COUNTY OF SAN DIEGO

Reclamation Plan

Conforms to the California Surface Mining and Reclamation Act (PRC 2700 et.sec.) and Sections 1810 and 6550-6556 of the County of San Diego Zoning Ordinance

East County Sand Mine

Reclamation Plan

MUP 09-001, RP 09-001

Lakeside, California

APN 375-100-20, -24, -43 and Portions of 375-041-36,-50 and 375-100-29, -41, -45

Submitted to:

County of San Diego
Planning and Development Services
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Submitted by:
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1.0 PROJECT INFORMATION

1.1 Site Information

Site Information	
General Plan Designation	Rural Land Category, Medium Impact Industrial
Zoning District, Ordinance	M58 (General Impact Industrial
Site Size	**Mine site**: 27.39 acres **Access Road**: _0___ acres (APN 375-100-20, -24, -43 and portions of 375-041, -36, -50 and 375-100-29, -41, -45),
Current Use & Development	The northern most parcel (APN 375-041-36) is occupied by Chuck Green and Associates' construction yard. Six parcels (APN 375-041 -50 and 375-100-20, -24, -41, -43, -45) of the project site are occupied by Bob's Tree Farm and Crane Service which specializes in all type of hourly truck crane rentals and open storage. The portion of APN 375-100-29 within the center of the project is vacant except for a well.
Surrounding Uses/Zoning	North: M-58 (construction office and sand mine) South: M-58 and A-70 (single family residence and bottled water plant) East: A-70 (rural single family residences) West: RR.5 (rural single family residences)
Access	All proposed extraction and reclamation truck traffic will be in and out direct from Moreno Avenue and travelling to and from the north of the project site.
Public Services	**Power:** San Diego Gas & Electric **Water Supply***:* Private well for non-drinking use, domestic water from Lakeside Water District

Site Information	
	Sewage: Existing onsite septic system. **Fire**: Lakeside Fire Protection District

1.2 SITE LOCATION AND ACCESS

The proposed East County Sand Mine and associated operations area would be located on eight Assessor's Parcels. The parcels are APN 375-100-20, -24, -43 and portions of 375-041-12, --36,-50 and 375-100- -29, -41 -45. The project site is also described as portions of Lots 197, 198, 201, 202, & 203 of Map No. 289, together with portions of Parcels 1 & 2 of Parcel Map 13894. The site is located east of State Route 67 and west of Moreno Avenue in the Lakeside Community Plan. (See **Figure K**, Vicinity Map).

Truck access to the proposed East County Sand Mine is provided by a proposed gated access off of Moreno Avenue 750 feet south of Vigilante Road. (See **Figure A**, Access Driveways, and Major Use Permit/Reclamation Plan -**Sheets 1-17**).

1.3 BACKGROUND INFORMATION

The project site has been disturbed by decades of farming activities and some minor sand removal has occurred. Further background information is contained in the Project Description (Section 1.5).

See **Figure K**: Vicinity Map

See **Sheet 1** of 17 of MUP/RP Plans: Plot Plan

See **Sheet 2** of 17 of MUP/RP Plans: Aerial photograph

1.4 EXISTING LAND USE

The northern most parcel (APN 375-041-36) is occupied by Chuck Green and Associates' construction yard. Six parcels (APN 375-041-50 and 375-100-20, -24 -41, -43, -45) of the project site are occupied by Bob's Tree Farm and Crane Service which specializes in all type of hourly truck crane rentals and open storage.. The portion of APN 375-100-29 within the center of the project is vacant except for a well.

1.5 PROJECT DESCRIPTION

The applicant requests the granting of a Major Use Permit (MUP) and the approval of a Reclamation Plan to authorize the extraction (mining) of approximately 674,000 cubic yards of material (632,000 cubic yards of sand and 42,000 cubic yards of topsoil). This project proposes to remove all resources to the depth of elevation 415 MSL. Approximately 677,000 cubic yards of soil, rock, concrete, and asphalt material would be imported and recycled for use as on-site fill, channel rip-rap and sale.

In the future, the applicant may apply for a modification to the Major Use Permit (MUP) and Reclamation Plan to authorize the extraction (mining) of up to approximately 1,175,000 cubic yards of material (1,133,000 cubic yards of sand and 42,000 cubic yards of topsoil). This potential future modification would propose removal of all of the feasible resources available and no future mining operations would be anticipated after final reclamation. Up to approximately 1,278,000 cubic yards of soil, rock, concrete, and asphalt material would be imported and recycled for use as on-site fill, channel rip-rap and sale in the ultimate condition.

On-site existing land uses that will continue to operate during the implementation of the Extraction and Reclamation Plans include: Bob's Tree Farm and Crane Service (APN 375-041-50, 375-100, -24, -20, -41, -43 and -45), Chuck Green & Associates, Landscape Construction and Equipment Sales (APN 375-041-36). These uses are planned to continue in operation following the completion of the reclamation plan.

