air Quality Assessment, Golden Queen Mining Company Soledad Mountain Project, Kern County, California; August 2006.
- ARCADIS U.S., Inc. (ARCADIS). 2007b. *Baseline Soil Characterization Report*; April 9, 2007.
- ARCADIS. 2008b. Soledad Mountain Project Human Health Risk Assessment; May 2008.
- ARCADIS and Golden Queen Mining Co., Inc. 2008. Soledad Mountain Project Environmental Site Assessment; September 2008.
- Air Sciences Inc. 2009b. *Soledad Mountain Project Air Quality and Health Risk Assessments*. July 2009.

The 2006 Air Quality Assessment by WZI Inc. concluded that the project would not create any additional air quality impacts and would not conflict with applicable standards or thresholds promulgated by the Kern County Air Pollution Control District (KCAPCD). Similarly, the AQ/HRA prepared in 2009 further assessed and updated the air quality and health risk impacts of the Revised Project. Consistent with the 2006 WZI analysis, the updated AQ/HRA presented the same findings and conclusions.

For **Air Quality thresholds of significance a, b, and e** above, the 2006 Air Quality Assessment concluded:

Even though the emissions from the new proposed project exceed Kern County APCD significance thresholds, the project is still less of an impact than the original proposed project since fewer pieces of mobile equipment will be used and improved methods of crushing and transportation of the ore (use of covered conveyors instead of all hauling) will be utilized. (p. 31)

The proposed project is expected to generate more than the existing amount of heavy-duty truck trips on the adjacent roadways. However, due to the small number of vehicle trips that will be generated, no impacts from CO near local roadways are expected. ...Mining is not a known source of odors and therefore is not expected to create any odor impacts. Additionally, no odor producing sites exist within 1 mile of the project site. Therefore, no odor impacts are expected to be associated with the proposed project. (p. 32)

Although the foregoing reasons and findings concluded that significant air quality impacts would not result with the project as proposed, an updated Air Quality Assessment was prepared. Findings and conclusions from the updated Air Quality/Health Risk Assessment are discussed in Section 4.2 (*Air Quality*) of this SEIR.

For **Air Quality threshold of significance c** above, the 2006 Air Quality Assessment also evaluated cumulative air impacts and concluded that significant impacts would not result. The following cites relevant findings and conclusions from the 2006 Air Quality Assessment:

Cumulative impacts were analyzed previously in Golden Queen's EIR. Based on this analysis all of the projects will increase the motor vehicle traffic in the Mojave area. Population growth and the accompanying vehicular emissions were taken into consideration. It was determined in that analysis that the impact to air quality from the cumulative projects is less than significant. Therefore, with this modified proposal having less of an impact on air quality it is also considered less than significant. (p. 32)

Findings and conclusions from the updated Air Quality/Health Risk Assessment relating to cumulative impacts are discussed in Section 4.2 of this SEIR.

A qualitative analysis of global warming and greenhouse gases impacts is evaluated in this SEIR in accordance with Kern County and CEQA requirements. Global warming/climate change regulation is continuing to evolve and is often the focus for CEQA litigation. The 2006 Air Quality Assessment included a very brief discussion of global warming impacts but did not provide a qualitative or quantitative analysis. The updated Air Quality Assessment evaluated greenhouse gases and global warming impacts. Findings and conclusions from the updated Air Quality/Health Risk Assessment relating to greenhouse gases and global warming impacts will be discussed in Section 4.2 of this SEIR.

IV. Biological Resources

Kern County Significance Thresholds

The County's Environmental Checklist Form indicates that a project would have significant adverse Biological Resources effects if it would:

- a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations or by the California Department of Fish and Game or U.S. Fish and Wildlife Service.
- b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service.
- c) Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means.
- d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species, or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites.

- *e)* Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance.
- f) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan.

1997 FEIR/EIS Analysis and Conclusions

For **Biological Resources threshold of significance a** above, the 1997 FEIR/EIS concluded:

There are no endangered, threatened, rare, or sensitive plant species observed or present, therefore, no impacts are anticipated. (1997 FEIR/EIS, p. 223)

Permanent or temporary loss...of natural vegetation is a residual impact. Revegetation during reclamation will offset the loss of natural vegetation types. The loss would be Less Than Significant because no rare or unique habitats are affected and there are large amounts of similar undisturbed habitats in the regional area. (1997 FEIR/EIS, p. 225)

No threatened or endangered animal species have been identified or observed on the project site. (1997 FEIR/EIS, p. 226)

No threatened or endangered species have been identified on the project site. Neither desert tortoises nor Mohave ground squirrels were observed on the project site...The populations of wildlife are not anticipated to drop below self sustaining levels as a result of the proposed project. No significant impacts to sensitive species are anticipated as a result of the proposed project (1997 FEIR/EIS, pp. 230 and 231).

The 1997 FEIR/EIS included a biological study entitled, "Biological and Soil Resource Evaluation for Soledad Mountain Project," prepared by Bamberg Associates in April 1997. The 1997 FEIR/EIS and Bamberg study surveyed the project area for plant species and wildlife species, including bats, desert tortoise, Mohave ground squirrel, etc. The report concluded that impacts to plant species would be insignificant since project reclamation would return the project site to open habitat, including native vegetation, after mining was completed. The report also concluded that impacts to animal species and species of management concern would be insignificant if the project complied with standard regulatory requirements, including preparation of a desert tortoise survey and consultation with the California Department of Fish and Game and the U.S. Fish and Wildlife Service. In compliance with the standard regulatory requirements and reflect changes to the project, additional biological reports have been prepared. Findings and conclusions from these reports are discussed in Section 4.3 of this SEIR.

For **Biological Resources thresholds of significance b and c** above, the 1997 FEIR/EIS concluded:

No wetlands, marshes, or other environmentally-sensitive habitat areas have been identified on the project site. There are no well-defined drainage channels or waters of the United States... There would be no loss of riparian [lands], wetlands, or waters as a result of the proposed project (1997 FEIR/EIS, pp. 222 and 223).

Based on biological surveys, the 1997 FEIR/EIS concluded that there were no wetlands or riparian areas located onsite. Therefore, the 1997 Project and the Revised Project both would have no significant adverse effects on these resources. No further analysis in this SEIR is required.

For **Biological Resources threshold of significance d** above, the 1997 FEIR/EIS concluded, *"There will be no interference with fish, migratory species or wildlife species, or with established migratory corridors"* (1997 FEIR/EIS, p. 230).

The 1997 FEIR/EIS concluded that there were no migratory corridors established within the project site and vicinity. Therefore, the 1997 and Revised Projects have no opportunity to interfere with any migratory corridor. Impacts will not result. No further analysis in this SEIR is required.

For **Biological Resources thresholds of significance e and f** above, the 1997 FEIR/EIS concluded, "*There would be No Impact to environmentally-sensitive habitat areas or 'specimen trees' because there are none present on the project site*" (1997 FEIR/EIS, p. 226).

The 1997 FEIR/EIS concluded that there were no "specimen trees" located onsite. The project site was used for mining operations. The Revised Project will establish new mining operations onsite, if the County approves the requested Conditional Use Permits. Assuming County approval, the Revised Project will not conflict with policies of the County General Plan or applicable Ordinances. No further analysis in this SEIR is required.

Compliance with 1997 FEIR/EIS Mitigation Measures

Vegetative Resources Impact 1. Project activities would result in the disturbance of vegetation.

Regulatory Requirements

- A Reclamation Plan is filed with Kern County in accordance with Surface Mining and Reclamation Act requirements.
- The Reclamation Plan requires revegetation of disturbed areas which will include the heap leach pads, facilities area, unnecessary roads, the tops of the overburden piles and the bottom areas of the pit.
- The seed mix will utilize only plant species native to the site area.
- Financial assurance is required to assure appropriate revegetation efforts are completed.

Existing Mitigation Measures/Conditions of Approval

• Project disturbance will be minimized to that necessary for safe and efficient operation. The limits of the construction areas will be clearly marked and vehicles and equipment will be confined to these areas. (Condition of Approval No. 27)

- Mature Joshua trees which may be disturbed will be salvaged and replanted in undisturbed areas within the property boundary. (Condition of Approval No. 28)
- The use of seedlings for revegetation will be investigated in test plots. (Condition of Approval No. 16)
- Fencing around the heap leach pile will remain in place until vegetation is established or as otherwise specified in the Reclamation Plan. (Condition of Approval No. 30)

Wildlife Resources Impact 1. The project will disturb wildlife habitats.

Regulatory Requirements

• Reclamation according to SMARA will return the project site to open habitat including native vegetation after mining is completed.

Existing Mitigation Measures/Conditions of Approval

• Grading for the project will be minimized to the extent consistent with safe and efficient operations to limit the total area of surface disturbance. (Condition of Approval No. 31)

Wildlife Resources Impact 2. The project will disturb wildlife in the area.

Regulatory Requirements

- An informal consultation with the California Department of Fish and Game will take place before construction begins.
- An informal consultation with the United States Fish and Wildlife Service will take place before construction begins.
- A preconstruction survey for desert tortoises was conducted in April 1997.
- A desert tortoise survey will be conducted by a qualified biologist before construction of each portion of the heap leach pads and the surveyed area will be fenced with appropriate material for exclusion of desert tortoises.
- In the event that a desert tortoise if found within the project site, mining activities must cease and the Bureau of Land Management shall be contacted immediately. At this time, BLM is responsible for initiating formal Section 7 consultation with the U.S. Fish and Wildlife Service. The Golden Queen Mining Company is not authorized for any form of "take" of desert tortoise. Taking is defined as harassing, harming, pursuing, hunting, shooting, wounding, trapping, capturing, collecting, or attempting to engage in any such conduct. Authorization for take of desert tortoise by Golden Queen Mining can only be obtained after a biological opinion has been issued to the BLM by the U.S. Fish and Wildlife Service.
Existing Mitigation Measures/Conditions of Approval

- Routine distribution of cyanide solution on the top of the heap leach pad will occur via a drip irrigation system and the heap leach pads will be contoured to prevent surface ponding which could attract birds and small animals. (Condition of Approval No. 32)
- Containers of reagents will be stored within controlled reagent storage areas and kept closed, stored in enclosed areas, or otherwise managed to prevent access by wildlife. (Condition of Approval No. 33)
- Project waste will be properly managed at the site to control garbage that could attract wildlife. (Condition of Approval No. 34)
- The maximum vehicle speed will be 25 mph. (Condition of Approval No. 35)
- Wildlife habitat awareness will be included in the workers education program. (Condition of Approval No. 36)
- Some of the mine adits will be retained and gated, and some of the mine shafts will be covered by grates to allow access by bats while excluding people. (Condition of Approval No. 37)

Comments Received on the Notice of Preparation

From U.S. Department of the Interior, Fish and Wildlife Service, September 27, 2008:

1. Conduct desert tortoise surveys utilizing Department survey guidelines.

EIR Response: The 1997 FEIR/EIS included the findings of a desert tortoise survey and stated,

Desert tortoise surveys were conducted in specific areas of potentially suitable habitat...No recent or active sign or live tortoises were observed on the project site...According to the United States Fish and Wildlife Service, recent tortoise surveys have not detected any tortoises west of State Route 14 in Antelope Valley. A detailed survey was conducted in April 1997 to confirm previous results (1997 FEIR/EIS, p. 229).

As mitigation, the 1997 FEIR/EIS required the following:

In the event that a desert tortoise is found within the project site, mining activities must cease in the vicinity of the sighting and the BLM shall be contacted immediately. At this time, BLM is responsible for initiating formal Section 7 consultation with the U.S. Fish and Wildlife Service (Service)...Authorization for take of desert tortoise by Golden Queen Mining can only be obtained after a biological opinion has been issued to the BLM by the Service (1997 FEIR/EIS, p. 232).

These findings relating to impacts to the desert tortoise and required mitigation also apply to the Revised Project. Further discussion in this SEIR is unnecessary.

2. The project must not provide "subsidies" for the common raven. Subsidies include food, water, and nesting. If assurances cannot be provided, the Department recommended monetary contribution to a fund to manage ravens on a regional basis.

<u>EIR Response</u>: Applicant compliance with standard conditions of approval will ensure that the site is periodically cleaned of subsidies, including food, debris, etc. In addition, it is assumed that the mining operations, including blasting, will scare and prevent the ravens from nesting onsite. Further analysis in this SEIR is not required.

3. The Department recommends that a complete range of bat surveys be conducted, including hibernacula in the winter and harp trap surveys in the summer and fall. In addition, bat boxes should be used to minimize disturbances to the bats.

<u>EIR Response</u>: The 2007 bat survey by Brown-Berry was prepared in accordance with accepted protocols to evaluate project impacts on bats. As discussed previously, the survey concluded that large numbers of bats were not observed and that mortality may be low.

4. The overflow pond should be assessed to determine if its water quality could be toxic to local wildlife and/or migratory birds.

<u>EIR Response</u>: Applicant compliance with Regional Water Quality Control Board permitting requirements, adopted conditions of approval and Best Management Practices will ensure that significant water quality issues will not result.

Technical Study Analyses and Findings

Technical studies were prepared to provide updated assessments of the Revised Project's potential effects on biological resources or to satisfy requirements of the 1997 Project's conditions of approval. This section and Section 4.3 of this SEIR cite relevant findings and conclusions from the following technical studies:

- Bamberg, Samuel A., Ph.D. and S. Lynn Bamberg LLC. 2006. Addendum to the Biological and Soil Resource Evaluation for Soledad Mountain Project; June 2006.
- Bamberg, Samuel A., Ph.D. 2007. *Revegetation Plan for Soledad Mountain Project*; prepared March 1997, revised March 2007.
- Brown-Berry Biological Consulting. 2007. Bat Surveys of Mines in Soledad Mountain, Kern County, California (May through December 2006); March 21, 2007.
- Bamberg, S. Lynn, LLC and Golder Associates Inc. 2008. Soil Salvage, Stockpiling, and Use Plan for the Soledad Mountain Project; November 2008.
- Sunrise Consulting. 2009. Desert Tortoise Focused Survey Report, Soledad Mountain Project, Kern County, California; May 2009.

Biological technical studies were prepared for the Revised Project, including: (a) "Addendum to the Biological and Soil Resource Evaluation for Soledad Mountain Project," prepared by Samuel A. Bamberg, Ph.D. and S. Lynn Bamberg LLC in June 2006; and (b) "Bat Surveys of Mines in Soledad Mountain, Kern County, California (May through December 2006)," prepared by Brown-Berry Biological Consulting on March 21, 2007. These reports concluded that significant impacts to endangered or sensitive biological species would not result with the Revised Project.

In addition to the two surveys listed above, a Desert Tortoise Focused Survey Report was prepared by Sunrise Consulting in May 2009 pursuant to the regulatory requirements listed under *Wildlife Resources Impact 2*. The following cites relevant findings and conclusions from the biological reports:

For **Biological Resources threshold of significance a** above, the biological reports concluded:

"The changes in the mining plan will not impact the overall reclamation and revegetation concepts... There have been very minor changes in the vegetation and plant communities and in the wildlife habitats in the last 10 years. The site has been protected from fires and sheep grazing, and other trespass and recreational uses are largely controlled. The site is stable and there have been no obvious disturbances to the soils or biota" (Bamberg 2006, p. 1).

"Wildlife surveys and observations did not note any new species not reported in the original report. Some species of mammals and birds were actually observed that previously had been reported as probable. These sightings included the burrowing and barn owls, a bobcat, a gray fox, and abundant sign of the pocket gopher" (Bamberg 2006, p. 3).

"We did not observe large numbers of bats on Soledad Mountain, and the mortality may be low" (Brown-Berry 2007, p. 7).

"Appropriate mitigation is to protect some bat habitat that will not be destroyed during the current planned mining operations...A "cookbook" approach should be used cautiously as no one method will work for all species in all locations. A sample protocol would require that a mine be watched with night vision equipment for at least an hour after dark or until most bats appear to exit the mine. The mine opening can be covered with one-inch chicken wire or heavy bird netting... The exclusion material should be left in place for 2-3 days to allow bats to escape before being permanently closed or covered with a more opaque material" (Brown-Berry 2007, pp. 8, 9, and 10).

"The alkali mariposa lily has a moderate potential to occur at playa edges on Site. However, these areas are unlikely to be disturbed during this Project so no further surveys or mitigation is required for this species" (Sunrise Consulting 2009, p. 15).

"No additional surveys are required or recommended for desert tortoise if vegetation removal activities are conducted within one year of the surveys (February 12th 2010). After that time, it is recommended that no further surveys be conducted but informal coordination with CDFG and USFWS be conducted to use monitoring and training of Project personnel to ensure no adverse effects will occur to this species" (Sunrise Consulting 2009, p. 15). "Surveys for Mojave ground surveys are not recommended on Site because the chances are so low of this species being present on Site. Training of Project personnel is recommended to recognize this species and know appropriate procedures if this species is found during Project activities" (Sunrise Consulting 2009, p. 15).

"Pre-construction surveys may be required for burrowing owls within 30-days of the initiation of vegetation removal activities on Site" (Sunrise Consulting 2009, p. 15).

"No further surveys or avoidance/mitigation will be required for prairie falcons, loggerhead shrikes, and LeConte's thrashers. No Project activities will take place in areas of potential nesting for prairie falcons. Loggerhead shrikes and LeConte's thrashers are both very mobile and are unlikely to be adversely affected by Project activities" (Sunrise Consulting 2009, p. 16).

"No further surveys or avoidance/mitigation is required for Townsend's bigeared bat. A bat gate was installed on a larger adit when this species was found and the bat gate remains in place. No additional populations of this species are likely to be adversely affected by the currently proposed Project" (Sunrise Consulting 2009, p. 16).

Findings and conclusions from the updated biological technical studies relating to the County's thresholds of significance and cumulative impacts are discussed in Section 4.3 of this SEIR.

V. Cultural Resources

Kern County Significance Thresholds

The County's Environmental Checklist Form indicates that a project would have significant adverse Cultural Resources effects if it would:

- a) Cause a substantial adverse change in the significance of a historical resource as defined in Section 15064.5.
- *b)* Cause a substantial adverse change in the significance of an archaeological resource pursuant to Section 15064.5.
- c) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature.
- *d) Disturb any human remains, including those interred outside of formal cemeteries.*

1997 FEIR/EIS Analysis and Conclusions

For **Cultural Resources thresholds of significance a and b** above, the 1997 FEIR/EIS found:

The impact to the cultural resources is Significant because four historical sites on private land, considered important, would be disturbed.... In

consultation with the BLM, it has been determined that there are no significant sites on federal lands. The impact to cultural resources on federal lands is considered Less Than Significant (1997 FEIR/EIS, pp. 239-240).

The recommended mitigation for this significant impact was as follows:

- A Phase III Data Recovery (salvage excavation and architectural recording) will be conducted at four sites. (Condition of Approval No. 41)
- Seven sites will have an archaeological monitor review the areas during grading activity. (Condition of Approval No. 42)

For the level of significance after mitigation (residual impacts), the 1997 FEIR/EIS found:

As a result of the proposed mitigation measures, the impact to the cultural resources on both private and federal lands would be Less Than Significant. The Phase III Data Recovery will actually preserve artifacts and information which would otherwise be lost to continued decay (1997 FEIR/EIS, p. 242).

The project Applicant has already complied with the recommended mitigation measure and has prepared a new Phase III Data Recovery report. This will be discussed in the following section. The Revised Project will have no new or substantially changed impacts on the historically important sites because of compliance with the Phase III Data Recovery mitigation measure. The Applicant was required to comply with archaeological monitoring as identified in the 1997 FEIR/EIS and the Phase III Data Recovery report. Further discussion in this SEIR is not required.

For **Cultural Resources threshold of significance c** above, regarding paleontological resources and unique geologic features, the 1997 FEIR/EIS concluded the following:

Paleontological Resources - Soledad Mountain is a silicic volcanic center consisting of felsic flows, tuffs and breccias of Middle to Late Miocene age. The rock types range from rhyolite to quartz latite. The volcanic rocks are overlain by alluvial sediments on the flanks of Soledad Mountain. Fossils do not occur in volcanic rocks and have not been found in the non-marine alluvium. . . . No impacts to paleontological resources are anticipated due to the lack of fossils within sedimentary rocks at the site and the distance to the known fossil locality. Therefore, no additional analysis will be conducted (1997 FEIR/EIS, pp. 136 and 137).

Soledad Mountain is a prominent feature in the area, although it is not a unique geologic feature (1997 FEIR/EIS, p. 151).

Soledad Mountain is an eroded silicic volcanic center and the flanks of Soledad Mountain are mantled by Quaternary alluvium deposits consisting of sands and gravels (1997 FEIR/EIS, p. 160).

These geological resources are known to be non-fossiliferous because they are volcanics and bedrock devoid of vertebrate fossils (1997 FEIR/EIS, p. 136).

Therefore, the 1997 and Revised Projects would not result in significant impacts to unique paleontological resources. This impact is less than significant. No further analysis in the SEIR is required.

For **Cultural Resources threshold of significance d** above, regarding human remains, the 1997 FEIR/EIS found that existing regulatory requirements provided for procedures in the event of discovery of human remains. There are no known human remains on the project site. The Revised Project will not result in new impacts or a substantial change in this impact. Further analysis in this SEIR is not required.

Compliance with 1997 FEIR/EIS Mitigation Measures

Cultural and Historical Impact 1. Project related activities could disturb or destroy potentially significant sites.

Regulatory Requirements

- If any unknown cultural resources (i.e., archaeological artifacts, human remains, paleontological resources) are discovered in the course of operations on federal land, the operator shall bring this to the attention of the authorized officer and shall leave such discovery intact until told to proceed by the authorized officer.
- In the event of discovery of human remains, work in the area will halt until the coroner has determined that no investigation of the cause of death is required; or, if the remains are of Native American origin, descendants have made a recommendation to the owner regarding proper disposal of remains, or no descendants have been identified or descendants failed to make a recommendation with 24 hours of notification. If no recommendation is received, remains are to be reinterred with appropriate dignity on the property in a location not subject to future development.

Existing Mitigation Measures/Conditions of Approval

- Artifacts from the historical sites will be used to establish a small display of historical mining activities onsite. After conclusion of the project, the items on display will be donated to a museum located in Kern County. (Condition of Approval No. 38)
- As part of the worker education program, construction contractors and operations personnel will be instructed regarding the sensitivity of cultural resources and the presence of laws against unauthorized collection and disturbance. (Condition of Approval No. 39)
- If any unknown archaeological/cultural resources are discovered on private land during the course of mining or reclamation, work in the area of discovery shall be stopped and a qualified archeologist contacted to evaluate the find and, if necessary, mitigate impacts prior to resumption of work. (Condition of Approval No. 40)

- A Phase III Data Recovery (salvage excavation and architectural recording) will be conducted at four sites. (Condition of Approval No. 41)
- Seven sites will have an archaeological monitor review the area during grading activity. (Condition of Approval No. 42)

Comments Received on the Notice of Preparation

From Native American Heritage Commission, August 25, 2008:

The NAHC provided their standard letter for compliance with the CEQA requirements for historical resources. Both Phase II Evaluation and Phase III Data Recovery have already been performed on the project site. A copy of the Draft SEIR will be sent to the NAHC during the 45-day public review period. Further discussion is not required in this SEIR.

Technical Study Analyses and Findings

The Phase III Data Recovery at CA-KER-4446H, -4447H & -4449H (W&S 2007) provides updated data for the four historically important sites. Another purpose of the report was to collect all information previously obtained by studies in the field in the 1990s and to compile them in a single report. This will create efficiencies in future monitoring and reporting work that is required by the CUPs once construction starts.

For **Cultural Resources thresholds of significance a and b** above, the Phase III report found:

A Phase III Data Recovery...resulted in the recovery and documentation of a substantial quantity of archaeological and architectural data. Combined with the earlier artifact assemblage recovered during the Phase II test excavation ... this has resulted in the collection of scientifically consequential information from and about these historical cultural resources. Following CEQA, this has served to completely and adequately mitigate any adverse impacts to these sites that might result from the development and use of the study area. Based on this last fact, we recommend no additional archaeological work on this property. Again following CEQA, however, we recommend that an archaeological monitor be present during topsoil grading on these sites (p. 70).

The Revised Project will have no new or substantially changed impact on the historically important sites because of compliance with the Phase III Data Recovery mitigation measure. The Applicant was required to comply with archaeological monitoring as identified in the 1997 FEIR/EIS and the Phase III Data Recovery report. Further discussion in this SEIR is not required.

VI. Geology and Soils

Kern County Significance Thresholds

The County's Environmental Checklist Form indicates that a project would have significant adverse Geology and Soils effects if it would:

- a) Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:
 - *i.* Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault. Refer to Division of Mines and Geology Special Publication 42.

ii. Strong seismic groundshaking.

iii. Seismic-related ground failure, including liquefaction.

iv. Landslides.

- b) Result in substantial soil erosion or the loss of topsoil.
- c) Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse.
- d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property.
- e) Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater.

1997 FEIR/EIS Analysis and Conclusions

For Geology and Soils thresholds of significance a (i - iv) above, the 1997 FEIR/EIS concluded:

The site could be subject to ground shaking due to the earthquakes along identified potentially active faults. There are no known active faults, potentially active faults or Alquist-Priolo Special Studies Zones within the project area....Due to the seismic design features and the nature of open pit mining, the seismic hazards would be Less Than Significant....The substrate at the project site is volcanic and, therefore, is not subject to liquefaction....There is no evidence of static hazards, such as landsliding. There is No Impact expected from static hazards (1997 FEIR/EIS, pp. 166 and 167).

The 1997 FEIR/EIS concluded that though the project site could experience ground shaking during a seismic event, project hazards are not expected if construction occurs in accordance with Zone 4 Seismic Design provisions of the Uniform Building Code; earthwork and fills are constructed in accordance with geotechnical design specifications; and structures are not located on unstable

areas or slopes greater than allowable under the Building Code. The 1997 FEIR/EIS concluded that the project site was not located within an Alquist-Priolo Special Studies Zone and was not subject to liquefaction or landsliding. The 1997 and Revised Projects would not be significantly impacted by any seismic event with compliance of standard regulatory requirements. Further discussion in this SEIR is not required.

For **Geology and Soils threshold of significance b** above, the 1997 FEIR/EIS concluded, "*The impact of erosion and loss of topsoil is potentially Significant. Regulatory requirements and project design features will reduce the impact to Less Than Significant*" (1997 FEIR/EIS, p. 173).

The 1997 FEIR/EIS concluded that compliance with those regulatory requirements and project design features would reduce potential erosion impacts to insignificant levels. The Revised Project would also be expected to comply with these same requirements and features. Applicant compliance with standard conditions of approval related to erosion control further ensures that significant impacts will not result. No further analysis in this SEIR is required.

For **Geology and Soils thresholds of significance c and d** above, the 1997 FEIR/EIS concluded:

A slope stability analysis (Slope Stability for the Soledad Mountain Project Mine Overburden Disposal Piles; Glasgow Engineering Group; October 1996) has determined the maximum allowable slope for mine walls. Analyses of maximum allowable slopes for the heap leach piles and the overburden piles have been conducted to prevent failure during a reasonably foreseeable seismic event, as well as static conditions. The impact to soil stability would be Less Than Significant (1997 FEIR/EIS, p. 167).

In spite of steep slopes on the mountain, there is minimal evidence of slope or soil instability in the form of slides, soil creep or solifluction lobes. None of the soils contain enough clay to be subject to shrinking or swelling (1997 FEIR/EIS, p. 171).

Soledad Mountain is a prominent feature in the area, although it is not a unique geologic feature (1997 FEIR/EIS, p. 151).

The 1997 FEIR/EIS concluded that the project site is not characterized by unstable or expansive soils or any unique geologic feature, and that the 1997 Project would be safely supported by underlying soils. As discussed previously, the site is also not subject to landslides, which further supports the conclusion that the site's soils are capable of handling mining operations and the Revised Project. Further discussion in this SEIR is not required.

For Geology and Soils threshold of significance e above, the 1997 FEIR/EIS concluded, "Domestic waste water will be discharged to a septic system in accordance with Kern County Environmental Health Services Department approvals" (1997 FEIR/EIS, p. 275).

The 1997 FEIR/EIS concluded that the 1997 Project's septic system would not result in any significant impacts if the system is designed and operated according to County Environmental Health Services Department's requirements. The

Revised Project would also comply with these same County requirements. Applicant compliance with standard conditions of approval and these County requirements ensures that significant impacts would not result. Further discussion in this SEIR is not required.

Compliance with 1997 FEIR/EIS Mitigation Measures

Physiography and Geology Impact 1. Natural ground contours would be modified. (Significant and Unavoidable Adverse Impact After Mitigation)

Regulatory Requirements

- The State Mining and Geology Board Reclamation Regulations require that slopes of the pit and overburden piles be stable and conform with the surrounding topography and proposed end use.
- A Reclamation Plan is required which identifies areas to be revegetated and type of vegetation.
- Bonding for reclamation is required.

Existing Mitigation Measures/Conditions of Approval

• During final reclamation, overburden will be graded to break up the unnatural angles at the top edges. (Condition of Approval No. 6)

Physiography and Geology Impact 2. Potential ground motion from earthquakes could cause instability of slopes, pose a hazard to site facilities, or cause collapse of historic underground mine areas and above ground structures.

Regulatory Requirements

- Construction of buildings will be in accordance with Zone 4 seismic design provisions of the Uniform Building Code. Building plans require review and approval by Kern County.
- Earthwork and fills will be constructed in accordance with geotechnical design specifications and Kern County excavation and grading guidelines. Grading plans require review and approval by Kern County.
- The State Mining and Geology Board Reclamation Regulations require that slopes of the pit and overburden piles be stable and conform with the surrounding topography and proposed end use. The requisite slope stability analysis will be incorporated as part of the approved reclamation plan.
- An Emergency Response Plan to address problems related to a seismic occurrence will be developed by the applicant as part of the Hazardous Materials Business Plan filed with the Kern County Environmental Health Services Department.

Existing Mitigation Measures/Conditions of Approval

• Mine pit slopes will be evaluated by the applicant throughout operations to assure that excavation occurs at a slope angle that is safe, considering

actual rock strength and structural conditions encountered. (Condition of Approval No. 7)

- Old underground mining areas will be excavated or remediated. (Condition of Approval No. 8)
- Historical structures will be stabilized or removed by the applicant prior to site disturbance. (Condition of Approval No. 9)

Soils Impact 1. Potential loss of topsoil due to surface disturbances or erosion.

Regulatory Requirements

- Up to six inches of Arizo and Cajon type soils will be removed from areas to be disturbed and stockpiled as growth media for use in reclamation and revegetation. The reclamation plan will be reviewed and approved by Kern County.
- A Site Drainage Plan has been prepared to control erosion and soil stabilization and will be incorporated as part of the approved surface mining and reclamation plan.
- Soils in areas subject to minimal disturbance will be left in place and stabilized, as necessary, in accordance with the surface mining and reclamation plan reviewed and approved by Kern County.

Existing Mitigation Measures/Conditions of Approval

- Surface disturbance outside the project area will be kept to a minimum by clearly delineating operating areas to limit roads and vehicle traffic outside designated areas. (Condition of Approval No. 10)
- Growth media stockpiles will be stabilized by allowing germination of seeds naturally contained in the soil. (Condition of Approval No. 11)
- The feasibility of inoculation of soil with biological components will be investigated in test plots. (Condition of Approval No. 12)
- Site drainage will be inspected periodically to assure that excessive erosion is not occurring. In the event excessive erosion is identified, the drainage plan will be revised in consultation with Kern County. (Condition of Approval No. 13)
- Additional erosion prevention techniques include: (a) Site drainage will be retained onsite; (b) Site roads and drainages will be inspected by Golden Queen personnel after rainfall events which result in surface flow to ensure erosion prevention is maintained and upgraded as needed; (c) Drainage from the tops of overburden piles will be directed away from the slopes toward the pit; (d) Salvaged growth media will be stockpiled away from areas of concentrated drainage; (e) Reclamation of disturbed areas will occur as soon as possible. (Condition of Approval No. 14)

Comments Received on the Notice of Preparation

From State Department of Conservation, Office of Mine Reclamation, September 30, 2008:

1. Requested that the Reclamation Plan provide additional information and/or clarification on the following issues: mining operations and closure; geotechnical requirements; and resoiling and revegetation.

<u>EIR Response</u>: The Project Description (Chapter 3) of this SEIR discusses updated features of the Reclamation Plan, including mining operations and closure; geotechnical requirements; and resoiling and revegetation activities. These comments do not specifically relate to this SEIR, but are addressed in the revised Surface Mining and Reclamation Plan

Technical Study Analyses and Findings

Several of the technical studies included baseline information relating to soil types and geological characteristics of the project site. Conclusions and findings made in these technical studies are discussed in other appropriate sections of this document.

For **Geology and Soils threshold of significance b** above, the *Soil Salvage, Stockpiling, and Use Plan for the Soledad Mountain Project* (Bamberg & Golder 2008) concluded that soil erosion will not result and stated the following:

Growth media will be stripped ahead of construction and the areas to be stripped will be the minimum required at any one time to limit fugitive dust.

Stripped growth media will be stockpiled at one of the three locations shown in Figure 2-1 [of Bamberg & Golder 2008]. Growth media will be placed in stockpiles 20 to 25 feet high and cover a total area of approximately 1.5 acres. Access to these areas is currently available and no new road construction will be required. The stockpiles will be stabilized by grading and sloping the sides at 3H:1V or less, and covering the surfaces with a gravel/rock layer to prevent wind and water erosion.

New technologies are available to protect finer stockpiled material from wind erosion such as a sealant that can be sprayed on the surface to bind the smaller particles. Such techniques may have to be tried if windblown dust is a problem.

Stockpiles will be monitored to ensure that erosion is not taking place. Organic matter and other factors that promote growth, break down growth media that is stockpiled for longer periods. Golden Queen Mining is committed to progressive reclamation, and stockpiled growth media will therefore, be reapplied as early as possible in the life of the mine. Growth media may be applied as it is stripped since this method insures the best use (Bamberg & Golder 2008, p. 8).

Significant impacts will not result. Further discussion in this SEIR is not required.

For **Geology and Soils thresholds of significance c and d** above, Bamberg & Golder (2008) concluded that onsite soils are poor as growth medium given that soils are salvaged from areas with little soil development. However, Bamberg & Golder also concluded that soils can be salvaged and reclaimed with the Revised Project and stated the following:

The physical and chemical characteristics of the soil itself (such as texture, pH, soluble salts and nutrients) permit growth of native plant species. The soils located at or near the surface had a better nutrient status with higher NPK values and some residual organic matter. The surface soils may contain abundant seed, and revegetation tests have shown good germination and growth from seeds in salvaged surface soils....Soils near the more moderately sloped areas around the base of the mountain potentially could be salvaged at the surface to a depth of about 0.5 feet as a source of seed. This stockpiled soil could act as a seedbank for distribution on surfaces to be reclaimed....The locations and amounts of soil materials of the 0.5 feet that can be salvaged can be determined once final mining configuration and design details of facilities are determined. The amounts will be calculated during the reclamation planning, and presented in the reclamation plan. The balance of salvaged soil materials can be calculated, and the storage or distribution can be determined and become part of the reclamation planning (Bamberg & Golder 2008, p. 18).

Significant impacts will not result. Further discussion in this SEIR is not required.

VII. Hazards and Hazardous Materials

Kern County Significance Thresholds

The County's Environmental Checklist Form indicates that a project would have significant adverse Hazards and Hazardous Materials effects if it would:

- a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials.
- b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment.
- c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within 1/4 mile of an existing or proposed school.
- d) Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would create a significant hazard to the public or the environment.
- e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, result in a safety hazard for people residing or working in the project area.

- *f)* For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area.
- *g) Impair implementation of, or physically interfere with, an adopted emergency response plan or emergency evacuation plan.*
- h) Expose people or structures to a significant risk of loss, injury, or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands.
- *i) Generate vectors (flies, mosquitoes, rodents, etc.) or have a component that includes agricultural waste. Specifically, a project would have a significant impact if it would exceed the following qualitative threshold:*

The presence of domestic flies, mosquitoes, cockroaches, rodents, and/or any other vectors associated with the project is significant when the applicable enforcement agency determines that any of the vectors:

- *i.* Occur as immature stages and adults in numbers considerably in excess of those found in the surrounding environment; and
- *ii.* Are associated with design, layout, and management of project operations; and
- *iii.* Disseminate widely from the property; and
- *iv.* Cause detrimental effects on the public health or well-being of the majority of the surrounding population.

1997 FEIR/EIS Analysis and Conclusions

For **Hazards and Hazardous Materials thresholds of significance a, b, c, and d** above, the 1997 FEIR/EIS concluded:

The proposed project would not create a significant hazard to the public or the environment through routine transport, use or disposal of hazardous materials. Hazardous materials will be transported in accordance with Department of Transportation regulations and stored, handled and disposed of in accordance with all applicable federal, state and local regulations....The proposed project would not create a significant hazard to the public or the environment through a reasonably foreseeable upset or accident condition involving the likely release of hazardous materials to the environment. As shown in the Preconstruction Design Study (Preconstruction Design Study for Potential Incidents Involving Hazardous Materials, prepared by WZI, in April 1997), propane and sodium cyanide will be handled such that their use will not create a significant hazard to the public or the environment....The proposed project would not have any problems with respect to the availability of facilities for hazardous waste reuse, treatment or disposal. All hazardous wastes will be handled in accordance with applicable federal, state, and local regulations....Therefore, the proposed project would have a Less Than Significant Impact on health hazards and public safety (1997 FEIR/EIS, p. 277 and 278).

The 1997 FEIR/EIS concluded that the 1997 Project would not create any potentially hazardous conditions insofar as the regulatory requirements and mitigation measures/conditions of approval described in the 1997 FEIR/EIS are satisfied. The Revised Project would be required to comply with the same

requirements and design features, thereby ensuring that significant impacts would not result. Additionally, there are no schools within a ¹/₄-mile radius of the project site. No school will be impacted by the Revised Project.

Though it could be concluded that significant health hazards would not result with the Revised Project, an updated Air Quality/Health Risk Assessment (Air Sciences 2009b) has been prepared. Findings and conclusions from the updated AQ/HRA are discussed in Section 4.2 of this SEIR.

For **Hazards and Hazardous Materials thresholds of significance e and f** above, the NOP/IS determined that the project site is located outside the influence areas of public airports and private airstrips (i.e., they are over two miles away from the project site). The Mojave Airport is located about 5 1/2 miles north of the project site while the Pontius airstrip and Lloyd's Landing airstrip, both private airstrips, are located approximately 2 1/8 miles southeast and 7 miles southwest, respectively, of the proposed project. Since the project site is located outside the influence area of any public airport, there would be no opportunity to conflict with the Kern County Airport Land Use Compatibility Plan. Impacts or conflicts would not result. Further discussion in this SEIR is not required.

For **Hazards and Hazardous Materials thresholds of significance g**, the 1997 FEIR/EIS concluded, "The proposed project would not interfere with community response plans or emergency evacuation plans in the event of a reasonably foreseeable upset or accident condition involving a hazardous material release...A Hazardous Materials Business Plan, which will include emergency response procedures, will be submitted to the County for use in emergency planning" (1997 FEIR/EIS, p. 277).

The 1997 FEIR/EIS concluded that the 1997 Project would not conflict with any County community response or emergency evacuation plans. To further ensure that potential conflicts would not result, the County requires that the Revised Project also prepare a Hazardous Materials Business Plan. Applicant preparation of said Plan and compliance with standard conditions of approval related to County emergency plans ensures that significant impacts would not result. Further discussion in this SEIR is not required.

For **Hazards and Hazardous Materials threshold of significance h**, the 1997 FEIR/EIS concluded, "*The proposed project will not require additional fire department staff or equipment to maintain an acceptable level of service, therefore, the impact would be Less Than Significant.*" (1997 FEIR/EIS, p. 272) Additionally, "*Adequate access for emergency vehicles will be provided in all areas and fire hydrants will be located as required by the fire code and the Kern County Fire Department*" (1997 FEIR/EIS, p. 275).

The 1997 FEIR/EIS did not specifically identify fire hazards as "wildland fires." However, potential impacts are not expected for two main reasons. First, the 1997 FEIR/EIS did require that the project's fire improvements and facilities be provided and located in accordance with the Fire Code and County Fire Department requirements. Provision of these fire improvements and facilities would help mitigate potential fire hazards in the area. Secondly, the 1997

FEIR/EIS concluded that the project would not require additional fire staff or equipment, nor would the current level of fire protection services be affected. Given that the mining operations and uses proposed with the Revised Project are similar with the 1997 Project, it could be concluded that the Revised Project would not result in any additional significant fire-related impacts. Further discussion in this SEIR is not required.

For **Hazards and Hazardous Materials threshold of significance i**, the 1997 FEIR/EIS did not determine that hazards associated with domestic flies, mosquitoes, cockroaches, rodents or any other vector would result with onsite mining operations as this threshold was not adopted until 2004. Nevertheless, with adherence to existing conditions of approval and best management practices, the proposed project will not result in trash piles or open containers that could provide breeding areas for mosquitoes, flies, or rodents. Therefore, it can be concluded that the Revised Project would not result in the significant generation of vectors. Consequently, further discussion in this SEIR is not required.

Compliance with 1997 FEIR/EIS Mitigation Measures

Health Hazard/Public Safety Impact 1. The project could create a potential health hazard or threat to public safety.

Regulatory Requirements

- Site operations will be conducted in compliance with Federal Mine Safety and Health Administration regulations.
- The routes of hazardous materials being shipped to and away from the proposed project will be coordinated with the California Highway Patrol or other appropriate agencies.
- Transportation of materials and equipment to the site would be regulated under state, federal and/or local laws, regulations and ordinances.
- Storage, use and disposal of all hazardous materials will be in accordance with all federal, state and local regulations, codes and rules.
- Storage and use of explosives will occur in compliance with federal regulations.
- Hazardous Materials Business Plan and inventory will be submitted to Kern County Environmental Health Services Department.
- Onsite personnel will receive annual training in emergency response procedures.
- Used oil and solvents will be collected and sent offsite to a licensed recycler.
- A Process Safety Management (PSM) and Risk Management Plan (RMP) will be prepared, if required.

Existing Mitigation Measures/Conditions of Approval

- Fences will be erected around potentially hazardous areas to discourage entry by unauthorized mine personnel or visitors. (Condition of Approval No. 51)
- Historical mining operations will be removed or closed to the extent feasible. (Condition of Approval No. 52)
- Former mine waste will be removed. (Condition of Approval No. 53)
- Project design will be in accordance with a preconstruction design study. (Condition of Approval No. 54)

Comments Received on the Notice of Preparation

From California Regional Water Quality Control Board, Lahontan Region, September 15, 2008:

1. Letter mentioned that referenced monitoring wells were not shown in the NOP.

<u>EIR Response</u>: Monitoring wells are shown on Figure 3 of the Soledad Mountain Project Hydrogeology Study (Golder 2007a). Further response is not required.

2. Clarified that the State Water Resources Control Board no longer administered the Above Ground Petroleum Act, including Spill Prevention Control and Countermeasure Plans. Instead, the County Certified Unified Program Agency and Environmental Health Services Department administered the Above Ground Petroleum Act.

EIR Response: The comment is noted. Further response is not required.

Technical Study Analyses and Findings

The following technical studies provide updated assessments of potential hazards:

- ARCADIS U.S., Inc. (ARCADIS). 2007b. Baseline Soil Characterization Report; April 9, 2007.
- ARCADIS. 2008b. Soledad Mountain Project Human Health Risk Assessment; May 2008.
- ARCADIS and Golden Queen Mining Co., Inc. 2008. Soledad Mountain Project Environmental Site Assessment; September 2008.
- Air Sciences Inc. 2009b. Soledad Mountain Project Air Quality and Health Risk Assessments. July 2009.

The 2007 Baseline Soil Characterization Report was prepared as per Condition of Approval No. 59, which was adopted with the 1997 Project approval.

For **Hazards and Hazardous Materials thresholds of significance a, b, c, and d** above, these technical studies also concluded that the Revised Project would not result in any significant impact relating to hazards and hazardous materials.

The following cites relevant findings and conclusions from the Environmental Site Assessment (ARCADIS & GQM 2008), which summarized the Soil Characterization Report (ARCADIS 2007b):

- *The* [acid rock drainage] *potential of waste materials in the project area is low to non-existent.*
- Leachable metals concentrations in the various materials (host rock, ore, historic tailings, and leach residue) are below STLC [EPA's Soluble Threshold Limit Concentrations] limits.
- Total metals concentrations in ore and host-rock are below TTLC [EPA's Total Threshold Limit Concentrations] limits, while in the historic tailings, only mercury exceeded the TTLC; however, it was not leachable.
- Due to the arid climate and depth to groundwater in the area, and the form of arsenic immobilized in the materials in the project area, there is no interaction of mine waste with precipitation that results in degradation of groundwater quality.
- Based on detailed mineralogical analyses, arsenic is not bioavailable and is strongly bound in both un-mined and mined materials at the site.
- The historical tailings do not pose a human health risk to construction workers or nearby residents under existing conditions. (ARCADIS & GQM 2008, p. 26)

The Human Health Risk Assessment (ARCADIS 2008b) concluded that the Revised Project would not generate significant concentrations of lead, mercury, or fugitive dust. Onsite workers and neighboring residences would not be exposed to potentially hazardous conditions. The Human Health Risk Assessment concluded the following:

An evaluation for lead was conducted according to DTSC [Department of Toxic Substances Control] guidance and the results indicate that lead concentrations are low and not a concern. The mercury concentrations detected on the Site were well below the target of one and the estimated fugitive dust concentrations were less than OSHA permissible exposure limits and, therefore, not a health risk concern.