Following the completion of the Reclamation Plan, development of the reclaimed areas could occur in accord with the provisions of the M58 General Impact Industrial Use Regulations. Zoning Ordinance Sections 2580 through 2585 identify the uses that can occur by right as well as uses subject to restrictions or that require a Minor or Major Use Permit.

The requested MUP would authorize a production limit of 102,842 tons per year based on a five-year rolling average (or 514,000 tons in any consecutive 5 calendar years) as shown in **Table 3 and 3A**. A maximum annual production of 300,000 tons in any calendar year is proposed. Total possible material production from the site is estimated to be 1.645 million tons (or 1,175,000 cubic yards) Note: 1.0 ton = 0.71 cubic yard (approximate). The average annual production would be 102,842 tons (or 73,438 cubic yards). Operations would occur Monday through Saturday between the hours of 6:00am to 5:00pm. Mining would occur over a 19.76-acre area with a maximum depth of excavation of 80 feet.

Mining of the project site would commence on February 1, 2017. At the proposed average mining rate of 102,842 tons per year, mining of the 0-949 million tons of

material would require approximately 11 years (i.e. to the year 2028) or 16 years for the full 1.645 million tons of material (i.e. to the year 2032). The reclamation is anticipated to continue for another 4 years after the mining is completed. Thus the proposed end of mine life is approximately December 31, 2031 or 2035.

The Slaughterhouse Creek and San Vicente Creek channels on the East County Sand Mine project site will be incrementally reconfigured to convey the 100-year storm through the site as the sand extraction and reclamation process proceeds. As shown on **Sheet 3,** Slaughterhouse Creek currently enters the project site from the north and flows southwesterly across the site towards SR 67. At SR 67 the channel turns to the south and follows the east side of the highway until it turns southeasterly on parcel APN 375-041-50. The Slaughterhouse Creek channel converges with the remnant of the San Vicente Creek channel near the center of the project site on parcel APN 375-100-24. The San Vicente Creek channel continues in a southerly direction until it turns to the southeast on APN 375-100-41. The channel exits the southern boundary of the project site on parcel APN 375-100-45. The westerly end of an unnamed tributary to Slaughterhouse Creek located on Parcel APN 375-100-29 will be channelized during the reclamation of Area 4R (see **Sheet 12**). The remainder of the channel will be completed as part of the Reclamation of Area 5R (see **Sheet 13**). The reconfiguration of the creeks and tributary channel will be permanent; the project does include any temporary diversions of the creeks or tributary drainage.

As reflected in the enclosed reclamation plan maps and sections, the mine site would be reclaimed to a condition suitable for industrial activities as permitted by the Medium Impact Industrial land use designation. Reclamation of the site would occur in 6 phases such that the acreage under active excavation at any one time would be minimized. The final reclaimed surface would be characterized by sloping pads and 100-yr flood channels. The final slopes would be a maximum of 2:1 gradient. The mined lands would be re-vegetated with plantings per the Reclamation Landscape Concept Plans (see **Sheets 14-16**) that are compatible with the surrounding area. Site drainage would be directed to sedimentation basins to minimize the offsite transport of eroded material while the vegetation is established.

2.0 OPERATIONS PLAN

2.1 PRODUCTION QUANTITIES AND TYPE OF MINERALS

This application reflects a proposal to mine approximately 0.949 or up to 1.645 million tons of material within the requested MUP boundary. Given the proposed mining rate of up to 102,842 tons per year, and assuming permit approvals in 2017, this 1.645 million ton reserve could have an expected mine life of approximately 16 years, or until the year 2036. A table of estimated mine production under the proposed MUP is included in **Table** 2 and 2A below.

Under the proposed plan of operations, the proposed East County Sand Mine and Reclamation Plan could produce an average of up to 102,842 tons of sand and/or topsoil products per year through the year 2036. The operator also proposes the use of a rolling five-year average to allow for production flexibility to meet market demand by totaling 514,000 tons in any consecutive 5-year period. A maximum total of 300,000 tons could be mined in any calendar year.

3.0 CONFORMANCE WITH RECLAMATION REGULATIONS

The following section describes the conformance of the proposed Reclamation Plan with the requirements of Section 87.705 of the County Grading Ordinance, Section 6556 of the County Zoning Ordinance and the California Surface Mining and Reclamation Act (PRC Section 2710 et. seq.).