Fugitive dust emission concentrations were calculated and compared to industrial standards to determine whether the concentration of each constituent present in the wind-blown particulates generated under normal conditions at the Site was acceptable for site worker exposure. (ARCADIS 2008b, p. 7-1)

All of the calculated fugitive particulate emission concentrations for both the tailings pile samples and the soil characterization samples were below all the TLVs [threshold limit values] and PELs [permissible exposure limits], indicating an acceptable level of risk for workers at the Site. From an occupational exposure consideration, there is no risk to site workers....The fugitive dust levels estimated over the 3-month and 6-month exposure periods used in this assessment show there is no hazard to construction workers....The results of the HHRA [Human Health Risk Assessment]

indicate that the potential levels of exposure of site workers to constituents in the historical tailings would not pose a risk based on either a 3-month or 6month exposure period during construction of the heap leach facility.... Comparison of estimated dust concentrations to occupational exposure limits result in no significant risk. The calculated levels were all below the occupational exposure limits (e.g., TLVs [threshold limit values] or PELs [permissible exposure limits]).

Finally, there are approximately six residences within a mile of the historical tailing piles. The soil samples secured during the 2006 baseline soil characterization study form the two nearest residences reflect that the COPCs [constituents of potential concern] concentrations in soil approximate the background concentration for Kern County. (ARCADIS 2008b, p. 7-2)

The Environmental Site Assessment (ARCADIS & GQM 2008) concluded that though levels of arsenic were detected in the groundwater, the Revised Project will not increase arsenic levels and arsenic will be stabilized and will resist leaching. The Environmental Site Assessment concluded the following:

In summary, arsenic is present in the principal lithologies of Soledad Mountain through incorporation into arsenopyrite and iron sulfides. Once the ore is mined and processed, the arsenic becomes strongly associated with iron oxyhydroxides and oxides. In this form, the arsenic is very stable, resistant to leaching, and is not readily bioavailable. (ARCADIS & GQM 2008, p. 23)

As depicted in the Conceptual Arsenic Model for the Soledad Mountain Project (Figure 5) [of the Environmental Site Assessment], leaching of the host rock or historical tailings by natural processes does not influence groundwater quality in the area....Arsenic incorporated into pyrite within the ore deposit is stable, while arsenic in the historical tailings is immobilized through sorption to iron hydroxides and incorporation into pyrite. The combination of low precipitation, insufficient sulfur for acid generation, and 180 to 260 feet of vadose zone soils with sorptive capacity for arsenic greatly inhibits the potential for development of ARD [Acid Rock Drainage] and ML [Metal Leaching] that could result in degradation to the quality of any receiving water at the site. (ARCADIS & GQM 2008, p. 24)

The Human Health Risk Assessment (ARCADIS 2008b) also concluded that arsenic would not significantly contaminate groundwater quality since arsenic is insoluble and therefore, would not rapidly leach into and through the soils. The likelihood of potential contamination is further minimized when considering that the region's groundwater table is low and the climate is generally dry and does not experience excessive rainfall. These variables make it difficult for arsenic to leach into the groundwater table. The Human Health Risk Assessment concluded, "Arsenic is the risk driver for this evaluation and the risk assessment incorporates a 50 percent bioavailability factor for arsenic based on scientific research which indicates that the predominant form of arsenic found in soils at mining sites is insoluble." (ARCADIS 2008b, p. 7-1)

Though it could be concluded that significant health risk hazards and impacts would not result with the Revised Project, updated air quality and health risk

assessments (Air Sciences 2009a/b) have been prepared, the findings and conclusions of which are discussed in Section 4.2 of this SEIR.

VIII. Hydrology and Water Quality

Kern County Significance Thresholds

The County's Environmental Checklist Form indicates that a project would have significant adverse Hydrology and Water Quality effects if it would:

- a) Violate any water quality standards or waste discharge requirements.
- b) Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted).
- c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on site or off site.
- d) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on site or off site.
- e) Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff.
- *f)* Otherwise substantially degrade water quality.
- g) Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map.
- *h) Place within a 100-year flood hazard area structures which would impede or redirect flood flows.*
- *i)* Expose people or structures to a significant risk of loss, injury, or death involving flooding, including flooding as a result of the failure of a levee or dam.
- *j)* Inundation by seiche, tsunami, or mudflow.

1997 FEIR/EIS Analysis and Conclusions

For **Hydrology and Water Quality threshold of significance a**, the 1997 FEIR/EIS concluded:

The Proposed Action will comply with all applicable regulations relating to hydrology and water quality. The Lahontan Regional Water Quality Control Board will regulate project systems with the potential to discharge liquids to surface or sub-surface waters. The review and permitting process will follow requirements of Title 23 CCR, Chapter 15, Article 7 (Mining Waste Management), the California Health and Safety Code, Chapter 6.67 (Above Ground Storage of Petroleum), the California Porter-Cologne Water Quality Act of 1985 and other applicable laws and regulations as described in Sections 1.6.3 of this document. (1997 FEIR/EIS, p. 179)

The impact to surface water quality as a result of the placement of overburden directly on the ground surface would be Less Than Significant. (1997 FEIR/EIS, p. 183)

Impacts to the quality of groundwater would be Less Than Significant as a result of regulatory requirements and design features. (1997 FEIR/EIS, p. 199)

The 1997 FEIR/EIS concluded that water quality impacts to either surface or groundwater resources would not be significant if the 1997 Project complied with Water Quality Control Board and other regulatory requirements. The Revised Project would be required to also comply with these same requirements. Applicant compliance with these requirements and standard conditions of approval related to water quality clearances further ensures that significant impacts would not result. Further discussion in this SEIR is not required.

For **Hydrology and Water Quality threshold of significance b**, the 1997 FEIR/EIS concluded:

Based on calculations included in the Groundwater Supply Evaluation ("Groundwater Supply Evaluation, Soledad Mountain Project, prepared by WZI, Inc., in 1996), groundwater drawdown should not exceed 30 feet at a distance of two miles from the water supply wells during the life of the project...The groundwater level would recover to within 80 percent of the pre-project level within five years after use of the wells is discontinued...The impact to the groundwater quantity is considered Less Than Significant." (1997 FEIR/EIS, p. 196)

Impacts to the groundwater supply would be Less Than Significant as demonstrated by hydrology studies. (1997 FEIR/EIS, p. 199)

The 1997 FEIR/EIS concluded that groundwater resources would not be significantly impacted. The Revised Project would similarly, not result in any significant impact to groundwater resources. Further discussion in this SEIR is not required.

For **Hydrology and Water Quality thresholds of significance c, d, e and f**, the 1997 FEIR/EIS concluded:

Surface drainage will be modified according to the Drainage Plan [Soledad Mountain Project Grading Plan Layout and Design Criteria Summary, prepared by Glasgow Engineering Group in January 1997] which will require review and approval by Kern County prior to implementation. The plan is designed to control erosion, prevent flooding and maintain stormwater onsite....Surface drainage will be altered by the proposed project and the

potential impact is Significant. The impact would be reduced to a level of Less than Significant by regulatory and design features as described in the Drainage Plan. (1997 FEIR/EIS, p. 180)

The surface drainage pattern would be permanently altered. However, the Site Drainage Plan, which will be approved by Kern County and will fulfill the Surface Mining and Reclamation Act of 1975 (SMARA) requirements for stabilization of drainages and erosion control, would assure that the new drainage system pattern will not cause flooding, would prevent undue erosion and unnatural surface runoff and would allow for percolation of storm water for normal recharge of the groundwater. (1997 FEIR/EIS, p. 181)

There would be No Impact related to flooding from the proposed project. (1997 FEIR/EIS, p. 183)

The proposed project has been designed as a "zero discharge" facility for storm water runoff. (1997 FEIR/EIS, p. 275)

The 1997 FEIR/EIS concluded that impacts associated with drainage patterns and runoff would be reduced to insignificant levels if the 1997 Project complied with provisions and design features contained in the 1997 Drainage Plan, which also required County review and approval. The Revised Project would result in a similar determination based on relevant technical studies that were recently prepared to evaluate flooding issues and recommend improvements to alleviate potential flooding hazards. These will be further discussed in the following section.

For **Hydrology and Water Quality thresholds of significance g, h and i**, the 1997 FEIR/EIS (p. 179) indicated, "*The project site is not located in a floodprone area. Therefore, No Impacts are expected from flooding as a result of the project location*" and, "*No bodies of surface water are located near the site and the site is not in a flood plain.*"

The 1997 FEIR/EIS (p. 176) indicated that the nearest FEMA 100-year floodplain lies along Silver Queen Road one-quarter mile northeast of the thenproposed Phase 1 heap leach pad. Silver Queen Road, northeast and east of the project site, is designated Zone A, defined as an area of 100-year flood where the base flood elevations and flood hazard factors have not been determined. The 1997 FEIR/EIS concluded that the project site is not located within any flood plain. However, under the Revised Project, the design and retention of the Phase 1 heap leach pad causes partial encroachment into the FEMA floodplain, thereby creating the need to obtain a Letter of Map Revision (LOMR). Therefore, the issue is further evaluated under *Technical Study Analyses and Findings*, below.

For **Hydrology and Water Quality threshold of significance j**, the project site is not subject to any seiche, tsunami, or mudflows. Significant impacts would not result. The 1997 FEIR/EIS (p. 179) indicated, "*No bodies of surface water are located near the site and the site is not in a flood plain.*" Conditions have not changed since 1997 and further discussion in this SEIR is not required.

Compliance with 1997 FEIR/EIS Mitigation Measures

Hydrology Impact 1. Alterations of the drainage pattern resulting in erosion and/or flooding.

Regulatory Requirements

- A General Construction Activity Storm Water Permit will be obtained from the Lahontan Regional Board to regulate storm water flows at the site during construction.
- A Site Drainage Plan for the control of surface flow during operations has been submitted to Kern County.
- The BLM will regulate the surface drainage modifications and erosion control measures through review, approval and issuance of the Plan of Operations. Annual inspections will assure compliance.
- Kern County will regulate reclamation activities related to stabilization of drainage and erosion control to assure consistency with SMARA requirements. Kern County will conduct inspections annually to assure compliance.

Existing Mitigation Measures/Conditions of Approval

- Site drainage will be inspected periodically to assure that excessive erosion is nor occurring. In the event excessive erosion is identified, the drainage plan will be revised in consultation with the Kern County Planning Department. (Condition of Approval No. 13)
- Additional erosion prevention techniques include: (a) Site drainage will be retained onsite; (b) Site roads and drainages will be inspected by Golden Queen personnel after rainfall events which result in surface flow to ensure erosion prevention is maintained and upgraded as needed; (c) Drainage from the tops of overburden piles will be directed away from the slopes toward the pit; (d) Salvaged growth media will be stockpiled away from areas of concentrated drainage; (e) Reclamation of disturbed areas will occur as soon as possible. (Condition of Approval No. 14)

Hydrology Impact 2. Potential degradation of surface water and groundwater quality.

Regulatory Requirements

- A Report of Waste Discharge will be filed with the Lahontan Regional Board in accordance with Title 23 CCR, Chapter 15, Article 7. The Lahontan Regional Board will implement the following requirements through detailed design review, issuance of waste discharge requirements, and yearly inspections.
 - Soil and foundation materials under the liner will be tested.
 - Approval of heap leach pad design and construction.
 - Low permeability liner systems will be installed by experienced contractors with quality assurance being provided by an independent engineering firm.

- A leachate collection and recovery system (LCRS) will monitor and collect any solution which may pass through the upper liner.
- A perimeter berm around the heap leach pads designed to contain solution from the leach pads and the 100-year, 24-hour storm event will be installed.
- Drainage or diversion ditches outside the processing solution area will be built to preclude entry of storm runoff into the system.
- Water quality will be monitored in groundwater monitoring wells for one year prior to the use of sodium cyanide as background information.
- Storm water runoff, the vadose zone (the unsaturated zone between the liner and groundwater), and groundwater will be monitored for constituents of concern using statistical analysis.
- Quarterly reports on monitoring results and the current status of operations will be submitted to the Lahontan Regional Board.
- The heap leach pile will be neutralized at the time of closure. A Final Closure and Post-Closure Maintenance Plan will be approved 180 days before the start of closure.
- Financial assurance for neutralization and closure of the heap leach pile will be posted in accordance with Title 23 CCR, Section 2580(f).
- Financial assurance sufficient to initiate and complete corrective actions for any reasonably foreseeable potential release to the environment will be posted in accordance with Title 23 CCR, Section 2550.0(b).
- Storage in above ground storage tanks will be regulated by the Lahontan Regional Board, in accordance with the California Health and Safety Code, Chapter 6.67, and the California Porter-Cologne Water Quality Act of 1985, with the following:
 - Development of a detailed Spill Prevention Control and Countermeasure Plan prepared in accordance with the guidelines of 40 CFR, Part 112;
 - Frequent visual inspections for leakage or deterioration of tanks, fittings or containment facilities;
 - Secondary containment; and
 - Grading of truck-transfer areas to contain potential spills.
- Storage of hazardous chemicals will comply with the spill control and secondary containment provisions found in Section 8003.1.7 of the 1994 Uniform Fire Code.
- An approval for the septic system design will be obtained from Kern County Environmental Health Services Department.
- The BLM will regulate the surface drainage modifications and erosion control measures through review, approval and issuance of the Plan of Operations. Annual inspections will assure compliance.
- Kern County will regulate surface mining and reclamation activities related to stabilization of drainage and erosion control to assure

consistency with SMARA requirements. Kern County will conduct inspections annually to assure compliance.

Existing Mitigation Measures/Conditions of Approval

- The overliner protective material placed in direct contact with the HDPE liner will not exceed 1.5 inches in diameter, and will not contain hard, sharp, angular pieces. (Condition of Approval No. 15)
- A cyanide destructing compound (e.g., hydrogen peroxide or calcium hypochlorite) will be maintained onsite for use in the event that a spill occurs. (Condition of Approval No. 16)
- Historical mining wastes and tailings will be tested and used onsite or, if indicated, disposed of at an offsite permitted disposal facility, removing any future threat of surface water contamination. (Condition of Approval No. 17)
- The Lahontan Regional Board will be consulted prior to the use of dust suppression or soil stabilization chemicals. (Condition of Approval No. 18)

Hydrology Impact 3. Drawdown of water levels due to pumping for project activities.

Regulatory Requirements

• New water supply wells will be drilled under a permit from Kern County Environmental Health Services Department in accordance with approved methods. A surface seal will be witnessed by a representative from the county.

Existing Mitigation Measures/Conditions of Approval

- The evaporation of water and, therefore, the need for makeup water will be minimized by the use of enclosed solution storage. (Condition of Approval No. 19)
- Golden Queen will monitor the groundwater level on a monthly basis and compare the water level data collected by the monitoring program to water levels predicted by the groundwater drawdown model. In the event that the monitoring program shows that the actual water drawdown in the well, when corrected for well conditions, exceeds the predicted model for six consecutive months, Golden Queen will supplement the water supplied by the production wells with up to 300 gallons per minute (gpm) of water from Antelope Valley - East Kern Water Agency. (Condition of Approval No. 20)

Comments Received on the Notice of Preparation

From Department of Conservation, Office of Mine Reclamation, September 30, 2008:

1. Requested that the Reclamation Plan provide additional information and/or clarification on the following issues: hydrology and water quality; protection of surface and groundwater in accordance with the Porter-Cologne and Clean Water Acts; erosion control; potential stream diversions; diversion of drainages around waste dumps or piles; and design of sediment and erosion control structures.

<u>EIR Response</u>: Chapter 3 (*Project Description*) of this SEIR discusses updated features of the Reclamation Plan, including improvements on hydrology and water quality, protection of surface and groundwater, erosion control, and stream and drainage diversions. Further discussion is not required.

Technical Study Analyses and Findings

Technical studies were prepared to provide updated assessments of hydrology and water quality issues associated with the Revised Project. This section cites relevant findings and conclusions from the following technical studies:

- Golden Queen Mining Co. Ltd. 2006. *Soledad Mountain Project Water Supply*; September 28, 2006.
- Golden Queen Mining Company, Inc., et al. 2007. *Report of Waste Discharge for the Soledad Mountain Project*; March 8, 2007, revised May 2, 2007.
- ARCADIS. 2007a. Technical Memorandum Soledad Mountain Project: Domestic Water Well Chemistry Assessment - December 2006 Monitoring Event; March 27, 2007.
- Golder Associates Inc. 2007a. *Soledad Mountain Project Hydrogeology Study*; March 8, 2007, revised May 2, 2007.
- ARCADIS. 2008a. Soledad Mountain Project Water Quality Monitoring and Data Management Procedures Manual; February 2008.
- Golder Associates Inc. 2008. Soledad Mountain Project Flood Hazard Evaluation Report; June 2008.
- Golder Associates Inc. 2009. *Soledad Mountain Project Site Drainage Plan;* January 25, 2007, revised May 28, 2009.

For **Hydrology and Water Quality threshold of significance a**, the *Domestic Water Well Chemistry Assessment* (ARCADIS 2007a) concluded that water quality will be within Drinking Water Regulations and significant impacts would not result. As indicated, "*Results on the samples collected… indicate that the water quality in both wells meet current California Drinking Water Standards for all constituents analyzed.*" (p. 1)

The Report of Waste Discharge (ROWD) (GQM et al. 2007) concluded that significant risks of potential water quality degradation will not result with the

Revised Project due to proposed closure and post-closure maintenance procedures, and monitoring, operation and contingency plans that will be implemented to ensure water quality protection. The following conclusions were made in the ROWD:

Results of the geochemical characterization program...indicate that the potential of the ore to generate ARD [Acid Rock Drainage] or ML [Metal Leaching] is low to non-existent. During operations, the pH of the ore will be increased with the addition of cement and will contain varying levels of NaCN solution, which will be neutralized during the closure phase to bring the pH, and both total and WAD [Weak Acid Dissociable] cyanide to acceptable levels as established in the WDRs [Waste Discharge Requirements] to achieve a Group C solid mine waste classification.

Site attributes within the immediate vicinity of the HLF (Heap Leach Facility) are also factors that will minimize the potential risk of water quality degradation. Key attributes include the depth to groundwater beneath the HLF at approximately 200 feet below NGL [Natural Ground Level], the lack of surface water features such as springs or seeps, the very low annual precipitation and high evaporation of the arid desert environment, and the low permeability of the formations below the HLF. (GQM et al. 2007, p. 10-2)

The HLF [Heap Leach Facility] design components and leak detection systems...have been developed to provide for containment of the crushed ore and process solutions during operations and the leached and rinsed residues and solutions during closure. The heap leach pad design includes a full composite liner system consisting of a 1-foot thick soil liner and an 80-mil durable LLDPE [Linear Low Density Polyethylene] geomembrane liner. Additionally, the pad design provides a double-lined section with a LDCS [Leak Detection and Collection System] along the down gradient toe to facilitate monitoring the integrity of the HLF liner system.

Furthermore, the LCRS [Leachate Collection and Recovery System] is designed to reduce the head on the liner. Engineering analyses of the HLF included complete geotechnical evaluations of the liner system for slope stability under both static and pseudostatic (earthquake) conditions.

In addition, the extensive monitoring and contingency plans for the HLF...further minimize the potential risk of water quality degradation. The monitoring system is designed to detect any potential seepage losses at the first stage of solution containment. (GQM et al. 2007, p. 10-2 and 10-3)

Based on its evaluation of the above elements, GQM (Golden Queen Mining) concludes that the combination of positive waste characteristics and site attributes, the HLF [Heap Leach Facility] design, quality control and quality assurance during construction, operational plans, and the monitoring program, demonstrate that the construction and operation of the HLF will not cause a significant threat to the water quality of receiving waters, and the proposed WMU [Waste Management Unit] classification meets regulatory criteria. (GQM et al. 2007, p. 10-3)

Significant impacts will not result. Further discussion in this SEIR is not required.

For **Hydrology and Water Quality threshold of significance b**, the *Soledad Mountain Project Hydrogeology Study* (Golder 2007a) was prepared as an appendix to the larger ROWD (GQM et al. 2007) for the Revised Project. The hydrogeology study concluded that significant groundwater impacts would not result, based on the following:

The probability of water or process solutions from the project adversely affecting groundwater quality in the vicinity of the site is low. This low probability is due to numerous mitigating factors. First and foremost among these is the arid climate...These conditions prevent aquifer recharge from occurring onsite, with the nearest recharge occurring near the base of the Tehachapi Mountains, approximately five miles northwest of the site. Second, the depth to water in the site vicinity also limits the ability of releases from the mining operation to impact groundwater. Within the project site and surrounding area (within one mile of the site), depths to groundwater range from 150 to 300 feet...Lastly, the aquifer may contain horizontal, clay-rich lake bed or playa layers of low permeability, which would greatly impede vertical flow into the groundwater...Given these conditions, mine operations are not anticipated to impact groundwater. (Golder 2007a, p. 24)

Significant impacts will not result. Further discussion in this SEIR is not required.

For **Hydrology and Water Quality threshold of significance c, d and e**, applicable technical studies include:

- Golder Associates Inc. 2008. Soledad Mountain Project Flood Hazard Evaluation Report; June 2008.
- Golder Associates Inc. 2009. *Soledad Mountain Project Site Drainage Plan;* January 25, 2007, revised May 28, 2009.
- Rivertech Inc. 2009. Soledad Mountain Hydrology Study, Final; April 2009.
- Rivertech Inc. 2009. Soledad Mountain Conditional Letter of Map Revision (CLOMR); September 2009.

The *Flood Hazard Evaluation* (Golder 2008), as well as a Conditional Letter of Map Revision (CLOMR) by Rivertech, Inc. in September 2009, were prepared as an update to the *Site Drainage Plan* (Golder 2009) and to address and evaluate construction of a portion of the facility within the 100-year floodplain, as mapped by FEMA, as well as to determine and confirm storm water flows previously estimated for the design of culverts for the new access road and the ditch around the northern perimeter of the Phase 1 heap leach pad. The Applicant's consulting engineers have had discussions with the Kern County Floodplain Management Section and the Kern County Roads Department. It is expected that the Applicant will apply to FEMA for a Conditional Letter of Map Revision once approvals are received from Kern County.

The Flood Hazard Evaluation (Golder 2008) concluded the following:

A portion of the Project's Phase 1 heap leach pad and processing facilities encroaches slightly into the 100-year floodplain as currently mapped on FEMA FIRM Panel 1825 of 2075 of FEMA (revised September 6, 1995)...In order to address this issue, modifications to the FEMA FIRM in the form of a CLOMR are proposed...The CLOMR is to be submitted to Kern County and to FEMA for approval to modify the 100-year floodplain with the construction of the new mine access road, culverts, and the drainage channel between the Phase 1 heap leach facilities and Silver Queen Road...The proposed modification to the floodplain, as a result of the implementation of channel improvements, will remove the site from the Zone A, Special Flood Hazard designation. (Golder 2008, p. 17)

This report has been prepared to evaluate possible flood hazards on GQM's Soledad Mountain property and to permit GQM to review the hazards with the Kern County Floodplain Management Section...The results of the CLOMR and the analyses in this report (2008 Flood Hazard Evaluation) indicate that the existing 100-year floodplain can be modified by construction of an engineered drainage channel adjacent to the Project facility improvements. (Golder 2008, p. 19)

The Revised Project also required preparation of the *Site Drainage Plan* (Golder 2009) to incorporate revisions to the *Mine Design and Backfilling Plan*, including HLF design, and to update the final design of the drainage channel between Silver Queen Road and the northern portion of the property. The *Site Drainage Plan* sets forth the following design objectives:

- 1. Set site drainage criteria for the Storm Water Pollution Prevention Plan (SWPPP) as follows:
 - a. Zero discharge of runoff over mine process areas (heap leach pad [pad], crushing and screening plant area, and Merrill-Crowe Plant) and active and non-reclaimed mining areas resulting from precipitation events up to the 100-year design storm event;
 - b. Control of runoff from disturbed 'non-contact' areas and reclaimed areas through sediment ponds designed for containment of runoff from the 20-year, one-hour intensity storm event and safe passage through the facilities of the 100-year peak runoff; and
 - c. Diversion of runoff from undisturbed areas into adjacent drainages using best management practices (BMP) to control erosion and scouring of the diversion ditches and receiving drainages;
- 2. Segregation of runoff from disturbed areas such as access roads, parking areas, and undisturbed areas to the extent practical;
- 3. Ditch and diversion channel capacity designed for the 100-yr peak runoff and erosion BMP for the 20-yr peak runoff;
- 4. Routing of runoff from waste rock dumps into the open pits to the extent possible;

- 5. Control of flow through the 100-yr floodplain within the northeastern property boundary such that there is no impact to the mapped floodplain beyond (downstream of) the property boundary; and
- 6. All runoff is routed either into the open pits or to sediment ponds on the Project site such that no runoff diversion from the Project area occurs into areas outside the limits of disturbance. (Golder 2009, p. 1)

As described in Chapter 3 (*Project Description*), the *Site Drainage Plan* for the Revised Project was designed to adequately alleviate impacts to drainage patterns and project runoff. Kern County and FEMA approval of the CLOMR (Rivertech 2009b) and the *Site Drainage Plan* (Golder 2009) would ensure that significant project impacts will not result. A mitigation measure/condition of approval is proposed below to ensure adherence with existing regulatory requirements.

Mitigation Measure 4.1-1: Prior to commencement of mining operations or issuance of building or grading permits, the project proponent shall demonstrate the project's adherence with the Kern County Floodplain Management Ordinance and applicable Standards and Title 44 of the Code of Federal Regulations, Section 65.10 of the National Flood Insurance Program regulations. Compliance with this measure will necessitate that the project's design be recognized as providing protection from the base flood and the following maintenance criteria:

- a) Levee systems must be maintained in accordance with an officially adopted maintenance plan, and a copy of this plan must be provided to Federal Emergency Management Agency by the owner of the levee system when recognition is being sought or when the plan for a previously recognized system is revised in any manner.
- b) All maintenance activities must be under the jurisdiction of a Federal or State agency, an agency created by Federal or State law, or an agency of a community participating in the National Flood Insurance Program that must assume ultimate responsibility for maintenance.
- c) The maintenance plan must document the formal procedure that ensures that the stability, height, and overall integrity of the levee and its associated structures and systems are maintained.
- d) At a minimum, the maintenance plan shall specify the maintenance activities to be performed, the frequency of their performance, and the person by name or title responsible for their performance.

Should the project proponent be unable to obtain the requisite public maintenance entity or maintenance plan approval from the Federal Emergency Management Agency, the approved surface mining and reclamation plan shall be amended to eliminate the project's encroachment into the 100-year floodplain in accordance with the applicable provisions of the Surface Mining and Reclamation Act of 1975.

Further discussion in this SEIR on the Revised Project's impacts on the alteration of existing drainage patterns as they relate to substantial erosion, surface runoff

resulting in flooding, or exceedance of storm water drainage systems is not required.

IX. Land Use and Planning

Kern County Significance Thresholds

The County's Environmental Checklist Form indicates that a project would have significant adverse Land Use and Planning effects if it would:

- *a) Physically divide an established community.*
- b) Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to, the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect.
- *c) Conflict with any applicable habitat conservation plan or natural community conservation plan.*

1997 FEIR/EIS Analysis and Conclusions

For Land Use and Planning thresholds of significance a and b, the 1997 FEIR/EIS concluded:

The proposed use within the project site is consistent with the Specific Plan for the area. The proposed use is also a permitted use, upon approval of a Conditional Use Permit for a Surface Mining/Reclamation Plan, in the existing zoning districts. Therefore, the project is not in conflict with the adopted specific plan of the community and the Kern County Zoning Ordinance and there is No Impact....The existing and historical land use within the project site is mineral exploration, mining and open space. The project site would be reclaimed at the conclusion of mining activities. Therefore, the land use after reclamation would be similar to the current land use. (1997 FEIR/EIS, p. 264)

There are no established communities within the project vicinity that could potentially be divided. The 1997 FEIR/EIS concluded that the previously proposed mining operations would be permitted and consistent with the County's General Plan and Zoning Ordinance if those previous Conditional Use Permits were approved by the County. In addition, given that the project site would reclaimed to functionally similar and compatible uses, it was concluded that the 1997 Project would not conflict with surrounding uses and the community. The Revised Project requires approval of modified and new Conditional Use Permits. County approval of said permits ensures that significant impacts would not result. Further discussion in this SEIR is not required.

Compliance with 1997 FEIR/EIS Mitigation Measures

Land Use Impact 1. The project could conflict with the uses, plans, and goals of the community in the area.

Regulatory Requirements

- Compliance with all regulatory permits and plans as cited in the Introduction (Section 1.2) [of the 1997 FEIR/EIS].
- Surface mining is a permitted use in the existing zoning districts subject to the requirement to obtain a Conditional Use Permit for a Surface Mining and Reclamation Plan.
- Compliance with the Noise Element of the Kern County General Plan (Section 3.9).
- Compliance with permits issued by the Kern County Air Pollution Control District, including the use of Best Available Control Technology (Section 3.5).
- Drainage will be controlled according to a Site Drainage Plan which is reviewed and approved by Kern County (Section 3.4.1) [of the 1997 FEIR/EIS].
- The acquisition of legal interests in minerals is required to conduct mining activities.

Existing Mitigation Measures/Conditions of Approval

Land Use Impact 1. The project could conflict with the uses, plans, and goals of the community in the area.

- Buildings and structures will be painted with non-reflective earthtone colors to blend with the predominant background. (Condition of Approval No. 45)
- Outdoor lighting for the mine pit and other areas of nighttime activities will be shielded and directed downward to reduce fugitive light. Light poles will be no higher than necessary for safe and efficient lighting. Low-pressure sodium bulbs or other appropriate technology will be used for outdoor lighting. (Condition of Approval No. 20)

Comments Received on the Notice of Preparation

From Department of Conservation, Office of Mine Reclamation, September 30, 2008:

1. Requested that the Reclamation Plan provide additional information and/or clarification on the following issues: mining operations and closure; description of open space to be created with reclamation plan; resoiling and revegetation; and project compliance with administrative requirements (SB 668, Chapter 869, Statutes of 2006).

<u>EIR Response</u>: The Project Description section of this SEIR discusses updated features of the Reclamation Plan, including mining operations and closure;

geotechnical requirements; and resoiling and revegetation activities. These comments do not specifically relate to this SEIR, but are addressed in the revised Surface Mining and Reclamation Plan.

From U.S. Department of the Interior, Bureau of Land Management, September 17, 2008:

1. BLM had no objections to the modified Conditional Use Permits and the New Eagle Road vacation. The BLM letter also indicated that the Applicant and BLM were continuing preparation of necessary documents for the Applicant to acquire 189 acres of public lands within the mine boundary.

<u>EIR Response</u>: Comments noted. The Applicant and BLM will continue to prepare the necessary documents as referenced in the comment. Further discussion in this SEIR is not required.

Technical Study Analyses and Findings

Technical studies were prepared to provide updated assessments of the Revised Project's reclamation and revegetation plans and objectives, which relate directly to ultimate land use form and function. This section cites relevant findings and conclusions from the following technical studies:

- Bamberg, Samuel A., Ph.D. and S. Lynn Bamberg LLC. 2006. Addendum to the Biological and Soil Resource Evaluation for Soledad Mountain Project; June 2006.
- Bamberg, Samuel A., Ph.D. 2007. *Revegetation Plan for Soledad Mountain Project*; prepared March 1997, revised March 2007.
- Bamberg, S. Lynn, LLC and Golder Associates Inc. 2008. Soil Salvage, Stockpiling, and Use Plan for the Soledad Mountain Project; November 2008.

Similar to the 19997 Project, the updated Revegetation Plan (Bamberg 2007) was prepared to provide improvements to revert the project site back to open space and wildlife habitat upon completion of the mining portion of the Revised Project. For Land Use and Planning thresholds of significance a and b, the following summarizes the purpose of and conclusions from the updated Revegetation Plan:

The Plan focuses on the procedures required to establish a productive ecosystem by revegetation and wildlife development, and in achieving visual compatibility with the surrounding landscape. Breaking up straight lines and establishing vegetation and habitats will mitigate visual impacts of the Project...The recommended methods and criteria form the basis for procedures during construction and operations to enhance revegetation, and for final revegetation as part of closure and reclamation...The proposed end land use is open space and wildlife habitat. (Bamberg 2007, pp. 1 and 2)

Kern County approval of the Conditional Use Permits for the revised Surface Mining and Reclamation Plan would ensure that the Revised Project does not conflict with any land use plan, policy, or regulation of Kern County. Further discussion in this SEIR is not required.

X. Mineral Resources

Kern County Significance Thresholds

The County's Environmental Checklist Form indicates that a project would have significant adverse Mineral Resources effects if it would:

- a) Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state.
- b) Result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan.

1997 FEIR/EIS Analysis and Conclusions

For **Mineral Resources thresholds of significance a and b,** the 1997 FEIR/EIS concluded:

The mining of the ore would result in the removal of the extracted minerals which is a Significant and Unavoidable Adverse Impact. Commercial utilization of the geologic resources constitutes a beneficial use of available resources. (1997 FEIR/EIS, p. 143)

The proposed use within the project site is consistent with the Specific Plan for the area. The proposed use is also a permitted use, upon approval of a Conditional Use Permit for a Surface Mining and Reclamation Plan, in the existing zoning districts. Therefore, the project is not in conflict with the adopted specific plan of the community and the Kern County Zoning Ordinance and there is No Impact. (1997 FEIR/EIS, p. 264)

The 1997 FEIR/EIS concluded that mining of gold would be a significant and unavoidable adverse impact. However, the commercial utilization of the mineral would be considered beneficial. To offset the significance of the impact, the original 1997 FEIR/EIS concluded that onsite mining operations would be permitted with approval of the Conditional Use Permits. The Revised Project will continue to mine the project site for gold, similar with the 1997 Project. Therefore, those findings made with the 1997 FEIR/EIS will continue to apply. The Revised Project requires County approval of modified and new Conditional Use Permits. County approval of these permits ensures that significant impacts would not result. The County will continue to find that commercial utilization of gold is a benefit. Further discussion in the SEIR is not required.

Compliance with 1997 FEIR/EIS Mitigation Measures

Mineral Resources Impact 1. Loss of mineral resources through extraction. (Significant and Unavoidable Adverse Impact After Mitigation)

Regulatory Requirements

• There are no regulatory requirements related to the mineral resources of the project.

Existing Mitigation Measures/Conditions of Approval

• Exploration activity, drilling boreholes and analysis of rock samples, has been conducted to ensure mineral resources will not be covered by overburden or heap piles. (Condition of Approval No. 5)

Comments Received on the Notice of Preparation

From California State Lands Commission, September 5, 2008:

1. Letter provided information on those lands there were being managed by the Commission, including navigable waterways and School Lands.

<u>EIR Response</u>: The project area includes lands patented by the State in 1927, where the State reserved a 1/16th mineral interest. This interest comprises about 71.97 acres located in Lots 2 and 20, north half of the northeast quarter of T10N, R12W, SBBM, Kern County. The Commission recommended that the Applicant contact the Planning and Development Section of the Mineral Resources Management Division.

The Applicant subsequently contacted the Commission and apprized them of the results of the exploration drilling program performed in that area which revealed a lack of minable minerals. The Revised Project depicts construction of the Phase I heap leach pad to occur in the referenced area. Further discussion in this SEIR is not required.

Technical Study Analyses and Findings

Technical studies were not prepared to further assess Mineral Resources impacts.

XI. Noise

Kern County Significance Thresholds

The County's Environmental Checklist Form indicates that a project would have significant adverse Noise effects if it would:

a) Exposure of persons to, or generation of, noise levels in excess of standards established in the local general plan or noise ordinance or applicable standards of other agencies.

- b) Exposure of persons to, or generation of, excessive ground borne vibration or ground borne noise levels.
- *c)* A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project.
- *d)* A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project.
- e) For a project located within the Kern County Airport Land Use Compatibility Plan, would the project expose people residing or working in the project area to excessive noise levels.
- f) For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels.

1997 FEIR/EIS Analysis and Conclusions

For Noise thresholds of significance a, b, c and d, the 1997 FEIR/EIS concluded:

The anticipated noise levels generated by typical operations at the Soledad Mountain Project are within the limits recommended by the Noise Element of the Kern County General Plan. During the operating life of the project, there would be an increase in ambient noise levels which would be perceptible to humans in the project vicinity, but these levels would not exceed maximum existing levels measured in the vicinity of the project area and the impact of the project on noise would be Less Than Significant. (1997 FEIR/EIS, p. 255)

The 1997 FEIR/EIS concluded that noise would be generated by mining activities; engines; construction equipment; rock drills and crushing; and blasting. The 1997 FEIR/EIS concluded that the 1997 Project's noise levels would be within the Noise Element of the County General Plan and impacts would be less than significant. The Revised Project would not propose any significantly different mining operations that would generate new or more intensive noise. Similar with the 1997 Project, the Revised Project would not result in any significant impact. Further discussion in this SEIR is not required.

Regarding **Noise thresholds of significance e and f** above, the NOP/IS determined that the project site is located outside the influence areas of public airports and private airstrips (over two miles away from the project site). The Mojave Airport is located about 5.5 miles north of the project site, while the Pontius airstrip and Lloyd's Landing airstrip, both private airstrips, are located approximately 2 1/8 miles southeast and 7 miles southwest, respectively, of the proposed project. Since the project site is located outside the influence area of any public airport, or private airstrip, there is no opportunity for the Revised Project to conflict with the Kern County Airport Land Use Compatibility Plan or result in the exposure of people working on the site to excessive noise levels from private aircraft. Significant noise impacts would therefore not result and further discussion in this SEIR is not required.
Compliance with 1997 FEIR/EIS Mitigation Measures

Noise Impact 1. Noise levels would increase in the vicinity of the project due to construction and operations.

Regulatory Requirements

- The noise levels at nearby residences will remain within the recommendations of the Noise Element of the Kern County General plan.
- Machinery, equipment and vehicles will be equipped with mufflers in accordance with MSHA requirements.

Existing Mitigation Measures/Conditions of Approval

- Approximately 75 to 80 percent of construction activities will take place during daylight. (Condition of Approval No. 47)
- Blasting will occur during daylight, one time per day, and will be engineered to minimize the amount of explosives used, according to United States Bureau of Mines guidelines. (Condition of Approval No. 48)
- The project shall comply with the goals and objectives of the Noise Element of the Kern County General Plan. (Condition of Approval No. 61)
- If a single-family residence is constructed on private land which lies within the projected 65 dB contour line northeast of the project area as shown in Exhibit 3.9-1 (*Projected Sound Level Contour Map*) of the 1997 FEIR/EIS, it will be ensured that the noise levels at the residence will remain within the recommendations of the Noise Element of the Kern County General Plan using both of the following methods:
 - (a) Noise levels will be monitored to determine if the noise levels are above the recommended limits.
 - (b) If noise levels are above the recommended limits, measures will be taken to reduce the noise level to acceptable levels.

The measures will include the construction of berms using overburden material to shield the noise and will include reduction of work in the area of the residence during the hours of 10:00 p.m. to 7:00 a.m. (Condition of Approval No. 62)

Comments Received on the Notice of Preparation

None received.

Technical Study Analyses and Findings

Technical studies were not prepared to further assess Noise impacts.

XII. Population and Housing

Kern County Significance Thresholds

The County's Environmental Checklist Form indicates that a project would have significant adverse Population and Housing effects if it would:

- a) Induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure).
- b) Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere.
- *c)* Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere.

1997 FEIR/EIS Analysis and Conclusions

For **Population and Housing threshold of significance a**, the 1997 FEIR/EIS (p. 270) stated, "A socioeconomic analysis of the proposed project has been performed by Weaver, Hawley, Mills Consultants and is attached as Appendix XI. . . . This analysis concludes that the project would enhance the regional economy. The project is not deemed growth inducing because the jobs created would, in all likelihood, replace those being eliminated by the closure of a similar facility within the area. Golden Queen anticipates hiring most, if not all, of its employees from that labor pool. Since the project is not deemed growth inducing, it would not conflict with population, employment or housing policies or projections established by government agencies."

Furthermore, the 1997 FEIR/EIS (p. 271) concluded, "The impacts to property values resulting from the proposed project are considered Less Than Significant....The population in the Mojave area is expected to increase to 6,225 by the end of the proposed project in 2015, assuming an annual growth rate of 2.2 percent based on historical growth. The cumulative socioeconomic impacts are considered Less Than Significant."

The 1997 FEIR/EIS concluded that impacts to population and housing would not be significant. The Revised Project would not propose any different mining operations that would result in additional population or housing impacts. Similar with the 1997 Project, the Revised Project would not result in any significant impact. Further discussion in this SEIR is not required.

For **Population and Housing thresholds of significance b and c**, the 1997 FEIR/EIS (p. 270) concluded, "*The project site is currently undeveloped, therefore, the project would not displace existing residences or create or exacerbate a housing shortage.*"

There are no houses or people residing onsite. There is no opportunity to displace any onsite houses or people. Further discussion in this SEIR is not required.

Compliance with 1997 FEIR/EIS Mitigation Measures

Socioeconomics Impact 1. The project could increase growth, causing a shortage of housing and services.

Regulatory Requirements

• No regulatory design features with respect to potential socioeconomic impacts have been identified.

Existing Mitigation Measures/Conditions of Approval

• Golden Queen has committed to hiring from the local population. (Condition of Approval No. 50)

Comments Received on the Notice of Preparation

None received.

Technical Study Analyses and Findings

Technical studies were not prepared to further assess Population and Housing impacts.

XIII. Public Services

Kern County Significance Thresholds

The County's Environmental Checklist Form indicates that a project would have significant adverse Public Services effects if it would:

- a) Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or to other performance objectives for any of the public services:
 - Fire Protection
 - Police Protection
 - Schools
 - Parks
 - Other Public Facilities

1997 FEIR/EIS Analysis and Conclusions

For all topics addressed under **Public Services threshold of significance a**, the 1997 FEIR/EIS concluded:

The proposed use does not conflict with existing recreational, educational, religious, or scientific uses in the area, therefore, there would be No Impact. (1997 FEIR/EIS, p. 264)

The proposed project will not require additional police/sheriff staff or equipment to maintain acceptable service ratios, therefore, the impact would be Less Than Significant. (1997 FEIR/EIS, p. 272)

The proposed project will not require additional fire department staff or equipment to maintain acceptable service ratios, therefore, the impact would be Less Than Significant. (1997 FEIR/EIS, p. 272)

The proposed project will not result in an increase in the population of school-age children, therefore, the impact would be Less Than Significant. (1997 FEIR/EIS, p. 272)

The 1997 FEIR/EIS concluded that the original mining project would not result in any significant impact to public services. The Revised Project would continue onsite mining operations and similarly, would not result in any significant impact. Further discussion in this SEIR is not required.

Compliance with 1997 FEIR/EIS Mitigation Measures

The 1997 FEIR/EIS determined that impacts related to public services were less than significant; therefore, no mitigation measures were necessary.

Comments Received on the Notice of Preparation

None received.

Technical Study Analyses and Findings

Technical studies were not prepared to further assess Public Services impacts.

XIV. Recreation

Kern County Significance Thresholds

The County's Environmental Checklist Form indicates that a project would have significant adverse Recreation effects if it would:

- a) Increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated.
- b) Include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment.

1997 FEIR/EIS Analysis and Conclusions

For **Recreation thresholds of significance a and b**, the 1997 FEIR/EIS (p. 264) concluded, "*The proposed use does not conflict with existing recreational, educational, religious, or scientific uses in the area, therefore, there would be No Impact.*"

The 1997 FEIR/EIS concluded that the original mining project would not result in any significant impact to recreational facilities and services. The Revised Project would continue onsite mining operations and, similarly, would not result in any significant impact. Further discussion in this SEIR is not required.

Compliance with 1997 FEIR/EIS Mitigation Measures

The 1997 FEIR/EIS determined that impacts related to recreation were less than significant; therefore, no mitigation measures were necessary.

Comments Received on the Notice of Preparation

None received.

Technical Study Analyses and Findings

Technical studies were not prepared to further assess Recreation impacts.

XV. Transportation and Traffic

Kern County Significance Thresholds

The County's Environmental Checklist Form indicates that a project would have significant adverse Transportation and Traffic effects if it would:

- a) Cause an increase in traffic which is substantial in relation to the existing traffic load and capacity of the street system (i.e., result in a substantial increase in either the number of vehicle trips, the volume to capacity ratio on roads, or congestion at intersections).
- b) Exceed, either individually or cumulatively, a Level of Service standard established by the county congestion management agency or adopted County threshold for designated roads or highways. Specifically, would implementation of the project cause the Level of Service (LOS) for roadways and/or intersections to decline below the following thresholds or further degrade already degraded segment(s):
 - i. Metropolitan Bakersfield General Plan LOS "C"
 - ii. Kern County General Plan LOS "D"
- c) Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks.

- *d)* Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment).
- e) Result in inadequate emergency access.
- *f) Result in inadequate parking capacity.*
- g) Conflict with adopted policies, plans, or programs supporting alternative transportation (e.g., bus turnouts, bicycle racks).

1997 FEIR/EIS Analysis and Conclusions

For **Transportation and Traffic thresholds of significance a, b and d,** the 1997 FEIR/EIS concluded:

The total increase in traffic on Silver Queen Road during the construction phase of the project, including employees and delivery trucks, is 413 ADT or 100 percent. The current volume to capacity ratio of 0.03 would be increased by construction traffic to 0.05. This increase would not affect the LOS on Silver Queen Road and is therefore, considered Less Than Significant....The total increase in traffic from current use during operation of the mine, including employees and supply trucks, is 375 ADT, an increase of 91 percent over the current 410 ADT. The capacity of Silver Queen Road is 15,000 ADT. The volume to capacity ratio would be increased from 0.03 to 0.08 by the year 2014. This increase would not affect the LOS on Silver Queen Road and is therefore, considered Less Than Significant. (1997 FEIR/EIS, p. 283)

Aggregate sales may result in additional truck traffic of approximately 70 daily round trips (140 ADT). The traffic associated with the possible sale of aggregate together with traffic associated with operation of the mine would add 515 ADT to the current 410 ADT, an increase of 126 percent on Silver Queen Road. The volume to capacity ratio would be increased to 0.09 and is therefore, Less Than Significant. (1997 FEIR/EIS, p. 283)

The project traffic would not increase the volume to capacity ratio enough to affect the LOS of State Route 14 and is, therefore, considered Less Than Significant. (1997 FEIR/EIS, p. 284)

The Proposed Action would not result in a new violation, or exacerbate an existing violation, of an applicable legal standard or goal relating to levels of service, or volume/capacity ratios, of a state or local agency. The Proposed Action would not conflict with any applicable congestion management plan, air quality plan or other plan or policy relating to automobiles or transit systems. The traffic associated with the Soledad Mountain Project is compatible with the current roadway design features and the project would have sufficient internal circulation capacity. Adequate parking would be provided onsite for employees, deliveries and visitors. There would be adequate internal circulation capacity, including entrance and exit, to safely accommodate the average and peak-hour traffic loads. Impacts are considered Less Than Significant. (1997 FEIR/EIS, pp. 284 and 285)

The 1997 FEIR/EIS concluded that the 1997 Project would not result in any significant impact relating to traffic generation, congestion, or roadway design. The Revised Project would continue onsite mining operations and would be designed similarly. Therefore, it is concluded that significant impacts would not be expected with the Revised Project. Further discussion is provided below, under *Technical Study Analyses and Findings*.

Regarding **Transportation and Traffic threshold of significance c** above, the NOP/IS determined that the project site is located outside the influence areas of public airports and private airstrips (over two miles away from the project site). The Mojave Airport is located about 5 1/2 miles north of the project site while the Pontius airstrip and Lloyd's Landing airstrip, both private airstrips, are located approximately 2 1/8 miles southeast and 7 miles southwest, respectively, of the proposed project. Since the project site is located outside the influence area of any public airport, or private airstrip, there would be no opportunity to conflict with the Kern County Airport Land Use Compatibility Plan or affect any air traffic patterns. Further discussion in this SEIR is not required.

For **Transportation and Traffic thresholds of significance e,** the 1997 FEIR/EIS concluded:

Onsite personnel will receive job training and annual refresher course training in emergency response procedures. Adequate access for emergency vehicles will be provided in all areas and fire hydrants will be located as required by the fire code and the Kern County Fire Department. Site tours and site-specific training will be provided for local emergency services. (1997 FEIR/EIS, p. 275)

For **Transportation and Traffic threshold of significance f**, the 1997 FEIR/EIS concluded:

Adequate parking would be provided onsite for employees, deliveries and visitors. There would be adequate internal circulation capacity, including entrance and exit, to safely accommodate the average and peak-hour traffic loads. Impacts are considered Less Than Significant. (1997 FEIR/EIS, p. 285)

The 1997 FEIR/EIS concluded that the original mining project would provide adequate parking. The Revised Project would continue to provide adequate parking onsite and similarly, would not result in any significant impact. Further discussion in this SEIR is not required.

Regarding **Transportation and Traffic threshold of significance g** above, the NOP/IS indicated that the County General Plan did not have any adopted alternative transportation policies, plans, or programs relative to the project site. Therefore, further discussion in this SEIR is not required.

Compliance with 1997 FEIR/EIS Mitigation Measures

Traffic and Transportation Impact 1. The project would increase the level of traffic on roads in the vicinity of the project.

Regulatory Requirements

• Kern County policy requires roadways to maintain a level of service of D or better.

Existing Mitigation Measures/Conditions of Approval

- The entrance road from Silver Queen Road to the office area will be paved. (Condition of Approval No. 55)
- Provide a left turn lane on Silver Queen Road at the entrance to the project site. (Condition of Approval No. 56)

Comments Received on the Notice of Preparation

From California Department of Transportation, District 9, September 12, 2008:

1. Letter requested analysis of construction and operational traffic related to: (a) facility geometry and turning movements of vehicles, (b) roadway degradation and restoration, and (c) fair share fees to mitigate any cumulative project impacts to the SR-14/Silver Queen Road interchange and local roadways.

EIR Response: See discussion below, under Technical Study Analyses and Findings.

From County Resource Management Agency, Roads Department, September 10, 2008:

- 1. Memo requested analysis of the following: (a) more thorough project trip generation analysis, and (b) analysis of daily truck trips entering and exiting with aggregate materials.
- 2. The Department supported the proposed non-summary vacation of New Eagle Road.

EIR Response: See discussion below, under *Technical Study Analyses and Findings*.

From State of California Public Utilities Commission, September 15, 2008:

1. The PUC had concern that the grade rail crossing at SR-14 and Purdy Avenue could be impacted by project traffic and requested that the traffic impact study evaluate potential traffics to this particular intersection. The PUC also noted that if this is not done with the proposed project, then the requested evaluation could be accomplished during the annual update of the Kern Fee program. <u>EIR Response</u>: The designated access route for project traffic is via SR-14 at the Silver Queen Road on-/off-ramps. This ramp intersection is located about two miles south of the rail crossing at SR-14 and Purdy Avenue. There are no railroad crossings that will be affected by traffic to and from the site, including rail operations at the referenced intersection. Further discussion in this SEIR is not required. For traffic information, see discussion below, under *Technical Study Analyses and Findings*.

Technical Study Analyses and Findings

In response to NOP comments and data requests made by Caltrans and the County Roads Department, this section summarizes those traffic studies that have recently been prepared for the Revised Project, provides a chronology of traffic-related correspondence that have been transmitted between the applicant and County, restates those mitigation measures/conditions of approval from the 1997 FEIR/EIS that would continue to be required for the Revised Project, and describes new and/or revised mitigation measures/conditions of approval that are now required by the County Roads Department.

Background and Chronology of Comment & Review

September 10, 2008 – Resource Management Agency, Roads Department, County of Kern: The County Roads Department prepared a comment memo on the NOP/IS requesting a more thorough project trip analysis of daily truck trips that would be entering and exiting the project site with aggregate materials.

September 12, 2008 – California Department of Transportation, District 9: Caltrans prepared a comment memo on the NOP/IS, which concurred with the traffic analysis approach described in the NOP/IS (page 52), but also requested additional analysis and discussion of the following issues:

- Facility geometry and turning movements
- Roadway degradation from commercial vehicles
- Fair share fee mitigation

December 10, 2008 – **Planning Department, County of Kern:** Based on comments from Caltrans and the County Roads Department, the applicant prepared a response that included pertinent information and analysis from the 1997 FEIR/EIS; described those applicable conditions of approval that were established with the original project approval which addressed Caltrans' and the County Roads Department's comments; and offered additional improvements to seal and pave the new access road and parking area. The applicant's responses were forwarded to Caltrans and the County Roadway Department on December 10, 2008 for their respective reviews.

January 14, 2009 – Resource Management Agency, Roads Department, County of Kern: After reviewing the applicant's response, the County Roads Department prepared another comment memo which continued to request preparation of a new traffic study to evaluate traffic-related impacts resulting with the Revised Project. **January 29, 2009 – Preparation of Additional Traffic Studies:** In response to comments and concerns raised by Caltrans and the County Roads Department, the applicant retained T.J. Cross Engineers, Inc. to evaluate project-related traffic impacts on Silver Queen Road and SR-14. Two traffic studies (T.J. Cross 2009a/b) were prepared to evaluate traffic impacts on Silver Queen Road and SR-14. These were transmitted to the County Roads Department for review.

February 12, 2009 – Resource Management Agency, Roads Department, County of Kern: After reviewing the two new traffic studies, the County Roads Department prepared another comment memo which required revisions to the traffic studies.

April 17, 2009 – Resource Management Agency, Roads Department, County of Kern: After reviewing additional material from the project traffic engineer, the County Roads Department prepared another comment memo that concluded the following:

- With the existing traffic counts showing a peak hour less than 50, a new traffic study would <u>not</u> be required.
- The County Roads Department analyzed the structural section for Silver Queen Road and determined that the increase in trucks (120) that would enter and exit the project would necessitate an increase in the pavement thickness of 0.36 feet. The project would be responsible for providing an overlay of 0.36 feet, 32 feet wide (two 12-foot travel lanes with two four-foot shoulders), and 6,500 feet in length along Silver Queen Road.
- The applicant could choose to provide an in-lieu payment, based upon approved cost estimates to the Roads Department as part of the Conditional Use Permit approval process. The payment would be required prior to issuance of any grading or building permit, and would be used specifically for the future overlay of Silver Queen Road.

Impact Discussion

As discussed, the 1997 FEIR/EIS concluded that the approved mining project would not result in any significant impact relating to traffic generation, congestion, or roadway design with mitigation. Since the Revised Project would result in substantially similar onsite mining operations and would be designed similarly, it was also concluded that significant impacts would not result with the Revised Project. However, in response to comments and concerns raised by Caltrans and the County Roads Department, two traffic evaluations were conducted. The following summarizes findings and conclusions from these two new traffic studies.

■ T.J. Cross Engineers, Inc. 2009a. Silver Queen Road Traffic Study for Golden Queen Mining Co. Ltd. Golden Queen Mine; January 29, 2009.

The traffic study forecasted the traffic level of service (LOS) on a 1.2-mile section of Silver Queen Road based on operation of the Revised Project and was based on Kern County traffic counts; Caltrans Truck and Traffic Volumes for

2007; aerial photos of Silver Queen Road; requirements of the Transportation Research Board's "Highway Capacity Manual"; discussions with the County Roads Department; a site reconnaissance; and utilization of the McTrans Traffic Software Version 5.3 model for evaluating levels of service. The following describes findings and conclusions from the traffic study:

- The impacted section of Silver Queen Road extended from the southbound off-ramp of SR-14 to the proposed entrance road that would be located approximately 1.2 miles west of the off-ramp.
- Access to the project site would be via Silver Queen Road, located approximately 1.2 miles west of the intersection of Silver Queen Road and SR-14. Silver Queen Road was determined to be a rural, class 2, two-lane highway running in the east/west direction between SR-14 and Holt Street. SR-14 was determined to be a four-lane, divided highway which run in the north/south direction. Access to Silver Queen Road was by a diamond ramp system. Ramps for SR-14 were approximately 1,500 feet long.
- Several access points were located along Silver Queen Road. Three and seven access points existed along the north and south sides of the road, respectively. These access points were primarily low travel, off-road vehicle type roads.
- Traffic count data provided by the Kern County Roads Department (2007) indicated that existing average annual daily traffic along Silver Queen Road totaled 180 vehicles per day. The "design vehicles per hour" would be 18, based on factors contained in the Highway Capacity Manual. The traffic study also observed that traffic flow speeds were free flowing, unrestricted, and generally in the 40 to 60 mph range.
- The traffic study concluded that existing traffic flows along Silver Queen Road operated at LOS A.
- The Revised Project would add approximately 64 heavy trucks and 119 lightduty vehicles to the vehicle stream. Of these, 60 aggregate trucks were assumed to be spread over the day. The remainder of the trucks and light vehicles would likely arrive during peak hours.
- The traffic study added the additional traffic stream to the existing peak hourly traffic and recalculated traffic movements and trips.
- The traffic study concluded that the Revised Project would <u>not</u> reduce the level of service along Silver Queen Road when compared with existing conditions. The road would continue to operate at LOS A.
- T.J. Cross Engineers, Inc. 2009b. State Route 14 Ramps at Silver Queen Road Traffic Study for Golden Queen Mining Co. Ltd. Golden Queen Mine; January 29, 2009.

The traffic study forecasted the traffic level of service on the ramps for SR-14 at Silver Queen Road based on operation of the Revised Project and was based on Caltrans Truck and Traffic Volumes and Ramp Volumes on the California State Freeway System for 2007; the document entitled, "Silver Queen Road Traffic Study for Golden Queen Mining Co. Ltd. Golden Queen Mine", prepared by T.J.

Cross Engineers, Inc., in January 29, 2009; aerial photos of Silver Queen Road; requirements of the Transportation Research Board's "Highway Capacity Manual"; discussions with the County Roads Department; a site reconnaissance; and utilization of the McTrans Traffic Software Version 5.3 model for evaluating levels of service. The following describes findings and conclusions from the traffic study:

- Traffic count data provided by the California Department of Transportation (2007) indicated that existing average annual daily traffic along SR-14 totaled 19,500 vehicles per day, with peak hourly traffic of 1,950 vehicle trips.
- The average daily trips for the southbound and northbound ramps of SR-14 were calculated to be 240 and 290 vehicles per day, respectively. The "design vehicles per hour" would be 24 and 29 for the southbound and northbound ramps, respectively, based on factors contained in the Highway Capacity Manual. The traffic study also observed that traffic flow speeds were free flowing and unrestricted.
- The traffic study concluded that existing traffic flows along the SR-14 ramps at Silver Queen Road operated at LOS B.
- The traffic study also concluded that the Revised Project would add approximately 64 heavy trucks and 119 light-duty vehicles to the vehicle stream. Of these, 60 aggregate trucks were assumed to be spread over the day. The remainder of the trucks and light vehicles would likely arrive during peak hours.
- The traffic study added the additional traffic stream to the existing peak hourly traffic and recalculated traffic movements and trips.
- The traffic study concluded that the Revised Project would <u>not</u> reduce the level of service along the SR-14 ramps when compared with existing conditions. The ramp intersections would continue to operate at LOS B.

It is concluded that the Revised Project would not result in any significantly new traffic-related impacts for the following reasons. First, the two traffic studies determined that levels of service along Silver Queen Road and the SR-14 ramps would continue at existing levels even with the addition of project-generated traffic. Second, the County of Kern Roads Department concurred with those findings made in the two new traffic studies and only required that the structural composition of Silver Queen Road be improved. The County's required improvements and mitigation measures will be further described in the following section. Third, the applicant is now proposing new roadway improvements with the Revised Project that would further reduce the significance of any potential traffic-related impact. Finally, the Revised Project would be required to continue implementation of those applicable traffic-related mitigation measures that were established with the 1997 FEIR/EIS. Again, the 1997 FEIR/EIS concluded that potential impacts would be alleviated with implementation of these mitigation measures.

Mitigation Measures/Conditions of Approval from 1997 FEIR/EIS

The following measures would ensure that traffic-related impacts remain less than significant. The measures are organized by those mitigation measures from the 1997 FEIR/EIS that would continue to be required for the Revised Project, and those mitigation measures that are required by the County Roads Department.

- The entrance road from Silver Queen Road to the office area will be paved (Condition of Approval No. 55)
- Provide a left-turn lane on Silver Queen Road at the entrance to the project site. (Condition of Approval No. 56)

Revised Mitigation Measure Required By Kern County

Revised Condition of Approval No. 56: Prior to commencement of mining operations as authorized by this permit, the project proponent shall cause:

- a) <u>Provide a A</u> left-turn lane on Silver Queen Road at the entrance to the project site to be constructed.
- b) <u>An overlay of 0.36 feet, 32 feet wide (two 12-foot travel lanes with two four-foot shoulders)</u>, and 6,500 feet in length along Silver Queen Road to be <u>constructed</u>.
- c) In lieu of constructing the requisite overlay improvements to Silver Queen Road, the project proponent may provide in-lieu payment to the Kern County Roads Department based upon cost estimates submitted to that department for review and approval. Fees received would be used specifically for the future overlay of Silver Queen Road and would be collected prior to the issuance of any building or grading permits for the project.

In light of Revised Condition of Approval No. 56, and for purposes of CEQA analysis, the project impact area extends beyond the site boundary to include the Silver Queen Road pavement overlay improvements that will extend approximately 6,500 feet eastward from the site access road (at Silver Queen and Gold Town Road) toward SR-14. Those County-required improvements do not include the SR-14 ramp intersections.

XVI. Utilities and Service Systems

Kern County Significance Thresholds

The County's Environmental Checklist Form indicates that a project would have significant adverse Utilities and Service Systems effects if it would:

a) Exceed wastewater treatment requirements of the applicable Regional Water *Quality Control Board.*

- b) Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects.
- c) Require or result in the construction of new stormwater drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects.
- d) Have insufficient water supplies available to serve the project from existing entitlements and resources, or new or expanded entitlements would be needed.
- e) Result in a determination by the wastewater treatment provider which serves or may serve the project that it has inadequate capacity to serve the project's projected demand in addition to the provider's existing commitments.
- *f)* Be served by a landfill with insufficient permitted capacity to accommodate the project's solid waste disposal needs.
- g) Be out of compliance with federal, state, and local statutes and regulations related to solid waste.

1997 FEIR/EIS Analysis and Conclusions

For **Utilities and Service Systems thresholds of significance a through g**, the 1997 FEIR/EIS concluded:

The proposed project will not result in the need for new electrical transmission systems, communications systems or sewer treatment. New septic systems will be installed for onsite use following the approval by Kern County Environmental Health Services Department. Industrial water will be supplied by onsite water wells and drinking water will be supplied by bottled water. Stormwater drainage will be retained onsite. Non-mining wastes, such as office waste, will be removed from the site by a contract hauler for disposal in an approved landfill. Regulated wastes, such as used oil and laboratory wastes, will be manifested and transported from the site by authorized haulers....No impacts to public services and utilities are anticipated from the proposed project. (1997 FEIR/EIS, pp. 138 and 139)

The 1997 FEIR/EIS concluded that impacts related to public utilities will be insignificant, including those resulting from the provision of drainage, water, sewer, and solid waste facilities and services. The Revised Project proposes similar mining operations onsite and, likewise, would not result in any significant impacts. Further discussion in this SEIR is not required.

Compliance with 1997 FEIR/EIS Mitigation Measures

The 1997 FEIR/EIS determined that impacts related to utilities and service systems were less than significant; therefore, no mitigation measures were necessary.

Comments Received on the Notice of Preparation

From Southern California Gas Company, Southern Region Transmission dated November 26, 2008:

1. SCGC's Transmission Department indicated there were no facilities in the project site. The letter noted, however, that their Distribution Department could have facilities located in the construction area and therefore, suggested that contact be made in the future to confirm.

<u>EIR Response</u>: Comments noted. As requested, the Applicant will contact the Distribution Department of SCGC to confirm that any local distribution pipeline system will not be affected by the Revised Project. Further discussion in this SEIR is not required.

Technical Study Analyses and Findings

Technical studies were not prepared to further assess Utilities and Service Systems impacts.

Section 4.2 Air Quality

4.2.1 Introduction

This Air Quality section describes the existing conditions of the site and the regulatory setting, evaluates potential impacts resulting from construction and operation of the Project as revised, compares the impacts of the 1997 Project to the impacts of the Revised Project and, where necessary, recommends feasible mitigation measures to reduce potential impacts from the Revised Project to levels that are less than significant.

This section is based on the following documents:

- The Kern County Planning Department's Guidelines for Preparing an Air Quality Assessment for Use in Environmental Impact Reports (Air Quality Guidelines), which are part of the County's Guide for the Preparation of Environmental Impact Reports, dated June 2006.
- Requirements and standards of the Kern County Air Pollution Control District (KCAPCD), necessary to acquire Authority to Construct (ATC) permits, which become Permits to Operate upon approval.
- The Soledad Mountain Project Air Quality and Health Risk Assessments (AQ/HRA) prepared specifically for the Revised Project by Air Sciences Inc. in July 2009 (Air Sciences 2009b). The complete AQ/HRA with modeling output is contained in Appendix D of this SEIR.
- The Soledad Mountain Project Greenhouse Gas Emissions prepared specifically for the Revised Project by Air Sciences Inc. in November 2009 (Air Sciences 2009c). This document is located in Appendix E of this SEIR.

Project Background

Following the Kern County Board of Supervisors' certification of the 1997 FEIR/EIS and approval of the CUPs, the applicant submitted applications for Authority to Construct (ATC) permits to the KCAPCD. The applications demonstrated compliance with the applicable air quality regulations and standards, and as a result, KCAPCD issued seven ATC permits for the 1997 Project in March 2002. GQM was evaluating various alternative designs at that time, and therefore the construction of the 1997 Project did not commence and the permits expired in March 2004 (Air Sciences 2009b, p. viii).

4.2.2 Environmental Setting

Ambient air quality is affected by the regional climate, topography, and the types and quantities of pollutants emitted by existing sources.

Climate and Topography

The project is located in the Mojave Desert Air Basin (MDAB). The terrain is characterized by flat valleys and low, barren mountains, ranging in elevation from 2,000 to 5,000 feet above sea level. The project region is bordered on the north and west by the Sierra Nevada, Tehachapi, San Gabriel, and San Bernardino Mountains, and merges with the Colorado Desert in the southeast. The climate is generally characterized by sparse winter rainfall and hot, dry summers.

Temperature affects the air quality of the region in several ways. Temperature has a major effect on vertical mixing height and affects chemical and photochemical reaction times, thereby impacting local pollutant concentrations. The annual average maximum temperature is 90 degrees Fahrenheit (F) with the average minimum temperature of 35 degrees F. On average, August and September are the warmest months while December is the coolest month. Most of the annual rainfall occurs between October and April and varies from 1.3 inches to 12.2 inches.

Wind flow patterns play an important role in the transport of air pollutants and also impact local pollutant concentrations. Primary wind direction is to the northeast. Secondary winds blow towards the south and southwest during the daytime in the winter months. In general, wind speeds increase in the afternoon and evening hours.

Meteorological monitoring stations are described in Section 3.8 (*Meteorological Data*) of the AQ/HRA (see SEIR Appendix D). That section specifies the monitoring stations and the range of meteorological and air quality data used as inputs to the air emissions dispersion modeling programs. The KCAPCD in 2009 approved the models, inputs, and methodologies (i.e., the Air Protocol) used to analyze the potential impacts of the Revised Project. Readers are directed to Section 3.8 of the AQ/HRA for detailed meteorological information, as well as other physical parameters (e.g., land cover, moisture conditions, topography, etc.) used for AERMOD dispersion modeling.

Soil Characteristics

As was the case in 1997, the primary pollutant of concern in the project area at present is suspended particulate matter (PM). Particles originate from a variety of sources, and airborne particulate serves as a transport mechanism for numerous chemicals. Therefore, the chemical and physical composition of onsite particulate is important to the understanding of existing and future air quality in the project vicinity. Known local sources include vehicle traffic on unpaved roads and

naturally occurring windblown dust. Other existing sources of PM around the project area include industrial processes, landfills, and other mining operations. High winds or increased surface disturbance can elevate PM concentrations.

Since preparation of the 1997 FEIR/EIS, the Applicant has undertaken several soil characterization studies to determine the full range of inert and potentially hazardous constituents of onsite soils. Studies include the following:

• P.M. DeDycker & Associates, Inc. 2006. Soledad Mountain Project Baseline and Background Soil Assessment Sampling and Analysis Plan; October 2006.

The primary purpose of the baseline/background soil assessment was to satisfy the 1997 Project Conditions of Approval (Exhibit E of the CUP). In December 2006, BSK Associates and P.M. DeDycker & Associates conducted soils sampling pursuant to the sampling and analysis plan.

• ARCADIS U.S., Inc. (ARCADIS). 2007b. Baseline Soil Characterization Report; April 9, 2007.

This report presented the methods and results of the sampling program and presents a statistical evaluation of the concentrations of trace elements and major elements in the soil within, and adjacent to, the proposed heapleaching facility. In general, the Baseline Soil Characterization Report noted elevated concentrations of metals in the soils on the site, including arsenic, chromium, mercury, lead, and nickel. The report concluded that the highest levels of metals onsite were near the largest of the historical tailing piles and tailings was likely the source for the elevated metals concentrations in the soils.

• ARCADIS. 2008b. Soledad Mountain Project Human Health Risk Assessment; May 2008.

Based on the results of the soil characterization work (ARCADIS 2007b), the program was expanded in 2007 by collecting samples directly from the historical tailings pile and evaluating potential risks and/or hazards to human health associated with the constituents detected in the tailings and soil samples.

The 1997 FEIR/EIS previously indicated that the cancer risk, though well below risk thresholds, was driven primarily by arsenic and beryllium, which are naturally occurring components of the soil in the desert, particularly in areas where precious metals are found. Although not in conflict with those findings, the aforementioned studies constitute new information that was not previously available when the 1997 FEIR/EIS was prepared. It is the purpose of this Supplemental EIR to consider that information and identify whether additional impacts will occur or further mitigation will be required. The AQ/HRA prepared in July 2009 includes the soil characterization data in its calculations and will serve as a primary source for the updated findings in this section. As input to the health risk assessment models, the AQ/HRA used rock composition data in Table 4.2-1 to determine pollutant emissions from onsite dust sources.

Pollutant	Concentration (ppm)	Pollutant	Concentration (ppm)
Antimony	5.1	Lead	11.6
Arsenic	23.0	Mercury	2.7
Barium	133.6	Nickel	1.6
Beryllium	0.1	Selenium	0.1
Cadmium	3.3	Silver	1.3
Chromium	112.1	Thallium	32.4
Cobalt	0.2	Zinc	10.3
Copper	6.7		
Source: Table 6-3 (Air Sciences 2009b)			

TABLE 4.2-1.	SOLEDAD MOU	NTAIN HOST R	ROCK COMPOS	SITION
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Existing Air Quality

State and Federal Air Quality Standards

National Ambient Air Quality Standards (NAAQS) were first authorized by the federal Clean Air Act of 1970 and have been set by the U.S. EPA. California Ambient Air Quality Standards (CAAQS) were authorized by the State legislature in 1967 and have been set by the California Air Resources Control Board (CARB). CARB manages air quality, regulates mobile emissions sources, and oversees the activities of county and regional Air Pollution Control Districts (APCDs) and Air Quality Management Districts (AQMDs).

Criteria air pollutants are those pollutants for which the Federal and State government have established ambient air quality standards or criteria for outdoor concentrations in order to protect public health with a margin of safety. The U.S. EPA and the CARB have established health-based air quality standards for ozone, carbon monoxide (CO), oxides of nitrogen (NO_x), respirable particulate matter (PM_{10} and $PM_{2.5}$), sulfur oxides (SO_x), and lead.

As shown in Table 4.2-2 below, the California standards are more stringent than the federal air quality standards. California also has established standards for sulfate, visibility, hydrogen sulfide, and vinyl chloride. Hydrogen sulfide and vinyl chloride currently are not monitored in the Basin because they are not a regional air quality problem but are generally associated with localized emission sources.

Air Pollutant	State Standards (Concentration/Averaging Time)	Federal Standards (Concentration/Averaging Time)
Ozone	0.09 ppm, 1-hr. avg. > 0.70 ppm, 8-hr	0.075 ppm, 8-hr avg>
Carbon Monoxide	9.0 ppm, 8-hr. avg. > 20 ppm, 1-hr. avg. >	9 ppm, 8-hr. avg. > 35 ppm, 1-hr. avg. >
Nitrogen Dioxide	0.18 ppm, 1-hr. avg. >	0.053 ppm, ann. avg. >
Sulfur Dioxide	0.04 ppm, 24-hr. avg. > 0.25 ppm, 1-hr. avg. >	0.03 ppm, ann. avg. > 0.14 ppm, 24-hr. avg. >
Suspended Particulate Matter (PM ₁₀)	$20 \ \mu g/m^3$, ann. arithmetic mean> $50 \ \mu g/m^3$, 24-hr. avg. >	150 μg/m ³ , 24-hr. avg. >
Suspended Particulate Matter (PM _{2.5})	$12 \ \mu g/m^3$, ann. arithmetic mean>	$15 \ \mu g/m^3$, ann. arithmetic mean> $35 \ \mu g/m^3$, 24-hr. avg. >
Sulfates	25 μg/m ³ , 24-hr. avg. >=	
Lead	$1.5 \ \mu g/m^3$, 30-day avg. >=	1.5 μ g/m ³ , calendar quarter >
Visibility-Reducing Particles	In sufficient amount to give an extinction coefficient >0.23 inverse kilometers (visual range to less than 10 miles) with relative humidity less than 70%, 8-hour average (10am – 6pm PST)	

TABLE 4.2-2. FEDERAL AND STATE AMBIENT AIR QUALITY STANDARDS

Existing Background Concentrations

The NAAQS and CAAQS are presented again in Table 4.2-3, along with monitored air quality data for particulate matter, nitrogen oxides, and sulfur oxides that characterize existing ambient air pollutant concentrations for the project area. The data are from several monitoring stations within the State and Local Air Monitoring Network, including the Mojave, Lancaster, and the Trona-Athol/Telescope stations. For each pollutant, Table 4.2-3 provides the measured concentration appropriate for each averaging period.

As shown in Table 4.2-3, existing concentrations of particulate matter, nitrogen oxides, and sulfur oxides are below the applicable State and Federal standards for most averaging periods. There are two exceptions.

First, the high-second-high 24-hour average (111.9 μ g/m³) and annual average (24.0 μ g/m³) PM₁₀ concentration at the Mojave station exceed the California 24-hour and annual PM₁₀ standards of 50 μ g/m³ and 20 μ g/m³, respectively. The region is designated as non-attainment for the California PM₁₀ standards. Although it is designated non-attainment, 96 percent of the monitored 24-hour

 $\ensuremath{\text{PM}_{10}}$ concentrations at the Mojave station are below the California 24-hour standard.

Second, the 1-hour maximum NO_x concentration (506.6 μ g/m³⁾ at the Lancaster monitoring station exceeds the California 1-hour NO_x standard of 339 μ g/m³. However, 99.7 percent of the monitored 1-hour NO_x concentrations at the Lancaster station are below the California 1-hour standard.

TABLE 4.2-3.	. MAXIMUM MEASURED POLLUTANT CONCENTRATIONS AT STATIO		
	IN THE STATE AND LOCAL AIR MONITORING NETWORK		

Pollutant	Averaging Period	NAAQS (µg/m ³)	CAAQS (µg/m ³)	Measured ^A Concentration	Monitoring Station (miles from Site)
PM_{10}^{A}	24-Hour	150	50	111.9	Mojave, CA (5 mi. north)
	Annual	NA	20	24	
PM _{2.5} ^A	24-Hour	35	NA	17.8	Mojave, CA (5 mi. north)
	Annual	15	12	6.6	
NO ₂ ^B	1-Hour	NA	339	506.6	Lancaster, CA (22 mi. south)
	Annual	100	57	37.4	
SO ₂ ^B	1-Hour	NA	655	94.3	Trona-Athol/ Telescope, CA (71 mi. northeast)
	24-Hour	365	105	10.5	
	Annual	80	NA	2.2	

Bold values are in excess of applicable standard.

NA = Not Applicable or Not Available.

^A The "Measured Concentration" for the PM_{10} 24-hour standard represents the second highest monitored concentration; for $PM_{2.5}$ represents the 98th percentile, and for all other pollutants and averaging periods represents the maximum monitored concentration.

^B Data provided by CARB; air monitoring station information provided in Table 5-3 of the AQ/HRA.

Source: Tables 3-17, 3-18 and 5-3 (Air Sciences 2009b)

Existing Attainment Status

Assessment of whether areas within Kern County and the MDAB are compliant with the aforementioned State and Federal air quality standards is also based on the area's "attainment" or "non-attainment" classification status. These classifications are determined by comparing regionally-monitored air pollutant concentrations to State and/or Federal standards. Air quality of a region is considered to be in attainment of the standards if the measured concentrations of air pollutants are continuously equal to or less than the air quality standards.

The following table identifies whether a particular criteria pollutant is classified as either attainment or non-attainment for the region.

Pollutant	Federal Attainment Status	State Attainment Status	
Ozone – one hour	Attainment/Maintenance	Moderate Non-attainment	
Ozone – eight hour	Non-attainment	No Designation	
PM ₁₀	Unclassifiable/Attainment	Non-attainment	
PM _{2.5}	Unclassifiable/Attainment	Unclassified	
СО	Unclassifiable/Attainment	Unclassified	
Nitrogen Dioxide	Unclassified	Attainment	
Sulfur Dioxide	Unclassified	Attainment	
Lead	No Designation	Attainment	
Source: Table 7-4 (Air Sciences 2009b)			

TABLE 4.2-4. KCAPCD FEDERAL AND STATE ATTAINMENT STATUS

As shown in the table, the project region is non-attainment for the Federal ozone 8-hour standard and the California ozone 1-hour standard. The region is also non-attainment for the California PM_{10} standard.

Soledad Mountain Monitoring Data

In 2006, GQM established a baseline monitoring station for PM_{10} , as discussed as a project design feature in the 1997 FEIR/EIS. The baseline monitoring station is located approximately one mile north of the center of the Revised Project, at a site selected in consultation with the KCAPCD. In addition to PM_{10} , the GQM monitoring station measures wind speed, wind direction, ambient and delta temperature, solar and net radiation, relative humidity, precipitation and barometric pressure. The GQM station is considered by KCAPCD to be a "special use" monitoring station and is not part of the State and Local Air Monitoring Network. Therefore, data collected at the GQM station is not used to determine the air basin's compliance with the NAAQS and CAAQS. However, the GQM station does provide useful data regarding localized ambient PM₁₀ concentrations. For example, the everyday 24-hour average PM₁₀ concentration is used in the modeling analysis in the AQ/HRA Assessment Report as "background" concentration to be added to modeled PM_{10} impacts for the Revised Project. It is expected that the ATC permit to be issued for the Revised Project will include a condition that will establish the current GQM PM₁₀ monitoring station as the "upwind" station and will require an additional "downwind" PM_{10} station to be installed. Once the downwind PM_{10} monitoring station is installed, the upwind and downwind PM₁₀ stations will provide data relating to the Revised Project's contribution to airborne PM₁₀ in the vicinity of the Revised Project.

Section 4.3 (PM_{10} and $PM_{2.5}$ Background Concentrations) of the AQ/HRA describes the PM_{10} data collection efforts at the GQM monitoring station and the method used to incorporate the GQM PM_{10} data into the modeling analysis as "background" PM_{10} . The AQ/HRA also describes "exceptional events" (i.e., fires and high winds) that caused some monitored PM_{10} concentrations to exceed the NAAQS. Where appropriate, these data were "flagged" as likely caused by exceptional events and were not used to represent background in the modeling analysis.

Common Air Pollutants

The following describes each of the criteria air pollutants and their potential physical and health-related effects.

Ozone

Ozone occurs in two layers of the atmosphere. The layer surrounding the earth's surface is the troposphere. Here, ground level, or "bad," ozone is an air pollutant that damages human health, vegetation, and many common materials. It is a key ingredient of urban smog. The troposphere extends to a level about 10 miles up, where it meets the second layer, the stratosphere. The stratospheric, or "good," ozone layer extends upward from about 10 to 30 miles and protects life on earth from the sun's harmful ultraviolet rays.

"Bad" ozone is what is known as a photochemical pollutant. It needs reactive organic gases (ROG), NO_x , and sunlight. ROG and NO_x are emitted from various sources throughout Kern County. In order to reduce ozone concentrations, it is necessary to control the emissions of these ozone precursors.

Significant ozone formation generally requires an adequate amount of precursors in the atmosphere and several hours in a stable atmosphere with strong sunlight.

Ozone is a regional air pollutant. It is generated over a large area and is transported and spread by wind. Ozone, the primary constituent of smog, is the most complex, difficult to control, and pervasive of the criteria pollutants. Unlike other pollutants, ozone is not emitted directly into the air by specific sources. Ozone is created by sunlight acting on other air pollutants (called precursors), specifically NO_x and ROGs. Sources of precursor gases to the photochemical reaction that form ozone number in the thousands. Common sources include consumer products, gasoline vapors, chemical solvents, and combustion products of various fuels. Originating from gas stations, motor vehicles, large industrial facilities, and small businesses such as bakeries and dry cleaners, the ozoneforming chemical reactions often take place in another location, catalyzed by sunlight and heat. High ozone concentrations can form over large regions when emissions from motor vehicles and stationary sources are carried hundreds of miles from their origins. Approximately 50 million people lived in counties with air quality levels above the U.S. Environmental Protection Agency's (EPA's) health-based national air quality standard in 1994. The highest levels of ozone were recorded in Los Angeles. High levels also persist in other heavily populated areas, including the Texas Gulf Coast and much of the northeast.

While the ozone in the upper atmosphere absorbs harmful ultraviolet light, ground-level ozone is damaging to the tissues of plants, animals, and humans, as well as to a wide variety of inanimate materials such as plastics, metals, fabrics, rubber, and paints. Societal costs from ozone damage include increased medical costs, the loss of human and animal life, accelerated replacement of industrial equipment, and reduced crop yields.

Health Effects

While ozone in the upper atmosphere protects the earth from harmful ultraviolet radiation, high concentrations of ground-level ozone can adversely affect the human respiratory system. Many respiratory ailments, as well as cardiovascular disease, are aggravated by exposure to high ozone levels. Ozone also damages natural ecosystems, such as forests and foothill communities; agricultural crops; and some man-made materials, such as rubber, paint, and plastic. High levels of ozone may negatively affect immune systems, making people more susceptible to respiratory illnesses, including bronchitis and pneumonia. Ozone also accelerates aging and exacerbates pre-existing asthma and bronchitis and, in cases with high concentrations, can lead to the development of asthma in active children. Active people, both children and adults, appear to be more at risk from ozone exposure than those with a low level of activity. Additionally, the elderly and those with respiratory disease are also considered sensitive populations for ozone.

People who work or play outdoors are at a greater risk for harmful health effects from ozone. Children and adolescents are also at greater risk because they are more likely than adults to spend time engaged in vigorous activities. Research indicates that children under 12 years of age spend nearly twice as much time outdoors daily than adults. Teenagers spend at least twice as much time as adults in active sports and outdoor activities. Also, children inhale more air per pound of body weight than adults, and they breathe more rapidly than adults. Children are less likely than adults to notice their own symptoms and avoid harmful exposures.

Ozone is a powerful oxidant—it can be compared to household bleach, which can kill living cells (such as germs or human skin cells) upon contact. Ozone can damage the respiratory tract, causing inflammation and irritation, and it can induce symptoms such as coughing, chest tightness, shortness of breath, and worsening of asthmatic symptoms. Ozone in sufficient doses increases the permeability of lung cells, rendering them more susceptible to toxins and microorganisms. Exposure to levels of ozone above the current ambient air quality standard leads to lung inflammation and lung tissue damage and a reduction in the amount of air inhaled into the lungs. Recent evidence has, for the first time, linked the onset of asthma to exposure to elevated ozone levels in exercising children. Elevated ozone concentrations also reduce crop and timber yields, damage native plants, and damage materials such as rubber, paints, fabric, and plastics (Kern County Planning Department 2006).

Reactive Organic Gases and Volatile Organic Compounds

Hydrocarbons are organic gases that are formed solely of hydrogen and carbon. There are several subsets of organic gases, including volatile organic compounds (VOCs) and ROGs, which include all hydrocarbons except those exempted by CARB. Therefore, ROGs are a set of organic gases based on state rules and regulations. VOCs are similar to ROGs in that they include all organic gases except those exempted by federal law. The list of compounds exempt from the definition of VOC is included by the KCAPCD and is presented in District Rule 102. Both VOCs and ROGs are emitted from incomplete combustion of hydrocarbons or other carbon-based fuels. Combustion engine exhaust is the primary sources of hydrocarbons. Another source of hydrocarbons is evaporation from petroleum fuels, solvents, dry cleaning solutions, and paint.

Health Effects

The primary health effects of hydrocarbons result from the formation of ozone and its related health effects (see the ozone health effects discussion above). High levels of hydrocarbons in the atmosphere can interfere with oxygen intake by reducing the amount of available oxygen through displacement. There are no separate federal or California ambient air quality standards for ROG. Carcinogenic forms of ROG are considered toxic air contaminants (TACs). An example is benzene, which is a carcinogen. The health effects of individual ROGs are described under the toxic air contaminants heading below.

Carbon Monoxide

CO is emitted by mobile and stationary sources as a result of incomplete combustion of hydrocarbons or other carbon-based fuels. CO is an odorless, colorless, poisonous gas that is highly reactive.

CO is a byproduct of motor vehicle exhaust, which contributes more than two-thirds of all CO emissions nationwide. In cities, automobile exhaust can cause as much as 95 percent of all CO emissions. These emissions can result in high concentrations of CO, particularly in local areas with heavy traffic congestion. Other sources of CO emissions include industrial processes and fuel combustion in sources such as boilers and incinerators. Despite an overall downward trend in concentrations and emissions of CO, some metropolitan areas still experience high levels of CO.

Health Effects

CO enters the bloodstream and binds more readily to hemoglobin than oxygen, reducing the oxygen-carrying capacity of blood and thus reducing oxygen delivery to organs and tissues. The health threat from CO is most serious for those who suffer from cardiovascular disease. Healthy individuals are also affected but only at higher levels of exposure. CO binds strongly to hemoglobin, the oxygen-carrying protein in blood, and thus reduces the blood's capacity for carrying oxygen to the heart, brain, and other parts of the body. Exposure to CO can cause chest pain in heart patients, headaches, and reduced mental alertness. At high concentrations, CO can cause heart difficulties in people with chronic

diseases and can impair mental abilities. Exposure to elevated CO levels is associated with visual impairment, reduced work capacity, reduced manual dexterity, poor learning ability, difficulty performing complex tasks, and in prolonged, enclosed exposure, death.

The adverse health effects associated with exposure to ambient and indoor concentrations of CO are related to the concentration of carboxyhemoglobin (COHb) in the blood. Health effects observed may include an early onset of cardiovascular disease; behavioral impairment; decreased exercise performance of young, healthy men; reduced birth weight; sudden infant death syndrome (SIDS); and increased daily mortality rate (Kern County Planning Department 2006).

Most of the studies evaluating adverse health effects of CO on the central nervous system examine high-level poisoning. Such poisoning results in symptoms ranging from common flu and cold symptoms (shortness of breath on mild exertion, mild headaches, and nausea) to unconsciousness and death. Hexter and Goldsmith report an association between daily death rate and exposure to ambient CO in Los Angeles County. They postulate a concentration of 20.2 parts per million (ppm) (the highest daily concentration recorded during a 4-year period) contributed to 11 out of 159 deaths. Additional studies conducted in Los Angeles and Sao Paulo also suggest a relationship between daily death rates and CO concentrations (Kern County Planning Department 2006).

Oxides of Nitrogen

 NO_x is a family of highly reactive gases that are primary precursors to the formation of ground-level ozone and react in the atmosphere to form acid rain. NO_x is emitted from the use of solvents and combustion processes in which fuel is burned at high temperatures, principally from motor vehicle exhaust and stationary sources such as electric utilities and industrial boilers. A brownish gas, NO_x is a strong oxidizing agent that reacts in the air to form corrosive nitric acid, as well as toxic organic nitrates. NO_x is an ozone precursor that combines with ROG to form ozone.

Health Effects

See the ozone section above for a discussion of the health effects of ozone.

Direct inhalation of NO_x can also cause a wide range of health effects. NO_x can irritate the lungs, cause lung damage, and lower resistance to respiratory infections such as influenza. Short-term exposures (e.g., less than 3 hours) to low levels of nitrogen dioxide (NO_2) may lead to changes in airway responsiveness and lung function in individuals with preexisting respiratory illnesses. These exposures may also increase respiratory illnesses in children. Long-term exposures to NO_2 may lead to increased susceptibility to respiratory infection and may cause irreversible alterations in lung structure. Other health effects associated with NO_x are an increase in the incidence of chronic bronchitis and lung irritation. Chronic exposure to NO_2 may lead to eye and mucus membrane aggravation, along with pulmonary dysfunction. NO_x can cause fading of textile

dyes and additives, deterioration of cotton and nylon, and corrosion of metals due to production of particulate nitrates. Airborne NO_x can also impair visibility.

 NO_x is a major component of acid deposition in California. NO_x may affect both terrestrial and aquatic ecosystems. NO_x in the air is a potentially significant contributor to a number of environmental effects such as acid rain and eutrophication in coastal waters. Eutrophication occurs when a body of water suffers an increase in nutrients that reduce the amount of oxygen in the water, producing an environment that is destructive to fish and other animal life.

 NO_2 is toxic to various animals as well as to humans. Its toxicity relates to its ability to combine with water to form nitric acid in the eye, lung, mucus membranes, and skin. Studies of the health impacts of NO_2 include experimental studies on animals, controlled laboratory studies on humans, and observational studies.