3.1 Section 87.705(d) of the County Grading Ordinance:

The Reclamation Plan shall contain all matters required by SMARA and Sections 3502 and 3700 and following of Title 14 of the California Code of Regulations, and shall provide in designated phases for the progressive rehabilitation of the mining site land form so that, when reclamation is complete, it will contain stable slopes, be readily adaptable for alternate land uses, and be free of derelict machinery, waste materials and scrap to the satisfaction of the County Official. The proposed mining site land form, to the extent reasonable and practical, shall be revegetated for soil stabilization, free of drainage problems, coordinated with present and anticipated future land use, and compatible with the topography and general environment of surrounding property.

Conformance of this proposed Reclamation Plan with each of the above-listed standards is described below- in Section 3.4.4:

Progressive rehabilitation of the mining site land form

Sand and topsoil extraction and site reclamation would occur in six phases over a 15-year period in the current MUP request as illustrated on **Sheets 8 – 13** and identified in **Table 1**. The extraction areas will have 1.5:1 cut slopes down to the ground water level and 3:1 to 3.5:1 slopes below the water table during the extraction process.

Table 1
Proposed Extraction and Reclamation Phases

Project Phase	Estimated Extraction Start Date	Estimated Date of Completion Extraction	Reclamation
1	2017	2021	2024
2	2022	2023	2025
3	2023	2024	2029
4	2024	2025	2027
5	2025	2027	2029
6	----	----	2031*

[a] Phase 6 includes a three year monitoring period for evaluation of reclamation success.

Sand and topsoil extraction and site reclamation would occur in six phases over a 20-year period if the modified MUP and Reclamation Plan is approved as illustrated on **Sheets 8 – 13** and identified in **Table 1A**. The extraction areas will have 1.5:1 cut slopes down to the ground water level and 3:1 to 3.5:1 slopes below the water table during the extraction process.

Table 1A
Proposed Extraction and Reclamation Phases

Project Phase	Estimated Extraction Start Date	Estimated Date of Completion Extraction	Reclamation
1	2017	2024	2026
2	2025	2026	2028
3	2026	2027	2031
4	2028	2029	2032
5	2029	2032	2033
6	----	----	2036*

[a] Phase 6 includes a three year monitoring period for evaluation of reclamation success.

The phasing sequence and quantity of material extracted in each phase is shown in **Table 2 and 2A** and the quantity of material anticipated to be extracted on a yearly basis is shown in **Table 3 and 3A**. However, the amount of material that would be extracted each year will fluctuate in response to market conditions.

Table 2
Extraction and Reclamation Phasing

Phase	Sheet	Extraction					Reclamation				
		Area	Acres	Quantity (CY)	Start Date	End Date	Area	Acres	Quantity (CY)	Start Date	End Date
1	8	1E-A 1E-B	10.3±	338,000	2017	2021					
2	9						1R-A 1R-B	9.2±	169,500	2020	2024
2	9	2E	3.1±	61,500	2022	2023					
3	10						2R	3.5±	84,000	2023	2025
3	10	3E	6.1±	74,000	2023	2024					
4	11						3R	4.0±	109,500	2025	2029
4	11	4E	1.9±	46,500	2024	2025					
5	12						4R	1.8±	10,500	2026	2027
5	12	5E	6.9±	154,000	2025	2027					
6	13						5R	7.7±	303,500	2026	2029
6	13									2028	2031
TOTAL				674,000					677,000		

Table 2A
Extraction and Reclamation Phasing

Phase	Sheet	Extraction					Reclamation				
		Area	Acres	Quantity (CY)	Start Date	End Date	Area	Acres	Quantity (CY)	Start Date	End Date
1	8	1E-A 1E-B	10.3±	590,000	2017	2024					
2	9						1R-A 1R-B	9.2±	320,000	2022	2026
2	9	2E	3.1±	107,000	2025	2026					
3	10						2R	3.5±	158,000	2026	2028
3	10	3E	6.1±	129,000	2026	2027					
4	11						3R	4.0±	207,000	2028	2032
4	11	4E	1.9±	81,000	2028	2029					
5	12						4R	1.8±	20,000	2030	2033
5	12	5E	6.9±	268,000	2029	2032					
6	13						5R	7.7±	573,000	2030	2033
6	13									2034	2036
TOTAL				1,175,000					1,278,000		

Table 3
Material Production

Phase	Year		Total Material Production*			Phase	Year		Total Material Production		
			Tons	Cubic Yds	Cumulative Cu Yds				Tons	Cubic Yds	Cumulative Cu Yds
1	1	2017	85,800	61,270	61,270	5	11	2027	85,800	61,300	674,000
1	2	2018	85,800	61,270	122,540	6	12	2028	-	-	-
1	3	2019	85,800	61,270	183,810	6	13	2029	-	-	-
1	4	2020	85,800	61,270	245,080	6	14	2030	-	-	-
1	5	2021	85,800	61,270	306,350	6	15	2031	-	-	-
2	6	2022	85,800	61,270	367,620						
3	7	2023	85,800	61,270	428,890						
4	8	2024	85,800	61,270	490,160						
5	9	2025	85,800	61,270	551,430						
5	10	2026	85,800	61,270	612,700						
TOTAL									943,800	674,000	--