In animals, long-term exposure to NO_x increases susceptibility to respiratory infections, lowering their resistance to such diseases as pneumonia and influenza. Laboratory studies show susceptible humans, such as asthmatics, exposed to high concentrations of NO_2 can suffer lung irritation and potentially, lung damage. Epidemiological studies have also shown associations between NO_2 concentrations and daily mortality from respiratory and cardiovascular causes as well as hospital admissions for respiratory conditions.

 NO_x contributes to a wide range of environmental effects both directly and when combined with other precursors in acid rain and ozone. Increased nitrogen inputs to terrestrial and wetland systems can lead to changes in plant species composition and diversity. Similarly, direct nitrogen inputs to aquatic ecosystems such as those found in estuarine and coastal waters can lead to eutrophication (a condition that promotes excessive algae growth, which can lead to a severe depletion of dissolved oxygen and increased levels of toxins harmful to aquatic life). Nitrogen, alone or in acid rain, also can acidify soils and surface waters. Acidification of soils causes the loss of essential plant nutrients and increased levels of soluble aluminum, which is toxic to plants. Acidification of surface waters creates conditions of low pH and levels of aluminum that are toxic to fish and other aquatic organisms. NO_x also contributes to visibility impairment (Kern County Planning Department 2006).

Particulate Matter

Particulate matter pollution consists of very small liquid and solid particles floating in the air. Some particles are large or dark enough to be seen as soot or smoke. Others are so small they can be detected only with an electron microscope. Particulate matter is a mixture of materials that can include smoke, soot, dust, salt, acids, and metals. Particulate matter also forms when gases emitted from motor vehicles and industrial sources undergo chemical reactions in the atmosphere. PM_{10} refers to particles less than or equal to 10 microns in aerodynamic diameter. $PM_{2.5}$ refers to particles less than or equal to 2.5 microns in aerodynamic diameter and are a subset of PM_{10} .

In the western United States, there are sources of PM_{10} in both urban and rural areas. PM_{10} and $PM_{2.5}$ are emitted from stationary and mobile sources, including diesel trucks and other motor vehicles; power plants; industrial processes; wood-burning stoves and fireplaces; wildfires; dust from roads, construction, landfills, and agriculture; and fugitive windblown dust. Because particles originate from a variety of sources, their chemical and physical compositions vary widely.

Health Effects

 PM_{10} and $PM_{2.5}$ particles are small enough—about one seventh the thickness of a human hair, or smaller—to be inhaled and lodged in the deepest parts of the lung where they evade the respiratory system's natural defenses. Health problems begin as the body reacts to these foreign particles. Acute and chronic health effects associated with high particulate levels include the aggravation of chronic respiratory diseases, heart and lung disease, and coughing, bronchitis, and respiratory illnesses in children. Recent mortality studies have shown a statistically significant direct association between mortality and daily concentrations of particulate matter in the air. Non-health-related effects include reduced visibility and soiling of buildings. PM_{10} can increase the number and severity of asthma attacks, cause or aggravate bronchitis and other lung diseases, and reduce the body's ability to fight infections. PM_{10} and $PM_{2.5}$ can aggravate respiratory disease and cause lung damage, cancer, and premature death.

Although particulate matter can cause health problems for everyone, certain people are especially vulnerable to adverse health effects of PM_{10} . These "sensitive populations" include children, the elderly, exercising adults, and those suffering from chronic lung disease such as asthma or bronchitis. Of greatest concern are recent studies that link PM_{10} exposure to the premature death of people who already have heart and lung disease, especially the elderly. Acidic PM_{10} can also damage manmade materials and is a major cause of reduced visibility in many parts of the United States.

Premature deaths linked to particulate matter are now at levels comparable to deaths from traffic accidents and secondhand smoke. One of the most dangerous pollutants, fine particulate matter (e.g., from diesel exhaust and fireplace soot) not only bypasses the body's defense mechanisms and becomes embedded in the deepest recesses of the lung but also can disrupt cellular processes. Population-based studies in hundreds of cities in the United States and around the world have demonstrated a strong link between elevated particulate levels and premature deaths, hospital admissions, emergency room visits, and asthma attacks. Long-term studies of children's health conducted in California have demonstrated that particulate pollution may significantly reduce lung function growth in children (Kern County Planning Department 2006).

Attaining the California particulate matter standards would annually prevent about 6,500 premature deaths, or 3 percent of all deaths. These premature deaths shorten lives by an average of 14 years. This is roughly equivalent to the same number of deaths (4,200–7,400) linked to secondhand smoke in 2000. In comparison, motor vehicle crashes caused 3,200 deaths, and 2,000 deaths resulted from homicide. Attaining the California particulate matter and ozone standards would annually prevent 4,000 hospital admissions for respiratory disease, 3,000 hospital admissions for cardiovascular disease, and 2,000 asthmarelated emergency room visits. Exposure to diesel particulate matter causes about 250 excess cancer cases per year in California (Kern County Planning Department 2006).

A recent study provides evidence that exposure to particulate air pollution is associated with lung cancer. This study found that residents who live in an area that is severely affected by particulate air pollution are at risk of lung cancer at a rate comparable to nonsmokers exposed to secondhand smoke. This study also found an approximately 16 percent excess risk of dying from lung cancer due to fine particulate air pollution (Kern County Planning Department 2006).

Another study shows that individuals with existing cardiac disease can be in a potentially life-threatening situation when exposed to high levels of ultrafine air pollution. Fine particles can penetrate the lungs and may cause the heart to beat irregularly or can cause inflammation, which could lead to a heart attack (Kern County Planning Department 2006).

Currently, 61 percent of California's population live in areas that exceed the federal $PM_{2.5}$ air standard, while 89 percent live in areas that exceed California's $PM_{2.5}$ air standard (Kern County Planning Department 2006).

Other Pollutants

Sulfur Dioxide

 SO_2 is a colorless, irritating gas with a "rotten egg" smell formed primarily by the combustion of sulfur-containing fossil fuels. Historically, in the late 1970s in the SJVAB portion of Kern County, SO_2 was a pollutant of concern, but with the successful application of regulations, the levels have been reduced significantly. In fact, the latest data from the CARB demonstrates that the highest 1-hour concentration for SO_2 was 0.011 ppm. With the California Ambient Air Quality Standard (CAAQS) being 0.25 ppm, SO_2 concentrations in the SJVAB are only about 4 percent of the standard and transport to the desert basin has not been identified as an issue. SO_2 data is not monitored in the in the MDAB portion of Kern County.

Health Effects

High concentrations of SO_2 can result in temporary breathing impairment for asthmatic children and adults who are active outdoors. Short-term exposures of asthmatic individuals to elevated SO_2 levels during moderate activity may result in breathing difficulties that can be accompanied by symptoms such as wheezing, chest tightness, or shortness of breath. Other effects that have been associated with longer-term exposures to high concentrations of SO_2 , in conjunction with high levels of PM, include aggravation of existing cardiovascular disease, respiratory illness, and alterations in the lungs' defenses. SO_2 also is a major precursor to $PM_{2.5}$, which is a significant health concern and a main contributor to poor visibility. (See also the discussion of health effects of particulate matter.) SO_2 not only has a bad odor, it can irritate the respiratory system. Exposure to high concentrations for short periods of time can constrict the bronchi and increase mucous flow, making breathing difficult. SO_2 can also:

- immediately irritate the lung and throat at concentrations greater than 6 ppm in many people,
- impair the respiratory system's defenses against foreign particles and bacteria when exposed to concentrations less than 6 ppm for longer time periods, and
- enhance the harmful effects of ozone (combinations of the two gases at concentrations occasionally found in the ambient air appear to increase airway resistance to breathing).

 SO_2 tends to have more toxic effects when acidic pollutants, liquid or solid aerosols, and particulates are also present. (In the 1950s and 1960s, thousands of excess deaths occurred in areas where SO_2 concentrations exceeded 1 ppm for a few days and other pollutants were also high.) Effects are more pronounced among "mouth breathers," e.g., people who are exercising or who have head colds. These effects include

- health problems, such as episodes of bronchitis requiring hospitalization associated with lower-level acid concentrations;
- self-reported respiratory conditions, such as chronic cough and difficult breathing, associated with acid aerosol concentrations. (Asthmatic individuals are especially susceptible to these effects. The elderly and those with chronic respiratory conditions may also be affected at lower concentrations than the general population.);
- increased respiratory tract infections associated with longer term, lower level exposures to SO₂ and acid aerosols; and
- subjective symptoms, such as headaches and nausea, in the absence of pathological abnormalities due to long-term exposure.

 SO_2 easily injures many plant species and varieties, both native and cultivated. Some of the most sensitive plants include various commercially valuable pines, legumes, red and black oaks, white ash, alfalfa, and blackberry. The effects include:

- visible injury to the most sensitive plants at exposures as low as 0.12 ppm for 8 hours,
- visible injury to many other plant types of intermediate sensitivity at exposures of 0.30 ppm for 8 hours, and
- positive benefits from low levels in a very few species growing on sulfurdeficient soils.

Increases in SO_2 concentrations accelerate the corrosion of metals, probably through the formation of acids. (SO_2 is a major precursor to acidic deposition.) Sulfur oxides may also damage stone and masonry, paint, various fibers, paper, leather, and electrical components.

Increased SO_2 also contributes to impaired visibility. Particulate sulfate, much of which is derived from SO_2 emissions, is a major component of the complex total suspended particulate mixture.

Sulfates

Sulfates are particulate products from combustion of sulfur-containing fossil fuels. When sulfur monoxide or SO_2 is exposed to oxygen, it precipitates out into sulfates (SO_3 or SO_4). Data collected in Kern County identify levels of sulfates that are significantly less than the applicable health standards.

Sulfates (SO_4^{2-}) are the fully oxidized ionic form of sulfur. Sulfates occur in combination with metal and/or hydrogen ions. In California, emissions of sulfur compounds occur primarily from the combustion of petroleum-derived fuels (e.g., gasoline and diesel fuel) that contain sulfur. This sulfur is oxidized to SO_2 during the combustion process and subsequently converted to sulfate compounds in the atmosphere. The conversion of SO_2 to sulfates takes place comparatively rapidly and completely in urban areas of California due to regional meteorological features.

CARB's sulfates standard is designed to prevent aggravation of respiratory symptoms. Effects of sulfate exposure at levels above the standard include a decrease in ventilatory function, aggravation of asthmatic symptoms, and an increased risk of cardio-pulmonary disease. Sulfates are particularly effective in degrading visibility and, because they are usually acidic, can harm ecosystems and damage materials and property (Kern County Planning Department 2006).

Lead

Lead is a metal that is a natural constituent of air, water, and the biosphere. Lead is neither created nor destroyed in the environment, so it essentially persists forever. Lead was used until recently to increase the octane rating in automobile fuel. Since gasoline-powered automobile engines were a major source of airborne lead through the use of leaded fuels and the use of leaded fuel has been mostly phased out, the ambient concentrations of lead have dropped dramatically. Kern County no longer monitors lead in the ambient air of the Kern County portion of the MDAB.

Exposure to lead occurs mainly through inhalation of air and ingestion of lead in food, water, soil, or dust. It accumulates in the blood, bones, and soft tissues and can adversely affect the kidneys, liver, nervous system, and other organs.

Excessive exposure to lead may cause neurological impairments such as seizures, mental retardation, and behavioral disorders. Even at low doses, lead exposure is associated with damage to the nervous systems of fetuses and young children, resulting in learning deficits and lowered IQ. Recent studies also show that lead may be a factor in high blood pressure and subsequent heart disease. Lead can also be deposited on the leaves of plants, presenting a hazard to grazing animals and humans through ingestion (Kern County Planning Department 2006).

Hydrogen Sulfide

Hydrogen sulfide (H_2S) is associated with geothermal activity, oil and gas production, refining, sewage treatment plants, and confined animal feeding operations. All of Kern County is unclassified for H_2S attainment.

Exposure to low concentrations of H_2S may cause irritation to the eyes, nose, or throat. It may also cause difficulty in breathing for some asthmatics. Exposure to higher concentrations (above 100 ppm) can cause olfactory fatigue, respiratory paralysis, and death. Brief exposures to high concentrations of H_2S (greater than 500 ppm) can cause a loss of consciousness. In most cases, the person appears to regain consciousness without any other effects. However, in many individuals, there may be permanent or long-term effects such as headaches, poor attention span, poor memory, and poor motor function. No health effects have been found in humans exposed to typical environmental concentrations of H_2S (0.00011–0.00033 ppm). Deaths due to breathing in large amounts of H_2S have been reported in a variety of different work settings, including sewers, animal processing plants, waste dumps, sludge plants, oil and gas well drilling sites, and tanks and cesspools.

Visibility-Reducing Particles

This standard is a measure of visibility. CARB does not yet have a measuring method with enough accuracy or precision to designate areas in the state as attainment or nonattainment. The entire state is labeled unclassified.

Vinyl Chloride

Vinyl chloride monomer is a sweet-smelling, colorless gas at ambient temperature. Landfills, publicly owned treatment works, and polyvinyl chloride (PVC) production are the major identified sources of vinyl chloride emissions in California. PVC can be fabricated into several products, such as PVC pipes, pipe fittings, and plastics. In humans, epidemiological studies of occupationally exposed workers have linked vinyl chloride exposure to development of a rare cancer, liver angiosarcoma, and have suggested a relationship between exposure and lung and brain cancers. There are currently no adopted ambient air standards for vinyl chloride.

Short-term exposure to vinyl chloride has been linked with the following acute health effects (Kern County Planning Department 2006).

- Acute exposure of humans to high levels of vinyl chloride via inhalation in humans has resulted in effects on the central nervous system, such as dizziness, drowsiness, headaches, and giddiness.
- Vinyl chloride is reported to be slightly irritating to the eyes and respiratory tract in humans. Acute exposure to extremely high levels of vinyl chloride has caused loss of consciousness, lung and kidney irritation, and inhibition of blood clotting in humans, and cardiac arrhythmias in animals.
- Tests involving acute exposure of mice have shown vinyl chloride to have high acute toxicity from inhalation exposure.

Long-term exposure to vinyl chloride concentrations has been linked with the following chronic health effects (Kern County Planning Department 2006).

- Liver damage may result in humans from chronic exposure to vinyl chloride, through both inhalation and oral exposure.
- A small percentage of individuals occupationally exposed to high levels of vinyl chloride in air have developed a set of symptoms termed "vinyl chloride disease," which is characterized by Raynaud's phenomenon (fingers blanch and numbness and discomfort are experienced upon exposure to the cold), changes in the bones at the end of the fingers, joint and muscle pain, and scleroderma-like skin changes (thickening of the skin, decreased elasticity, and slight edema).
- Central nervous system effects (including dizziness, drowsiness, fatigue, headache, visual and/or hearing disturbances, memory loss, and sleep disturbances) as well as peripheral nervous system symptoms (peripheral neuropathy, tingling, numbness, weakness, and pain in fingers) have also been reported in workers exposed to vinyl chloride.

Several reproductive/developmental health effects from vinyl chloride exposure have been identified (Kern County Planning Department 2006).

- Several case reports suggest that male sexual performance may be affected by vinyl chloride. However, these studies are limited by lack of quantitative exposure information and possible co-occurring exposure to other chemicals.
- Several epidemiological studies have reported an association between vinyl chloride exposure in pregnant women and an increased incidence of birth defects, while other studies have not reported similar findings.
- Epidemiological studies have suggested an association between men occupationally exposed to vinyl chloride and miscarriages during their wives' pregnancies, although other studies have not supported these findings.
- Long-term exposure to vinyl chloride has also been identified as a cancer risk (Kern County Planning Department 2006).
- Inhaled vinyl chloride has been shown to increase the risk of a rare form of liver cancer (angiosarcoma of the liver) in humans.
- Animal studies have shown that vinyl chloride, via inhalation, increases the incidence of angiosarcoma of the liver and cancer of the liver.

Toxic Air Contaminants

Hazardous air pollutants is a term used by the Federal Clean Air Act (CAA) that includes a variety of pollutants generated or emitted by industrial production activities. The California Clean Air Act of 1988 (CCAA) uses the term TACs. Ten TACs have been identified through ambient air quality data as being the most substantial health risk in California. Direct exposure to these pollutants has been shown to cause cancer, birth defects, damage to the brain and nervous system, and respiratory disorders. However, CARB only provides TAC emission inventories for the larger air basins.

The general goal of regulatory agencies is to limit exposure to TACs to the maximum extent feasible. Ambient monitoring for TACs is limited compared to monitoring for criteria pollutants because toxic pollutant impacts are typically more localized than criteria pollutant impacts. CARB conducts air monitoring for a number of TACs every 12 days at approximately 20 sites throughout California. CARB does not monitor for TACs in the Mojave Desert Air Basin. Therefore, no background concentrations for TACs are available. The following describes potential health effects of the various toxic air contaminants.

Acetaldehyde

Acetaldehyde is both directly emitted into the atmosphere and formed in the atmosphere from photochemical oxidation. Sources include combustion processes such as exhaust from mobile sources and fuel combustion from stationary internal combustion engines, boilers, and process heaters.

Acetaldehyde is classified as a federal hazardous air pollutant and as a California TAC. Acetaldehyde is a carcinogen that also causes chronic non-cancer toxicity in the respiratory system. Symptoms of chronic intoxication of acetaldehyde in humans resemble those of alcoholism.

The primary acute effect of inhalation exposure to acetaldehyde is irritation of the eyes, skin, and respiratory tract in humans. At higher exposure levels, erythema, coughing, pulmonary edema, and necrosis may also occur. Acute inhalation of acetaldehyde resulted in a depressed respiratory rate and elevated blood pressure in experimental animals. Tests involving acute exposure of rats, rabbits, and hamsters have demonstrated acetaldehyde to have low acute toxicity from inhalation and moderate acute toxicity from oral or dermal exposure (Kern County Planning Department 2006).

Benzene

Approximately 84 percent of the benzene emitted in California comes from motor vehicles, including evaporative leakage and unburned fuel exhaust. Currently, the benzene content of gasoline is less than 1 percent.

Benzene is highly carcinogenic and occurs throughout California. Benzene also has non-cancer health effects. Brief inhalation exposure to high concentrations can cause central nervous system depression. Acute effects include central nervous system symptoms of nausea, tremors, drowsiness, dizziness, headache, intoxication, and unconsciousness (Kern County Planning Department 2006).

Neurological symptoms of inhalation exposure to benzene include drowsiness, dizziness, headaches, and unconsciousness in humans. Ingestion of large amounts of benzene may result in vomiting, dizziness, and convulsions in humans. Exposure to liquid and vapor may irritate the skin, eyes, and upper respiratory tract in humans. Redness and blisters may result from dermal exposure to benzene.

Chronic inhalation of certain levels of benzene causes disorders in the blood in humans. Benzene specifically affects bone marrow (the tissues that produce blood cells). Aplastic anemia, excessive bleeding, and damage to the immune system (by changes in blood levels of antibodies and loss of white blood cells) may develop. Increased incidence of leukemia (cancer of the tissues that form white blood cells) has been observed in humans occupationally exposed to benzene (Kern County Planning Department 2006).

1,3-Butadiene

The majority of 1,3-butadiene emissions comes from incomplete combustion of gasoline and diesel fuels. Mobile sources account for 83 percent of total statewide emissions. Area-wide sources such as agricultural waste burning and open burning contribute to approximately 13 percent of statewide emissions.

In California, 1,3-butadiene has been identified as a carcinogen. Butadiene vapors cause neurological effects at very high levels such as blurred vision, fatigue, headache, and vertigo. Dermal exposure of humans to 1,3-butadiene causes a sensation of cold, followed by a burning sensation, which may lead to frostbite (Kern County Planning Department 2006).

One epidemiological study reported that chronic (long-term) exposure to 1,3-butadiene via inhalation resulted in an increase in cardiovascular diseases, such as rheumatic and arteriosclerotic heart diseases, while other human studies have reported effects on the blood. A large epidemiological study of synthetic rubber industry workers demonstrated a consistent association between 1,3-butadiene exposure and occurrence of leukemia. Several epidemiological studies of workers in styrene-butadiene rubber factories have shown an increased incidence of respiratory, bladder, stomach, and lymphato-hematopoietic cancers. However, these studies are not sufficient to determine a causal association between 1,3-butadiene exposure and cancer due to possible exposure to other chemicals and other confounding factors (Kern County Planning Department 2006).

Carbon Tetrachloride

The primary sources of carbon tetrachloride in California include chemical and allied product manufacturers and petroleum refineries.

In California, carbon tetrachloride has been identified as a carcinogen. Carbon tetrachloride is also a central nervous system depressant and mild eye and respiratory tract irritant. EPA has classified carbon tetrachloride as a Group B2 probable human carcinogen (Kern County Planning Department 2006).

Acute inhalation of and oral exposures to high levels of carbon tetrachloride have been observed to damage primarily the liver (swollen, tender, changes in enzyme levels, and jaundice) and kidneys (nephritis, nephrosis, proteinurea) of humans. Depression of the central nervous system has also been reported. Symptoms of acute exposure in humans include headache, weakness, lethargy, nausea, and vomiting. Delayed pulmonary edema (fluid in lungs) has been observed in
humans exposed to high levels of carbon tetrachloride by inhalation and ingestion, but this is believed to be due to injury to the kidney rather than the direct action of carbon tetrachloride on the lung. Chronic inhalation of or oral exposure to carbon tetrachloride produces liver and kidney damage in humans and animals (Kern County Planning Department 2006).

Hexavalent Chromium

Chromium plating and other metal finishing processes are the primary sources of hexavalent chromium emissions in California. In California, hexavalent chromium has been identified as a carcinogen. There is epidemiological evidence that exposure to inhaled hexavalent chromium may result in lung cancer. The principal acute effects are renal toxicity, gastrointestinal hemorrhage, and intravascular hemolysis (Kern County Planning Department 2006).

The respiratory tract is the major target organ for chromium (VI) following inhalation exposure in humans. Other effects noted from acute inhalation exposure to very high concentrations of chromium (VI) include gastrointestinal and neurological effects, while dermal exposure causes skin burns in humans. Chronic inhalation exposure to chromium (VI) in humans results in effects on the respiratory tract, with perforations and ulcerations of the septum, bronchitis, decreased pulmonary function, pneumonia, asthma, and nasal itching and soreness reported. Chronic human exposure to high levels of chromium (VI) by inhalation or oral exposure may produce effects on the liver, kidneys, gastrointestinal and immune systems, and possibly the blood (Kern County Planning Department 2006).

Para-Dichlorobenzene

The primary sources of para-dichlorobenzene include consumer products such as non-aerosol insect repellents and solid/gel air fresheners. These sources contribute 99 percent of statewide para-dichlorobenzene emissions.

In California, para-dichlorobenzene has been identified as a carcinogen. Acute exposure to 1,4-dichlorobenzene via inhalation results in irritation to the eyes, skin, and throat in humans. In addition, long-term inhalation exposure may affect the liver, skin, and central nervous system in humans (e.g., cerebellar ataxia, dysarthria, weakness in limbs, and hyporeflexia) (Kern County Planning Department 2006).

Formaldehyde

Formaldehyde is both directly emitted into the atmosphere and formed in the atmosphere as a result of photochemical oxidation. Formaldehyde is a product of incomplete combustion. One of the primary sources of formaldehyde is vehicular exhaust. Formaldehyde is also used in resins, many consumer products (as an antimicrobial agent), and fumigants and soil disinfectants.

The major toxic effects caused by acute formaldehyde exposure via inhalation are eye, nose, and throat irritation and effects on the nasal cavity. Other effects seen from exposure to high levels of formaldehyde in humans are coughing, wheezing, chest pains, and bronchitis. Chronic exposure to formaldehyde by inhalation in humans has been associated with respiratory symptoms and eye, nose, and throat irritation. Animal studies have reported effects on the nasal respiratory epithelium and lesions in the respiratory system from chronic inhalation exposure to formaldehyde. Occupational studies have noted statistically significant associations between exposure to formaldehyde and increased incidence of lung and nasopharyngeal cancer. This evidence is considered to be "limited" rather than "sufficient" due to possible exposure to other agents that may have contributed to the excess cancers. EPA considers formaldehyde to be a probable human carcinogen (cancer-causing agent) and has ranked it in EPA's Group B1. In California, formaldehyde has been identified as a carcinogen (Kern County Planning Department 2006).

Methylene Chloride

Methylene chloride is used as a solvent, a blowing and cleaning agent in the manufacture of polyurethane foam and plastic, and a solvent in paint-stripping operations. Paint removers account for the largest use of methylene chloride in California.

Case studies of methylene chloride poisoning during paint-stripping operations have demonstrated that inhalation exposure to extremely high levels can be fatal to humans. Acute inhalation exposure to high levels of methylene chloride in humans has resulted in effects on the central nervous system, including decreased visual, auditory, and psychomotor functions, but these effects are reversible once exposure ceases. Methylene chloride also irritates the nose and throat at high concentrations. The major effects from chronic inhalation exposure to methylene chloride in humans are effects on the central nervous system, such as headaches, dizziness, nausea, and memory loss. In addition, chronic exposure can lead to bone marrow, hepatic, and renal toxicity. EPA considers methylene chloride to be a probable human carcinogen and has ranked it in EPA's Group B2. California considers methylene chloride to be carcinogenic (Kern County Planning Department 2006).

Perchloroethylene

Perchloroethylene is used as a solvent, primarily in dry cleaning operations. Perchloroethylene is also used in degreasing operations, paints and coatings, adhesives, aerosols, specialty chemical production, printing inks, silicones, rug shampoos, and laboratory solvents.

In California, perchloroethylene has been identified as a carcinogen. Perchloroethylene vapors are irritating to the eyes and respiratory tract. Following chronic exposure, workers have shown signs of liver toxicity, as well as kidney dysfunction and neurological disorders (Kern County Planning Department 2006).

Diesel Particulate Matter

Diesel particulate matter is emitted from both mobile and stationary sources. In California, on-road diesel-fueled engines contribute approximately 24 percent of

the statewide total, with an additional 71 percent attributed to other mobile sources such as construction and mining equipment, agricultural equipment, and transport refrigeration units. Stationary sources contribute about 5 percent of total diesel particulate matter.

Diesel exhaust and many individual substances contained in it (including arsenic, benzene, formaldehyde, and nickel) have the potential to contribute to mutations in cells that can lead to cancer. Long-term exposure to diesel exhaust particles poses the highest cancer risk of any TAC evaluated by the California Office of Environmental Health Hazard Assessment (OEHHA). CARB estimates that about 70 percent of the cancer risk that the average Californian faces from breathing toxic air pollutants stems from diesel exhaust particles.

In its comprehensive assessment of diesel exhaust, OEHHA analyzed more than 30 studies of people who worked around diesel equipment, including truck drivers, railroad workers, and equipment operators. The studies showed these workers were more likely to develop lung cancer than workers who were not exposed to diesel emissions. These studies provide strong evidence that long-term occupational exposure to diesel exhaust increases the risk of lung cancer. Using information from OEHHA's assessment, CARB estimates that diesel-particle levels measured in California's air in 2000 could cause 540 "excess" cancers (beyond what would occur if there were no diesel particles in the air) in a population of 1 million people over a 70-year lifetime. Other researchers and scientific organizations, including the National Institute for Occupational Safety and Health, have calculated cancer risks from diesel exhaust that are similar to those developed by OEHHA and CARB.

Exposure to diesel exhaust can have immediate health effects. Diesel exhaust can irritate the eyes, nose, throat, and lungs, and it can cause coughs, headaches, lightheadedness, and nausea. In studies with human volunteers, diesel exhaust particles made people with allergies more susceptible to the materials to which they are allergic, such as dust and pollen. Exposure to diesel exhaust also causes inflammation in the lungs, which may aggravate chronic respiratory symptoms and increase the frequency or intensity of asthma attacks.

Diesel engines are a major source of fine-particle pollution. The elderly and people with emphysema, asthma, and chronic heart and lung disease are especially sensitive to fine-particle pollution. Numerous studies have linked elevated particle levels in the air to increased hospital admissions, emergency room visits, asthma attacks, and premature deaths among those suffering from respiratory problems. Because children's lungs and respiratory systems are still developing, they are also more susceptible than healthy adults to fine particles. Exposure to fine particles is associated with increased frequency of childhood illnesses and can also reduce lung function in children. In California, diesel exhaust particles have been identified as a carcinogen (Kern County Planning Department 2006).

Valley Fever

Coccidioidomycosis, more commonly known as "Valley Fever," is primarily a disease of the lungs caused by inhalation of spores of the *Coccidioides immitis*

fungus. The spores are found in the soil, become airborne when the soil is disturbed, and are subsequently inhaled into the lungs. After the fungal spores have settled in the lungs, they change into a multicellular structure called a spherule. Fungal growth in the lungs occurs as the spherule grows and bursts, releasing endospores, which then develop into more spherules.

Valley Fever symptoms generally occur within 2 to 3 weeks of exposure. Approximately 60 percent of Valley Fever cases are mild and display flu-like symptoms or no symptoms at all. Of those who are exposed and seek medical treatment, the most common symptoms are fatigue, cough, chest pain, fever, rash, headache, and joint aches. In some cases, painful red bumps may develop. One important fact to mention is that these symptoms are not unique to Valley Fever and may be caused by other illnesses as well. Identifying and confirming this disease requires specific laboratory tests such as 1) microscopic identification of the fungal spherules in the infected tissue, sputum, or body fluid sample, 2) growing a culture of Coccidioides immitis from a tissue specimen, sputum, or body fluid, 3) detection of antibodies (serological tests specifically for Valley Fever) against the fungus in blood serum or other body fluids, and 4) administering the Valley Fever skin test (called coccidioidin or spherulin), which indicates prior exposure to the fungus (Kern County Planning Department 2006).

Valley Fever is not contagious and therefore cannot be passed from person to person. Most of those who are infected will recover without treatment within 6 months and will have a life-long immunity to the fungal spores. In severe cases, such as patients with rapid and extensive primary illness, those who are at risk for dissemination of disease, and those who have disseminated disease, antifungal drug therapy is used. Only 1–2 percent of those exposed who seek medical attention will develop a disease that disseminates (spreads) to other parts of the body other than the lungs. Table 4.2-5 presents the various infection classifications and normal diagnostic spread as noted in recent research conducted by the Valley Fever Center for Excellence.

Infection Classification	Percent of Total Diagnosed Cases
Unapparent infections	60 percent
Mild to moderate infections	30 percent
Infections resulting in complications	5–10 percent
Fatal infections	<1 percent
Data from the Valley Fever Center for Excellence Department 2006.	2002. See Kern County Planning

TABLE 4.2-5. RANGE OF VALLEY FEVER CASES

Factors that affect the susceptibility to coccidioidal dissemination are race, sex, pregnancy, age, and immunosuppression. According to data gathered by the Kern County Health Department, Mexicans are 3.4 times more likely than whites to develop coccidioidal dissemination, blacks are 13.7 times more likely, and Filipinos are 175.5 times more likely. Regarding the number of deaths attributed to the disease, compared to whites, the number of Mexicans is 5 times greater; blacks, 23.3 times greater; and Filipinos, 191.4 times greater (Kern County

Planning Department 2006). In addition, residents new to the desert area are at a higher risk of infection due primarily to low immunity to this particular fungus. Many long-time residents exposed to Valley Fever have recovered and therefore developed a life-long immunity to the disease.

The Coccidioides immitis fungal spores are often found in the soil around rodent burrows, Indian ruins, and burial grounds. The spores become airborne when the soil is disturbed by winds, construction, farming, or other activities. This type of fungus is common in the southwestern United States and even more endemic in Kern County. The ecologic factors that appear to be most conducive to the survival and replication of the fungal spores are high summer temperatures, mild winters, sparse rainfall, and alkaline, sandy soils.

Asbestos

Ultramafic, serpentinized rock is closely associated with asbestos and is chemically composed of the following minerals:

- antigorite: $(Mg, Fe)_3Si_2O_5(OH)_4$
- clinochrysotile: Mg₃Si₂O₅(OH)₄
- $\blacksquare \quad lizardite: Mg_3Si_2O_5(OH)_4$
- orthrochrysotile: Mg₃Si₂O₅(OH)₄
- **•** parachrsotile: $(Mg, Fe)_3Si_2O_5(OH)_4$

These minerals have essentially the same chemistry but different structures. Chrysotile minerals are more likely to form serpentinite asbestos; however, serpentinite is uncommon to sedimentary soil found in the project area.

Asbestos can adversely affect humans only in its fibrous form, and these fibers must be broken and dispersed into the air and then inhaled. During geological processes (e.g., fault movement), the asbestos mineral can be crushed, causing it to become airborne. It also enters the air or water from the breakdown of natural deposits. Constant exposure to asbestos at high levels on a regular basis may cause cancer in humans. The two most common forms of cancer are lung cancer and mesothelioma, a rare cancer of the lining that covers the lungs and stomach.

Greenhouse Gases and Global Climate Change

The Earth's atmosphere naturally includes a number of gases, including carbon dioxide (CO_2), methane, and nitrous oxides (N2O) that are referred to as greenhouse gases (GHGs). These gases trap some amount of solar radiation and the Earth's own radiation, preventing it from passing through the Earth's atmosphere and into space. GHGs are vital to life on Earth; without them Earth would be an icy planet. CO_2 is also a trace element that is essential to the cycle of life. It is essential to plant growth and studies have shown that vegetation growth has increased in North America commensurate with the increase in CO_2 over the past decades. However, increasing GHG concentrations tend to warm the planet.

A warming trend of about 0.7°F to 1.5°F occurred during the 20th century, and a number of scientific analyses indicate that rising levels of GHGs in the

atmosphere are contributing to climate change. As the average temperature of the Earth increases, weather may be affected, including changes in precipitation patterns, accumulation of snow pack, and intensity and duration of spring snowmelt. There may be rises in sea level, resulting in coastal erosion and inundation of coastal areas. Emissions of air pollutants and ambient levels of pollutants also may be affected in areas. Climate zones may change, affecting the ecology and biological resources of a region. There may be changes in fire hazards due to the changes in precipitation and climate zones.

While scientists have established a connection between increasing CO_2 concentrations and increasing average temperatures, important scientific questions remain about how much warming will occur, how fast it will occur, and how the warming will affect the rest of the climate system. At this point, scientific efforts are unable to quantify the degree to which human activity impacts climate change. The phenomenon is worldwide, yet it is expected that there will be substantial regional and local variability in climate changes. It is not possible with today's science to determine the affect of global climate change in a specific locale, or whether the effect of one aspect of climate change may be counteracted by another aspect of climate change, or exacerbated by it.

Human activities generate GHGs. Since pre-industrial times, there has been a build-up of levels of gases like CO_2 in the atmosphere. The human contribution to the increase in atmospheric CO_2 concentrations largely has resulted from the burning of fossil fuels. Fossil fuel combustion accounts for approximately 98 percent of carbon dioxide emissions from human activity.

The United States has the highest emissions of GHGs of any nation on Earth, though CO_2 emissions in California are less than the national average, both in per capita emissions and in emissions per gross state product. Transportation is the largest source of CO_2 emissions in California, accounting for approximately 41 percent of total emissions. Electricity generation accounts for approximately 22 percent of CO_2 emissions in California, and the industrial sector accounts for approximately 20.5 percent. California GHG emissions and the increase in project emissions of CO_2 , methane (CH₄), and N₂O are summarized in Table 4.2-6 below.

	Carbon Dioxide Equivalent Net – Million Tons			
Greenhouse Gas	2002	2003	2004	
Carbon Dioxide (CO ₂)	380.4	360.0	369.2	
Methane (CH ₄)	29.9	30.3	30.8	
Nitrous Oxide (N ₂ O)	38.0	37.4	36.7	
High GWP Gases (HFC, PFCs, SF ₆)	13.2	14.2	15.7	
Global Warming Potential 461.5 441.9 452.4				
Source: California Energy Commission 2006. See	Kern County Plar	nning Departmer	nt 2006.	

 TABLE 4.2-6. CALIFORNIA GREENHOUSE GAS EMISSIONS

The effects of increasing global temperature are far-reaching and extremely difficult to quantify. The scientific community continues to study the effects of global climate change. In general, increases in the ambient global temperature as a result of increased GHGs is anticipated to result in rising sea levels which could threaten coastal areas through accelerated coastal erosion, threats to levees and inland water systems and disruption to coastal wetlands and habitat.

If the temperature of the ocean warms, it is anticipated that the winter snow season would be shortened. Snowpack in the Sierra Nevada provides both water supply (runoff) and storage (within the snowpack before melting), which is a major source of supply for the state. According to a California Energy Commission report, the snowpack portion of the supply could potentially decline by 70 to 90 percent by the end of the 21st century. This phenomenon could lead to significant challenges securing an adequate water supply for a growing state population. Further, the increased ocean temperature could result in increased moisture flux into the state; however, since this would likely increasingly come in the form of rain rather than snow in the high elevations, increased precipitation could lead to increased potential and severity of flood events, placing more pressure on California's levee/flood control system. Sea level has risen approximately seven inches during the last century and, according to the CEC report, it is predicted to rise an additional 22 to 35 inches by 2100, depending on the future GHG emissions levels. If this occurs, resultant effects could include increased coastal flooding, saltwater intrusion and disruption of wetlands (Kern County Planning Department 2006). As the existing climate throughout California changes over time, mass migration of species, or worse, failure of species to migrate in time to adapt to the perturbations in climate, could also result.

4.2.3 Regulatory Setting

Federal Regulations

Clean Air Act

The primary legislation that governs federal air quality regulations is the Clean Air Act, which delegates primary responsibility for ensuring clean air to the EPA. The EPA develops rules and regulations to preserve and improve air quality and delegate specific responsibilities to state and local agencies.

The EPA has NAAQS for criteria pollutants; including CO, NO₂, SO₂, ozone, PM_{10} , and lead (see Table 4.2-2). If an area does not meet the NAAQS, federal clean air planning requirements specify that states must develop and adopt SIPs, which are air quality plans that show how air quality standards will be attained. In California, the EPA has delegated the authority to prepare SIPs to the CARB, which, in turn, has delegated that authority to individual air districts.

The Project is located within a federal nonattainment area for ozone. Therefore, the KCAPCD has adopted a SIP that addresses ozone and the ozone precursors (NO_x and ROGs). The SIP specifies that regional air quality standards for ozone concentrations can be met through additional source controls and through trip

reduction strategies. The SIP also establishes emissions budgets for transportation and stationary sources. Those budgets, developed through air quality modeling, reveal how much air pollution can be in an area before there is a violation of the NAAQS.

State Regulations

California Clean Air Act

CARB, which is part of the California Environmental Protection Agency, develops air quality regulations at the State level. The State regulations mirror Federal regulations by establishing industry-specific pollution controls for criteria, toxic, and nuisance pollutants. California also requires areas to develop plans and strategies for attaining state ambient air quality standards as set forth in the California Clean Air Act of 1988.

The CARB is also responsible for developing motor vehicle emission standards for California vehicles. In August 1998, CARB identified particulate emissions from diesel-fueled engines (diesel PM) as toxic air contaminants. In September 2000, CARB approved a comprehensive diesel risk-reduction plan to reduce emissions from both new and existing diesel-fueled engines and vehicles. The goal of the plan is to reduce diesel PM_{10} emissions and the associated health risk by 75 percent in 2010 and by 85 percent by 2020. The plan identifies 14 measures that CARB will implement over the next several years. To the extent that the CARB measures are enacted before any phase of construction, the proposed project would be required to comply with applicable diesel control measures.

Global Climate Change Regulatory Issues

In 1988, the United Nations established the Intergovernmental Panel on Climate Change to evaluate the impacts of global warming and to develop strategies that nations could implement to curtail global climate change. In 1992, the United Nations Framework Convention on Climate Change established an agreement with the goal of controlling GHG emissions, including methane. As a result, the Climate Change Action Plan was developed to address the reduction of GHGs in the United States. The plan consists of more than 50 voluntary programs.

Additionally, the Montreal Protocol was originally signed in 1987 and substantially amended in 1990 and 1992. The Montreal Protocol stipulates that the production and consumption of compounds that deplete ozone in the stratosphere (chlorofluorocarbons [CFCs], halons, carbon tetrachloride, and methyl chloroform) were to be phased out by 2000 (methyl chloroform was to be phased out by 2005).

On September 27, 2006, AB 32, the California Global Warming Solutions Act of 2006 was enacted by the State of California. The legislature stated, "global warming poses a serious threat to the economic well-being, public health, natural resources, and the environment of California." AB 32 caps California's GHG emissions at 1990 levels by 2020. It defines GHG emissions as all of the

following gases: carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride. This agreement represents the first enforceable statewide program in the U.S. to cap all GHG emissions from major industries that includes penalties for non-compliance. While acknowledging that national and international actions will be necessary to fully address the issue of global warming, AB32 lays out a program to inventory and reduce GHG emissions in California and from power generation facilities located outside the state that serve California residents and businesses.

AB 32 charges CARB with responsibility to monitor and regulate sources of GHG emissions in order to reduce those emissions. Pursuant to deadlines established in the Act, CARB has adopted a list of discrete early action measures that can be adopted and implemented before January 1, 2010, to reduce GHG emissions. In addition, CARB has defined the 1990 baseline emissions for California, and adopted that baseline as the 2020 statewide emissions cap. CARB is currently conducting rulemaking, culminating in rule adoption by January 1, 2011, for reducing GHG emissions to achieve the emissions cap by 2020. The rules must take effect no later than 2012. In designing emission reduction measures, CARB must aim to minimize costs, maximize benefits, improve and modernize California's energy infrastructure, maintain electric system reliability, maximize additional environmental and economic co-benefits for California, and complement the state's efforts to improve air quality.

Executive Order S-3-05 goes even farther than AB32. Signed by Governor Schwarzenegger in 2005, Executive Order S-3-05 proclaims that California is vulnerable to the impacts of climate change. It declares that increased temperatures could reduce the Sierra's snowpack, further exacerbate California's air quality problems, and potentially cause a rise in sea levels. To combat those concerns, the Executive Order establishes total greenhouse gas emission targets. Specifically, emissions are to be reduced to the 2000 level by 2010, the 1990 level by 2020, and to 80 percent below the 1990 level by 2050. The Executive Order directs the Secretary of the California Environmental Protection Agency (CalEPA) to coordinate a multi-agency effort to reduce greenhouse gas emissions to the target levels. The Secretary will also submit biannual reports to the Governor and state Legislature describing: (1) progress made toward reaching the emission targets; (2) impacts of global warming on California's resources; and (3) mitigation and adaptation plans to combat these impacts. To comply with the Executive Order, the Secretary of the CalEPA created a Climate Action Team (CAT) made up of members from various state agencies and commission. CAT released its first report in March 2006. The report proposed to achieve the targets by building on voluntary actions of California businesses, local government and community actions, as well as through state incentive and regulatory programs.

At this time, the EPA does not regulate GHG emissions, however in *Massachusetts et al. v. EPA*, the U.S. Supreme Court has recently determined that EPA does have the authority to regulate GHG under the CAA. The Court also instructed EPA to review its policies toward regulation of vehicle emissions under the CAA. It is now anticipated that regulations will eventually be promulgated by EPA to further control GHG emissions from vehicles as well as other sources. On October 30, 2009, EPA adopted a final rule for mandatory reporting of greenhouse gas emissions across all sectors of the economy. The rule

does not require control of greenhouse gases; rather, it requires sources exceeding certain emissions thresholds to monitor and report their emissions.

Global warming and climate change have received substantial public attention for nearly 20 years. For example, the United States Global Change Research Program was established by the Global Change Research Act of 1990 to enhance the understanding of natural and human-induced changes in the Earth's global environmental system; to monitor, understand, and predict global change; and to provide a sound scientific basis for national and international decision-making. Even so, the analytical tools have not been developed to determine the effect on worldwide global warming from a particular increase in GHG emissions, or the resulting effects on climate change in a particular locale. The scientific tools needed to evaluate the impacts that a specific project may have on the environment are even further in the future.

There is as yet no statewide CEQA significance threshold developed to evaluate the impacts of the Revised Project, or any project, on global climate change or on the environment in California. Senate Bill 97 (Dutton-CEOA-Greenhouse gas emissions) signed by the Governor on August 24, 2007 directed the Office of Planning and Research (OPR) to develop guidelines by July 1, 2009, for feasible mitigation for GHG emissions, and requires that the Resources Agency adopt those guidelines by January 1, 2010. OPR submitted proposed guidelines to the Resources Agency on April 13, 2009, and the Resources Agency has released the proposal for public review and comment. However, no guidelines have been adopted as yet. Meanwhile, OPR issued a June 2008 Technical Advisory document that provided Interim Guidance on Addressing Greenhouse Gas Emissions in CEQA documents. The Technical Advisory explained that SB97 relates only to mitigation of greenhouse gas emissions, and not the difficult task of determining significance. To encourage consistency and uniformity throughout the State, OPR requested that CARB recommend a method of establishing a greenhouse gas significance threshold. CARB released a draft proposal on October 24, 2008, entitled "Preliminary Draft Staff Proposal: Recommended Approaches for Setting Interim Significance Thresholds for Greenhouse Gases under the California Environmental Quality Act," which proposed thresholds for industrial, commercial, residential, and transportation projects. However, CARB has not announced a timetable for further action.

In 2009, the California Natural Resources Agency and numerous other State agencies were involved in the creation of a multi-sector strategy to help guide California's efforts in adapting to climate change impacts. The 2009 California Climate Adaptation Strategy summarizes potential climate change impacts in seven specific sectors and provides recommendations on how to manage against the possibility of rising temperatures, changing precipitation patterns, sea level rise, and extreme natural events. As data continue to be developed and collected, the State's adaptation strategy will be updated to reflect current findings.