Table 3A
Material Production

Phase	Year		Total Material Production*			Phase	Year		Total Material Production		
			Tons	Cubic Yds	Cumulative Cu Yds				Tons	Cubic Yds	Cumulative Cu Yds
1	1	2017	102,842	73,438	73,438	3	11	2027	102,842	73,438	807,818
1	2	2018	102,842	73,438	146,876	3&4	12	2028	102,842	73,438	881,256
1	3	2019	102,842	73,438	220,314	4&5	13	2029	102,842	73,438	954,694
1	4	2020	102,842	73,438	293,752	5	14	2030	102,842	73,438	1,028,132
1	5	2021	102,842	73,438	367,190	5	15	2031	102,842	73,438	1,101,570
2	6	2022	102,842	73,438	440,628	5	16	2032	102,842	73,438	1,175,008
3	7	2023	102,842	73,438	514,066	6	17	2033	--	--	--
4	8	2024	102,842	73,438	587,504	6	18	2034	--	--	--
5	9	2025	102,842	73,438	660,942	6	19	2035	--	--	--
5	10	2026	102,842	73,438	734,380	6	20	2036	--	--	--
TOTAL									1,645,442	1,175,008	--

Stable slopes

Cut or mined slope portions above groundwater may be constructed at a maximum slope gradient of 1.5:1 to 1.6:1(horizontal : vertical) or flatter, and the portions below the groundwater may be constructed at a maximum slope gradient of 3:1 to 3.5:1 or flatter, for temporary conditions. Fill slopes will be at a 2:1 ratio or flatter. All major slopes will be rounded into existing terrain to produce a contoured transition from cut or fill faces to natural ground and abutting cut and fill slopes.

In order to evaluate the temporary slope stability, GeoSoils, Inc. (GSI) reviewed the previous available slope evaluations, the land use within the influence of the top-of-slope, groundwater, earth materials to be mined, and the effects of seismic shaking. The static Factor-of-Safety (F.O.S.) in each section analyses met a temporary F.O.S. of 1.25 or greater. The seismic F.O.S, owing to groundwater proximity, was also evaluated. The seismic F.O.S. was calculated to be approximately 1.0 or greater. This seismic F.O.S. against sliding appears reasonable given the assumed Probabilistic Horizontal Site Acceleration (PSHA of 0.35 g) in the top 100 feet of the soil column, and the associated low magnitude of seismic deformation evaluated for this project. The "Slope Stability Analysis" section of the *Update Geotechnical Investigation Report* (September 14, 2011) includes a detailed discussion of slope stability.

Site readily adaptable for alternate land use

Implement a Reclamation Plan that includes the following:

a. Construction of a portion of the Slaughterhouse Creek and San Vicente Creek channels to convey the 100-yr storm.

b. Create level pads upon completion of the sand extraction operation that are above the 100-yr inundation level and are suitable for future uses in accordance with the zoning ordinance.

Free of derelict machinery, waste materials and scrap

All machinery used during the mining and reclamation of this project is portable equipment and will be removed from the project site upon completion of the work. No machinery is to remain on-site, and there are no salvage costs related to this project.

Revegetation for soil stabilization

The project proposes to construct 100-yr channels for both the San Vicente Creek and the Slaughterhouse Creek, create biological mitigation areas on-site, and complete the Landscape Concept Plan (see **Sheets 14-16**) as part of the project completion. See the *Conceptual Revegetation and Wetland Mitigation Plan for the East County San Project Site, Addendum the East County Sand Project Conceptual Revegetation and Wetland Mitigation and Monitoring Plan, P 09-016, RP 09-001, ER 09-14-008*, and Landscape Conceptual Plan: Reclamation Phase (Sheet 15 of 17).

Free of drainage problems

Channels to convey the 100-year storm through the site will be constructed as the sand mining and reclamation process proceeds. These channels are shown on Sheet 6 of 17. The San Vicente Creek channel is designed to connect with the channel that will be created on the adjacent property to the north (APN 375-041--35) as a result of an on-going sand mining operation on that property. The San Vicente Creek channel will exit the project site at the south in the existing creek bed. As shown on Sheet 6 of 17, water exiting this channel will sheet flow onto the adjacent property to the south.

The Slaughterhouse Creek channel will traverse the site in a north-south direction and join the San Vicente Creek channel in the southeasterly portion of the project site as shown on MUP/Reclamation Plan Sheet 13. The northern end of this channel will connect to an existing channel on the adjacent property to the north (APN 375-041-36). As shown on Sheet 6 of 17, the proposed project includes the property to the north to complete this connection.

Cross-sections of the proposed Slaughterhouse Creek and San Vicente Creek channels are shown on Sheet 7 of 17. As shown on these figures, the channel slopes would be lined with riprap and covered with 2 feet of topsoil and planted, except for the western side of the northern part of the San Vicente Creek channel which will have gabions to match the channel that will be constructed on the adjacent property to the north (APN 375-041--35).

A channel will be constructed on parcel APN 375-100-29 to replace the existing channel that conveys storm water flows from SR67 to Slaughterhouse Creek (see Sheet 6 of 17). The new channel will connect with the realigned Slaughterhouse Creek channel. Cross-section G-G on Sheet 7 of 17 illustrates this channel.

A *Storm Water Pollution Prevention Plan* (SWPPP) will be prepared for the Project as required by the SMARA. The plan will fulfill the requirements of the RWQCB Order No 200-01, NPDES No. CAS0108758 by including Best Management Practices (BMPs) to eliminate and/or minimize stormwater pollution during construction. A monitoring and reporting component of the plan would be enforced to ensure that the construction activities are in compliance with the plan.

Compatible with the topography and general environment of surrounding property

The project site is surrounded by disturbed lands; north of the site is an existing sand mine operation and a newly graded channel and building

pad; east is Moreno Avenue; south is the disturbed San Vicente Creek and existing single family lots; and west is Highway 67.

The southern coast live oak riparian forest adjacent to Highway 67 shown on **Figure B** will be retained in its current condition throughout the life of the project. Impacts to wetlands (i.e., southern coast live oak riparian forest, emergent wetland) will be mitigated by preserving, creating, and enhancing wetlands areas adjacent to SR-67 on parcel APN 375-041-50, and in the Slaughterhouse Creek and San Vicente Creek Channels throughout the project site on parcels APN 375-041-50, 375-100-41, and -45. Impacted upland habitat (i.e., non-native grassland) will be mitigated by planting the channel slopes with Diegan coastal sage scrub which will be uptier mitigation for the non-native grassland impacts.

3.4 CONSISTENCY WITH THE RECLAMATION STANDARDS OF THE CALIFORNIA SURFACE MINING AND RECLAMATION ACT

3.4.1 Past reclamation activities:

This is a new sand mining operation. No previous reclamation efforts have been performed on the project site.

3.4.2 Proposed future reclamation activities:

Approximately 677,000 or up to 1,278,000 CY of soil, rock, concrete, and asphalt material is proposed to be imported and recycled for use as on-site fill and channel rip-rap during the six reclamation phases described in the previous section. Recycled materials would be temporarily stored on-site in segregated piles until a sufficient quantity accumulates to warrant processing. A 5 to 7 CY loader would move the recycled materials to a portable crusher and screen for reclamation re-processing. These materials would then be stockpiled and periodically wetted to control moisture content and as a means of dust control. Additional soil, rock, concrete and asphalt material materials may be imported, recycled and exported off site.

During the reclamation operation areas adjacent to SR 67 will be cleared and filled to the final grade as shown on **Sheet 6**. During this time period fencing with screening will be installed along SR 67 and on the southwestern border of the project site. The temporary screening will be removed during the implementation of the landscaping plan. The reclaimed area would be available for future uses as permitted by the County Zoning Ordinance; see the Future Land Uses discussion below for a full discussion of potential future land uses.

When the Reclamation Plan is completed (see MUP **Sheet 6**) the Slaughterhouse Creek and San Vicente Creek channels would convey a 100-yr storm flow through the project site without overtopping the channels. Upon completion of the Reclamation Plan a utility corridor would be dedicated by easement along the south boundary as shown on **Sheet 6**. This utility corridor would provide for the installation of water and sewer service to the future land uses that may occur on the reclaimed lands. At the end of the reclamation process, no future mining activities would occur on the site because all of the recoverable mineral resources will have been extracted from the site.

The following sections provide a discussion of the compliance of the proposed reclamation plan with applicable State reclamation regulations and standards pursuant to the Surface Mining and Reclamation Act (SMARA).

3.4.3 SURFACE MINING AND RECLAMATION ACT OF 1975 - SECTION 2773.1, FINANCIAL ASSURANCES

The Financial Assurance amount for reclamation of the proposed facility, based on this Reclamation Plan, will be determined upon plan approval in compliance with SMARA and other applicable regulations. The amount of financial assurance by bond, letter of credit or other method will be assessed annually by the County of San Diego based on the cost to reclaim existing disturbed areas and the areas anticipated to be disturbed in the succeeding year.

3.4.4 STATE MINING AND GEOLOGY BOARD RECLAMATION REGULATIONS - SECTIONS 3502

3.4.4.1 The Reclamation Plan, (b) Reclamation Plan Elements

(A) The Environmental Setting Of The Site Of Operations And The Effect That Possible Alternate Reclaimed Site Conditions May Have Upon The Existing And Future Uses Of Surrounding Lands.