Kern County

Kern County Air Pollution Control District

The KCAPCD California Clean Air Act Ozone Air Quality Attainment Plan was approved by CARB in 1993 and updated in 2005. The plan lists the rules adopted by the KCAPCD between 1987 and 2004 that address Reasonably Available Control Technology for all sources of ozone precursor emissions. The KCAPCD is in attainment with the NAAQS 1-hour ozone standard. However, the NAAQS 8-hour and the CAAQS ozone standards have not been met. The KCAPCD is responsible for establishing and enforcing local air quality rules and regulations that address the requirements of federal and state air quality laws. The Revised Project may be subject to the following District rules; however, mining and related reclamation projects conducted under the Surface Mining and Reclamation Act may be exempt from KCAPCD's Rule 402 – Fugitive Dust.

Rule 210.1 (New and Modified Stationary Source Review Rule): This rule applies to all new stationary sources and all modifications of existing stationary sources that are subject to the District permit requirements and after construction emit or may emit one or more affected pollutant.

Rule 202 (Exemptions, Permits): This rule exempts home fireplaces, motor vehicles, repairs to and maintenance of existing structures, and portable engines.

Rule 201.1 (Permits to Operate for Sources Subject to Title V of the Federal Clean Air Act): This rule is intended to implement requirements of Title V of the Federal Clean Air Act, which requires certain sources emitting regulated air pollutants to obtain operating permits.

Rule 423 (National Emission Standards for Hazardous Air Pollutants): This rule applies to any portion of an existing building that will be renovated, partially demolished, or removed. Prior to any demolition activity, an asbestos survey of existing structures on the project site may be required to identify the presence of any asbestos-containing building material (ACBM). Any identified ACBM having the potential for disturbance must be removed by a certified asbestos contractor in accordance with CAL-OSHA requirements.

Rule 401 (Visible Emissions): This rule prohibits emissions of visible air contaminants to the atmosphere and applies to any source operation that emits or may emit air contaminants.

Rule 419 (Nuisance): This rule applies to any source operation that emits or may emit air contaminants or other materials. In the event that the project or construction of the project creates a public nuisance, it could be in violation and be subject to KCAPCD enforcement action.

Rule 427 (Stationary Piston Engines; Oxides of Nitrogen): This rule limits the emissions of NO_x , CO, and VOC from internal combustion engines. These limits are not applicable to standby engines as long as they are used fewer than 200 hours per year (e.g., for testing during non-emergencies).

Rule 402 (Fugitive Dust): This rule is designed to reduce PM_{10} emissions (predominantly dust/dirt) generated by human activity, including construction, road construction, bulk materials storage, landfill operations, etc.

Kern County General Plan

The Kern County General Plan, originally adopted on March 13, 2007, and last amended on September 22, 2009, contains the following policies and implementation measures concerning air quality.

Chapter 1. Land Use/Conservation/Open Space Element

Air Quality

- Goals
 - Goal 1. Ensure that the County can accommodate anticipated future growth and development while maintaining a safe and healthful environment and a prosperous economy by preserving valuable natural resources, guiding development away from hazardous areas, and assuring the provision of adequate public services.
- Policies
 - Policy 18. The air quality implications of new discretionary land use proposals shall be considered in approval of major developments. Special emphasis will be placed on minimizing air quality degradation in the desert to enable effective military operations and in the valley region to meet attainment goals.
 - Policy 19. In considering discretionary projects for which an Environmental Impact Report must be prepared pursuant to the California Environmental Quality Act, the appropriate decision-making body, as part of its deliberations, will ensure that:
 - (a) All feasible mitigation to reduce significant adverse air quality impacts have been adopted; and
 - (b) The benefits of the Revised Project outweigh any unavoidable significant adverse effects on air quality found to exist after inclusion of all feasible mitigation. This finding shall be made in a statement of overriding considerations and shall be supported by factual evidence to the extent that such a statement is required pursuant to the California Environmental Quality Act.
 - Policy 20. The County shall include fugitive dust control measures as a requirement for discretionary projects and as required by the adopted rules and regulations of the San Joaquin Valley Unified Air Pollution Control District and the Kern County Air Pollution Control District on ministerial permits.
 - Policy 21. The County shall support air districts efforts to reduce PM₁₀ and PM_{2.5} emissions.

- Policy 22. Kern County shall continue to work with the San Joaquin Valley Unified Air Pollution Control District and the Kern County Air Pollution Control District toward air quality attainment with federal, state, and local standards.
- Implementation Measures
 - Implementation F. All discretionary permits shall be referred to the appropriate air district for review and comment.
 - Implementation H. Discretionary projects may use one or more of the following to reduce air quality effects:
 - (a) Pave dirt roads within the development.
 - (b) Pave outside storage areas.
 - (c) Provide additional low Volatile Organic Compounds (VOC) producing trees on landscape plans.
 - (d) Use of alternative fuel fleet vehicles or hybrid vehicles.
 - (e) Use of emission control devices on diesel equipment.
 - (f) Increasing the amount of landscaping beyond what is required in the Zoning Ordinance (Chapter 19.86).
 - (g) The use and development of park and ride facilities in outlying areas.
 - (h) Other strategies that may be recommended by the local Air Pollution Control Districts.
 - Implementation J. The County should include PM₁₀ control measures as conditions of approval for subdivision maps, site plans, and grading permits.

4.2.4 Impacts and Mitigation Measures

This section describes the CEQA impact analysis relating to air quality for the Revised Project. It describes the methods used to determine the Revised Project's impacts and lists the thresholds used to conclude whether an impact would be significant. Measures to mitigate (avoid, minimize, rectify, reduce, eliminate, or compensate for) significant impacts accompany each impact discussion.

Methodologies

The purpose of a supplemental EIR is to evaluate only the changes in the project, changes in circumstances, or new information that led to the preparation of the supplemental EIR. Aspects of the project that were known at the time the original EIR was certified are not to be re-evaluated because the original, certified EIR is final and not subject to reconsideration. Thus, the analysis in a supplemental EIR is limited to changes in the environmental impacts, the significance conclusions or mitigation due to changes between the original project and the revised project, or precipitated by changes in circumstances or new information.

With regard to air quality, there are no changed circumstances that prompted preparation of this Supplemental DEIR. There has not been any substantial development or change in land use in the area surrounding the Project Site. In addition, the recent ambient air quality monitoring data is comparable to that used in the 1997 FEIR/EIS. With respect to exceptional events that cause high PM₁₀, the 1997 FEIR/EIS stated: "*PM₁₀ levels in the region vary greatly. High winds and the arid climate may account in part for the high PM₁₀ levels experienced at the monitoring stations" (1997 FEIR/EIS, p. 202.).*

Therefore, the air quality analysis in this Supplemental DEIR will evaluate project changes, as reflected in the Project Description, Chapter 3. In this regard, there also is new information available. Specifically, in July 2009, Air Sciences Inc. prepared the Air Quality and Health Risk Assessments (AQ/HRA) for the Revised Project. The most recent version (07026) of the AERMOD air dispersion modeling system was used to model and assess air quality impacts. The health risk assessment utilized CARB's Hotspots Analysis and Reporting Program (HARP) program. Many of the assumptions, data inputs, and analysis processes are discussed further in the impact discussion sections. A complete inventory of all data inputs and results is provided in the AQ/HRA and its appendices. The summary results of the air quality impact and health risk analyses are presented below.

The methodology in the succeeding sections will be to first summarize the conclusions of the 1997 FEIR/EIS with respect to the impact, then to describe the changes in the Revised Project that affect that impact and to compare the Revised Project impacts to the 1997 Project impacts. If the impacts of the Revised Project are greater, then the analysis will proceed to compare the Revised Project to the significance threshold for that impact. Mitigation will be evaluated if the analysis identifies any new significant impact. (The 1997 FEIR/EIS did not identify any significant air quality impacts; therefore, this Supplemental DEIR will not consider whether the Revised Project will cause a "substantial increase in the severity of previously identified significant effects" as would otherwise be required under CEQA Guidelines Section 15162.)

Thresholds of Significance

The Kern County Planning Department's "Guidelines for Preparing an Air Quality Assessment for Use in Environmental Impact Reports" (Air Quality Guidelines) are intended to assist with the preparation of the air quality assessments that serve as technical documents in Environmental Impact Reports prepared by the Department. The Air Quality Guidelines are part of the Kern County Planning Department's "Guide for the Preparation of Environmental Impact Reports," dated June 2006.

The County's *Air Quality Guidelines* require construction and operational emissions comparisons with the adopted Kern County (CEQA Environmental Checklist) thresholds and the KCAPCD thresholds.

The KCAPCD has adopted "Guidelines for Implementation of the California Environmental Quality Act (CEQA) of 1970," as amended in July 1999. Those District Guidelines contain air quality significance criteria that are applied during

CEQA review of projects for which the District is the lead agency. However, the County of Kern is the CEQA lead agency for the Revised Project and will make the determination as to whether or not the Revised Project may have a significant effect on the environment. The County's determination will take into consideration the KCAPCD's criteria, but will ultimately be based upon the thresholds adopted by the County. As such, the Revised Project would have a significant impact on air quality if it would:

- a. Conflict with or obstruct implementation of the applicable air quality plan;
- b. Violate any air quality standard as adopted or established by EPA or air district or contribute substantially to an existing or projected air quality violation; or
- c. Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is nonattainment under an applicable federal or State ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors). Specifically, if implementation of the project would exceed any of the following thresholds adopted by the KCAPCD:

Construction, Operational, and Area Sources

- Reactive Organic Gases (ROG): 25 tons per year
- Oxides of Nitrogen (NO_x): 25 tons per year
- *Particulate Matter (PM₁₀): 15 tons per year*

Stationary Sources -- As Determined by District Rules

- Any criteria pollutant: 25 tons per year
- d. Expose sensitive receptors to substantial pollutant concentrations.

Levels of risk determined by KCAPCD's Board of Directors to be significant for purposes of the California 1987 Air Toxic and Information Act (AB 2588) public notification are: (1) a cancer risk exceeding 10 in 1 million, or (2) a ratio of the chronic or acute exposure to the reference exposure level ("hazard index") exceeding 1.0.

- e. Create objectionable odors affecting a substantial number of people.
- f. Is inconsistent with any existing air quality plan, including the Kern Council of Governments Final Air Quality Conformity Analysis (May 2007).
- g. Constitutes a cumulatively considerable contribution to global climate change.

With regard to climate change, neither the KCAPCD nor the State of California has identified discrete significance thresholds to evaluate the impacts of the Revised Project, or any project, on global climate change. In the absence of definitive guidance, this analysis uses several criteria that have been previously used by Kern County or acknowledged by the Attorney General and air quality regulators as appropriate for judging the significance for development projects. As such, the Revised Project would have a significant impact on climate change if it:

- Conflicts with or obstructs implementation of the goals or strategies of Executive Order S-3-05;
- Conflicts with CARB's 44 Early Action Measures to implement AB 32;
- Would be subject to CARB's mandatory reporting requirements (generally required for projects producing more than 25,000 annual metric tons of CO₂ equivalents [CO₂e])
- For an industrial project, would result in more than 10,000 metric tons per year of GHG emissions (CO₂e);
- Would be inconsistent with the recommended global warming mitigation measures from the Attorney General, CAPCOA, and the Office of Planning and Research;
- Would expose persons to significant risk associated with the effects of global climate change (e.g., increased risk of flooding from accelerated runoff from reduced Sierra snowpack, coastal inundation from sea level rise).

Project Impacts

Section 3.6 (*Mine Life and Phasing*) of the Project Description (Chapter 3) describes the Revised Project as consisting of:

- Construction lasting approximately one year
- Mining to include open-pit operation, ore processing, aggregate production, waste rock management, and sequential backfilling of mined-out areas; and
- Reclamation to include structure renovation, revegetation, weed control, and monitoring.

Figure 4.2-1 illustrates the relationship among project activities, phasing, and emissions generation. It shows that there is a period of activity overlap during which simultaneous emissions create a "worst-case" scenario. The AQ/HRA (Air Sciences 2009b) evaluates that scenario.

The sections that follow describe the primary construction and operational activities and assumptions that form the basis of the AQ/HRA.



Note: Reclamation will commence earlier than the conclusion of mining. However, any reclamation that occurs concurrent with mining activities will not increase emissions because the same equipment and personnel on-site for mining activities will conduct such reclamation activities. In other words, work activities will shift from mining to reclamation during such periods.

Figure 4.2-1 Project Activities, Phasing and Emissions Overlap

Design Modifications (1997 Project vs. Revised Project)

As explained under Methodology, above, the inquiry for a supplemental EIR is whether the original EIR requires substantial changes due to increased impacts cause by project modifications, or revealed by new information not previously available. The AO/HRA (Air Sciences 2009b) identified a number of project changes that will tend to reduce emissions and/or impacts compared to the 1997 Project. Most importantly, the Revised Project is significantly smaller in scope than the 1997 Project in terms of total material to be mined (AQ/HRA, p. viii). The current production rate is forecast at 158.6 million tons of total material (ore and waste rock) over the Project's life span. This production rate is significantly lower (by 42 percent) than the previously approved mine plan of 275 million tons over a 15-year mine life (AQ/HRA, p. ix). Another significant improvement is the sequential backfilling of waste rock into mined-out pit phases, which minimizes the waste rock footprint outside the pit areas, and reduces potential particulate (and associated contaminant) emissions (AQ/HRA, p. viii). With the design improvements, air quality impacts from the Revised Project are expected to be less than the air quality impacts associated with the 1997 Project (AQ/HRA, p. viii).

The Revised Project reflected in the air quality analyses incorporates many features that will result in lower actual emissions of all pollutants than the previous (1997) design of the project, as follows:

Previous (1997) Design	Revised Project (Current) Design	Effect on Emissions
Waste storage areas.	Backfilling.	Decreased haul truck traffic and disturbed area acreage resulting in lower emissions of all pollutants.
Total production (ore and waste rock) of 275 million tons.	Total production of 158.6 million tons.	Reduced production results in lower emissions of all pollutants.
Tier I (or earlier) engines in mobile off-road heavy equipment.	Tier II or Tier III engines in mobile off-road heavy equipment.	Decrease in tailpipe emissions of oxides of nitrogen and particulate matter.
Exposed solution distribution system on the heap leach facility.	Buried drip emitters on the heap leach facility.	Less exposure of free cyanide to air and sunlight resulting in lower release of hydrogen cyanide to the atmosphere.
Source: Table 1-1 (Air Sciences 2009b)		

In addition, during some phases of mining, a pipe conveyor will be used to move ore, rather than haul trucks. This will result in substantially less emissions. However, since the pipe conveyor is not feasible for all phases, analysis of criteria pollutant emissions assumes haul trucks and not pipe conveyor.

Construction Activities

Construction of the Revised Project infrastructure (e.g., the heap leach pad, crushing-screening plant, Merrill-Crowe plant, workshop/warehouse, and access and haul roads) will take place during the first phase of mine development. In many aspects, PM_{10} emissions due to construction activities (including any land clearing and grading activities that are necessary for building processing plants) will be similar in nature to PM_{10} emissions due to operational activities at the site (i.e., material excavation, material hauling, material placement, dozing, and grading). However, construction activities will be of lesser intensity and will generate lower quantities of PM_{10} emissions than operations and will be of shorter duration. Therefore, the PM_{10} modeling analysis prepared for the Revised Project is based on operational activities, which is considered to be representative of a worst-case assessment of PM_{10} emissions generated at the Site.

Operations and Maintenance Activities

Modeling was conducted to determine whether the Revised Project would cause exceedances of State or federal emissions standards or local significance thresholds. Following are summaries of the operational considerations that factor into the AQ/HRA input data, modeling results, and findings.

Emissions Sources and Controls

The AQ/HRA (Air Sciences 2009b) provides extensive detail about the activities, processes, equipment, vehicles, and other inputs to the emissions models. In general, the following will generate both process and fugitive emissions:

Process Sources

- Ore Dumping at Primary Crusher
- Ore Crushing and Screening
- Ore Transfers and Stockpiles
- Ore Grinding and Agglomeration
- Cement Silo (loading and discharge)
- Aggregate Processing

• Fugitive Sources

- o Drilling
- o Blasting
- o Material (ore and waste rock) Loading and Unloading
- o Material Hauling
- o Mobile Machinery (mining equipment and support vehicles) Tailpipe
- o Wind Erosion
- o Haul Road and Surface Maintenance (dozing and grading)

The process and fugitive sources included in the air quality analyses and their corresponding activity rates are presented in Tables 3-2 and 3-3 of the AQ/HRA (Air Sciences 2009b).

Section 3.12 (*Environmental Controls*) of the Project Description (Chapter 3) lists particulate emissions control methods to be implemented with the Revised Project, including:

- **Hood** to enclose trucks when dumping at the primary crusher receiving hopper.
- Water Sprays to control dust emissions in the primary crusher
- Sonic Foggers to control dust emissions at the transfer points.
- Wet Scrubber to control dust emissions at the HPGR discharge and transfer points.
- **Bin Vents/Filters** for dust control at the cement silo and the backup cement storage vessel
- Wet Material to minimize stockpile fugitive dust emissions.
- **Dust Collection System** for drilling operations
- Additive Application/Watering to minimize fugitive dust during material hauling
- **Highly Maintained Haul/Access Roads** to minimize fugitive dust from vehicle travel over unpaved roads (AQ/HRA, p. 24).

These and other emissions controls are described throughout the Project Description. Other operational considerations factored into the overall emissions include:

- Historical tailings will be incorporated in the construction of the Phase 1 heap leach pad and this will remove one source of fugitive dust in the area (GQM 2006c).
- Fuel usage and related emissions will be reduced by:
 - o Use of backfill techniques to minimize hauling distances of waste rock.
 - Construction of a pipe conveyor to convey ore from the active pits to the ore processing circuit to minimize hauling of ore.
 - Use of optimally sized haul trucks for the Project to minimize haul truck trips.

Toxic Air Contaminant Sources and Controls

Similar to the 1997 Project, the Revised Project would result in the emission of various air toxics, including naturally-occurring metals from handling of the ore and overburden materials, hydrogen cyanide from the leaching solution and organic gases, and some metals from the gas-fired furnace and the mercury retort. Following are summary descriptions of emissions sources and design processes meant to handle those TACs that are a primary cause for concern with regard to human health and environmental safety. The AQ/HRA and its technical appendices provide detailed modeling calculations and findings regarding the overall effects of TAC emissions.

<u>Mercury</u>

Before gold can be further refined into bars or ingots, the mercury must be removed using a mercury retort system. A mercury retort will be used to remove mercury from the precipitate by heating it to volatilization. The mercury retort exhaust fumes are cooled and cleaned in a sulfur-impregnated carbon scrubber before being discharged (AQ/HRA, p. 12). Mercury emissions will also result from the melt furnace and will be similarly reduced by carbon bed scrubbers. The AQ/HRA mercury emission estimate assumes a 95 percent control efficiency for the carbon bed scrubbers (p. 59), resulting in total estimated mercury emissions of 1.9 lb/yr and 0.9 lb/yr from the retort and melt furnace, respectively. While total estimated mercury emissions from the Revised Project is a larger number than the mercury emissions of 1.249E-02 lb/yr from the retort estimated in the 1997 FEIR/EIS, this is a reflection of improved mercury emissions estimation methods rather than changes to the project. While the mercury emissions estimate for the Revised Project is greater than the estimate provided in the 1997 FEIR/EIS, design improvements to the Revised Project are expected to result in less mercury emissions than the design of the 1997 Project would have produced.

Hydrogen Cyanide

Hydrogen cyanide (HCN) gas emissions from the heap leach pad are estimated at 837 pounds per year. This is far less than the 21,731.95 pounds per year estimated by the 1997 FEIR/EIS (Appendix E to Appendix VII). Buried drip emitters on the heap leach facility are expected to minimize exposure of free cyanide to air and sunlight resulting in lower release of HCN to the atmosphere.

Naturally Occurring Substances

The cancer risk component described in the AQ/HRA is driven primarily by arsenic, which is a naturally occurring component of the soil in the desert, particularly in areas where precious metals are found. As input to the health risk assessment models, the AQ/HRA used recent rock composition data to determine pollutant emissions from onsite dust sources (see Table 4.2-1).

Air Quality Plan Conformity

Impact 4.2-1: The Project would not conflict with or obstruct implementation of applicable air quality management plans, including the Ozone Attainment Plan.

A project is non-conforming if it conflicts with or delays implementation of any applicable attainment or maintenance plan. A project is conforming if it complies with all applicable District rules and regulations, complies with all proposed control measures that are not yet adopted from the applicable plan(s), and is consistent with the growth forecasts in the applicable plan(s) (or is directly included in the applicable plan).

With respect to this impact, the 1997 FEIR/EIS concluded:

This type of mining project was anticipated by the Kern County Air Pollution Control District and is in conformity with the air district's plan for attainment of the ozone NAAQS and CAAQS...The proposed project will obtain permits, as applicable, from the Kern County Air Pollution Control District and comply with all applicable rules and regulations designed to achieve or maintain compliance with NAAQS or CAAQS...The proposed project would not violate any approved plan for achieving or maintaining compliance with NAAQS or CAAQS, local or regional growth or congestion plans or local CEQA significance standards for air quality... (1997 FEIR/EIS, pp. 208, 219, 220).

The changes in the Revised Project do not change the conclusions with respect to the plans discussed in the 1997 FEIR/EIS because the project changes tend to reduce emissions. However, the plans themselves have been updated, and so further discussion is provided below.

Conformity with growth forecasts can be established by demonstrating that the project is consistent with the land use plan that was used to generate the growth forecast. As discussed under Impact 4.2-6, vehicle-related emissions estimates and projections are based on key socio-economic data including population, employment, and vehicle miles traveled (VMT). In accordance with the Kern Council of Governments Final Air Quality Conformity Analysis (May 2007), regional vehicle-related emissions estimates are found in the Transportation Improvement Program/Regional Transportation Plan and approved emissions budgets. Projections for the Mojave area assume significant growth in population (54 percent), employment (43 percent), and VMT (69 percent) from 2008 to 2030. Current data demonstrates that growth has been less than these estimates.

Therefore, any effect of the Revised Project on population, employment, and VMT can be reasonably assumed to be accounted for in these projections. Therefore, the Revised Project is consistent with the Conformity Analysis.

The air quality management plan that is applicable to the project is the KCAPCD's "2003 Ozone Attainment Demonstration, Maintenance Plan, and Redesignation Request." The 2003 Ozone Plan indicates that the KCAPCD has implemented all control measures identified in the 2003 Ozone Plan. Therefore, the Revised Project would not result in any potential impact since it complies with all control measures in the 2003 Ozone Plan. The Revised Project would not conflict with or obstruct implementation of the 2003 Ozone Plan because County staff has established conditions of approval with the project's processing to ensure compliance.

Mitigation Measures

Additional mitigation is not required. The Revised Project is required to comply with those applicable mitigation measures established with the 1997 FEIR/EIS.

Level of Significance After Mitigation

The Revised Project will not result in any new significant impact when compared with the 1997 Project as reviewed in the 1997 FEIR/EIS. The Revised Project would comply with all control measures in the 2003 Ozone Plan.

Compliance With Ambient Air Quality Standards

Impact 4.2-2: The Project would not violate an air quality standard or contribute substantially to an existing or projected air quality violation.

With respect to this impact, the 1997 FEIR/EIS concluded:

This type of mining project was anticipated by the Kern County Air Pollution Control District and is in conformity with the air district's plan for attainment of the ozone NAAQS and CAAQS...The proposed project will obtain permits, as applicable, from the Kern County Air Pollution Control District and comply with all applicable rules and regulations designed to achieve or maintain compliance with NAAQS or CAAQS. As shown by dispersion modeling, PM_{10} emissions from the proposed project would not cause or contribute to a violation of the NAAQS or CAAQS for PM_{10} in the project area. The proposed project would not violate any approved plan for achieving or maintaining compliance with NAAQS or CAAQS, local or regional growth or congestion plans or local CEQA significance standards for air quality... (1997 FEIR/EIS, pp. 208, 219, 220)

The changes in the Revised Project do not change the conclusions in the 1997 FEIR/EIS because the project changes tend to reduce emissions. However, additional data has been collected at the baseline monitoring station installed by

GQM, and additional modeling has been conducted using this data. Accordingly, further discussion is provided below.

The AQ/HRA by Air Sciences Inc. (2009b) evaluates compliance with federal and State ambient air quality standards. Compliance with CAAQS is determined by comparing the Project-related (modeled) impacts to the numeric pollutant standards. Background (monitored) concentrations are not added to the Project impact.

Compliance with NAAQS, on the other hand, is determined by adding the modeled Project impacts to the background concentrations, then comparing those summed values to the numeric pollutant standards. The background concentrations are added to account for natural and other existing, non-Project sources of air pollution. The AQ/HRA details the methodologies used to compare total ambient (i.e., background plus project-related) pollutant concentrations with their corresponding NAAQS. The AQ/HRA also explains the statistical methods applied to modeled and monitored data prior to comparison with the applicable standards.

The AQ/HRA (Air Sciences 2009b) represents the PM_{10} modeling results in several ways to determine the Revised Project's compliance with applicable ambient air quality standards. The maximum modeled 24-hour PM_{10} impact plus the monitored PM_{10} concentration due to other sources (i.e., background) is less than the 24-hour PM_{10} NAAQS of 150 µg/m³. Modeled 24-hour PM_{10} impacts due to emissions from the Revised Project do not exceed the California 24-hour PM_{10} standard of 50 µg/m³. Per the "Soledad Mountain Project AERMOD PM_{10} and $PM_{2.5}$ Modeling Protocol" (Air Sciences 2009a) approved by KCAPCD, modeled 24-hour PM_{10} impacts due to emissions from the Revised Project's NO₂ emissions are less than the annual NO₂ NAAQS of 100 µg/m³ and the 1-hour CAAQS of 339 µg/m³. Table 4.2-7 presents a summary of PM_{10} , $PM_{2.5}$, NO_2 and SO_2 modeling results and a comparison to the applicable NAAQS. Table 4.2-8 presents the summary of modeling results and a comparison to the applicable CAAQS.

Tables 4.2-7 and 4.2-8 show that modeled impacts for all pollutants and averaging periods are less than their applicable NAAQS and CAAQS and thus in compliance with the applicable regulatory requirements. These impacts are less than significant. The modeling input and output files are presented in the appendices of the AQ/HRA (Air Sciences 2009b), which is included in Appendix D of this EIR.

Pollutant	Averaging Period	Total Ambient Concentration ^a (μg/m ³)	Date of Occurrence	NAAQS (µg/m ³)	Comply with Standard
PM_{10}	24-hour ^b	109.8	06/10/08	150	Yes
	24-hour ^c	68.4	12/29/08		Yes
PM _{2.5}	24-hour	30.9	12/28/08	35	Yes
	Annual	8.4	N/A	15	Yes
NO ₂	Annual	39.7	N/A	100	Yes
SO ₂	24-hour	13.1	12/24/08	365	Yes
	Annual	2.5	N/A	80	Yes

TABLE 4.2-7. NAAQS COMPLIANCE DEMONSTRATION

^a Total ambient concentration is the sum of modeled project impact and monitored (i.e., background) concentration.

^bBackground-driven second highest concentration.

^c High-second-high modeled impact-driven concentration.

Source: Tables 3-19 and 7-2 (Air Sciences 2009b)

TABLE 4.2-8. CAAQS COMPLIANCE DEMONSTRATION

Pollutant	Averaging Period	Highest Modeled Concentration ^a (µg/m ³)	Date of Occurrence	CAAQS (µg/m ³)	Comply with Standard
PM ₁₀	24-hour	45.7	12/28/08	50	Yes
	Annual	5.4	N/A	20	Yes
PM _{2.5}	Annual	1.8	N/A	12	Yes
NO ₂	1-hour	251.9	12/24/08	339	Yes
SO ₂	1-hour	39.1	12/24/08	665	Yes
	24-hour	1.8	12/24/08	105	Yes
^a Highest modeled concentration due to Project emissions.					

Mitigation Measures

No additional mitigation is proposed.

Level of Significance After Mitigation

The Revised Project will not result in any new significant impact when compared with the 1997 Project as reviewed in the 1997 FEIR/EIS.

Visibility Evaluation

The 1997 FEIR/EIS evaluated the impact of the 1997 Project on two Class I areas: the Dome Land and the San Gabriel Wilderness areas. A screening analysis showed that the increase in 24-hour PM_{10} concentration at these areas would be approximately 0.21 μ g/m³, which was less than the significance threshold of 10 μ g/m³. A visibility screening analysis also showed that the screening criteria were not exceeded, and the impact on visibility and ambient air quality in these areas was determined to be less than significant (1997 FEIR/EIS, p. 211.).

There have been no changes associated with the Revised Project that would change the significance conclusions regarding impacts to visibility at Class I areas. Project changes have substantially reduced emissions of PM_{10} . Even though no further visibility analysis was required, the AQ/HRA (Air Sciences 2009b) reassessed the effects of project-related emissions on visibility conditions at the Federal Class I areas located within 100 kilometers (km) of the site, including a third Class I area, the Cucamonga Wilderness. The AQ/HRA also assessed visibility impacts at the Edwards Air Force Base (EAFB). The two groups of visibility receptors required different analysis methodologies.

The "Q/D" screening method from the draft 2008 Federal Land Managers' Air Quality Related Values Work Group is used to evaluate the visibility impacts at the Federal Class I areas within 100 km of the Project Site. This method uses the ratio of a project's annual emissions (PM_{10} , NO_x , and SO_x combined) in tons per year ("Q") to the distance of a Class I area in km ("D") to determine if a project will have a significant visibility impact at a long-range (> 50 km) Class I area, and whether a detailed visibility analysis is required. A project with a Q/D value of less than ten is considered insignificant, and a detailed visibility analysis is not triggered. The results of the Q/D analysis for the Revised Project are presented in Table 4.2-9, which shows that the Q/D values are significantly less than 10 for all three Class I areas. Therefore, a detailed visibility analysis is not triggered for the Revised Project.

Class I Area	D Distance from Project (km)	Q Project Emissions ^a (ton/yr)	Q/D
San Gabriel Wilderness	74	160.2	2.2
Domeland Wilderness	80	160.2	2.0
Cucamonga Wilderness	95	160.2	1.7
^a Combined PM ₁₀ , NO _x , and SO ₂ . Source: Table 7-6 (Air Sciences 2009b)			•

TABLE 4.2-9. CLASS I AREA VISIBILITY ANALYSIS SCREENING RESULTS

For Edwards Air Force Base, the AQ/HRA employs the State visibility standard, which relies on extinction values calculated at receptor locations based on distance from the Project Site. This standard is from the Federal Land Managers' Air Quality Related Values Work Group (FLAG) 2008 Interagency Monitoring of Protected Visual Environments (IMPROVE) equation. The data inputs to the equation and other assumptions are described in Section 7.4.3.4 (*Visibility Evaluation*) of the AQ/HRA. The calculated extinction values and their comparison with the State visibility standard are also presented in Table 7-7 of the AQ/HRA. As shown in that table, the estimated visibility impacts at the modeled receptors at EAFB are approximately two orders of magnitude less (i.e., range from 1.13 to 4.01 Mm⁻¹) than the State visibility standard (i.e., an extinction of 0.23 per km or 230 inverse Megameters [Mm⁻¹]). This impact is less than significant.

Mitigation Measures

No additional mitigation is proposed.

Level of Significance After Mitigation

Less than significant.

Net Increase in Nonattainment Pollutants

Impact 4.2-3: The Project would result in a cumulatively considerable net increase for a criteria pollutant for which the project region is nonattainment.

The cumulative setting for the project is in the KCAPCD. Cumulative impacts are two or more individual impacts that, when considered together, are considerable or that compound or increase other environmental impacts. A detailed description of the cumulative impact scenario considered with the Revised Project is provided in Chapter 3 (*Project Description*). A cumulative impact analysis first identifies whether a cumulatively significant impact exists in the given resource area. If one exists, the analysis then determines whether the project will make a considerable contribution to that impact. Where a cumulative impact is severe, even a small contribution may be considerable.

One of the significance criteria applied in the 1997 FEIR/EIS was whether the proposed project would "*result in a net increase of any criteria pollutant for which the project area has not attained applicable federal or state ambient air quality standards*" (1997 FEIR/EIS, p. 208). The 1997 FEIR/EIS generally concluded:

This type of mining project was anticipated by the Kern County Air Pollution Control District and is in conformity with the air district's plan for attainment of the ozone NAAQS and CAAQS... The proposed project will obtain permits, as applicable, from the Kern County Air Pollution Control District and comply with all applicable rules and regulations designed to achieve or maintain compliance with NAAQS or CAAQS... The proposed project would not violate any approved plan for achieving or maintaining compliance with NAAQS or CAAQS, local or regional growth or congestion plans or local CEQA significance standards for air quality... (1997 FEIR/EIS, pp. 208, 219, 220)

With the exception of NO_x emissions from mobile sources (due to added truck trips transporting aggregate), the changes in the Revised Project do not change the conclusions in the 1997 FEIR/EIS. Although some project changes (e.g., aggregate processing) and methodologies (e.g., different emission factors) may result in higher non-mobile source emissions, this increase is more than offset by other project changes that reduce emissions. Additional information is presented here regarding all project pollutants. It should be noted, however, that except for NO_x emissions from mobile sources, these emissions do not represent new or additional impacts related to the Revised Project.

The project site is in relatively remote area and there are no other projects within a six-mile radius of the project site that are expected to contribute significantly to cumulative air quality impacts. A complete list of residential, commercial, natural resource and solar energy projects within the six-mile radius is provided in Chapter 3, Table 3-4. The lead agency acknowledges there are five other proposed solar projects beyond the six-mile radius; however, potential air impacts by these projects will only occur during construction activities and is not expected to contribute significantly to cumulative air quality impacts. Therefore, the discussion below considers only the emissions from the 1997 Project and the Revised Project. The air basin is in nonattainment for ozone and PM_{10} .

As shown in Table 4.2-10, changes to key design features in the Revised Project indicate that material handling activities and fuel consumption will be significantly lower for the Revised Project than they would have been for the previously approved 1997 Project.

Design Feature/Parameter	Unit	1997	2009	Likely Effect on Emissions (from 1997 to 2009)		
Life of mine	yr	14	36	A		
Life of mine ore production	MMt	45.5	46.6	•		
Life of mine waste production	MMt	204.5	98.5	▼		
Life of mine total material production	MMt	250.0	145.1	▼		
Stripping ratio	n/a	4.5	2.1	▼		
Life of mine aggregate production	MMt	0.0	19.0	A		
Life of mine on-site diesel use	MMgal	24.9	11.3	▼		
Life of mine on-site gasoline use	MMgal	0.6	0.3	▼		
Source: Soledad Mountain Project, Greenhouse Gas Emissions (Air Sciences 2009c)						

TABLE 4.2-10. SOLEDAD MOUNTAIN PROJECT 1997 AND 2009 DESIGN FEATURES

These changes are expected to reduce emissions of all criteria pollutants. The emissions reduction benefits of the above changes can be seen in Table 4.2-11, which compares the PM_{10} emissions estimates from the 1997 Project and the

Revised Project. The table shows higher total lb/hour PM_{10} emissions for the Revised Project. This is due to a difference in estimating assumptions rather than a change in the project. The 1997 FEIR/EIS took credit for eliminating 136,000 lb/yr PM_{10} by using the existing tailings pile as a base for the leach pad (p. 213). The Revised Project also will incorporate the existing tailings into the leach pad base; however, the Air Sciences AQ/HRA does not take credit for any resulting reduction in fugitive emissions. Any effect of reducing fugitive emissions will be the same for the Revised Project as for the 1997 Project, but is not reflected in Table 4.2-11. Even without taking credit for this reduction, the annual PM_{10} emissions will be substantially less for the Revised Project compared to the 1997 Project.

	1997 FEIR/EIS ^a		Revised	Project ^b
Emission Source	max lb/hr	ton/year	max lb/hr	ton/year
Drilling	0.33	1.20	0.31	0.94
Blasting	157.00	20.61	55.67	6.96
Truck Loading	5.31	17.69	3.00	12.59
Truck Unloading	2.95	14.15	2.02	8.50
Material Hauling	3.15	7.99	3.21	13.48
Dozing	1.89	0.94	0.68	2.58
Grading			1.65	1.21
Wind Erosion	0.94	4.25	261.40 ^d	2.50 ^d
Mining Equipment ^c			1.13	3.16
Support Equipment ^c			0.01	0.01
Crushing	1.43	4.78		
Ore Processing			0.5	2.1
Aggregate Processing			3.01	3.76
Emergency Generator			0.05	0.002
Total	173.00	71.61	332.6	57.8

TABLE 4.2-11. COMPARISON OF PM_{10} EMISSIONS FROM 1997 PROJECT AND REVISED PROJECT

^a Source: 1997 FEIR/EIS, Table 3.5-3, "Proposed Project Emissions." 1997 FEIR/EIS did not estimate emissions from aggregate operations. Accordingly, this table does not include on-road vehicle emissions.

^b Source: Appendix B of the AQ/HRA (Air Sciences 2009b), pages 3 and 9

^c Tailpipe emissions

^d Unlike the 1997 FEIR/EIS, the Air Sciences AQ/HRA does not take credit for elimination of 136,000 lb/yr PM_{10} by eliminating the existing tailings pile. This is not a change to the project, but only a change to the analysis of fugitive emissions. The tailings pile will be used in construction of the leach pad under the Revised Project as well, and any effect of reducing fugitive emissions will be the same as for the 1997 Project.

A complete summary of criteria emissions from the Revised Project is presented in Table 4.2-12, along with a comparison to the mass thresholds currently used in applying this significance criterion.

Pollutant	Revised Project Emissions ^a	Thresholds of Significance				
Non-Mobile Sources (ton/yr)						
PM_{10}	54.6	15				
PM _{2.5}	7.6	n/a				
СО	84.4	100				
SO _x	2.6	25				
NO _x	21.6	25				
VOC/ROG	0.002	25				
Mobile Sources (ton/yr)						
NO _x	86.8	25				
VOC/ROG	12.4	25				
^a Source: Air Sciences 2009b, p.74.						

 TABLE 4.2-12. REVISED PROJECT EMISSIONS SUMMARY AND

 THRESHOLDS OF SIGNIFICANCE

Table 4.2-12 shows that mobile source NO_x will be greater than the significance threshold of 25 ton/year. This is a significant impact that was not identified in the 1997 FEIR/EIS. The Revised Project includes aggregate production starting in the fourth year of operation and continuing for the 30 years life of mine, and the aggregate production is expected to require up to 60 truckloads per day to transport the aggregate to market.

While Table 4.2-12 shows that emissions of PM_{10} will be greater than the mass threshold currently used in applying this significance criterion, this does not represent a new significant impact associated with the project changes incorporated into the Revised Project. As noted, emissions from non-mobile source activities will be lower for the Revised Project than for the 1997 Project.

Even though the PM_{10} emissions estimate does not represent new or increased emissions, the AQ/HRA included an assessment of PM_{10} emissions to demonstrate no significant impacts relative to ambient air quality standards. Modeling results indicate that the Revised Project is not expected to cause exceedances of the California PM_{10} standards. In addition, it is anticipated that the ATC permits issued by KCAPCD will include a condition to monitor PM_{10} concentrations at upwind and downwind locations of the Project in order to confirm project-related PM_{10} emissions levels. Therefore, the Project is not expected to result in a cumulatively considerable net increase for PM_{10} .

The Revised Project would reduce emissions of NO_x associated with operation by requiring the project proponent to purchase equipment that meets all California regulations, properly maintain and tune all internal combustion engine powered equipment, require employees and subcontractors to comply with California's idling restrictions for compression ignition engines, and use low sulfur diesel fuel. No other reasonable or feasible mitigation has been identified.

Despite the reduction in potential emissions achievable through implementation of emission control and mitigation measures, the Revised Project would nonetheless result in a net increase in NO_x from mobile sources in excess of the mass significance threshold. There are no feasible control measures to reduce mobile source NO_x emissions below the threshold. Therefore, the cumulative air quality impact is considered cumulatively considerable and significant and unavoidable for mobile source NO_x .

Mitigation Measures

Mobile sources for the proposed project include mining equipment and on-road vehicles, both sources of PM_{10} and NO_x . Both the mining equipment and the on-road sources are regulated by both the U.S. EPA and CARB. The mining equipment for this project would meet current emissions standards at the time of their purchase. Since the equipment would either be new or existing mining equipment used at other project sites, such equipment would have had to meet all emission standards at the time of purchase. Alternative fuels such as biodiesel would improve (reduce) the PM_{10} emissions but would increase NO_x emissions. The project is not proposing to use any alternative fuels. Current technology exists to reduce PM_{10} and NO_x emissions for mobile sources, but is not yet proven on mining equipment.

 NO_x from stationary and mobile sources would exceed the significance criteria and therefore would be a potentially significant impact.

The following regulatory requirements and mitigation measures/conditions of approval from the 1997 FEIR/EIS remain applicable to the Revised Project:

Regulatory Requirements

- The Kern County Air Pollution Control District (KCAPCD) will review facility designs and operations for compliance with Federal and California regulations for the protection of air quality. An application for Authority to Construct has been submitted to the KCAPCD.
- As required by the KCAPCD, permitted sources of emissions will be equipped with Best Available Control Technology (BACT).
- Roads will be maintained on a routine basis. Appropriate dust suppression techniques will be used on roads and disturbed surfaces to minimize fugitive emissions.
- As required by the KCAPCD, sources of emissions will be controlled to ensure compliance with California Health and Safety Code §41700 (i.e., nuisance) and §41701 (i.e., visible emissions).

Existing Mitigation Measures/Conditions of Approval

- Onsite equipment and vehicles will be maintained on a routine basis, as recommended by manufacturer manuals, to reduce exhaust emissions. (Condition of Approval No. 21)
- Monitoring stations for PM₁₀ will be established upwind and downwind from the processing facilities. (Condition of Approval No. 22 condition satisfied)
- A mercury retort will be installed to control mercury emissions. (Condition of Approval No. 23)
- The size and number of blasts in the mine will be limited by good engineering design. (Condition of Approval No. 24)
- The existing tailings piles will be removed, thereby reducing the long-term fugitive emissions from the site. (Condition of Approval No. 25)
- The adopted reclamation plan shall include reclamation of previously disturbed areas. (Condition of Approval No. 26)

The project design features along with the mitigation measures, would reduce project-level and cumulative impacts on air quality. However, any addition of ozone precursors and PM_{10} pollutants generated at full build out of the future projects would continue to degrade air quality within the Kern County Air Pollution Control District. While cumulative and project impacts have been lessened to the extent feasible by the design features and all reasonable and applicable mitigation measures and air district rules and regulations have been implemented, the proposed project's air quality impacts and associated health effects would remain cumulatively significant and unavoidable.

The following additional mitigation measure is specifically intended to reduce NO_x emissions.

Mitigation Measure 4.2-1: The following vehicle emission control measures shall be implemented:

- a) Properly maintain and tune all internal combustion engine powered equipment, with maintenance checks being performed on all mechanical equipment once every four months.
- b) Require employees and subcontractors to comply with California's idling restrictions for compression ignition engines.
- c) Require the use of low sulfur (CARB) diesel fuel.

Level of Significance After Mitigation

Significant and Unavoidable.

Health Risk Assessment

Impact 4.2-4: The Revised Project would not expose sensitive receptors to substantial pollutant concentrations.

Sensitive receptors are defined as uses or facilities where sensitive population groups are located and include residences, schools, playgrounds, childcare centers, retirement homes, convalescent homes, hospitals, medical clinics, etc. Sensitive population groups include children, the elderly, the acutely ill, and the chronically ill. Those with cardio-respiratory diseases are especially sensitive to pollutant concentrations. Residential areas are considered to be sensitive to air pollution because residents (including children and the elderly) tend to be at home for extended periods of time, resulting in sustained exposure to any pollutants present. Recreational land uses can also be moderately sensitive to localized elevated concentrations of air pollution.

Toxic Air Contaminants

The 1997 FEIR/EIS estimated emissions of air toxics from the 1997 Project, including naturally occurring metals from handling of the ore and overburden materials, hydrogen cyanide from the leaching solution and organic gases, and some metals from the gas-fired furnace and the mercury retort. Based on a health risk assessment, the 1997 FEIR/EIS concluded that these emissions would cause a less than significant impact (1997 FEIR/EIS, pp. 214-215, 219).

There have not been any changes incorporated into the Revised Project that would tend to increase toxic risk. The Revised Project will not use any additional toxic compounds or increase use of those previously reviewed. Similarly, the Revised Project does not incorporate any changes that would increase emissions of toxic air contaminants from the Project Site. To the contrary, project changes will tend to decrease risk of exposure to toxic air contaminants. For example, burying the drip emitters on the heap leach facility will reduce emissions of hydrogen cyanide. While there have not been any project changes that would require further analysis, there is new information in the form of the health risk assessment prepared by Air Sciences for the Revised Project (the AQ/HRA). The results of the 1997 analysis and the AQ/HRA for the Revised Project are compared in Table 4.2-13 below:

TABLE 4.2-13. COMPARISON OF HEALTH RISK ASSESSMENT FOR 1997
PROJECT AND REVISED PROJECT

Parameter	1997 Project ^a	Revised Project ^b	Significance Threshold ^c
Cancer Risk (chances per million)	4.99	5.27	10
Short Term (acute) Hazard Index	0.014	0.51	1.0
Long Term (chronic) Hazard Index	0.052	0.90	1.0
 ^a 1997 FEIR/EIS p. 214-15, 219. ^b AQ/HRA Table (Air Sciences 2009b) ^c There has been no change in the thresholds 	since 1997.		

Table 4.2-13 suggests that the health risk associated with the Revised Project is greater than that of the 1997 Project. However, this is not a real increase in health risk. Rather, it reflects regulatory changes since 1997, including choice of model, number of contaminants evaluated, risk factors, etc. In addition, even with the higher risk numbers, the analysis shows that the Revised Project remains below the significance thresholds. The analysis of the Revised Project is described further below.

To assess potential project impacts to the surrounding sensitive receptors, the Health Risk Assessment component of the AQ/HRA evaluated potential health hazards and cancer risks associated with toxic air contaminants that could be emitted from the Revised Project. The AQ/HRA did not specifically identify the locations of the nearest residences. However, spatial modeling parameters do account for potential sensitive receptors (including all existing residents) within four distinct distance classes:

- 1. At the Project Site boundary, with receptors modeled at 50 meters (164 feet) apart.
- 2. Within 2,000 meters (1.24 miles) of the Project Site boundary, with receptors modeled in a grid pattern 200 meters (656 feet) apart.
- 3. From 2,000 to 5,000 meters (3.1 miles) from the Project Site boundary, with receptors modeled in a grid pattern 500 meters (1,640 feet) apart.
- 4. A group of 30 randomly selected sensitive receptors representing the Edwards Air Force Base, nearby communities, schools, and designated Class I and Wilderness Areas (see Table 3-12 of the AQ/HRA for a complete listing). These range from 1.8 miles to over 60 miles from the Project Site. Those receptors within three miles of the site are also accounted for in the gridded receptor inventories.

The Health Risk Assessment of the AQ/HRA (Air Sciences 2009b) consisted of four steps, including: health identification, exposure assessment, dose-response, and risk characterization.

- Hazard Identification: Identified those substances of concern and associated health problems. Determination was based on available short-term (acute) and long-term (chronic) epidemiological, clinical, and laboratory studies. Table 6-2 of the AQ/HRA (Air Sciences 2009b) lists the 51 substances that were analyzed in the HRA.
- Exposure Assessment: Estimated the extent of public exposure to each identified substance, by analyzing dust sources, leaching and refining sources, and fuel combustion for each substance of concern. The most recent version of the AERMOD air dispersion modeling system was used to estimate concentrations. AERMOD was run to generate modeled concentration tables for each source, as shown in Table 6-5 (*Model Input Parameters-VOLUME Sources*) and Table 6-6 (*Model Input Parameters-POINT Sources*) in the AQ/HRA (Air Sciences 2009b).
 - **Dust sources** include non-criteria pollutant emissions that are estimated based on their concentration in the host rock (ore and waste rock). This

group represents emissions from mining activities including drilling, blasting, material loading, unloading, hauling, and transfer, and fugitive emissions associated with surface disturbance and maintenance, i.e., wind erosion, dozing, and grading. The rock composition data used to develop these emissions were summarized in Table 4.2-1.

- <u>Dose-Response</u>: Determined the relationship between exposure to a carcinogen and non-carcinogen substances (dose) and health effects (response). Long-term exposure from project air emissions of substances were analyzed for both inhalation and non-inhalation, which are summarized in Table 6-8 (*Chronic Inhalation and Oral REL and Target Organ Systems*) and Table 6-9 (*Acute Inhalation REL and Target Organ Systems*) of the AQ/HRA (Air Sciences 2009b).
- Risk Characterization: Estimated the cancer-risk (carcinogenic risk assessment) and non-cancer chronic and acute health impacts (non-carcinogenic risk assessment) of the Revised Project on neighboring populations by utilizing the most recent version of the HARP (version 1.4a).

The AQ/HRA uses the Tier-1 point-estimation approach for the determination of inhalation and non-inhalation cancer risks, along with the chronic inhalation and non-inhalation, and acute hazard indices. These risk values and hazard indices can be determined at the point of maximum impact (PMI). The AQ/HRA focuses on PMI for cancer risk, chronic hazard index (HI) and acute HI (collectively termed "risk values") since the PMI identifies the maximally affected receptor for each risk value.

The highest estimated risk values (cancer risk, chronic and acute HI) at grid and sensitive receptor locations are shown in Table 4.2-14.

	Estimated Hig		
Risk Value	Grid Receptor PMI	Sensitive Receptor	Significance Threshold
Cancer Risk (chances per million)	5.27	0.083	10
Maximum Chronic Hazard Index	0.90	0.015	1.0
Maximum Acute Hazard Index	0.51	0.021	1.0
PMI: point of maximum impact Source: Table 7-8 (Air Sciences 2009b)			

 TABLE 4.2-14. HIGHEST ESTIMATED RISK VALUES

The locations of the PMI are presented in Figure 6-1 of the AQ/HRA (see Appendix D). As shown in that figure, the estimated cancer risk PMI occurs on a boundary receptor northeast of the Project center. The chronic and acute HI PMI occur on two adjacent boundary receptors located north of the proposed refinery. Due to their wide dispersal and distance from the Project Site, the sensitive receptors are not mapped, but their risk values are listed in Table 6-12 (*HRA Results at Sensitive Receptors*) of the AQ/HRA.

Boundary receptors are typically used to assess compliance with applicable ambient air quality standards (for air permitting) and the point of maximum impact (for health risk assessments) at the fence line of a facility. The grid receptors are used to generally characterize air quality impacts in all areas extending in all directions from emission sources at the Project. In addition to the grid and boundary line receptors, a group of selected sensitive receptors representing the Edwards Air Force Base, nearby cities, schools, designated Class I and Wilderness Areas, are evaluated in the AQ/HRA analyses. Sensitive receptors allow for the estimation of air quality and health risks at specific locations of interest.

As shown in the tables, none of the estimated risk values exceed any significance threshold. The highest estimated cancer value is 0.08 in a million at Sensitive Receptor 29 Edwards Air Force Base. The highest estimated chronic HI is 0.01 at the same Edwards Air Force Base location. The highest estimated acute HI is 0.02 at Sensitive Receptor 2 in Mojave. Based on this analysis, it can be concluded that the Revised Project would not result in any potentially hazardous health risk and therefore, those sensitive receptors that are located near the project site would likewise, not be significantly impacted.

It should also be noted that an HRA was prepared in 1997 by WZI Inc. for the previously proposed Soledad Mountain mining operations. The 1997 HRA, "Golden Queen Mining Company, Soledad Mountain Project, Estimated PM_{10} and Air Toxics Emissions and Impacts Assessment," presented results that concluded that cancer risk and chronic and acute health effects associated with the 1997 TAC emissions would be below significance thresholds. Subsequently, the KCAPCD issued seven ATC permits in 2002.

Since 1997, not only has the Project been revised, but regulatory tools and methods relating to air quality and health risk assessment have also changed. Table 4.2-15 lists a comparison of the key inputs and methods used to prepare the 1997 HRA and the current AQ/HRA. It is important to note that in various instances, inputs/results are not directly comparable. While changes in the HRA model inputs and methodologies produce risk estimates in the current AQ/HRA that are similar (but in most cases higher) than risk estimates included in the 1997 HRA, important design features in the Revised Project (listed in Table 1-1 of the AQ/HRA) are expected to result in real reductions in emissions and, consequently, lower health risks to exposed population than the previous version of the Project. Conclusions and findings from the AQ/HRA prepared for the Revised Project provide further assurances that significant health impacts would not result with the Revised Project.

Input/Method in 1997 HRA	Input/Method in 2009 HRA	Likely Effect on Risk Results (2009 HRA vs. 1997 HRA)
ISCST3 Dispersion Model	AERMOD Dispersion Model	Unknown
ACE 2588 Risk Model	HARP Risk Model	Unknown

TABLE 4.2-15. COMPARISON OF HRA INPUTS AND METHODOLOGIES

Input/Method in 1997 HRA	Input/Method in 2009 HRA	Likely Effect on Risk Results (2009 HRA vs. 1997 HRA)
1990 – 1991 Off-Site Meteorological Data Set	2008 On-Site Meteorological Data Set	Unknown (although average wind speed for the 2008 meteorological data set is higher than the 1990-1991 data set)
Total Production of 275 Million Tons	Total Production of 158.6 Million Tons	Lower Project toxic emissions
1997 List of Toxic Air Contaminants Considered in HRA (11 TACs)	2009 List of Toxic Air Contaminants Considered in HRA (> 23 TACs)	Higher estimated health risk
1997 Unit Risk Factors and Reference Exposure Levels	2009 Unit Risk Factors and Reference Exposure Levels	Higher estimated heath risk
1997 Emissions Inventory Inputs and Emission Factors	2009 Emissions Inventory Inputs and Emission Factors	Higher estimated health risk
Source: Air Sciences, Inc.		

Mitigation Measures

Additional mitigation is not required. The Revised Project is required to comply with those applicable mitigation measures established with the 1997 FEIR/EIS.

Level of Significance After Mitigation

The Revised Project will not result in any new significant impact when compared with the 1997 Project. The 1997 FEIR/EIS and the AQ/HRA (Air Sciences 2009b) both conclude that significant health impacts would not result.

Carbon Monoxide Hotspots

Carbon monoxide (CO) hotspots are localized areas of high CO concentration usually associated with mobile source emissions due to congestion at traffic intersections. With respect to this impact, the 1997 FEIR/EIS concluded: "Based on the findings of Section 3.13, Traffic and Transportation, there will not be any concentration of vehicle trips or vehicle-related emissions in a localized area which would be expected to cause a violation of any CO ambient air quality standards" (1997 FEIR/EIS, p. 215). The Revised Project includes mobile sources that would generate CO emissions, including an increase in on-road vehicle trips associated with the aggregate production. However, based on the County's Air Quality Guidelines (June 2006), the Revised Project does not require CO hotspots analysis because it does not meet any of the following conditions:

- Project traffic contribution to Level of Service (LOS) of an intersection or roadway identified as LOS E or worse;
- Signalization and/or channelization is added to an intersection; and,
- Sensitive receptors such as residences, schools, hospitals, etc. are located in the vicinity of the affected intersection or signalization.
As indicated in Section 4.1 (XV. *Transportation and Traffic*), with implementation of the Revised Project, no roadway or intersection in the Revised Project's vicinity will operate at worse than LOS B. Therefore, no signalization or channelization is required at any intersection and sensitive receptors will not be affected. This would be a less than significant impact.

Mitigation Measures

No additional mitigation is proposed.

Level of Significance After Mitigation

Less than significant.

Odor Evaluation

Impact 4.2-5: The Project would not create objectionable odors affecting a substantial number of people.

Odors rarely cause any physical harm but can be very unpleasant, leading to considerable distress among the public and often generating citizen complaints to local governments and the KCAPCD. The KCAPCD has no rules or standards specifically related to odor emissions, other than its nuisance rule, Rule 419. In such cases where the KCAPCD receives complaints from the public, the District could require that a qualitative assessment be prepared to determine if odors would be generated by any project. Typically, facilities that often result in odor complaints include refineries, wastewater treatment plants, chemical manufacturing plants, painting and coating businesses, feed lots and dairies, composting facilities, solid waste landfills, and solid waste transfer stations.

The 1997 FEIR/EIS considered odor impacts, and generally concluded as follows: "*No conditions are anticipated which would create a public nuisance condition, therefore, the impact of the Proposed Action is Less Than Significant*" (1997 FEIR/EIS, p. 215). There have not been any changes incorporated into the Revised Project that would increase odors from the Revised Project or change this conclusion. The Revised Project will not use any additional odorous compounds or substantially change proposed operations in a manner that might cause or increase odors from the Project Site. Therefore, no further odor analysis was necessary for the Revised Project.

Even though no further analysis was required, odors were evaluated in the AQ/HRA. To determine if the Revised Project would generate objectionable odors, the AQ/HRA included dispersion modeling to estimate 24-hour average concentrations of odorous compounds at and beyond the project boundaries, as required by the County's *Air Quality Guidelines*. Odors were assessed at specified locations for diesel emissions, such as formaldehyde (HCHO) and emissions of hydrogen cyanide (HCN). Table 4.2-16 shows that the modeled concentrations of odorous compounds are significantly below odor thresholds. Therefore, emissions from the Revised Project are not expected to create any

objectionable odors that could affect a substantial number of people. Significant impacts are not expected.

	Max. 1-hour Impact (ppm)		
Pollutant	Grid Receptor	Sensitive Receptor	Odor Threshold (ppm)
Diesel Exhaust (as HCHO)	4.3E-04	1.5E-05	0.012 ^a
HCN	6.6E-04	7.8E-05	0.58 ^b

TABLE 4.2-16. ODOROUS COMPOUND IMPACTS AND ODOR THRESHOLDS

Sources: Table 7-9 (Air Sciences 2009b)

^a U.S. Department of Labor, Occupational Safety and Health Administration health guidelines for hydrogen cyanide. (http://www.osha.gov/SLTC/healthguidelines/hydrogencyanide/recognition.html)

^b U.S. EPA Health Assessment Document for Diesel Engine Exhaust, May 2002.

(http://www.epa.gov/ttn/atw/dieselfinal.pdf)

Mitigation Measures

Additional mitigation is not required. The Revised Project is required to comply with those applicable mitigation measures established with the 1997 FEIR/EIS that was certified for the original Soledad Mountain mining operations.

Level of Significance After Mitigation

The Revised Project will not result in any new significant odor impact when compared with the 1997 Project as analyzed in the 1997 FEIR/EIS. The original 1997 FEIR/EIS concluded that odors associated with mining operations would be below similar significance thresholds and therefore, would not result in any significant impacts related to odors. Given that the Revised Project would include mining operations and activities similar to those analyzed in 1997, it can be concluded that the Revised Project would also not result in any significant impact related to odors.

Conformity Analysis

Impact 4.2-6: The Project is consistent with the Kern Council of Governments' Final Air Quality Conformity Analysis.

The conformity tests identified in the Kern Council of Governments Final Air Quality Conformity Analysis (May 2007) (Conformity Analysis) are based upon comparing regional vehicle-related emissions estimates associated with the Transportation Improvement Program/Regional Transportation Plan with approved emissions budgets. The planning years for which regional vehiclerelated emissions budgets have been established extend out to 2030. Vehiclerelated emissions estimates and projections are based on key socio-economic data including population, employment, and vehicle miles traveled (VMT). Projections for the Mojave area assume significant growth in population (54 percent), employment (43 percent), and VMT (69 percent) from 2008 to 2030. Moreover, current data demonstrates that growth has been less than these estimates. Therefore, any effect of the Revised Project on population, employment, and VMT can be reasonably assumed to be accounted for in these projections. Therefore, the Revised Project is consistent with the Conformity Analysis.

Mitigation Measures

No additional mitigation is proposed.

Level of Significance After Mitigation

Less than significant.

Greenhouse Gas Emissions

Impact 4.2-7: The Project would contribute to global greenhouse gas emissions.

Global climate change could be caused by increased greenhouse gas emissions and refers to changes in average climatic conditions on earth as a whole, including temperature, wind patterns, precipitation, and storms. The six major greenhouse gases identified by the Kyoto Protocol are carbon dioxide (CO_2), methane, nitrous oxide, sulfur hexafluoride, haloalkanes, and perfluorocarbons.

The 1997 FEIR/EIS did not analyze the Project's greenhouse gas emissions or the potential impact on or contribution to climate change. This alone, however, does not prompt a requirement to analyze climate change in this Supplemental EIR. In order to trigger additional environmental review following certification of an initial EIR for a project, Public Resources Code Section 21166 provides that there must be "new information, which was not known and could not have been known at the time the environmental impact report was certified..." The concepts of climate change and human contribution to that phenomenon do not constitute "new information" within the meaning of Public Resources Code Section 21166 because information relating to these concepts was widely available and publicly debated as early as 1988, when the United Nations established the Intergovernmental Panel on Climate Change. Thus, information about climate change was available at the time the 1997 FEIR/EIS was certified and could have been raised at that time. The time to challenge any deficiencies in the 1997 FEIR/EIS has long since passed, and it must be accepted as adequate for the project as then approved. Therefore, as with all other topics covered in this Supplemental EIR, there would only need to be analysis of climate change and greenhouse gas emissions if the project's contribution of greenhouse gases were to increase as a result of changes incorporated into the Revised Project.

The AQ/HRA (Air Sciences 2009b) determined that carbon dioxide will be the only greenhouse gas emitted in any substantial quantity.

The changes incorporated into the Revised Project will not increase the project's emissions of greenhouse gases. Although there will be additional greenhouse gas

emissions associated with the addition of aggregate production (which was not evaluated in the 1997 FEIR/EIS), these emissions will be more than offset by other project changes, such as reduction in total material production. Overall, the project changes will decrease greenhouse gas emissions from the Revised Project compared to the 1997 Project.

Although greenhouse gas (GHG/CO₂) emissions were not evaluated and addressed in the 1997 FEIR/EIS, the emissions associated with the 1997 Project an emissions estimate can be prepared retroactively and compared to the emissions estimate for the Revised Project. In March 1998 GQM conducted a feasibility study to estimate equipment and fuel usage for the Project (*Soledad Mountain Project, Feasibility Report,* M3 Engineering & Technology Corporation, Prepared for Golden Queen Mining Company, Inc., March 1998). The March 1998 fuel usage estimates were based on the Project design approved in conjunction with certification of the 1997 FEIR/EIS, and have been used to estimate the CO₂ emissions for the 1997 Project design for this comparison. Detailed fuel consumption and CO₂ estimates for the 1997 Project are contained in the Soledad Mountain Project, Greenhouse Gas Emissions (Air Sciences 2009).

The underlying key design features for the CO_2 emission estimates for the 1997 Project and the Revised Project are presented in Table 4.2-17, together with the directional effect on CO_2 emissions. The comparison is presented for the life of the mine. This is for two reasons. First, unlike criteria pollutants which can result in immediate or near term health effects, a particular concern with greenhouse gases is their tendency to accumulate in the atmosphere and contribute to climate change over time. Second, the project changes incorporated into the Revised Project has extended the life of the project. The 1997 Project design had a 14year project life while the Revised Project has a 35-year project life. Thus, it is important to look at emissions over the life of the project for a full and appropriate comparison.

				Effect on
Design Feature/Parameter	Unit	1997	2009	CO ₂ Emissions (from 1997 to 2009)
Life of mine	yr	14	36	
Life of mine ore production	MMt	45.5	46.6	•
Life of mine waste production	MMt	204.5	98.5	▼
Life of mine total material production	MMt	250.0	145.1	▼
Stripping ratio		4.5	2.1	▼
Life of mine aggregate production	MMt	0.0	19.0	A
Life of mine on-site diesel use	MMgal	24.9	11.3	▼
Life of mine on-site gasoline use	MMgal	0.6	0.3	▼
Diesel combustion CO ₂ emission factor ^a	lb/gal	22.2	22.2	N/A
Gasoline combustion CO ₂ emission factor ^a	lb/gal	19.4	19.4	N/A
^a EPA420-F-05-001	•			•

 TABLE 4.2-17. COMPARISON OF 1997 PROJECT AND REVISED PROJECT

 DESIGN FEATURES AND IMPACT ON GHG EMISSIONS

Figure 4.2-1, above, presented the life of mine schedule for the Revised Project. Taking into account the different length of time projected for each activity under the 1997 Project and the Revised Project, Table 4.2-18 compares CO_2 emissions over the life of the project.

Activity	1997	2009	Revised Project Effect	Difference ^a
Construction	7,165	5,971	▼	1,194
Mining	265,976	125,508	▼	140,468
Reclamation	2,476	5,441	A	-2,965
Sub-total	275,617	136,920	▼	138,698
Aggregate Production	0	70,271	A	-70,271
Grand Total	275,617	207,191	▼	68,426
^a 1997 estimate minus 2009 estimate				

TABLE 4.2-18. LIFE OF MINE CO2 EMISSIONS, 1997 PROJECT VERSUS REVISED PROJECT (TONS)

Construction and mining activity related CO_2 emissions are lower for the Revised Project compared to the 1997 Project. CO_2 emissions associated with reclamation and aggregate production increase with the Revised Project. The Revised Project design incorporates a more than 50 percent decrease in waste production (shown in Table 4.2-17), a more compact footprint (resulting in shorter hauling distances), and the application of backfilling of waste rock into mined areas. Overall, the Revised Project design results in an estimated reduction of 68,426 tons (approximately 25 percent) of CO_2 emissions compared with CO_2 estimates for the 1997 Project. Annual CO_2 emission statistics are provided in Table 4.2-19.

Emission Scenario	1997	2009	Revised Project Effect	Difference ^a
Maximum annual	36,502	12,801	▼	23,701
Life of mine annual average	19,687	5,755	▼	13,932
Active mining annual average ^b	19,687	9,570	•	10,117
^a 1997 estimate minus 2009 estimate ^b Excluding 2009 design operation years dedicated to aggregate production exclusively				

 TABLE 4.2-19. ANNUAL CO2 EMISSIONS, 1997 PROJECT VERSUS REVISED

 PROJECT (TONS)

Maximum and life-of-mine average annual CO_2 emissions in 2009 design are 30-35 percent of the CO_2 emissions estimated for the 1997 Project. The more conservative comparison of average annual CO_2 emissions based on active mining (construction, ore and waste production and/or reclamation) years only (i.e., no aggregate production years) shows that the active mining annual average CO_2 emissions are reduced by more than 50 percent in the Revised Project. Because the Revised Project will result in fewer greenhouse emissions than the 1997 Project, it is not necessary to analyze the Revised Project for new significant impacts. Nonetheless, Air Sciences conducted such an analysis as though the Revised Project were undergoing initial CEQA review. Emissions were estimated for the emergency generator, gasoline vehicles, diesel machinery including on-site vehicles, and off-site vehicles including transportation of aggregate. Detailed emissions calculations are presented in the Soledad Mountain Project, Greenhouse Gas Emissions (Air Sciences 2009c).

Figure 4.2-2 shows the annual CO_2 emissions over the life of the Revised Project. The upper, lighter colored portion of each bar represents off-site CO_2 emissions. Average annual emissions over the life of the Revised Project, including the construction, mining operations, reclamation, and aggregate production phases, are estimated to be 5,755 t/year. Annual CO_2 emissions will be highest during the mining operations phase of the Project.

The annual average CO2 emissions from the Revised Project will be substantially less than the 10,000 metric tons per year CEQA significance threshold applied by Kern County to industrial projects. In addition, the peak year emissions (approximately years 6 through 13) will be less than the 25,000 metric ton per year reporting threshold used as a CEQA significance threshold.

The GHG emissions from the Revised Project are entirely dependent upon the combustion of fossil fuels. The Revised Project design includes several features that minimize the fossil fuel combustion and result in lower GHG emissions than the previously approved project in the 1997 FEIR/EIS. These improvements include:

- Use of backfill techniques to minimize hauling distances of waste rock.
- Construction of an electric pipe conveyor to convey ore from the active pits to the ore processing circuit to minimize hauling of ore.
- Use of optimally sized haul trucks for the Project to minimize haul truck trips.

All feasible and reasonable mitigation has been imposed and the project is consistent with the recommended global warming mitigation measures from the Attorney General, CAPCOA, and the Office of Planning and Research. Implementation of the existing mitigation measures/conditions of approval from the 1997 FEIR/EIS and Mitigation Measure 4.2-1 would reduce emissions of NO_x associated with operation by requiring the project proponent to properly maintain and tune all internal combustion engine powered equipment, require employees and subcontractors to comply with California's idling restrictions for compression ignition engines, and use low sulfur diesel fuel. No other reasonable or feasible mitigation has been identified that would reduce impacts to air quality for the project.

The impact of the additional CO_2e emissions on the increased risk of flooding from accelerated runoff from reduced Sierra snowpack, and coastal subsidence from sea level rise is not known. As it pertains to the Revised Project and its environs, there are no specific climate change effects that are known or reasonably expected to occur, much less adversely affect the Revised Project.

Mitigation Measures

No additional mitigation is proposed.

Level of Significance After Mitigation

The Revised Project reduces emissions of greenhouse gas emissions compared to the 1997 Project; therefore, there is no new significant impact. In addition, even if the greenhouse gas emissions were evaluated as new emissions, they would be considered a less than considerable contribution to a cumulative impact.



Figure 4.2-2 Revised Project Greenhouse Gas Emissions (CO₂e tons/yr)

Section 4.3 Biological Resources

4.3.1 Introduction

This section of the Supplemental EIR addresses the potential impacts on biological resources associated with elements of the Soledad Mountain Project that have changed since its approval in 1997. The 1997 FEIR/EIS provided a thorough discussion of the existing conditions of the project site, the regulatory setting and the impacts of the 1997 Project and feasible mitigation measures to reduce or avoid these impacts. This section will briefly summarize these aspects of the site and the Revised Project and further describe the elements that have changed since approval of the 1997 Project.

The analysis of biological resources presented in this section is based on the 1997 FEIR/EIS, a review of the Applicant submitted project description, maps, biological investigations and reports, and available literature from federal, State, and local agencies.

Concepts and Terminology

Special-Status Species

Special-status species are plants, animals, and fish species that are legally protected under the California Endangered Species Act (CESA), the federal Endangered Species Act (ESA), or other regulations, as well as species considered sufficiently rare by the scientific community to qualify for such listing. Special-status species include:

- Species listed or proposed for listing as threatened or endangered under ESA (50 Code of Federal Regulations [CFR] 17.12 [listed plants], 50 CFR 17.11 [listed animals], and various notices in the Federal Register [FR] [proposed species]).
- Species that are candidates for possible future listing as threatened or endangered under ESA (69 FR 24876, May 4, 2004).
- Species listed or proposed for listing by the State of California as threatened or endangered under CESA (14 CCR 670.5).
- Species that meet the definitions of rare or endangered under CEQA (CEQA Guidelines Section 15380).

- Plants listed as rare under the California Native Plant Protection Act. (California Fish and Game Code Section 1900 et seq.)
- Plants considered by California Native Plant Society (CNPS) to be "rare, threatened, or endangered in California" (Lists 1B and 2, CNPS 2001); plants listed by CNPS as plants about which more information is needed to determine their status, and plants of limited distribution (Lists 3 and 4, CNPS 2001), which may be included as special-status species on the basis of local significance or recent biological information.
- Animal species of special concern to the California Department of Fish and Game (CDFG).
- Animals fully protected in California (California Fish and Game Code Section 3511 [birds], 4700 [mammals], and 5050 [amphibians and reptiles]).

Project Background

Following the Kern County Board of Supervisors' certification of the 1997 FEIR/EIS and approval of the CUPs, the applicant submitted applications for Authority to Construct (ATC) permits to the KCAPCD. The applications demonstrated compliance with the applicable air quality regulations and standards, and as a result, KCAPCD issued seven ATC permits for the 1997 Project in March 2002. GQM was evaluating various alternative designs at that time, and therefore the construction of the 1997 Project did not commence and the permits expired in March 2004 (Air Sciences 2009b, p. viii).

Section 4.1.3 (Effects Not Found to be Significant - IV. Biological Resources) of this Supplemental EIR describes the biological investigations and reports prepared for the 1997 FEIR/EIS and the biological technical studies prepared: 1) pursuant to the regulatory requirements applicable to the 1997 Project, and 2) for the Revised Project.

4.3.2 Environmental Setting

The project site is located approximately five miles southwest of the town of Mojave, in the western area of the Mojave Desert. This area experiences strong and persistent winds. The climate is typical of the Californian deserts with hot, dry summers with temperatures ranging from 70 to 105 degrees Fahrenheit and cool winters ranging from 27 to 60 degrees Fahrenheit. The Mojave Desert has very low levels of precipitation - approximately five inches per year with the majority of the rainfall occurring in the winter months from frontal storms. However, at higher elevations on Soledad Mountain, the temperatures are cooler and there is some increase in rainfall and snowfall (Bamberg 1997).

Vegetative and Wildlife Communities

The project site generally has rocky or pebbly loams on the slopes, and sandy loams on alluvial fans and flats. The vegetation communities onsite are characterized by vegetation found in similar areas subject to the harsh desert climates, with desert shrub-scrub dominating the lower, flat areas and alluvial fans below the mountain. Creosote bush (*Larrea tridentata*) and white bursage (*Ambrosia dumosa*) are the most common of the plant species onsite. In addition to the creosote bush and white bursage, four-wing saltbush (*Atriplex canescens*), shadscale (*A. confertifolia*), Anderson's boxthorn (*Lycium andersonii*), Cooper's boxthorn (*L. cooperi*), Nevada tea (*Ephedra nevadensis*), and spiny hopsage (*Grayia spinosa*) also appear onsite (Sunrise Consulting, 2009 pp. 8-9). On the mountain, the vegetation is mostly grass and varied shrubs. Past fires, grazing, recreational vehicles and historic and recent mine-related disturbances have influenced the vegetation onsite, changing and reducing the shrub cover and increasing annual grasses and weeds (Bamberg 1997, p. 3). No "blue-line" or other significant drainages are found onsite (Sunrise Consulting 2009, p. 8).

Also similar to other desert habitats, the majority of the wildlife species that are found on the Project site are small mammals, reptiles, and birds. The site disturbances mentioned above may have kept the general populations of wildlife low onsite. There were no deer or bighorn sheep observed on the project site (Bamberg 1997, p. iv).

Further environmental setting information, including vegetation types and wildlife found onsite are provided in the 1997 Bamberg report and 1997 FEIR/EIS, which are available for public review at the Kern County Planning Department offices. As indicated in Section 4.1 of this Supplemental EIR, the 1997 Bamberg report was updated in June 2006 by one of the same authors of the 1997 report Samuel A. Bamberg, Ph.D., ("2006 Bamberg report").

The 2006 Bamberg report found that the vegetation and plant communities and wildlife habitats have not changed significantly in the last 10 years. However, different from the 1997 Bamberg report, the 2006 Bamberg report noted that the site has been protected from fires and sheep grazing. Most trespassing and recreational uses have also been largely controlled since the prior report (Bamberg 2006, p. 1).

Wildlife surveys and observations completed as part of the 2006 Bamberg report did not note any new species that were not reported in the 1997 Bamberg report. However, burrowing and barn owls, a bobcat, a gray fox, and the pocket gopher were observed during the surveys and observations conducted for the 2006 Bamberg report, all which were reported as probable on-site species in the 1997 Bamberg report (Bamberg 2006, p. 3).

Special-Status Plant Species

The 1997 FEIR/EIS noted that no special status plant species were expected to occur or were observed on the project site (Bamberg, 1997, p. 19). The Desert Tortoise Focused Survey Report prepared in 2009 by Sunrise Consulting, noted based on a review of the CDFG's California Natural Diversity Data Base (CNDDB) and the California Native Plant Society's Electronic Inventory (CNPSEI) databases, that two sensitive plant species have been documented in the vicinity of the project site. These species include the alkali mariposa lily (*Calochortus striatus*) and white pygmy poppy (*Canbya candida*). Table 4.3-1 lists these species, their status and potential for occurrence (Sunrise Consulting 2009, p. 9).

The alkali mariposa lily is a bulbiferous herb that is historically known to be found most commonly in open, flat, barren sites on the sandy margins of alkali depressions in creosote bush scrub and arid phase saltbush scrub communities at elevations ranging from 230 to 5,230 feet above mean sea level. No specimens were observed on-site; however, the nearest recorded occurrence is approximately 5 miles east of the project site and suitable habitat for this species is found at the lowest elevations and site margins. Therefore, this species has a moderate potential for occurrence in these areas on-site (Sunrise Consulting 2009, pp. 10-11).

The white pygmy poppy is an annual herb that has been found in areas over 10 miles north of the project site at elevations ranging from approximately 2,000 to 4,800 feet above mean sea level. This species is found in Joshua tree woodlands and Mohave Desert scrubs, which are not located on-site. Therefore, this species has a low potential to occur on-site (Sunrise Consulting 2009, p. 11).

TABLE 4.3-1. SENSITIVE PLANT SPECIES

Common Name (Scientific Name)	Status	Potential to Occur On-site		
alkali mariposa lily (Calochortus striatus)	Federal: none CA: none CNPS: 1B.2	Moderate in lower areas of site		
white pygmy poppy (Canbya candida)	Federal: none CA: none CNPS: 4.2	Low		
California Native Plant Society (CNPS) designations: 1B: Plants rare and endangered in California and throughout their range. 4: Plants of limited distribution; a watch list.				
Threat Code Extensions: .2: Fairly endangered in California.				
Source: Sunrise Consulting, 2009, p. 10 as derived from the CNDDB and CNPSEI for Mojave and Soledad Mountain 7.5 minute USGS quadrangles; West Mojave Plan and Final Environmental Impact Statement, July 2005 (WEMO).				

Special-Status Wildlife Species

The 1997 FEIR/EIS identified three threatened or endangered species as being potentially present on or near the site, including the federal and state listed endangered peregrine falcon, the federal and state listed threatened desert tortoise, and the Mohave ground squirrel, a California listed threatened species. The 1997 FEIR/EIS noted that a peregrine falcon had been observed crossing a road to the north of the project site. However, peregrine falcons were not observed on the project site during extensive wildlife surveys. There are no peregrine eyrie on-site or in surrounding areas such that the project site would be included within critical habitat for this species. Preferred habitat for peregrine falcon nesting and foraging is cliff faces, usually near streams or bodies of water. The project site is not considered good foraging habitat due to distances to suitable habitat types for nesting and wetland habitats. Surveys conducted for the desert tortoise and the Mohave ground squirrel did not identify the presence of these animals on the site (Bamberg 1997, pp. 36 - 37). The 2009 Desert Tortoise

Focused Survey Report also noted that records suggest the latter two species having records of occurrence near the site (Sunrise Consulting 2009, p. 11). The 2009 Desert Tortoise Focused Survey Report also identified six additional sensitive wildlife species that have been recorded in the vicinity of the site. Table 4.3-2 lists these species, as well as status and potential for occurrence of each.

Common Name (Scientific Name)	Status	Potential to Occur On-site
desert tortoise (Gopherus agassizii)	Federal: threatened CA: threatened WEMO: covered	Absent
Mohave ground squirrel (Spermophilus mohavensis)	Federal: petitioned CA: threatened WEMO: covered	Low
burrowing owl (Athene cunicularia)	Federal: none CA: CSC WEMO: covered	Present
Townsend's big-eared bat (Corynorhinus townsendii)	Federal: none CA: CSC WEMO: covered	High
prairie falcon (Falco mexicanus)	Federal: none CA: CSC WEMO: covered	High
loggerhead shrike (Lanius ludovicianus)	Federal: none CA: CSC WEMO: covered	Present
American badger (<i>Taxidea taxus</i>)	Federal: none CA: CSC WEMO: covered	Low
LeConte's thrasher (Toxostoma lecontei)	Federal: none CA: CSC WEMO: covered	High
Source: Sunrise Consulting 2009, p. 12	-	•

TABLE 4.3-2 SENSITIVE WILDLIFE SPECIES

Of the eight species that have been recorded in the vicinity of the site, only the birds have been observed on or near the site, or have a high potential of appearing on-site (Sunrise Consulting 2009, pp. 12-13). Historically, Desert tortoises have been found near the Site, but none have been found in the past 20 years west of State Highway 14. The focused surveys conducted for the Revised Project to comply with regulatory requirements imposed by CDFG and USFWS found no evidence of current or historical presence of this species on-site; therefore, the desert tortoise is considered absent from the project site. Further, the 2009 Desert Tortoise Focused Survey Report found that historical soil disturbance has left soils on the site only marginally suitable for this species and as a result it is not likely that the species will be re-established onsite (Sunrise Consulting 2009, p. 11). The Mohave ground squirrel and American badger were not found onsite and the only record of their occurrence was 10 and 5 miles from the project site respectively. The Mohave ground squirrel has also not been found west of State Highway 14 (Sunrise Consulting 2009, pp. 11-13).

4.3.3 Regulatory Setting

This section summarizes the 1997 FEIR/EIS environmental review and consultation requirements and identifies permits and approvals that must be obtained from local, State, and federal agencies before implementation of the Revised Project.

Federal Regulations

Federal Endangered Species Act

The ESA of 1973 (16 USC 1531), as amended, extends legal protection to plants and animals listed as endangered or threatened by the U.S. Fish and Wildlife Service (USFWS). The ESA authorizes the USFWS to review proposed federal actions to assess potential impacts to "listed" species (e.g., Endangered, Threatened, Proposed or Candidate species, the definitions of which are located in Section 1.2.4.3.1 of the 1997 FEIR/EIS. No listed species are known to occur on or in the vicinity of the project site (Sunrise Consulting 2009, p. 12).

Migratory Bird Treaty Act

Migratory birds are protected under the Migratory Bird Treaty Act (MBTA) of 1918 (16 USC 703-711). MBTA makes it unlawful to take, possess, buy, sell, purchase, or barter any migratory bird listed in 50 CFR Part 10, including feathers or other parts, nests, eggs, or products, except as allowed by implementing regulations (50 CFR 21). The burrowing owl is the only migratory bird observed on or in the vicinity of the project site that is protected under MBTA (Sunrise Consulting 2009, p. 12). Thus, project construction and operation has the potential to directly take nests, eggs, young, or individuals of these protected species. Disturbance during the breeding season could result in the incidental loss of fertile eggs or nestlings, or otherwise lead to the abandonment of nests, which would be a violation of MBTA.

Clean Water Act

The federal Clean Water Act was enacted as an amendment to the federal Water Pollution Control Act of 1972, which outlined the basic structure for regulating discharges of pollutants to waters of the United States. The Clean Water Act now serves as the primary federal law protecting the quality of the nation's surface waters, including lakes, rivers, and coastal wetlands. The Clean Water Act empowers the U.S. Environmental Protection Agency (EPA) to set national water quality standards and effluent limitations and includes programs addressing both point-source and non-point-source pollution. Point-source pollution is pollution that originates or enters surface waters at a single, discrete location, such as an outfall structure or an excavation or construction site. Nonpoint-source pollution originates over a broader area and includes urban contaminants in stormwater runoff and sediment loading from upstream areas. The Clean Water Act operates on the principle that all discharges into the nation's waters are unlawful unless specifically authorized by a permit; permit review is the Clean Water Act's primary regulatory tool. A Section 401 certification would be required only if the project requires a Section 404 permit for discharges into navigable waters.

The following paragraphs provide additional details on specific sections of the Clean Water Act.

Water Quality Certification (Section 401)

Under the Clean Water Act, Section 401, applicants for a federal license or permit to conduct activities that may result in the discharge of a pollutant into waters of the United States must obtain certification from the state in which the discharge would originate, or, if appropriate, from the interstate water pollution control agency with jurisdiction over affected waters at the point where the discharge would originate. Therefore, all projects that have a federal component and may affect state water quality (including projects that require federal agency approval, such as issuance of a Section 404 permit) must also comply with Clean Water Act Section 401.

Permits for Stormwater Discharge (Section 402)

Section 402 of the Clean Water Act regulates construction-related stormwater discharges to surface waters through the National Pollutant Discharge Elimination System (NPDES) program, administered by the EPA. In California, the State Water Board is authorized by the EPA to oversee the NPDES program through Regional Water Quality Control Boards (see the related discussion under the subsection "State Water Resources Control Board," below). NPDES permits are required for projects that disturb more than one acre of land. The NPDES permitting process requires the applicant to file a public notice of intent to discharge stormwater and to prepare and implement a stormwater pollution prevention plan (SWPPP). The SWPPP includes a site map and a description of proposed construction activities. In addition, it describes the Best Management Practices (BMPs) that would be implemented to prevent soil erosion and discharge of other construction-related pollutants (e.g., petroleum products, solvents, paints, cement) that could contaminate nearby water resources. Permittees are required to conduct annual monitoring and reporting to ensure that BMPs are correctly implemented and effective in controlling the discharge of stormwater-related pollutants.

Section 404

Discharge of fill material into "waters of the U.S." including wetlands, is regulated by the U.S. Army Corps of Engineers (USACE) under Section 404 of the federal Clean Water Act (33 USC 1251-1376). USACE regulations implementing Section 404 define "waters of the U.S." to include intrastate waters, including lakes, rivers, streams, wetlands, and natural ponds; the use, degradation or destruction of which could affect interstate or foreign commerce. Wetlands are defined for regulatory purposes as "areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions" (33 CFR 328.3; 40 CFR 230.3).

The project site does not have any waters of the U.S. and is therefore not subject to Sections 404 or 401.

State Regulations

California Environmental Quality Act

CEQA is the regulatory framework by which California public agencies identify and mitigate significant environmental impacts. A project normally has a significant environmental impact on biological resources if it substantially affects a rare or endangered species or the habitat of that species; substantially interferes with the movement of resident or migratory fish or wildlife; or substantially diminishes habitat for fish, wildlife, or plants. The State CEQA Guidelines define rare, threatened, or endangered species as those listed under California Endangered Species Act (CESA) and ESA, as well as any other species that meet the criteria of the resource agencies or local agencies, for example, the CDFGdesignated "species of special concern" and CNPS-listed species. The State CEQA Guidelines state that the lead agency preparing an EIR must consult with and receive written findings from the CDFG concerning project impacts on species listed as endangered or threatened. The effects of a Revised Project on these resources are important in determining whether it has significant environmental impacts under CEQA.

California Endangered Species Act

CESA protects wildlife and plants listed as threatened and endangered by the California Fish and Game Commission. CESA prohibits take of state-listed wildlife and plants and requires an incidental take permit for authorization of take. The California Department of Fish and Game Code defines take as any action or attempt to "hunt, pursue, catch, capture, or kill." The requirements for an application for an incidental take permit under CESA are described in Section 2081 of the California Fish and Game Code and in final adopted regulations for implementing Sections 2080 and 2081. Incidental take may also be authorized if the state-listed species is also listed under ESA (2080.1) or is part of an approved Natural Community Conservation Plan (NCCP) (2835). Regarding rare plant species, CESA defers to the California Native Plant Protection Act of 1977, which prohibits importing rare and endangered plants into California, taking rare and endangered plants, and selling rare and endangered plants. State-listed plants are protected mainly in cases where state agencies are involved in projects under CEQA. In these cases, plants listed as rare under the California Native Plant Protection Act are not protected under CESA but can be protected under CEQA.

Historically, the Desert tortoise and the Mohave ground squirrel, both state listed as threatened species, have been found near the project site. However, no specimens of either species have been found on-site during recent surveys, and accordingly are now considered absent (in the case of the Desert tortoise) and having a low potential for occurring on-site (in the case of the Mohave ground squirrel) (Sunrise Consulting 2009, p. 12).

California Department of Fish and Game

Streambed Alteration Agreement (Sections 1600-1607 of the California Fish and Game Code)

State and local public agencies are subject to Section 1602 of the California Fish and Game Code, which governs construction activities that will substantially divert or obstruct the natural flow or substantially change the bed, channel, or bank of any river, stream, or lake designated by the CDFG. Under Section 1602, a discretionary Stream Alteration Agreement permit from the CDFG (Region 2 for the Revised Project) must be issued by the CDFG to the project developer prior to the initiation of construction activities within lands under CDFG jurisdiction. As a general rule, this requirement applies to any work undertaken within the 100-year floodplain of a stream or river containing fish or wildlife resources. The Revised Project will not affect areas subject to Section 1602 (Sunrise Consulting 2009, p. 8).

Native Plant Protection Act

The Native Plant Protection Act (*California Fish and Game Code Section. 1900-1913*) prohibits the taking, possessing, or sale within the state of any plants with a State designation of rare, threatened, or endangered (as defined by CDFG). An exception to this prohibition in the Act allows landowners, under specified circumstances, to take listed plant species, provided that the owners first notify CDFG and give that State agency at least 10 days to come and retrieve (and presumably replant) the plants before they are plowed under or otherwise destroyed (*Fish and Game Code, § 1913* exempts from "take" prohibition "the removal of endangered or rare native plants from a canal, lateral ditch, building site, or road, or other right of way"). Project impacts to these species are not considered significant unless the species are known to have a high potential to occur within the area of disturbance associated with construction of the Revised Project. No plant species with a State designation of rare, threatened, or endangered are known to occur on the project site (Sunrise Consulting 2009, p. 10).

Birds of Prey

Under Section 3503.5 of the California Fish and Game Code it is unlawful to take, possess, or destroy any birds in the orders of Falconiformes or Strigiformes (birds of prey) or to take, possess, or destroy the nest or eggs of any such bird except as otherwise provided by this code or any regulation adopted pursuant thereto. The prairie falcon is the only bird of prey observed on or in the vicinity of the project site (Sunrise Consulting 2009, p. 12).

"Fully Protected" Species

California statutes (Sections 3505, 4700, 5050 and 5515 of the California Fish and Game Code) also accord "fully protected" status to a number of specifically identified birds, mammals, reptiles, amphibians and fish. No such fully protected species are known to occur on or in the vicinity of the project site.