Land uses to the north of the project site along Moreno Avenue and Vigilante Road consist of sand mining, industrial and construction related uses, and a green waste recycling facility. San Vicente Reservoir dam is located at the end of Moreno Avenue approximately one-mile to the north-northeast of the project site. A rock quarry and blasting contracting business are located near the intersection of Vigilante Road and SR 67. Land uses to the west of SR 67 opposite the project site consists of rural residential area along Johnson Lake Road. Areas to the north and south of this residential area contain a few residences on steeply sloping lands.

The area south of the project site between SR 67 and Moreno Avenue contains a bottled water company, scattered single-family homes, interspersed with various industrial and commercial activities. A multi-family residential complex and mobile home park are located west of SR 67. The area further to the south, on the south side of the San Diego River, contains industrial uses west of SR 67 and a high school east of SR 67.

The project site is located within the Rural Land category of the General Plan Community Development Model. The Rural Lands category provides for agriculture, managed resource production, conservation, and recreation in areas not appropriate for intensive residential or commercial uses due to significant topographical or environmental constraints, limited access, and the lack of public services or facilities.

The Medium Impact Industrial land use designation provides for freestanding industrial development in areas with access to key

transportation corridors at a maximum FAR of 0.5. Typical uses within this designation include: manufacturing, processing, and assembly; warehousing and distribution; large equipment supply and sales; and other industrial and commercial activities that are generally incompatible with dissimilar adjacent land uses. Uses in this designation may include outdoor operations or require significant outdoor storage of process materials and product. Supporting uses are allowed in this designation, including business services.

The Zoning Designation for the site is High Impact Industrial (M58). The M58 Use Regulations are applied to manufacturing and industrial uses having high nuisance characteristics. Non-industrial uses which support industrial uses are permitted within the zone, particularly administrative, sales, and services uses. Typically, the M58 Use Regulations are applied near rail and trucking facilities or other locations where impacts associated with noise, odor and traffic would not impact residential or commercial areas.

A biological resources map circa 1990-1991 for the project site was created based on a review of historical aerial photographs (i.e., 1989, 1990-1991) and the 1995 biological resources map provided in a 2000 biological report. Historical biological site conditions were reviewed again in 2015 and refined or corrected as needed. Under historical conditions, the project site predominately consisted of orchards, eucalyptus woodland, disturbed habitat, and riparian scrub.

Evidence of significant scouring from a major dam spill from San Vicente Reservoir remained within the San Vicente Creek floodplain that runs north-south through the site. These areas are mapped as non-vegetated channel/floodway and disturbed habitat. Other areas that had been previously scoured had been converted to an orchard in the central and southeastern portions of the site. Although the 1990-1991 aerial photograph reflects substantial human-related disturbance in the northern portion of the site, it is presumed that Slaughterhouse Creek (in a disturbed condition) entered the site in the northeastern portion of the site and continued to the south through the remainder of the site in a similar path to its historical path, as depicted in older aerial photographs (i.e., 1980, 1974, 1963, 1953). The estimated path of Slaughterhouse Creek onsite appears to have been disturbed wetland in the northern portion, southern coast live oak riparian forest along the eastern edge adjacent to SR 67, and a mix of southern willow scrub and other riparian scrub (disturbed conditions within both habitats) throughout the remainder of the site to the south.

A Preliminary Geotechnical Investigation prepared GeoSoils, Inc. (GSI) reported that the project site's geologic units include topsoil/colluvium,

Quaternary-age alluvial deposits, and Cretaceous-age granitics. Colluvium/topsoil mantles the site at the surface where the exploratory borings and test pits were excavated and consists of light brown to dark brown, dry to moist, loose/soft to medium dense sand to silty sands to sandy silt that are approximately ±1 to ±6½ feet thick. The thickest topsoil/colluvium was generally located within the northern parcels of the site.

The colluvial soils are underlain by the Quaternary-age alluvial deposits, which consist of light brown to dark brown to reddish brown, loose/soft to medium dense sand to silty sand to sandy silt to silty clay, poorly graded sands with little or no fines to well graded sands. The alluvium is generally dry to moist above the water table and saturated below the water table. The observed alluvium was up to ±55 feet thick, mantled upon dense granitic rock.

Bedrock consisting of Cretaceous-age plutonic rocks (commonly called "granitics") was encountered in test pits underlying the site. These plutonic rocks are the crystalline basement rock of the region. The plutonic rocks have been mapped as part of the Tonalite. The granitics encountered during the investigation generally were observed to be dense to very dense. These materials were well weathered, producing a uniform "decomposed granitic" texture. A few "floaters" (hard, resistive granitic clasts) were observed on the surface in localized offsite areas.