California Native Plant Society

The CNPS maintains a list of plant species native to California that have low numbers, limited distribution, or are otherwise threatened with extinction. This information is published in the Inventory of Rare and Endangered Vascular Plants of California. Potential impacts to populations of CNPS-listed plants receive consideration under CEQA review. The alkali mariposa lily and white pygmy poppy have moderate and low potential respectively for occurring on the project site. The lily has a CNPS designation of 1B, which is applied to plants that are rare and endangered in California and throughout their range. It also has a .2 threat code, which means the plant is "fairly endangered" in the state. The poppy has a CNPS designation of 4, which is a watch list and is applied to plants that have a limited distribution. It also has a .2 threat code.

Kern County

Kern County General Plan

The 1997 Project was determined to be consistent with the Kern County General Plan in effect at the time it was approved. However, the current Kern County General Plan, originally adopted on June 15, 2004, and last amended on September 22, 2009, contains the following policies related to biological resources. The Revised Project's consistency with the listed policies is described in Table 4.3-3.

Chapter 1. Land Use/Conservation/Open Space Element

Threatened and Endangered Species

- Goals
 - Goal 1: Ensure that the County can accommodate anticipated future growth and development while maintaining a safe and healthful environment and a prosperous economy by preserving valuable natural resources, guiding development away from hazardous areas, and assuring the provision of adequate public services.
- Policies
 - Policy 27. Threatened or endangered plant and wildlife species should be protected in accordance with State and federal laws
 - Policy 28. County shall work closely with State and federal agencies to assure that discretionary projects avoid or minimize impacts to fish, wildlife, and botanical resources.
 - Policy 29. The County will seek cooperative efforts with local, State, and federal agencies to protect listed threatened and endangered plant and wildlife species through the use of conservation plans and other methods promoting management and conservation of habitat lands.

- Policy 31. Under the provisions of CEQA, the County, as lead agency, will solicit comments from the California Department of Fish and Game and the U.S. Fish and Wildlife Service when an environmental document (Negative Declaration, Mitigated Negative Declaration, or Environmental Impact Report) is prepared.
- Policy 32. Riparian areas will be managed in accordance with United States Army Corps of Engineers, and the California Department of Fish and Game rules and regulations to enhance the drainage, flood control, biological, recreational, and other beneficial uses while acknowledging existing land use patterns.

Implementation Measures

- Implementation Q. Discretionary projects shall consider effects to biological resources as required by the California Environmental Quality Act.
- Implementation R. Consult and consider the comments from responsible and trustee wildlife agencies when reviewing a discretionary project subject to the California Environmental Quality Act.
- Implementation S. Pursue the development and implementation of conservation programs with State and federal wildlife agencies for property owners desiring streamlined endangered species mitigation programs.

TABLE 4.3-3. PROJECT CONSISTENCY WITH KERN COUNTY GENERAL PLAN POLICIES

General Plan Objectives and Implementing Policies	Consistency	Analysis
Policy 27. Threatened or endangered plant and wildlife species should be protected in accordance with State and federal laws.	Yes, with mitigation	Mitigation Measures 4.3-1 through 4.3-4 and the mitigation measures and project conditions of approval applied to the 1997 Project would reduce impacts to special-status species to a less than significant level. The Revised Project would be in compliance with federal and State laws.
Policy 28. County should work closely with State and federal agencies to assure that discretionary projects avoid or minimize impacts to fish, wildlife, and botanical resources.	Yes, with mitigation	Mitigation Measures 4.3-1 through 4.3-4 and the mitigation measures and project conditions of approval from the 1997 Project approval would reduce impacts to special-status species to a less than significant level. The Revised Project would be in compliance with federal and State laws. Consultation with State and federal agencies is required.
Policy 29. The County will seek cooperative efforts with local, State, and federal agencies to protect listed threatened and endangered plant and wildlife species through the use of conservation plans and other methods	Yes, with mitigation	Mitigation Measures 4.3-1 through 4.3-4 would reduce impacts to special-status species to a less than significant level.

General Plan Objectives and Implementing Policies	Consistency	Analysis
promoting management and conservation of habitat lands.		
Policy 31. Under the provisions of CEQA, the County, as lead agency, will solicit comments from the California Department of Fish and Game and the U.S. Fish and Wildlife Service when an environmental document (Negative Declaration, Mitigated Negative Declaration, or Environmental Impact Report) is prepared.	Yes	This Supplemental EIR will be sent to CDFG and USFWS for review and comment.
Policy 32. Riparian areas will be managed in accordance with United States Army Corps of Engineers, and the California Department of Fish and Game rules and regulations to enhance the drainage, flood control, biological, recreational, and other beneficial uses while acknowledging existing land use patterns.	Yes	There is no riparian or wetland habitat present within the Revised Project site.

4.3.4 Impacts and Mitigation Measures

This section describes the CEQA impact analysis relating to biological resource issues for the Revised Project. It describes the methods used to determine the Revised Project's impacts and lists the thresholds used to conclude whether an impact could be significant. Revised Project components were considered to evaluate and assess potential impacts to biological resources. Construction of the Revised Project has the potential to directly or indirectly affect biological resources as well as contribute to cumulative impacts to biological resources. Potential impacts to biological resources can be temporary, long-term, or permanent depending on the effect of project activities on an individual resource. Measures to mitigate (avoid, minimize, rectify, reduce, eliminate, or compensate for) potentially significant or significant impacts accompany each impact discussion.

Methodologies

Section 2.2.4.3 of the 1997 FEIR/EIS described the methodologies of the surveys and analyses conducted during the preparation of the biological technical studies supporting the 1997 FEIR/EIS and the methods of compliance with the applicable regulations. As part of the Revised Project's application, Samuel A. Bamberg, Ph.D. and S. Lynn Bamberg, LLC prepared an addendum to the 1997 Biological and Soil Resource Evaluation that Samuel A. Bamberg, Ph.D. authored for the 1997 FEIR/EIS. In addition, they prepared a revised Revegetation Plan for Soledad Mountain Project, dated March 2007. Brown-Berry Biological Consulting also prepared a report on Bat Surveys of Mines in Soledad Mountain, dated March 21, 2007 and S. Lynn Bamberg, LLC and

Golder Associates Inc. prepared a Soil Salvage, Stockpiling, and Use Plan for the Soledad Mountain Project, dated November 2008. In response to standard regulatory requirements of the USFWS and CDFG, Sunrise Consulting prepared a Desert Tortoise Focused Survey Report, dated May 2009.

Literature Search

A biological resources literature search was performed, which included researching information from regional documents such as the West Mojave Plan (WEMO, BLM/FWS 2005) as well as searching the CDFG's CNDDB and the CNPSEI to determine the sensitive species that had been documented in the project site's region. The results of the literature search are identified above in Section 4.3.2.

Field Evaluation

Samuel A. Bamberg, Ph.D. and S. Lynn Bamberg, LLC conducted quantitative vegetation surveys and wildlife observations on the project site to update the Biological and Soil Resource Evaluation. The project site was surveyed for vegetation community parameters and wildlife present. They used standardized field forms in order to compare the present conditions with the detailed vegetation and habitat studies conducted in 1990 and 1995 to complete the quantitative vegetation surveys. In addition, they photographed the site to document current vegetation conditions and observed the natural revegetation that has occurred in the roads and historic mining disturbances during the past 60 years for plant species and type of vegetation. The information about the natural vegetation was used to determine the best plant species for seeding in altitudinal zones for the proposed revegetation plans (Bamberg 2006, p. 2).

The vegetation survey method used in 2006, used was coupled quadrats (50 ft. \times 6 ft. or 25 ft. \times 6 ft.) in a linear transect, and recorded 10 quadrats (total length of 500 or 250 ft.) in each transect (Bamberg, 2006). Each plant rooted in the quadrat was recorded as to species numbers and estimated cover. A total of 13 linear transects was recorded, and provided quantitative data on large plant stands, and 2 qualitative plots were recorded on the upper slopes. They employed methods identical to those used in the 1997 Biological and Soil Resource Evaluation to measure plant cover, density, and diversity (species richness). This method was used on three altitudinal zones with different species composition: 1) lower alluvial fans and flats at the base of the mountain, 2) toeslopes and upper bajadas, and 3) upper mountain slopes and ridges. The field forms were entered into spreadsheets, and for each vegetation zone the data were analyzed for species composition, canopy cover, density, and species richness. Additional wildlife surveys were conducted during both site visits, and animals and birds observed and recorded (Bamberg 2006, p. 2).

Sunrise Consulting performed a focused survey for the federally-listed and statelisted threatened desert tortoise to collect information including:

- Preliminary characterization of plant communities and soils present on the Site;
- Taking photographs of the Site;

- Recording all sign of desert tortoises including live tortoise, burrows, scat, tracks, and carcasses;
- Recording all other sensitive species sightings during the survey; and
- Recording all sightings of all common plant and animal species.

Focused desert tortoise surveys were conducted according to the 1992 Field Survey Protocol for Any Federal Action that May Occur within the Range of the Desert Tortoise (USFWS 1992) by walking transects at 10-meter spacing throughout all accessible, appropriate habitat on Site and walking transects within the surrounding survey area (Sunrise Consulting 2009, p. 6).

For the Bat Survey prepared by Brown-Berry Biological Consulting, teams of field assistants were hired to complete external evaluation forms, map the locations and digitally photograph the mines since not all of the mine features were catalogued. The external descriptions and locations were entered on an excel database, and identification numbers were plotted on maps generated by DeLorme Topo Quad USA. Many of the mines were already shown on USGS Topo sheets, but some were new features. An aerial reconnaissance from a Piper tripacer airplane helped to locate mines and to determine the best route to reach them (Brown-Berry Consulting 2007, p. 2).

Some shafts were relatively shallow, and all portions of the mine were visible when a bright (million candle power) light was employed to look for bats, guano and other wildlife. In addition to bat species and/or guano present, data was recorded on mine features, such as configuration, crevices, airflow, stability, temperature, and evidence of human visitation. Most shafts, stopes and glory holes were too dangerous or complex to evaluate by internal surveys. Mines that could not be safely and/or completely accessed internally were monitored at dusk in the warm season with night vision equipment (augmented with infra-red light sources) and finger tallies, to obtain accurate exit counts. Sony "Nightshot" video cameras (sensitive in the infrared) with auxiliary IR lights were used to remotely monitor mines, and to obtain permanent records of bat and other wildlife activity (Brown-Berry Consulting 2007, p. 3).

Echolocation signals were recorded outside of mine features for at least an hour after dark with an Anabat detector on a storage CFZCAIM (Compact Flash Zero Crossing Analysis Interface Module) for later analysis on the computer. These calls were used for identification of some bat species near the mines (especially when capture was not possible), and to document general bat activity in an area (Brown-Berry Consulting 2007, p. 3).

Thresholds of Significance

The Kern County CEQA Implementation Document and Kern County Environmental Checklist state that a project would have significant impacts on biological resources if it would:

- a. Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or specialstatus species in local or regional plans, policies or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service.
- b. Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies or regulations, or by the California Department of Fish and or U.S. Fish and Wildlife Service.
- c. Have a substantial adverse effect on federally protected wetlands, as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal wetlands, etc.), through direct removal, filling, hydrological interruption or other means.
- d. Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites.
- e. Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance.
- f. Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional or State habitat conservation plan.

CEQA Guidelines Section 15380 further provides that a plant or wildlife species may be treated as "rare or endangered" even if not on one of the official lists if, for example, it is likely to become endangered in the foreseeable future.

An evaluation of the significance of potential impact on biological resources must consider both direct effects to the resource as well as indirect effect in a local or regional context. Potentially significant impacts would generally result in the loss of a biological resource or obviously conflict with local, State, or federal agency conservation plans, goals, policies, or regulations. Actions that would potentially result in a significant impact locally may not be considered significant under CEQA if the action would not substantially affect the resource on a population-wide or region-wide basis.

Project Impacts

Impact 4.3-1: The Revised Project could have a substantial adverse effect, either directly or through habitat modifications, on a species identified as a candidate, sensitive, or special-status species in local or regional plans, policies or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service.

As described in Section 4.1, the 1997 FEIR/EIS concluded the following:

There are no endangered, threatened, rare, or sensitive plant species observed or present, therefore, no impacts are anticipated. (1997 FEIR/EIS, p. 223)

Permanent or temporary loss...of natural vegetation is a residual impact. Revegetation during reclamation will offset the loss of natural vegetation types. The loss would be Less Than Significant because no rare or unique habitats are affected and there are large amounts of similar undisturbed habitats in the regional area. (1997 FEIR/EIS, p. 225)

No threatened or endangered animal species have been identified or observed on the project site. (1997 FEIR/EIS, p. 226)

No threatened or endangered species have been identified on the project site. Neither desert tortoises nor Mohave ground squirrels were observed on the project site...The populations of wildlife are not anticipated to drop below self sustaining levels as a result of the proposed project. No significant impacts to sensitive species are anticipated as a result of the proposed project. (1997 FEIR/EIS, pp. 230 and 231)

Impacts to Listed Special-Status Plant Species

The 1997 FEIR/EIS included a biological study entitled, "Biological and Soil Resource Evaluation for Soledad Mountain Project," prepared by Bamberg Associates in April 1997. The 1997 FEIR/EIS and 1997 Bamberg study surveyed the project area for plant species and wildlife species, including bats, desert tortoise, Mohave ground squirrel, etc. The report concluded that impacts to plant species would be insignificant since project reclamation would return the project site to open habitat, including native vegetation, after mining was completed.

As part of the Revised Project application, technical studies were submitted to provide updated assessments of the Revised Project's potential effects on biological resources or to satisfy standard regulatory requirements of the 1997 Project's approval. Similar to the findings of the 1997 FEIR/FEIS, the reports concluded that no endangered, threatened, rare, or sensitive plant species were observed or present on-site. The Desert Tortoise Focused Survey Report (Sunrise Consulting 2009) noted that although the alkali mariposa lily was not observed on-site, it has a moderate potential for occurrence on-site in the lower areas of the site near the edges of the property. However, because these areas are unlikely to

be disturbed during the Revised Project's construction and operation, no impact will occur and no further surveys or mitigation is required for this species. The white pygmy poppy was not found on-site and suitable habitat does not exist onsite; therefore, no impact will occur and no further surveys or mitigation is required for this species (Sunrise Consulting 2009, p. 15).

Section 4.1 of this Supplemental EIR identifies regulatory requirements and mitigation measures/conditions of approval from the 1997 FEIR/EIS and 1997 Project approval related to potential impacts to plant species. The Revised Project will be required to comply with these requirements, features and measures/conditions of approval as listed below.

Regulatory Requirements

- A Reclamation Plan has been filed with Kern County in accordance with Surface Mining and Reclamation Act requirements.
- The Reclamation Plan requires revegetation of disturbed areas which will include the heap leach pads, facilities area, unnecessary roads, the tops of the overburden piles and the bottom areas of the pit.
- The seed mix will utilize only plant species native to the site area.
- Financial assurance is required to assure appropriate revegetation efforts are completed.
- Reclamation according to the Surface Mining and Reclamation Act of 1975, will return the project site to open habitat including native vegetation after mining is completed.

Existing Mitigation Measures/Conditions of Approval

- Project disturbance will be minimized to that necessary for safe and efficient operation. The limits of the construction areas will be clearly marked and vehicles and equipment will be confined to these areas. (Condition of Approval No. 27)
- Mature Joshua trees which may be disturbed will be salvaged and replanted in undisturbed areas within the property boundary. (Condition of Approval No. 28)
- The use of seedlings for revegetation will be investigated in test plots. (Condition of Approval No. 16)
- Fencing around the heap leach pile will remain in place until vegetation is established or as otherwise specified in the Reclamation Plan. (Condition of Approval No. 30)

Mitigation Measures

No additional mitigation is proposed.

Level of Significance after Mitigation

Less than significant

Impacts to Listed Special-Status Wildlife Species

The 1997 FEIR/EIS included a biological study entitled, "Biological and Soil Resource Evaluation for Soledad Mountain Project," prepared by Bamberg Associates in April 1997. The 1997 FEIR/EIS and Bamberg study surveyed the project area for plant species and wildlife species, including bats, desert tortoise, Mohave ground squirrel, etc. The 1997 Bamberg report (Biological and Soil Resource Evaluation for Soledad Mountain Project) concluded that impacts to animal species and species of management concern would be insignificant if the project complied with standard regulatory requirements, including preparation of a desert tortoise survey and consultation with the California Department of Fish and Game and the U.S. Fish and Wildlife Service.

The 1997 FEIR/EIS identified three threatened or endangered wildlife species that were potentially present on or near the site, including the federal and state listed endangered peregrine falcon, the federal and state listed threatened desert tortoise, and the Mohave ground squirrel, a California listed threatened species. However, surveys conducted on-site did not identify the presence of these animals or their habitat on the site (Bamberg 1997, pp. 36 - 37). Therefore, no impact will occur and no further surveys or mitigation is required. Evidence of the burrowing owl was found and one loggerhead shrike was viewed onsite during the surveys conducted for the Sunrise Consulting report and is described in the following sections (Sunrise Consulting 2009, pp. 12-13). Regarding the Townsend's big-eared bat, a bat gate was installed on a larger adit when this species was found and the bat gate remains in place. No additional populations of this species are likely to be adversely affected by the Revised Project; therefore, no further surveys or avoidance/mitigation are required (Sunrise Consulting 2009, p. 16).

Section 4.1 of this Supplemental EIR identifies regulatory requirements and mitigation measures/conditions of approval from the 1997 FEIR/EIS and 1997 Project approval related to potential impacts to wildlife species. The Revised Project will be required to comply with these requirements, features and measures/conditions of approval as listed below, with the exception of the requirement to conduct additional desert tortoise surveys, which are not required or recommended for desert tortoise if vegetation removal activities are conducted within one year of the surveys (February 12, 2010). After that time, no further surveys are needed but informal coordination with CDFG and USFWS shall be conducted for the purpose of monitoring and training project personnel, which was already required of the 1997 Project.

Regulatory Requirements

- An informal consultation with the California Department of Fish and Game will take place before construction begins.
- An informal consultation with the United States Fish and Wildlife Service will take place before construction begins.
- A preconstruction survey for desert tortoises was conducted in April 1997 and February 2009.

- A desert tortoise survey will be conducted by a qualified biologist before construction of each portion of the heap leach pads and the surveyed area will be fenced with appropriate material for exclusion of desert tortoises.
- In the event that a desert tortoise is found within the project site, mining activities must cease and the Bureau of Land Management shall be contacted immediately. At this time, BLM is responsible for initiating formal Section 7 consultation with the U.S. Fish and Wildlife Service. The project proponent is not authorized for any form of "take" of desert tortoise. Taking is defined as harassing, harming, pursuing, hunting, shooting, wounding, trapping, capturing, collecting, or attempting to engage in any such conduct. Authorization for take of desert tortoise by the project proponent can only be obtained after a biological opinion has been issued to the BLM by the U.S. Fish and Wildlife Service.

Existing Mitigation Measures/Conditions of Approval

- Grading for the project will be minimized to the extent consistent with safe and efficient operations to limit the total area of surface disturbance. (Condition of Approval No. 31)
- Routine distribution of cyanide solution on the top of the heap leach pad will occur via a drip irrigation system and the heap leach pads will be contoured to prevent surface ponding which could attract birds and small animals. (Condition of Approval No. 32)
- Containers of reagents will be stored within controlled reagent storage areas and kept closed, stored in enclosed areas, or otherwise managed to prevent access by wildlife. (Condition of Approval No. 33)
- Project waste will be properly managed at the site to control garbage that could attract wildlife. (Condition of Approval No. 34)
- The maximum vehicle speed will be 25 mph. (Condition of Approval No. 35)
- Wildlife habitat awareness will be included in the worker's education program. (Condition of Approval No. 36)
- Some of the mine adits will be retained and gated, and some of the mine shafts will be covered by grates to allow access by bats while excluding people. (Condition of Approval No. 37)

Mitigation Measures

No additional mitigation is proposed.

Level of Significance after Mitigation

Less than significant

Impacts to Raptors and Migratory Birds

Suitable nesting habitat for various birds, including raptors and migratory bird species such as loggerhead shrike, prairie falcon and Le Conte's thrasher, occurs within the project site; however, no project activities will take place in areas of

potential nesting. Further, loggerhead shrikes and LeConte's thrashers are both very mobile and are unlikely to be adversely affected by Project activities (Sunrise Consulting 2009, p. 16). Therefore, there is no impact and no further surveys or avoidance/mitigation will be required for prairie falcons, loggerhead shrikes, and LeConte's thrashers.

Mitigation Measures

No additional mitigation is proposed.

Level of Significance after Mitigation

Less than significant

Impacts to Special-Status Wildlife Species – Western Burrowing Owl

Evidence of the western burrowing owl was found onsite in areas where disturbance would occur, therefore, implementation of the Revised Project could result in the loss of nesting habitat or direct mortality of western burrowing owl. This impact is potentially significant.

During construction and mining activities, the Revised Project has the potential to cause direct mortality of or harm to western burrowing owl, if this species is present during grading or earthmoving work. Although no burrows were observed on or near the project site during surveys, evidence of the species was found and suitable habitat is present (Bamberg 2006 and Sunrise Consulting 2009).

If nests are present within 150 meters (500 feet) of the project site, construction and mining of the Revised Project may interfere with nesting activities. Indirect impacts such as noise or ground disturbance may cause nest failure or abandonment of a nest within the project site. There is the potential that project construction and each phase of the project could inadvertently compact occupied burrows. These actions could result in direct loss (or take) of a western burrowing owl if construction or mining activities disrupt the breeding of this special-status species or destroy a burrow that is actively being used by a western burrowing owl. This impact would be considered potentially significant. The following mitigation measures would reduce the potential for impacts to the burrowing owl by identifying locations with the species present, relocating the species to a CDFG-approved location and/or avoidance of species habitat. Additionally Mitigation Measure 4.3-2 specifically minimizes disturbance to the animals during project construction. The requirement for use of qualified biologists will also ensure that the mitigation is applied in such a way as to minimize impacts to the species. Implementation of the mitigation measures would reduce potential impacts to western burrowing owl to a less than significant level.

Mitigation Measures

Mitigation Measure 4.3-1: A pre-construction survey shall be conducted by a qualified biologist for burrowing owl activities to assess owl presence and need for implementation of Mitigation Measures 4.3-2 through 4.3-4 within thirty (30) days prior to ground disturbing activities using California Department of Fish and Game and *California Burrowing Owl Consortium guidelines* (CBOC 1993). The breeding period for burrowing owls is February 1 - August 31 with the peak being April 15 - July 15, the recommended survey window. Winter surveys may be conducted between December 1 and January 31. If construction of each phase of the project is delayed or suspended for more than 30 days after the survey, the area shall be resurveyed.

- Surveys shall be completed for occupied burrows within all construction areas and within 150 meters (500 feet) from the project work areas (where possible and appropriate based on habitat). All occupied burrows will be mapped on an aerial photo for submittal to California Department of Fish and Game and the Kern County Planning Department.
- At least 15 days prior to the expected start of any project-related ground disturbance activities, or restart of activities, the project proponent shall provide the burrowing owl survey results and mapping to California Department of Fish and Game and the Kern County Planning Department.

Mitigation Measure 4.3-2: If burrowing owl presence is indicated or assumed in required surveys, the following actions shall be taken by the project proponent to offset impacts during construction:

- If paired owls are present in areas scheduled for disturbance or degradation (e.g. grading) or within 50 meters (160 feet) of a permanent project feature, and nesting is not occurring, owls shall be relocated to a California Department of Fish and Game-approved relocation.
- If paired owls are present within 50 meters (160 feet) of a temporary project disturbance (i.e., parking areas) then active burrows shall be protected with fencing/cones/flagging and monitored by a qualified biologist throughout construction to identify losses from nest abandonment and/or loss of reproductive effort (e.g., killing of young).
- If paired owls are nesting in areas scheduled for disturbance or degradation, nest(s) shall be avoided from February 1 through August 31 by a minimum of a 75 meters (250-foot) buffer or until fledging has occurred. Following fledging, owls may be passively relocated according to California Department of Fish and Game guidelines.

Mitigation Measure 4.3-3: If any protected burrows are discovered during surveys, the project proponent shall implement all avoidance and mitigation currently stipulated by California Department of Fish and Game. No work would be completed within 500 feet of the nest without approval from California Department of Fish and Game and an authorized raptor biologist monitoring the nesting birds. These measures shall be initiated prior to the initiation of ground disturbance activities in the vicinity of the nest.

Mitigation Measure 4.3-4: If burrows cannot be avoided, the project proponent shall implement mitigation measures from the *California Burrowing Owl Consortium's Burrowing Owl Survey Protocol and Mitigation Guidelines* (CBOC 1993), including, but not limited to, "passively relocating" owls during pre-construction surveys. The timing of the burrowing owl relocation is critical and shall not occur during this species' breeding season (February 1 through August 31).

Level of Significance after Mitigation

Less than significant.

Impact 4.3-2: The Revised Project will not have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies or regulations, or by the California Department of Fish and or U.S. Fish and Wildlife Service.

Impact 4.3-3: The Revised Project will not have a substantial adverse effect on federally protected wetlands, as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal wetlands, etc.), through direct removal, filling, hydrological interruption or other means.

As discussed in Section 4.1, the 1997 FEIR/EIS concluded:

No wetlands, marshes, or other environmentally-sensitive habitat areas have been identified on the project site. There are no well-defined drainage channels or waters of the United States... There would be no loss of riparian [lands], wetlands, or waters as a result of the proposed project. (1997 FEIR/EIS, pp. 222 and 223)

Based on biological surveys, the 1997 FEIR/EIS concluded that there were no wetlands or riparian areas located onsite. The updated survey reports did not identify wetlands or riparian areas onsite. Therefore, the 1997 Project and the Revised Project both would have no significant adverse effects on these resources.

Mitigation Measures

No additional mitigation is proposed.

Level of Significance after Mitigation

Less than significant.

Impact 4.3-4: The Revised Project will not interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites.

As discussed in Section 4.1, The 1997 FEIR/EIS concluded, "There will be no interference with fish, migratory species or wildlife species, or with established migratory corridors." (1997 FEIR/EIS, p. 230)

The 1997 FEIR/EIS concluded that there were no migratory corridors established within the project site and vicinity. The updated survey reports reached the same conclusion; therefore, the 1997 and Revised Projects have no opportunity to interfere with any migratory corridor. Impacts will not result.

Mitigation Measures

No additional mitigation is proposed.

Level of Significance after Mitigation

Less than significant.

Impact 4.3-5: The Revised Project will not conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance.

The proposed project would not conflict with any known local policies, including but not limited to a tree preservation policy or ordinances protecting biological resources.

As discussed in Section 4.1, the 1997 FEIR/EIS concluded, "*There would be No Impact to environmentally-sensitive habitat areas or 'specimen trees' because there are none present on the project site.*" (1997 FEIR/EIS, p. 226)

The 1997 FEIR/EIS concluded that there were no "specimen trees" or other trees located onsite that would be protected by a tree preservation policy. The updated survey reports reach the same conclusion. The project site was previously used for mining operations. The Revised Project will establish new mining operations onsite, if the County approves the requested Conditional Use Permits. Assuming County approval, the Revised Project will not conflict with policies of the County General Plan or applicable Ordinances.

Mitigation Measures

No additional mitigation is proposed.

Level of Significance after Mitigation

Less than significant.

Impact 4.3-6: The Revised Project will not conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional or State habitat conservation plan.

The proposed project would not conflict with any known adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or State habitat conservation plan. There is no impact.

Mitigation Measures

No additional mitigation is proposed

Level of Significance after Mitigation

Less than significant.

Cumulative Impacts

Impact 4.3-7: The Revised Project will contribute to an adverse cumulative impact on biological resources, habitats, and the movement of wildlife species.

Cumulative impacts are two or more individual impacts that, when considered together, are considerable or that compound or increase other environmental impacts. The Kern County Planning Department reviewed all known projects within a six-mile radius of the project site. Table 3-3 (*Relevant Cumulative Projects in Kern County*) previously listed nearby residential, commercial, natural resource and solar energy projects. A detailed description of the cumulative impact scenario considered with the Revised Project is provided in Chapter 3 (*Project Description*).

Most notable of the development proposals in Kern County are those for largescale solar energy generation facilities and the potential impact on western burrowing owl habitat. Cumulative impacts on other plant and animal species and habitat are not significant as the Revised Project will not impact other plant and animal species, will avoid the habitat and restore habitat impacted as a result of the Revised Project.

The project site and its surrounding area as a whole must be considered for the purpose of evaluating impacts associated with biological resources on a cumulative level. In particular, this cumulative setting condition for biological resources includes the proposed and approved projects listed in Table 3-3, as well as consideration of development patterns on communities in the rest of Kern County. This area was identified as the biological setting because the habitat for burrowing owls occurs throughout the County and includes open, dry grasslands, agricultural and range lands, and desert habitats.

Increased development and disturbance created by human activities under cumulative conditions will result in direct mortality, habitat loss and deterioration of habitat suitability.

The potential loss of special-status species is regulated by the USFWS and CDFG. Projects (including the Revised Project) that could impact special-status species would be required to undertake consultation with USFWS and/or CDFG. Impact 4.3-1 discusses the Revised Project's potential impact on the western burrowing owl, which is also a potential impact associated with other projects in the vicinity.

Impacts on this species are cumulatively considerable given the potential loss of thousands of acres of western burrowing owl habitat that would occur throughout the County if all of the proposed public and private solar energy generation facilities are implemented. These projects have not been approved and may not be implemented; however, if they are, the potential burrowing owl habitat loss is cumulatively considerable.

Compliance with Mitigation Measures 4.3-1 through 4.3-4 and the regulatory requirements and mitigation measures/conditions of approval would reduce the Revised Project-level impact to burrowing owl habitat to less than significant. However, despite the Revised Project's compliance with rules and regulations, as well as revegetation of the project site and including Mitigation Measures 4.3-1 through 4.3-4, which will temper the Revised Project's impact to the western burrowing owl, the Revised Project could result in direct loss of habitat. This impact is considered significant and unavoidable. Therefore, a Statement of Findings and Overriding Considerations would be required pursuant to CEQA Guidelines, Sections 15091 and 15093.

Mitigation Measures

Compliance with Mitigation Measures 4.3-1 through 4.3-4 and the regulatory requirements and mitigation measures/conditions of approval would reduce the project-level impact to less than significant; however, the potential loss of western burrowing owl habitat remains cumulatively significant and unavoidable.

Level of Significance after Mitigation

Significant and unavoidable.

CHAPTER 5 CONSEQUENCES OF PROJECT IMPLEMENTATION
Chapter 5 Consequences of Project Implementation

5.1 Environmental Effects Found to be Less Than Significant

5.1.1 Impacts Found to Have No Significance

The 1997 FEIR/EIS (pages S-23 to S-37) found that the following impacts would have no significance. Section 4.1 (*Effects Not Found to be Significant*) of this EIR confirms the applicability of the listed findings from the 1997 FEIR/EIS, and the Revised Project does not change those conclusions.

Geology and Seismology

There would be no impacts resulting from liquefaction. The Revised Project does not change these conclusions, as described in Section 4.1.

Vegetative Resources

There would be no impact to environmentally sensitive habitat areas or "specimen trees." The Revised Project does not change these conclusions, as described in Section 4.1.

Land Use

The 1997 Project does not conflict with existing land uses. The 1997 Project does not contain prime agricultural land. The Revised Project does not change these conclusions, as described in Section 4.1.

5.1.2 Impacts Mitigated to a Level of Less Than Significant

Significant impacts are defined as impacts which would cause substantial adverse changes to existing environmental conditions which can be reduced to less than significant by mitigation measures. The following significant impacts have been reduced to less than significant by mitigation measures, shown parenthetically as Conditions of Approval from the 1997 FEIR/EIS.

Cultural and Historical Resources

The loss of four historical sites to disturbance will be mitigated by the performance of Phase III Data Recovery work.

(Conditions of Approval Nos. 38 – 42)

Geology and Seismology

The impacts due to seismic activities would be less than significant because of regulatory requirements and conditions of approval.

The impact from slope failure would be less than significant because of regulatory requirements and conditions of approval.

Subsidence due to old mining properties would be less than significant because of regulatory requirements and conditions of approval.

(Conditions of Approval Nos. 6-9)

Soils

The permanent loss of soil would be less than significant, as a result of regulatory requirements and project design features.

(Conditions of Approval Nos. 10 – 13)

Surface Hydrology

The impact to surface water quality, as a result of the placement of overburden directly on the ground surface, would be less than significant.

Impacts to surface drainage would be less than significant because of regulatory requirements and conditions of approval.

The potential for discharge of hazardous materials to land would be less than significant because of regulatory requirements and conditions of approval.

The 1997 FEIR/EIS found that there would be no impact related to flooding. Section 4.1 of this Supplemental EIR finds that the Revised Project will result in impacts requiring mitigation. With mitigation, these impacts are reduced to below a level of significance.

(Conditions of Approval Nos. 12, 13, 15 – 18)

Groundwater

Impacts to the groundwater supply would be less than significant, as demonstrated by hydrogeology studies.

Impacts to the quality of groundwater would be less than significant because of regulatory requirements and conditions of approval.

(Conditions of Approval Nos. 15 – 20)

Air Quality

As shown by dispersion modeling, PM_{10} emissions from the proposed project would not cause or contribute to a violation of the NAAQS or CAAQS for PM_{10} in the project area, and the impact would be less than significant.

The proposed project would not violate any approved plan for achieving or maintaining compliance with NAAQS or CAAQS, local or regional growth or congestion plans or local CEQA significance standards for air quality, and the impact would be less than significant.

The proposed project would not result in toxic air contaminant emissions which would cause a significant short- or long-term health risk or cause an increase cancer risk of greater than 10 per million, and the impact would be less than significant.

The proposed project would not concentrate vehicle trips or motor vehicle-related emissions in a localized area which would cause a violation of any CO ambient air quality standard, and the impact would be less than significant.

The proposed project would not cause an odor, visibility or other problem which would create a public nuisance condition, and the impact would be less than significant.

(*Conditions of Approval Nos. 16, 21 – 26, 32, 63*)

Vegetative Resources

The project would result in the loss of natural vegetation. This impact would be less than significant because of revegetation during reclamation and because no rare or unique habitats will be affected.

(Conditions of Approval Nos. 16, 27, 28, and 30)

Wildlife Resources

The 1997 FEIR/EIS found that impacts to the small numbers of bats would be reduced by placing gates or grates at the entrance to some existing shafts and adits to allow bat access for roosting. Other impacts to wildlife will be reduced by reclamation of disturbed surfaces to restore habitats.

Section 4.3 (*Biological Resources*) of this Supplemental EIR finds that the Revised Project will result in impacts; specifically with regard to the burrowing

owl, which requires mitigation. With mitigation, these impacts are reduced to below a level of significance.

The project would not interfere substantially with the movement of any resident or migratory fish or wildlife species.

The project would not cause any wildlife population to drop below self-sustaining levels.

The project would not cause a net loss of any riparian lands, wetlands, marshes or other environmentally-sensitive habitat areas.

Impacts to wildlife resources would be less than significant after regulatory requirements and conditions of approval are implemented and monitored.

(Conditions of Approval Nos. 31 – 37)

Visual Resources

The long-term impact to visual resources would be less than significant after reclamation.

(Conditions of Approval Nos. 27, 44 – 46)

Noise

The project will not raise noise levels above standards set by Kern County, and the impact would be less than significant.

(Conditions of Approval Nos. 47, 48, 61, 62)

Socioeconomics

The project will not conflict with population, employment or housing projects; therefore, the impact would be less than significant.

The project will not cause substantial growth or concentration in the population beyond current levels directly or indirectly therefore, the impact would be less than significant.

The project will not cause a decrease in jobs; therefore, the impact would be less than significant.

The project will not require additional police/sheriff staff or equipment to maintain acceptable service ratios; therefore, the impact would be less than significant.

The project will not require additional fire department staff or equipment to maintain an acceptable level of service; therefore, the impact would be less than significant.

The project will not result in an increase in the population of school-age children; therefore, the impact would be less than significant.

The project will not create or exacerbate a housing shortage; therefore, the impact would be less than significant.

(Condition of Approval No. 50)

Health Hazards

The project would not create a significant hazard to the public or the environment through routine transport, use or disposal of hazardous materials.

The project would not create a significant hazard to the public or the environment through a reasonably foreseeable upset or accident condition involving the likely release of hazardous materials to the environment.

The project would not interfere with community response plans or emergency evacuation plans in the event of a reasonably foreseeable upset or accident condition involving a hazardous material release, and the impact would be less than significant.

The project will not have any problems with respect to the availability of facilities for hazardous waste reuse, treatment or disposal, and the impact would be less than significant.

(Conditions of Approval Nos. 51 – 54)

Transportation

The project will not cause a new violation of a goal relating to traffic LOS. By the year 2014, the LOS on State Route 14 is estimated to be E as a result of regional traffic growth. The proposed project will add slightly to the growth, but the overall impact would be less than significant.

Notwithstanding the County's condition of approval requiring improvements to the Silver Queen Road pavement section, the proposed traffic use is compatible with the existing road designs; therefore, the impact would be less than significant.

The project will be designed for adequate parking and circulation, including entrance and exit routes; therefore, the impact would be less than significant.

(Conditions of Approval Nos. 55, 56)

5.2 Significant Environmental Effects That Cannot Be Avoided

Significant and unavoidable adverse impacts are those which constitute a substantial adverse change to existing environmental conditions that cannot be fully mitigated by implementing all feasible mitigation measures. The following are significant and unavoidable adverse impacts as a result of the project.

5.2.1 Mineral Resources

Precious metals resources would be extracted from a known ore body, reducing the resource. Additionally, insufficient identification of those resources could cause them to be covered by overburden or heap piles. While a mitigation measure (Condition of Approval No. 5) was adopted to reduce this impact through exploration activity, drilling boreholes and analysis of rock samples, the measure would only minimize the impact. The 1997 FEIR/EIS found that the loss of mineral resources from mining is a significant and unavoidable impact, and the Revised Project is subject to the same finding. Further, as indicated in Chapter 6 (*Alternatives*), specific economic and other considerations make the alternatives that would eliminate or reduce this effect infeasible.

5.2.2 Topography

The 1997 FEIR/EIS found that the topography of Soledad Mountain within the mine disturbance areas would be permanently changed, and that a change in the natural ground contours is a significant and unavoidable impact. Though reduced in acreage from the 1997 Project, and despite conditions of approval on final reclamation, the Revised Project is subject to the same impact finding. Further, as indicated in Chapter 6 (*Alternatives*), specific economic and other considerations make the alternatives that would eliminate or reduce this effect infeasible.

5.2.3 Air Quality Emissions

As indicated in Section 4.2 (*Air Quality*), emissions of all pollutants will be reduced by the Revised Project, with the exception of NO_x from mobile sources. Incorporation of all feasible mitigation will not eliminate this new significant impact.

5.3 Irreversible Impacts

Section 15126.2(c) of the State CEQA Guidelines provides the following direction for the discussion of irreversible changes:

Uses of nonrenewable resources during the initial and continued phases of the project may be irreversible since a large commitment of such resources makes removal or nonuse thereafter unlikely. Primary impacts and, particularly, secondary impacts (such as highway improvement which provides access to a previously inaccessible area) generally commit future generations to similar uses. Also, irreversible damage can result from environmental accidents associated with the project. Irretrievable commitments of resources should be evaluated to assure that such current consumption is justified.

Determining whether the Revised Project would result in significant irreversible impacts requires a determination of whether key resources would be degraded or destroyed with little possibility of restoration.

As with the 1997 Project, implementation of the Revised Project would result in the conversion of parcels of land that are primarily vacant to a surface mining use. Similarly, the Revised Project would also be consistent with the site's designation under the Kern County General Plan and its zoning classification and conditionally permitted uses.

Development of the project site would irretrievably commit building materials and energy to the construction and maintenance of the plants and infrastructure proposed. Renewable, nonrenewable, and limited resources that would likely be consumed as part of construction and operation of the proposed project would include, but are not limited to: oil, diesel fuel, gasoline, asphalt, water, steel, and similar materials. Any utilities extended to the project site would not be extended to adjacent parcels, and therefore, would not commit future generations to any similar uses on adjacent or nearby parcels.

5.4 Significant Cumulative Impacts

According to Section 15355 of the State CEQA Guidelines, the term cumulative impacts "...refers to two or more individual effects which, when considered together, are considerable or which compound or increase other environmental impacts." Individual effects that may contribute to a cumulative impact may be from a single project or a number of separate projects. Individually, the impacts of a project may be relatively minor, but when considered along with impacts of other closely related or nearly projects, including newly proposed projects, the effects could be cumulatively significant. A list of projects used in the cumulative analysis is contained in Chapter 3 (Project Description) and a full discussion of all cumulative impacts for each impact is contained in Chapter 4.

As identified in Section 4.2 (*Air Quality*), the Revised Project's individual exceedance of the NO_x threshold would likewise contribute to an air quality impact that is considered cumulatively considerable and significant and unavoidable for mobile source NO_x .

Although implementation of all regulatory, statutory, and feasible and reasonable mitigation measures would minimize project-specific impacts to burrowing owl, the effects on burrowing owl within the cumulative projects' area of influence were determined in Section 4.3 (*Biological Resources*) to be cumulatively considerable and, therefore, significant.

5.5 Growth-Inducing Impacts

As with the 1997 Project, it is similarly expected that the Revised Project will not produce significant growth-inducing impacts to the local area. Within a 50-mile commuting distance of the project, adequate housing, utilities, schools and commercial and government services already exist with the capacity to absorb the level of employment and secondary jobs that the project would support. Most (80 percent) of the jobs created at the project are expected to be filled by persons who already live in the area. The recent closure of two mining operations and the current level of economic growth and unemployment in the area will allow this project to begin operations without placing significant new demand for utilities, government services or other support services.

CHAPTER 6 ALTERNATIVES

Chapter 6 Alternatives

6.1 Introduction

The California Environmental Quality Act (CEQA) requires that an EIR include a discussion of reasonable project alternatives that would "feasibly attain most of the basic objectives of the project," but would "avoid or substantially lessen any significant effects of the project, and evaluate the comparative merits of the alternatives" (CEQA Guidelines Section 15126.6). This chapter identifies potential alternatives to the proposed project and evaluates them, as required by CEQA.

Key provisions of the CEQA Guidelines on alternatives (Section 15126.6[a] through [f]) are summarized below to explain the foundation and legal requirements for the alternatives analysis in the EIR.

- "The discussion of alternatives shall focus on alternatives to the project or its location which are capable of avoiding or substantially lessening any significant effects of the project, even if these alternatives would impede to some degree the attainment of the project objectives, or would be more costly" (15126.6[b]).
- "The specific alternative of 'no project' shall also be evaluated along with its impact" (15126.6[e]). "The no project analysis shall discuss the existing conditions at the time the Notice of Preparation is published, and at the time the environmental analysis is commenced, as well as what would reasonably be expected to occur in the foreseeable future if the project were not approved, based on current plans and consistent with available infrastructure and community services. If the environmentally superior alternative is the 'no project' alternative, the EIR shall also identify an environmentally superior alternative among the other alternatives" (15126.6[e][2]).
- "The range of alternatives required in an EIR is governed by a 'rule of reason' that require the EIR to set forth only those alternatives necessary to permit a reasoned choice. The alternatives shall be limited to ones that would avoid or substantially lessen any of the significant effects of the project" (15126.6[f]).
- "Among the factors that may be taken into account when addressing the feasibility of alternatives are site suitability, economic viability, availability of infrastructure, general plan consistency, other plans or regulatory limitations, jurisdictional boundaries, and whether the proponent can

reasonably acquire, control or otherwise have access to the alternative site (or the site is already owned by the proponent)" (15126.6[f][1]).

- For alternative locations, "only locations that would avoid or substantially lessen any of the significant effects of the project need be considered for inclusion in the EIR" (15126.6[f][2][A]).
- "An EIR need not consider an alternative whose effect cannot be reasonably ascertained and whose implementation is remote and speculative" (15126.6[f][3]).

Per the CEQA Guidelines Section 15126.6(d), additional significant effects of the alternatives are discussed in less detail than the significant effects of the Revised Project.

For each alternative, the analysis: 1) Describes the alternative; 2) Analyzes the impact of the alternative as compared to the proposed Project; 3) Identifies the impacts of the Project which would be avoided or lessened by the alternative; 4) Assesses whether the alternative would meet most of the basic project objectives; and 5) Evaluates the comparative merits of the alternative and the project.

6.2 Alternatives Screening Process

An EIR must describe a range of reasonable alternatives to the project or to the project location that feasibly would attain the basic project objectives while avoiding or substantially lessening the significant environmental impacts of the project. Alternatives may be eliminated from detailed consideration in the EIR if they fail to meet the basic project objectives, are determined to be infeasible, or cannot be demonstrated to avoid or lessen significant environmental impacts. Alternatives analyzed in this SEIR are adapted from the 1997 FEIR/EIS, but were refined considering the current project objectives and significant and unavoidable environmental impacts of the Revised Project, as described in Chapter 4 (*Supplemental Environmental Analysis*).

The following alternatives initially developed and screened in the 1997 FEIR/EIS are re-evaluated for project objective attainment and reduction of environmental impacts when compared with the Revised Project:

- Alternative A1 No Project/No Development Alternative
- Alternative A2 No Project/Implementation of Existing General Plan Uses
- Alternative B Alternative Mining and Ore Processing Rates
- Alternative C Reduced Project Size
- Alternative D Alternative Mining Techniques
- Alternative E Mine Backfilling Alternatives
- Alternative F Alternative Gold Extraction Techniques
- Alternative G Alternative Project Location and Configurations
- Alternative H Alternative Power Supply

6.2.1 **Project Objectives**

The Applicant's objectives for the Revised Project are as follows:

- Construct and operate mining, ore processing and project support facilities to recover precious metal (gold and silver) from the Soledad Mountain mineral resource. The Revised Project will occur on and within fee lands, mining leases, patented mining claims and unpatented mining claims owned and/or controlled by Golden Queen Mining Co. Inc.
- Develop and operate a mine to recover gold from the Soledad Mountain Project ore deposit within the boundary of the property controlled by Golden Queen Mining Co. Inc.
- Meet the market demand for precious metal.
- Recover precious metals in a manner that is environmentally responsible and to comply with applicable laws and regulations while optimizing precious metal production, maximizing the utilization of the resource and meeting the financial expectations of its shareholders.

The revised Surface Mining and Reclamation Plan also contains additional specific objectives and implementation techniques. The following are design and/or operations components that will ensure proper reclamation and revegetation:

- Maximize backfill in mined-out phases of the open pit with no, or a minimum of, double-handling of waste rock at the end of the mine life.
- Use waste rock disposed of outside the open pit perimeter primarily for the construction of access roads and the pad required for the production and sale of aggregate.
- Minimize the footprint of any remaining waste rock dumps outside the open pit perimeter.
- Minimize re-sloping required for closure and reclamation by using appropriate techniques to build the waste rock management facilities or dumps.
- Cover as much of the benched pit wall as feasible by backfilling.
- Attempt to create a reclaimed surface that will be similar to either the original or surrounding natural ground surfaces.
- Locate waste rock management units on shallow slopes to ensure stability.
- Provide reclamation and revegetation plans in accordance with Surface Mining and Reclamation Act requirements.

The following additional design components are intended to support an overall objective of minimizing environmental and nuisance impacts:

- Remove existing tailings piles to minimize the recurring levels of fugitive dust.
- Utilize pipe conveyors where feasible to minimize haul distances for trucks used in the open pit operation.

- Minimize the number of affected drainage basins.
- Preserve corridors for the pipe conveyor, the use of which will reduce fugitive dust emissions.
- No soil stockpile or waste rock shall be placed in the Joshua tree grove west of the Northwest Pit (Phase 1 area).
- No waste rock shall be placed south of Soledad Mountain to avoid a visual impact.
- Establish a "green" fund to promote green technologies in the greater Mojave area.

6.2.2 Significant Environmental Impacts of the Project

Significant potential impacts are identified for the following subject areas: aesthetics, biology, cultural resources, geology and soils, hazards and hazardous materials, hydrology and water quality, and traffic. Mitigation measures have been proposed that would reduce most potential impacts to less than significant levels (see Section 4.1 of this Supplemental EIR), with the exception of the mineral resources, topography, and air quality emissions impacts, which are indentified in Chapter 5 as significant and unavoidable.

6.3 Alternatives Considered and Rejected

This section describes alternatives that were considered but were eliminated from further evaluation because they were determined infeasible, not capable of substantively reducing or eliminating environmental impacts, or not capable of satisfying the Purpose and Need. The alternatives evaluated and rejected are:

- Alternative A2 No Project/Implementation of Existing General Plan Uses
- Alternative D Alternative Mining Techniques
- Alternative E Mine Backfilling Alternatives
- Alternative F Alternative Gold Extraction Techniques
- Alternative G Alternative Project Location and Configurations
- Alternative H Alternative Power Supply

The following discussions of each alternative include a brief description of the comparable aspect of the Revised Project to provide a basis for comparison.

6.3.1 Alternative A2 – No Project/Implementation of Existing General Plan Uses

This alternative involves development of the project site under existing General Plan designations. The Kern County General Plan currently designates the site for Mineral Extraction & Processing, Public Lands, and Low-Density Residential.

Without approval of the proposed project, no development is anticipated in areas designated Mineral Extraction & Processing and Public Lands. Any development within the Low-Density Residential designation would be limited to 1 dwelling unit per 2.5 acres. As no residential project has been proposed for this area, development of this area is speculative. Per CEQA Guidelines Section 15126.6(f)(3), an EIR need not consider an alternative whose implementation is remote and speculative. Therefore, this alternative will not be further evaluated in this Supplemental EIR.

6.3.2 Alternative D – Alternative Mining Techniques

Proposed Open Pit Mining Technique

The configuration and character of the Soledad Mountain mineral resource was evaluated to determine the optimal technique for the Revised Project. The resource occurs as mineralization in a series of veins, filled faults and shear zones which vary in width up to fifty feet. Ore occurs to a depth of hundreds of feet. Overlying and interspersed with the ore is non-goldbearing overburden material that must be removed to access the ore.

The proposed open pit mining method will consist of excavating the ore and overburden material required to access the ore. The ore material will be processed and the overburden material will be placed adjacent to the open pit mine. Strip mining and underground mining were evaluated as alternatives to the proposed open pit method.

Strip Mining Alternative

Strip mining is a linear method of removal that is typically applied to shallow deposits of minerals, such as coal, potash or uranium which occur in horizontal seams. Such deposits are usually flat-lying sedimentary formations that extend over a substantial area. Strip mining is practical for such deposits because their recovery generally requires shallow excavation over a relatively large and contiguous area. In strip mining, only a portion of the waste rock and ore is initially mined. Then, as mining advances to the adjacent portion of the ore body, the waste rock excavated during the advance is permanently disposed of by placing it in the excavated area created during the earlier stage of mining. In this manner, the mining process acts as a moving trench that is filled in behind the area of active extraction.

This method is physically impossible for deposits such as those at the Soledad Mountain site, which have a relatively limited surface extent in comparison to their depth. Because of the configuration and depth of the project ore body, there is insufficient space within the open pit to dispose of overburden material from a portion of the open pit being actively worked into an area where mining has been completed. Instead, all of the overburden must be removed from the pit in order to expose the ore. The 1997 FEIR/EIS rejected this alternative as infeasible and, for the same reasons, this alternative warrants no further consideration in this Supplemental EIR.

Underground Mining Alternative

Underground mining is typically suited to deep mineral deposits of high-grade veins or seams. Such deposits generally require removal of a relatively small volume of host material in order to recover the mineral values. In the case of high-grade veins, values are typically confined to discrete structural discontinuities, such as joint or fractures in a competent host rock.

Underground tunnels can be excavated along these deposits, leaving most of the host rock in place to support the overburden. This method of mining was utilized by earlier mining operations at the Soledad Mountain site, but is not applicable to the remaining low-grade disseminated ore bodies, which are not economic to mine underground. The large volumes of low-grade ore could not be safely or efficiently extracted by underground mining methods. The 1997 FEIR/EIS rejected this alternative as infeasible and, for the same reasons, this alternative warrants no further consideration in this Supplemental EIR.

6.3.3 Alternative E – Backfilling Alternatives

The project analyzed in the 1997 FEIR/EIS proposed permanent disposal of overburden and processed ore from the mining operation to surface overburden piles and the heap leach pads, respectively. As an alternative to this permanent surface disposal, the backfill of overburden material and possibly the processed, neutralized ore to the open pit was considered. Three methods of backfilling were proposed in the 1997 FEIR/EIS:

- Sequential backfilling, which places overburden from an active area to a previously mined inactive area.
- Complete backfilling, which would fill the open pit to the greatest degree possible with material mined from the project. This would essentially be a large earth-moving project which would commence following the cessation of mining operations on the project site.
- Partial backfilling, which involves the removal of overburden from the overburden piles and replacement into the mine depressions, filling the depressions to the top of the low-side of the rims. This would occur during the reclamation phase.

The Revised Project in this Supplemental EIR incorporates aspects of sequential and complete backfilling. In December 2002, the State of California instituted new backfilling requirements (California Code of Regulations, Title 14, Division 2, Chapter 8, Subchapter 1, Article 9, Section 3704.1) for open pit metal mines. As the State Mining and Geology Board concluded that the 1997 Project had not been issued final approval of both a reclamation plan and a financial assurance prior to December 18, 2002, adherence to the referenced regulation was necessary. Thus, the sequential and complete backfilling alternatives are now integral to the Revised Project and are not alternatives. To the extent feasible, the Revised Project adheres to the requirements in the State Mining and Geology Board Report on Backfilling of Open-Pit Metallic Mines in California and the Surface Mining and Reclamation Act (SMARA) of 1975, which provides the performance standards for backfilling excavations and recontouring lands disturbed by open pit metallic mineral surface mining operations.

Partial Backfilling

The partial backfilling alternative was evaluated in the 1997 FEIR/EIS. However, changes in State standards since certification of the 1997 FEIR/EIS have resulted in this alternative being infeasible due to regulatory constraints.

The Revised Project is subject to the requirements of California Code of Regulations, Title 14, Division 2, Chapter 8, Subchapter 1, Article 9, Section 3704.1 ("Performance Standards for Backfilling Excavations and Recontouring Lands Disturbed by Open Pit Surface Mining Operations for Metallic Minerals"), in effect since December 2002. Subsection (a) of this regulation states that:

[a]n open pit excavation created by surface mining activities for the production of metallic minerals shall be backfilled to achieve not less than the original surface elevation, unless the circumstances under subsection (h) are determined by the lead agency to exist.

Subsection (h) explains the circumstances where "complete backfill" does not necessarily achieve the original surface elevation, as required by Subsection (a):

The requirement to backfill an open pit excavation to the surface pursuant to this section using materials mined on site shall not apply if there remains on the mined lands at the conclusion of mining activities, in the form of overburden piles, waste rock piles, and processed or leached ore piles, an insufficient volume of materials to completely backfill the open pit excavation to the surface, and where, in addition, none of the mined materials has been removed from the mined lands in violation of the approved reclamation plan. In such case, the open pit excavation shall be backfilled [...] to an elevation that utilizes all of the available material remaining as overburden, waste rock, and processed or leached ore.

As a result of changes in State regulations since certification of the 1997 FEIR/EIS, partial backfilling is no longer an acceptable alternative, and will not be further analyzed in this Supplemental EIR.

6.3.4 Alternative F – Alternative Gold Extraction Techniques

Proposed Heap Leach Method

The proposed method for recovering precious metal from the ore is heap leaching, using dilute cyanide solutions, with Merrill-Crowe processing being used for recovery of precious metals from leach solutions. This is a conventional process that has been used for decades at other commercial gold producing operations with similar low-grade, disseminated ore bodies (U.S. Environmental Protection Agency 1988). Ore from which the precious metals have been recovered remains in place on the heap, where, at closure, it is neutralized, reclaimed and revegetated.

Alternative gold extraction methods could include conventional milling, vat leaching, and in situ leaching.

Conventional Milling

Conventional milling generally consists of reducing the ore particles to a very small size (usually very fine sand and silt size particles) using capital intensive crushing and grinding equipment. This process further liberates minute precious metal particles and maximizes the exposed mineral surface area. Gold extraction is then accomplished in tanks by extracting the gold from the resultant slurry of the finely ground particles mixed with water and chemical reagents. Total precious metals recovery for milling processes is generally higher than for heap leach processes and is completed in hours rather than in months as in heap leaching.

Two basic methods of gold recovery are normally used to extract the precious metals from the slurry:

- Flotation utilizes surfactant reagents in specially designed, agitated cells, to form a froth to which the gold and/or precious metals bearing sulfide particles attach. This method is generally suited for some ores that contain appreciable quantities of sulfide minerals. Since the Soledad Mountain ores contain few sulfide minerals, it would not be a satisfactory method for use at the project and was eliminated from consideration on a mineralogical basis in the 1997 FEIR/EIS. For the same reason, this alternative warrants no further consideration.
- Leaching methods utilize free cyanide to dissolve gold in large agitated tanks. The precious metals are then recovered from solution using carbon adsorption technology, or sometimes Merrill-Crowe processing, followed by electrowinning of the recovered metals and smelting to produce a doré product.

Due to the need for substantial grinding facilities, the conventional milling process requires considerably greater energy (from five to 10 times) than the heap leach process, with its associated impacts of increased electrical consumption.

The milling process is a larger consumer of water, since the waste products from milling (tailings) are normally disposed of at 35 to 50 percent water by weight, after water reclamation, while the heap leaching process will ultimately consume about 12 to 20 percent by weight. Thus, the milling process could consume up to three times the water required for a heap leach operation.

The tailings also require the construction and maintenance of suitable tailings containment facilities and the continuous neutralization of any free cyanide that may be contained in them. Because these tailings are stored as a slurry, they cannot be stacked, as in a heap leach, but must be contained in an impoundment. This requires the construction of a much larger storage area, impacting significantly more surface lands. It is estimated that from 325 to 450 acres could be required to store the same amount of tailings from the milling method as opposed to the 245 acres necessary for the proposed heap leach. This additional amount of land, with topographic suitability, is not available at the project site.

At reclamation, the slurried tailings would be dried and revegetated. Due to the fine particle size, this material will be much more susceptible to erosion from wind and water than would be a comparable reclaimed heap leach pile.

The 1997 FEIR/EIS rejected the conventional milling alternative since it has no environmental advantage over the proposed heap leach process that would compensate for the disadvantages discussed above. For those same reasons, this alternative warrants no further consideration in this Supplemental EIR.

Vat Leaching

The vat leaching process is similar to heap leaching, but is conducted in large, shallow tanks. Ore is prepared in much the same manner as for the heap leach process, except that it is placed in the vats for leaching with dilute cyanide solution, followed by either Merrill-Crowe or carbon adsorption recovery processes. When ore in the vat has been leached, it is rinsed, removed from the vat and disposed of, after which the vat is reloaded and the cycle repeated. It is an appropriate technique to employ with ores having rapid dissolution rates or for sites with constraints that prohibit leach pads (e.g., weather or steep topography). The Soledad Mountain deposit has a moderate dissolution rate and moderate constraints for leach pad construction.

Typically, the precious metals from such ores will be extracted within days or weeks compared to heap leach extraction which can occur over a period of months to years. The same amount of leached ore residue is produced as in heap leaching. However, double-handling of material is required with associated increases in fuel consumption and associated fuel-burning emissions. It may also, in some locations, require the treatment and release of process waters.

The 1997 FEIR/EIS rejected this alternative since it does not present any significant environmental advantages over the proposed method and is not suited for the Soledad Mountain deposit. For those same reasons, this alternative warrants no further consideration in this Supplemental EIR.

In Situ Leaching

In situ leaching involves the injection of leaching solution directly into an ore body while it is still in place in the ground, and then recovering the enriched solution by pumping from extraction wells. The method requires suitable geologic formations that will confine the solution in the ground until it could be recovered. In the absence of such formations, the potential for adverse effects to groundwater and soils could be substantial.

In situ leaching is typically used for minerals, such as salt, borates, copper, uranium and other minerals that are readily dissolved by water or acid solutions as opposed to cyanide leaching solutions typically used to dissolve gold.

While this alternative would not involve open pit mining methods with associated ore and overburden material removal, the risk of solution escape and groundwater and soil contamination will preclude its use for the Soledad Mountain deposit. The 1997 FEIR/EIS rejected this alternative and, for those same reasons, this alternative warrants no further consideration in this SEIR.

6.3.5 Alternative G – Alternative Project Location and Configurations

The location of project facilities for the 1997 and Revised Projects is largely constrained due to the fixed location of the ore body. The proposed layout has been designed to minimize surface disturbance and energy consumption and to maximize project efficiency in consideration of the given constraints to project development. The facilities and structures proposed for use at the project site are limited to those necessary for efficient operation. Options for relocation of the primary project facilities that were considered, but found not to be acceptable, are described in the following sections.

Alternative Open Pit Mine Location

Section 15126 of the CEQA Guidelines requires that an EIR address alternative locations for the proposed project. Under this alternative the proposed project would be developed at another location within Kern County utilizing the same development parameters as the proposed project (i.e., the same tons of ore, the same processing facilities, generally the same acreage).

In the 1997 FEIR/EIS, forty (40) mining districts were evaluated for an alternative precious metal ore body within a 100-mile radius around Soledad Mountain (WZI Inc., 1997b). Any known districts located within or adjacent to state or federal land designated as Primitive or Wilderness Areas were eliminated from consideration. Of the mining districts reviewed, the Loraine District appears to be the best possible alternative. The Loraine District covers approximately 60 square miles and is centered approximately 12 miles north of Tehachapi in the southern end of the Sierra Nevada. The principal period of mining activity occurred between 1894 and 1912 (Tucker and Sampson, 1933). The Loraine District was active again in the 1920s and 1930s, and there has been intermittent

prospecting since. Approximately 92,000 ounces of gold has been produced from this District. Exploration for precious metals has occurred in this district during the past 10 years. The Zenda Mine Project has been evaluated by Claim Staker Resources and gold ore reserve resource estimates of approximately 920,000 tons of ore at an average grade of 0.057 oz/ton, or approximately 52,000 contained ounces of gold, are present (WZI Inc, 1997b).

Silver and gold are present in quartz veins commonly within or along the walls of the rhyolite berms (Troxel and Morton, 1962). The veins also extend from the rhyolite into schist or diorite. Wall-rock alteration is pronounced in most of the silver and gold mines in the District.

The topography is rugged, with variation in elevation from approximately 5,500 feet to 2,600 feet (U.S. Geological Survey, 1972). Soils are fairly well developed sandy loams, shallow on the ridgetops and deeper in the valleys and northerly slopes (Kern County, 1989). The major access to the area is Caliente Creek Road, a paved two-lane winding road adjacent to Caliente Creek. Dirt roads provide access to the former mine sites. Several earthquake epicenters with recorded 4.0 and 4.9 magnitude earthquakes are located within the Loraine District. The major drainage, Caliente Creek, discharges into the southern San Joaquin Valley, providing recharge to the groundwater basin. Springs are present throughout the area. Limited groundwater is present in the fractured and decomposed bedrock. The area receives annual average rainfall of 16 inches and 33 inches of snow.

The Loraine District is within the southern portion of the San Joaquin Valley Unified Air Pollution Control District, which is in nonattainment for ozone and PM_{10} (particulate). The area is characterized by Douglas oak woodland plant association, with some chaparral and live oak woodland also present. The ground surface is covered by 62 percent low shrubs and 42 percent trees. The State-listed threatened Tehachapi slender salamander (*Batrachoseps stebbinsi*) is known to inhabit moist habitats in this area. The Year 2000 General Plan Master Environmental Assessment has designated the area as a Class I Visual Space. Presently the area is used for cattle grazing.

There are no known alternative ore bodies that are equivalent to those at Soledad Mountain. Exploration would be required, possibly in previous mine sites, to determine whether an ore body suitable for heap leaching is present. The known ore body, under claim as the Zenda Mine, is estimated to be less than 10 percent the size of the Soledad Mountain resource. The alternative open pit location would result in similar impacts as the proposed location to mineralogy, physiography and geology, soils, air quality, cultural and historical resources, noise, land use and socioeconomics. The remote location and the lack of existing infrastructure would result in the formation of new disturbance in the form of roads and utilities (water, electricity).

Because of the undefined nature of the ore body and the potential to disturb previously undisturbed areas, the alternative open pit location is not a reasonable alternate. The 1997 FEIR/EIS rejected this alternative and, for those same reasons, this alternative warrants no further consideration in this Supplemental EIR.

Offsite Ore Processing

The Revised Project includes onsite location of all facilities required for selfsufficient ore mining and processing including the open pit mine, overburden piles, heap leach pads, gold recovery facilities, maintenance and administration facilities, etc. An offsite ore processing alternative would consist of extracting ore at the proposed mine site and trucking the ore to a new or existing ore processing facility at an offsite location. For this alternative, the Soledad Mountain Project site would include the open pit mine, overburden piles, an ore stockpile, aggregate stockpile, production equipment, and ancillary maintenance, administration and truck loading facilities. There would be no need for heap leach pads or gold recovery facilities.

As of the 1997 FEIR/EIS, there were two existing facilities in the vicinity that might be capable of processing the ore under contract. However, both had reached full capacity and were in the detoxification/closure stages and would require re-permitting to process the Soledad Mountain ore. Furthermore, trucking of ore offsite would require approximately 550 round trips per day (based on 30-ton truck and trailer rigs hauling on a seven-day per week schedule). Environmental impacts of this alternative are substantially greater than for the 1997 and Revised Projects due to increased fuel consumption, increased emissions from truck haulage, and traffic-related impacts.

There are no alternative sites nearby that offer substantive environmental advantages and there would still be increased impacts of fuel consumption, dust, and fuel burning emissions. The 1997 FEIR/EIS rejected this alternative and, for those same reasons, this alternative warrants no further consideration in this Supplemental EIR.

Heap Leach Pad Alternatives

The 1997 and Revised Projects were both designed to treat ore from the open pit on single-use heap leach pads located near the ore body. It is reasonably foreseeable that approximately 50 million tons of ore will be developed for processing. The 1997 Project would have accommodated upwards of 60 million tons of ore. The proposed pad configurations will allow for the treating of this quantity of ore. The heap leach pad capacities and configurations are appropriate to assure that project environmental impacts are adequately assessed.

Under both the 1997 and the Revised Projects, the proposed location of the heap leach pads were determined after consideration of operational and environmental factors. These include proximity of the open pit mine, efficiency of construction and operation, minimizing land use and potential for the discovery of additional mineral reserves.

Examination of the layout of the Revised Project relative to the property boundaries makes it apparent that there are no alternative locations that will provide for the necessary capacity while reducing any environmental impacts associated with the proposed pads. Regardless of the location, the design of any other single heap or multiple heaps will result in a similar amount of surface disturbance and visual effect.

Alternative Solution Storage Configuration

Proposed Configuration

For general reference to the design concept, the term "modified valley-fill heap leach" can be used to describe a heap leach pad with internal solution control. The heap leach pads are designed as side hill leach pads with a perimeter berm supporting the toe of each heap. The berm also provides solution storage capacity. One of the important attributes of the valley-fill concept is the lack of solution ponds exterior to the leach pads. The toe berm will create a pond area for in-heap management of the solutions, runoff from precipitation and retention of the design storm event. The lack of barren and pregnant solution ponds minimizes hazards to wildlife.

All solutions on the pads will be contained inside the heap. Pregnant solution will be extracted by pumps placed in pipes installed on the inside slope of the berm. This prevents liner penetration and associated potential leakage problems. Booster pumps will move the solution to tankage at the process plant. No open ponds are necessary with this arrangement. The pregnant solution will be circulated through the process plant and recirculated to the heap. The pad liner in the area of solution storage of the heap is more difficult to repair than a leak in a separate solution pond. Discontinued use of the heap may be required in the event a leak is detected in the liner, as directed by the Regional Water Quality Control Board.

Open Solution Storage Ponds

Many heap leach gold mining projects utilize open solution storage ponds for pregnant and barren solution management. These ponds must be designed for the containment of process solution flows, the design storm event, and include additional freeboard for a safety factor allowance. Open solution storage ponds have large surface areas that result in increased water losses due to evaporation and represent a threat to wildlife. Suitable locations for open solution storage ponds are not readily available at the project site. Because of the increased solution losses, wildlife hazards and lack of available sites, the open solution storage ponds alternative was eliminated from further consideration in the 1997 FEIR/EIS. As an alternative to the Revised Project, this alternative similarly warrants no further consideration in this Supplemental EIR.

6.3.6 Alternative H – Alternative Power Supply

As discussed in Section 3.11.4 (*Electrical Power*) of the Project Description, the crushing-screening plant demands the most power and its design has evolved since the 1997 Project, with the present design providing substantial energy efficiency improvements. Electrical power consumed per ton of throughput was estimated at 6.14 kilowatt hours per ton (kW.h/ton) for the 1997 Project and 2.81 kW.h/ton for the Revised Project. Based on a feasibility level design for power

supply and distribution, power will be supplied by SCE via a main power line at the eastern site boundary. Moreover, the Applicant anticipates a power credit due to the proposed use of a variable frequency drive with regenerative braking capability for the downhill pipe conveyor. Power generated by the drive would be absorbed by the mine load.

The starting and stopping of the large motors and the fluctuating power needs of the crushers will require that the electrical system be able to make rapid responses to avoid unplanned equipment shutdowns or electrical system failures. The problem of this fluctuating load can be dealt with if a sufficient supply of power is made available, such as from a public utility, or by installing onsite generation equipment with a rapid response time to fluctuating load conditions.

Based upon these peak energy and steady load considerations, the following alternatives were considered for power supply to the proposed project:

- Utility power from Southern California Edison (SCE)
- Onsite power generation
- Commercial power consumption

Proposed Southern California Edison Connection

The closest power lines that are capable of satisfying site power requirements are located at the northeast comer of the project site. A new substation and circuiting equipment will be constructed on the project site with overhead and underground distribution to serve the various locations on the project site.

Onsite Power Generation

Diesel or natural gas-fueled power generators could be installed onsite to meet the power requirements of the Revised Project. Low sulfur diesel fuel could be used for power generation, but operation of these engines may contribute to emissions of carbon monoxide, sulfur oxides and nitrogen oxides. Natural gas fueled generation will reduce emissions in comparison to diesel fueled generators. It is anticipated that sufficient power generation capacity could be designed and constructed such that the environmental impacts would be Less Than Significant in all respects, including noise generation. Although this alternative is feasible, the 1997 FEIR/EIS concluded that it would not provide an environmental impact reduction benefit over the proposed project. As an alternative to the Revised Project, this alternative similarly warrants no further consideration in this Supplemental EIR.

Commercial Power Consumption

Due to electrical restructuring, opportunities to purchase commercially available non-utility power will emerge that the project proponent may wish to pursue at a later date. These options, however, would be pursued after the project is developed and the electrical market is better defined. There are commercial quantities of electrical power available in proximity to the project site. Consumption of commercially available power will have identical impacts to those of the proposed project, which relies on publicly available power. The 1997 FEIR/EIS concluded that while this alternative would be feasible, it would not provide environmental impact reduction benefit over the proposed project. As an alternative to the Revised Project, this alternative similarly warrants no further consideration in this Supplemental EIR.

6.4 Alternatives Analyzed in the Supplemental Environmental Impact Report

The following three alternatives have been determined to represent a reasonable range of alternatives which have the potential to feasibly attain most of the basic objectives of the Revised Project, and which may avoid or substantially lessen any of the significant impacts of the proposed project. This section also describes the "Environmentally Superior" Alternative, as required by CEQA. These alternatives are analyzed in detail below:

- Alternative A1 No Project/No Development Alternative
- Alternative B Alternative Mining and Ore Processing Rates
- Alternative C Reduced Project Size

Table 6-1 provides a summary of the relative impacts and feasibility of each Alternative. A complete discussion of each Alternative is provided below.

Alternative	Description	Summary of Analysis
ALTERNATIVE A1 No Project/ No Development	Existing land use to continue (no mining).	Avoids need for new CUP, CUP modifications, and vacation of roadway. Environmentally superior alternative.
ALTERNATIVE B	Changes to mining and ore	Increased processing rates: Higher levels of air
Alternative Mining and Ore Processing Rates	processing rates (both increased and decreased rates analyzed).	pollution and water usage while project is operational; however, total period of operations is reduced.
		Reduced processing rates: Lower levels of air pollution and water usage while project is operational; however, total period of operation is increased.
		Changes in the mining and ore processing rates will not result in an environmentally superior project.

Alternative	Description	Summary of Analysis
ALTERNATIVE C Reduced Project Size	Amount of ore mined reduced to 17.4 million tons (reduction of 70 percent).	Some beneficial environmental effects, but does adequately meet project objectives.
	Overburden will total 44 million tons (reduction of 70 percent).	Potentially economically infeasible.
	Mining life of about three years.	

6.4.1 Alternative A1 – No Project/No Development

Implementation of the No Project Alternative means that the Revised Project would not be developed and the present land uses would continue indefinitely. This alternative would constitute denial of the operational permits for the project. This alternative would result in no direct physical change to the land and resources of the area. The 1997 FEIR/EIS identified the No Project/No Development alternative as the CEQA environmentally superior alternative and the NEPA environmentally preferred alternative. While the "Specific Plan for Soledad Mountain - Elephant Butte and Vicinity - South of Mojave" recognizes gold and silver mining operations as important land uses, this alternative would still be generally consistent with both the County General Plan and the Specific Plan.

Comparative Merits

Ability to Avoid or Substantially Lessen Project Impacts

There are approximately 215 acres of existing disturbed areas relating to past underground mining operations, including a large tailings pile on the northern flank of the mountain, which are subject to wind erosion emissions. Although there would be no potential for increased environmental impacts due to mining activity, reclamation of a portion of the 215 acres disturbed by historic mining activities would not be realized under this alternative. Disturbances on the site since January 1, 1976 would be reclaimed, while surface disturbances that were created by historical (pre-January 1, 1976), non-project related mining events would remain.

The current sources of air pollution on the unreclaimed areas of the site would continue to exist as a result of this alternative. Additionally, the 1997 FEIR/EIS indicated that deterioration of significant cultural and historical resources would continue without preservation.

The "Specific Plan for Soledad Mountain – Elephant Butte and Vicinity – South of Mojave" recognizes gold and silver mining operations as important land uses. However, Kern County could adopt the No Project/No Development Alternative

(i.e., deny approval of the Revised Project) if any significant adverse environmental effects are identified which could not be mitigated to a level that is less than significant, and a Statement of Overriding Considerations under CEQA could not be justified.

Because it has several beneficial environmental benefits, this alternative is environmentally superior to the Revised Project. However, the selection of the No Project/No Development alternative would not be consistent with federal mining laws and regulations (1976 FLPMA and 43 CFR 3809), unless operations of the Revised Project were found to result in undue and unnecessary degradation of the subject lands. Such a finding was not made in the 1997 FEIR/EIS and no such finding is presently supported by the information in this Supplemental EIR.

Attainment of Project Objectives

The No Project/No Development alternative does not achieve even the most basic project objectives. It would have no known socioeconomic or employment benefit to the area.

The National Materials and Minerals Policy, Research and Development Act of 1980 declared that "*it is the continuing policy of the United States to promote an adequate and stable supply of materials necessary to maintain national security, economic well being and industrial production with appropriate attention to a long-term balance between resource production, energy use, a healthy environment, natural resources conservation and social needs.*" The No Project/No Development Alternative would be generally inconsistent with this policy and the project objectives that lend support.

At the State level, SMARA similarly encourages the production of minerals while giving consideration to environmental resources.

Feasibility

The No Project/No Development alternative is technically feasible.

6.4.2 Alternative B – Alternative Mining and Processing Rates

Based on the 1997 FEIR/EIS, this section describes two alternative approaches to the project that will consider the impacts associated with mining and processing ore at rates 20 percent higher and 20 percent lower than the 4.55 million tons per year in the Revised Project. These alternatives provide a basis for comparing the environmental impacts that could result from a change in project scale and duration.

Increased Mining and Processing Rate Alternative

Using the assumptions in the 1997 FEIR/EIS, the total amounts of ore and waste rock mined over the life of this alternative would be the same as for the Revised

Project, but the mining and ore processing rates would be increased by 20 percent to produce and process 5.46 million tons of ore per year. This would decrease the mining and metallic processing period of the project to about 9.38 years for a total period of 11 years, based upon the foreseeable (51.2 million tons) ore reserve. Note however that the production and sale of aggregate is driven by market demand and would not be expected to change.

Total surface disturbance and the site layout for this alternative would be the same as for the Revised Project. Excavation of the same total tonnage of ore and waste rock, but over a different period of time, would require the same mine, waste rock and heap leach pile configurations. Surface disturbances for onsite roads and ancillary facilities would be similar because the same basic transportation and access needs and supporting activities would occur. While individual buildings or pieces of equipment may be sized differently, for example, a larger crushing circuit might be used, most physical differences in disturbances would be negligible.

There would be a change in the employment level at the project, although any increase in employment would be less than 20 percent.

The changes in environmental impact that could occur due to an increased mining and processing rate are primarily related to the duration of activities and the consumptive uses associated with project operations.

Comparative Merits

Ability to Avoid or Substantially Lessen Project Impacts

This alternative examines the environmental effects of an increased rate of mining and ore processing relative to the Revised Project. This alternative would result in the exceedance of PM_{10} standards. This would require implementation of additional mitigation measures associated with dust control. This would result in additional water usage and operational equipment exhaust.

If operational air quality monitoring should indicate that the results of preoperational modeling were not indicative of actual conditions, consideration of increased rates should not be precluded.

Attainment of Project Objectives

The Increased Mining and Processing Rate alternative would attain project objectives, but to a lesser degree than the Revised Project due to increased levels of air pollution produced and increased water usage.

Feasibility

The Increased Mining and Processing Rate alternative is technically feasible.

Although this alternative is technically feasible, it is not environmentally superior to the Revised Project.

Decreased Mining and Processing Rate Alternative

Under this reduced rate alternative, the total amounts of ore and waste rock mined over the life of the alternative would be the same as for the Revised Project, but the mining and ore processing rates would be reduced by 20 percent to produce and process 3.79 million tons of ore per year. This would increase the mining and processing period of the project to about 13.5 years, for a total period of 18 years, based upon the foreseeable (51.2 million tons) ore reserve. Note however that the production and sale of aggregate is driven by market demand and would not be expected to change.

Total surface disturbance and the site layout for this alternative would be the same as for the Revised Project. Excavation of the same total tonnage of ore and waste rock, but over a different period of time, would require the same mine, waste rock and heap leach pile configurations. Surface disturbances for onsite roads and ancillary facilities would be similar because the same basic transportation and access needs and supporting activities would occur. While individual buildings or pieces of equipment might be sized differently, for example, a smaller crushing circuit might be used, most physical differences in disturbances would be negligible.

There would be a change in the employment level at the project, although any decrease in employment would be by less than 20 percent.

The changes in environmental impact that could occur due to a reduced mining and processing rate are primarily related to the duration of activities and the consumptive uses associated with project operations.

Comparative Merits

Ability to Avoid or Substantially Lessen Project Impacts

This alternative examines the environmental effects of a decreased rate of mining and ore processing relative to the Revised Project. This alternative would have a slight beneficial effect on drawdown of groundwater levels, slightly lower noise levels and slightly less traffic. The alternative would produce a negligible impact on water supply due to the need for an increased total amount of water. With respect to other resources affected, there would be no significant difference between this alternative and the Revised Project.

Attainment of Project Objectives

The Decreased Mining and Processing Rate alternative would attain project objectives, but to a lesser degree than the Revised Project due to the longer duration of mining on the site.

Feasibility

The Decreased Mining and Processing Rate alternative is technically feasible.

Although this alternative is technically feasible and has some beneficial effects, it is not environmentally superior to the Revised Project. It is comparable to the Revised Project.

6.4.3 Alternative C – Reduced Project Size

The Revised Project is reduced from the previously approved 1997 Project, both in terms of acreage disturbance and mining and processing tonnage. The relative beneficial effects of those reductions are described throughout the analyses in Chapter 4 (*Supplemental Environmental Analysis*).

This alternative is based on information in the 1997 FEIR/EIS and evaluates the changes that would be made to the Revised Project if it were to be designed to avoid impacting the topographic and visual resources at the project site. It is based upon the avoidance of mining in areas that would affect the primary ridgelines of Soledad Mountain, thus maintaining the basic silhouette of Soledad Mountain and reducing any impact on the visual character of the mountain.

This alternative also illustrates the effect of a general reduction in size of the project proposed for any other purpose. In this alternative the amount of ore mined would be reduced to 17.4 million tons, a reduction of 70 percent from the foreseeable reserve. Waste rock mined in conjunction with this amount of ore would total 44 million tons, also a reduction of 70 percent. Based upon a mining rate that would produce six million tons of ore per year (the same as for the 1997 Project), the mining life of this alternative would be about three years.

The differences in potential environmental impacts resulting from this alternative would be primarily related to the change in area of disturbance and the reduced mine life. The percentage reduction in total tonnage mined would not be reflected in a corresponding reduction in the surface area disturbed. This is because the volume to surface area relationship of the waste rock piles and the heap leach pads tend to become less efficient with decreasing size and because the same basic amount of area is needed for facilities such as the process plant, offices, maintenance shops and other ancillary and support requirements.

The annual operating requirements for this alternative would be similar to the Revised Project with regard to the number of employees, the scale of the operation, and consumption of reagents, water, operating supplies and maintenance supplies. The other operating impacts on the environment would also be similar to the Revised Project, but the total effect of some, such as total water consumed, would be reduced due to the short project life.

Comparative Merits

Ability to Avoid or Substantially Lessen Project Impacts

The Reduced Project Size alternative is primarily designed to minimize topographical impacts and incrementally improve visual impacts. This alternative would have a slight beneficial effect on the topographic profiles in relation to the Revised Project since less disturbed acreage is involved. This alternative would

have a slight beneficial effect on the vegetative resources of the affected area. With respect to the visual impact of this alternative, relative to the 1997 and Revised Projects, there would be a slight beneficial difference. Health hazard risks could increase as a result of this Reduced Project Size alternative, mainly due to the decreased acreage subject to reclamation. For all other resources affected, its environmental impacts are essentially equivalent to the Revised Project.

As discussed above, the No Project/No Development alternative has been identified as the environmentally superior alternative to the Revised Project. However, when the No Project alternative is determined to be the environmentally superior alternative, CEQA Guidelines Section 15126.6(e)(2) requires that another alternative also be identified as environmentally superior. The Reduced Project Size alternative generally reduces more impacts than the other possible alternatives; thus, it is the environmentally superior alternative to the Revised Project. Overall, a reduction in project size would be slightly beneficial with respect to topographic profiles and vegetative resources. Even so, the benefits of reducing existing hazards and reclamation of previously disturbed mining activities would not be fully realized.

Attainment of Project Objectives

This alternative attains all project objectives, but to a lesser degree than the Revised Project.

Feasibility

This alternative would be technically feasible but potentially economically infeasible.

CHAPTER 7 RESPONSES TO COMMENTS

Chapter 7 Responses to Comments

(Reserved)
CHAPTER 8 ORGANIZATIONS AND PERSONS CONSULTED & LIST OF PREPARERS

Chapter 8 Organizations and Persons Consulted & List of Preparers

8.1 Organization and Persons Consulted

In preparing the Supplemental Environmental Impact Report, consultation with agencies, organizations, and private individuals was limited to discussions with the lead agency (Kern County Planning Department).

8.2 List of Preparers

Lead Agency

Kern County Planning Department

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- Rick Goacher, Founder/Principal
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- Jeremy Krout, Principal
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- Duane Morita, Associate
- Jennifer Wilcox, Associate

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CHAPTER 10 ACRONYMS AND ABBREVIATIONS

Chapter 10 Acronyms and Abbreviations

A-1 [Zoning Classification]	Limited Agriculture
AB	Assembly Bill
ACBM	Asbestos-containing building material
ADT	Average Daily Trips
ANF	Angeles National Forest
APCD	Air Pollution Control District
AQ/HRA	Soledad Mountain Project Air Quality and Health Risk Assessments (Air Sciences 2009b)
AQMD	Air Quality Management District
ARB	Air Resources Board
ARD	Acid Rock Drainage
ATC	Authority to Construct
AVEK	Antelope Valley – East Kern Water Agency
BACT	Best Available Control Technology
BLM	Bureau of Land Management
BMP	Best Management Practice
CAA	Federal Clean Air Act
CAAQS	California Ambient Air Quality Standards
Caltrans	California Department of Transportation
Cal/OSHA	California Division of Occupational Safety and Health
CAPCOA	California Air Pollution Control Officers Association
CARB	California Air Resources Board
CCAA	California Clean Air Act
CCR	California Code of Regulations
CDFG	California Department of Fish and Game
CEC	California Energy Commission
CEQA	California Environmental Quality Act
CESA	California Endangered Species Act
CFC	Chlorofluorocarbon
CFR	Code of Federal Regulations

CFZCAIM	Compact Flash Zero Crossing Analysis Interface Module
CHP	California Highway Patrol
CH ₄	Methane
CLOMR	Conditional Letter of Map Revision
CNDDB	California Natural Diversity Database
CNPS	California Native Plant Society
СО	Carbon monoxide
CO_2	Carbon dioxide
CO ₂ e	Carbon dioxide equivalent
COHb	Carboxyhemoglobin
COPC	Constituent of Potential Concern
County	Kern County
CUP	Conditional Use Permit
CWA	Clean Water Act
CY	Cubic Yards
dB	Decibel
DEIR	Draft Environmental Impact Report
DTSC	Department of Toxic Substances Control
DWR	Department of Water Resources
EAFB	Edwards Air Force Base
FIR	Environmental Impact Report
FIS	Environmental Impact Statement
EPA	US Environmental Protection Agency
ERS [Zoning Classification]	F(2.12) RS (Estate 2.5 Acres Residential
	Suburban Combining)
ESA	Federal Endangered Species Act
FEIR	Final Environmental Impact Report
FEMA	Federal Emergency Management Agency
FGC	Fish and Game Code
FHWA TNM	Federal Highway Administration Traffic Noise
	Model
FIRM	Flood Insurance Rate Map
FLAG	Federal Land Managers' Air-Quality Related Values Workshop
FR	Federal Register
GHG	Greenhouse Gas
GPM	Gallons per minute
GOM	Golden Queen Mining Company Ltd. or Golden
	Queen Mining Company, Inc.

H_2S	Hydrogen sulfide
HARP	Hotspots Analysis and Reporting Program
НСНО	Formaldehyde
HCN	Hydrogen cyanide
Hg	Mercury
HI	Hazard Index
HLF	Heap Leach Facility
HPGR	High Pressure Grinding Roll
HHRA	Human Health Risk Assessment
IMPROVE	Interagency Monitoring of Protected Visual Environments
IS	Initial Study
KCAPCD	Kern County Air Pollution Control District
km	Kilometer
kV	Kilovolt
LCRS	Leachate Collection and Recovery System
LDCS	Leak Detection and Collection System
LLDPE	Linear Low-Density Polyethylene
LOS	Level of Service
MAHI	Maximum Acute Hazard Index
MBTA	Migratory Bird Treaty Act
MCHI	Maximum Chronic Hazard Index
MDAB	Mojave Desert Air Basin
MMMP	Mitigation Measure Monitoring Program
MSHA	Mine Safety and Health Administration
MSL	Mean Sea Level
MW	Megawatt
NAAQS	National Ambient Air Quality Standards
NaCN	Sodium cyanide
NAHC	Native American Heritage Commission
NCCP	Natural Community Conservation Plan
NEPA	National Environmental Policy Act
NESHAPS	National Emission Standards for Hazardous Air Pollutants
NFIP	National Flood Insurance Program
NGL	Natural Ground Level
NO_2	Nitrogen dioxide
NOC	Notice of Completion

NOD	Notice of Determination
NOP	Notice of Preparation
NO_x or N_2O	Nitrogen oxides
NPDES	National Pollutant Discharge Elimination System
NRHP	National Register of Historic Places
O ₃	Ozone
ОЕННА	Office of Environmental Health Hazard Assessment
OMR	Office of Mine Reclamation
OPR	Governor's Office of Planning and Research
OSHA	Occupational Safety and Health Administration
PEL	Permissible Exposure Limits
PM _{2.5}	Particulate matter <2.5 microns
PM_{10}	Particulate matter <10 microns
PMI	Point of Maximum Impact
PPC	Public Protection Classification
PPM	Parts per million
PPV	Peak particle velocity
PRC	Public Resources Code
PSM	Process Safety Management
PUC	Public Utilities Commission
PVC	Polyvinyl chloride
RMP	Risk Management Plan
ROD	Record of Decision
ROG	Reactive Organic Gases
ROWD	Report of Waste Discharge
RTP	Regional Transportation Plan
RWQCB	Regional Water Quality Control Board
SARA	Superfund Amendments and Reauthorization Act
SB	Senate Bill
SBBM	San Bernardino Base and Meridian
SEIR	Supplemental Environmental Impact Report
SCE	Southern California Edison Company
SCGC	Southern California Gas Company
SCH	State Clearinghouse
SIDS	Sudden Infant Death Syndrome
SIP	State Implementation Plan
SMARA	Surface Mining and Reclamation Act of 1975

SMGB	Surface Mining and Geology Board
SMRP	Surface Mining and Reclamation Plan
SO_3 or SO_4	Sulfates
SO4 ²⁻	Sulfates in the fully oxidized ionic form of sulfur
SO_2	Sulfur dioxide
SO _x	Sulfur oxides
SPCC	Aboveground Petroleum Storage Tank Spill Prevention Control and Countermeasure Plan
SPRR	Southern Pacific Railroad
SR	State Route
SRRE	Source Recycling and Recycling Element
STLC	Soluble Threshold Limit Concentrations
SWPPP	Stormwater Pollution Prevention Plan
TACS	Toxic Air Contaminants
TDS	Total Dissolved Solids
TLV	Threshold Limit Values
TTLC	Total Threshold Limit Concentrations
TWRA	Tehachapi Wind Resource Area
$\mu g/m^3$	Microgram per Cubic Meter
UBC	Uniform Building Code
UFC	Uniform Fire Code
Unified Program	Unified Hazardous Waste and Hazardous Materials Management Regulatory Program
USACE	United States Army Corps of Engineers
USC	United States Code
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey
VMT	Vehicle Miles Traveled
VOC	Volatile Organic Compound
WAD	Weak Acid Dissociable
WDR	Waste Discharge Requirements
WMU	Waste Management Unit