Implementation of the Reclamation Plan that includes the construction of a portion of the Slaughterhouse Creek and San Vicente Creek channels to convey the 100-yr storm will affect the lands in the vicinity of the mining site in a positive way to control and contain the 100-yr flooding. Creation of level pads upon completion of the sand extraction operation above the 100-yr inundation level is suitable for future uses in accordance with the zoning ordinance. Driveway access from the project site during the extraction and reclamation process is restricted to the driveways on Moreno Avenue and travelling north to Vigilante Road to Highway 67 and to the project using the same Vigilante Road to Moreno Avenue to the project driveway.

The proposed East County Sand Mine project proposes to extract all recoverable sand from the project site as shown on **Sheet 4 of 17**. The aerial extent of the extraction plan area is constrained by: setbacks from Highway 67, Moreno Avenue, and septic leach fields on adjacent properties; sensitive vegetation habitat and sensitive species; and geotechnical considerations. As sand is extracted from the site, the extraction pits will be filled with inert debris landfill and graded pads created suitable for industrial development as allowed by the County

Zoning Ordinance. Filling of the extraction pits and industrial development of the site will preclude subsequent mining of the site.

The final conditions of the reclaimed site are consistent with the properties north of the East County Sand Mine Properties. This also provides for the continuation of the San Vicente and Slaughterhouse Creeks Channelization started upstream of this project.

(B) The Public Health and Safety, Giving Consideration to the Degree and Type of Present and Probable Future Exposure of the Public to the Site.

During the proposed mining and reclamation activities, the locked gates to the project site located off of Highway 67 and Moreno Avenue will remain to discourage unauthorized access. All mining and backfill sites will comply with all Federal (MSHA) and State (OSHA) mine safety regulations concerning operating standards and operation of equipment. Workers, including contract labor, are trained in mine safety and first aid. Refresher courses are conducted periodically in accordance with applicable regulations.

Mine operators carry portable cellular phones for off-site communication. All visitors, outside vendors and truck drivers are required to check in and check out with the on-site office. Conditions affecting safety are continually monitored by a dedicated safety coordinator based out of the operations office.

The East County Sand Mining operation is on private property, and after completion of the proposed East County Sand Mine and Reclamation Plan, as well as during the interim while mining operations continue, the general public will not be admitted to these lands.

When mining has concluded and reclamation has been completed, there will be no open shafts or any hazardous materials present on these lands

(C) The designed steepness and proposed treatment of the mined land's final slopes shall take into consideration the physical properties of the slope material, its probable maximum water content, landscaping requirements, and other factors. In all cases, Reclamation Plans shall specify slope angles flatter than the critical gradient for the type of material involved. Whenever final slopes approach the critical gradient for the type of material involved, Regulatory Agencies shall require an Engineering Analysis of the slope stability. Special emphasis on slope stability and design shall be necessary when public safety or adjacent property may be affected.

Cut or mined slope portions above groundwater may be constructed at a maximum slope gradient of 1.5:1 to 1.6:1(horizontal : vertical) or flatter, and the portions below the groundwater may be constructed at a maximum slope gradient of 3:1 to 3.5:1 or flatter, for temporary conditions. Fill slopes will be at a 2:1 ratio or flatter. All major slopes will be rounded into existing terrain to produce a contoured transition from cut or fill faces to natural ground and abutting cut and fill slopes. All slopes will be planted in accordance with County specifications as shown on MUP/Reclamation Plan Sheets 14-16.

(D) Areas Mined To Produce Additional Materials For Backfilling And Grading, As Well As Settlement Of Filled Areas, Shall Be Considered In The Reclamation Plan. Where Ultimate Site Uses Include Roads, Building Sites, Or Other Improvements Sensitive To Settlement, The Reclamation Plans Shall Include Compaction Of The Fill Materials In Conformance With Good Engineering Practice.

The proposed final configuration of the project site includes raised pads to be above the 100-yr flood plain. These pads will have filled 2:1 slopes to meet final grades surrounding the pads. These pads and slopes will be constructed in compliance with the "Design Standards and Performance Requirements" of the County Grading Ordinance.

(E) Disposition of Old Equipment.

When mining activities cease, all mobile and processing equipment not required for reclamation will be removed from the site. All buildings and fixtures not included in the final approved reclamation plan will be removed. Ground water wells, water pipelines and related utilities useful for future landscaping will be left in place.

3.4.5 SURFACE MINING AND RECLAMATION ACT OF 1975 REGULATIONS, ARTICLE 9, RECLAMATION STANDARDS

The following sections provide discussions of the compliance of the proposed Reclamation Plan with the applicable provisions of SMARA Regulations, Article 9, Reclamation Standards.

3.4.5.1 Section 3703 - Performance Standards for Wildlife Habitat

(A) Rare, Threatened or Endangered Species shall be conserved:

To avoid potential significant impacts to least Bell's vireo (*Vireo bellii pusillus*) (vireo), avoidance measures during the breeding season for vireo, March 15 to September 15 (as provided in the County of San Diego

Multiple Species Conservation Plan [MSCP] and County Biology Guidelines[a]) will be implemented. In addition, to mitigate for the loss of occupied vireo habitat onsite, the creation/restoration of onsite in-kind or better quality occupied vireo habitat (i.e., southern willow scrub) would be necessary. See **Appendix B** for a summary of biological impacts and mitigation.

To avoid impacts to migratory birds that may potentially nest onsite, no brushing, clearing, and/or grading would be allowed within habitat during the breeding season of migratory birds (between February 15 and August 31) to ensure compliance with the Migratory Bird Treaty Act (MBTA). If the project is unable to avoid the breeding season, it is recommended that a pre-construction nesting bird survey be conducted to determine if nesting migratory birds are present within habitat proposed for brushing, clearing or grading.

Applicable Resource Protection Ordinance (RPO) and Biological Mitigation Ordinance (BMO) exemption mitigation measures will be implemented as part of the proposed project. Impacts to southern willow scrub habitat, mule fat scrub (occupied vireo habitat and unoccupied habitat), disturbed riparian scrub, and disturbed wetland, would be mitigated in-kind onsite. Project impacts to non-native grassland would be mitigated out-of-kind onsite. Impacts to all types of wetland habitat onsite are proposed to be mitigated onsite at a 2:1 to 2.5:1 ratio of mitigation area to impact area with higher ratios applying to disturbed habitats supporting vireo. The proposed mitigation ratios are consistent with those provided in Table 4-8 in the County MSCP Subarea Plan and BMO (Attachment M) for proposed impacts and mitigation located outside of a Biological Core and Linkage Area (BCLA). In addition, the proposed project phasing plan was designed to avoid temporal loss of wetland and vireo occupied habitat onsite. Impacts to non-native grassland would be mitigated onsite out-of-kind at a 0.5:1 ratio through the restoration of similar low growing native habitat. The proposed project design and construction best management practices (BMPs) are expected to avoid all other significant impacts.

(B) Wildlife shall be established on disturbed land in a condition at least as good as that which existed before the lands were disturbed by surface mining operations:

The site lies within the MSCP County Subarea Plan boundary, Metro-Lakeside-Jamul Segment. Although this project is generally exempt from the BMO, terms and concepts such as Biological Resource Core Area

[a] County of San Diego, *Guidelines for Determining Significance Biological Resources*, September 15, 2010.

(BRCA) and Pre-Approved Mitigation Area (PAMA) provided in the BMO were used to determine the long-term conservation/biological value of the project site within the MSCP boundary. Specifically, the project site does not qualify as a BRCA for the following reasons:

1. the project site is not located within a PAMA; the nearest PAMA is located at least 200 feet east of the project site and separated by Moreno Avenue and agricultural lands;
2. the site does not contribute to the long-term survival of any sensitive species and is not located adjacent to or contiguous to a PAMA;
3. the site is not within a regional linkage/corridor;
4. the habitat onsite is not shown on the Habitat Evaluation Map as high or very high and does not link significant blocks of habitat;
5. the site is not within an undisturbed block of habitat greater than 500 acres; and
6. The site does not support a high number of sensitive species and is not adjacent or contiguous to surrounding undisturbed habitats or soils that are known to support sensitive species.

(C) Wetland Habitat shall be avoided. Any wetland habitat impacted as a consequence of surface mining operations shall be mitigated at a minimum of one to one ratio for wetland habitat acreage and wetland habitat value:

The East County Sand Mine *Conceptual Revegetation and Wetland Mitigation and Monitoring Plan*[b] and *Addendum the East County Sand Project Conceptual Revegetation and Wetland Mitigation and Monitoring Plan, P 09-016, RP 09-001, ER 09-14-008*[c] focuses on expanding and improving wetland habitat functions, biochemical, and hydrologic conditions of Slaughterhouse and San Vicente Creeks. Specifically, the creation of wetland habitat would expand the width and increase the length of Slaughterhouse Creek and San Vicente Creek. The mitigation would increase habitat availability and diversity, and provide enhanced groundwater recharge and storm water retention. The project's proposed meandering creeks and associated wetland vegetation will increase nutrient retention and transformation as well as sediment/toxicant retention on-site. Protection afforded to the mitigation site will eliminate the need for vegetation control and as such the created vegetation is expected to increase wildlife use in the area, especially to avian species. In the upper portion of the mitigation site, flood flow alteration is expected

[b] Merkel & Associates, Inc., *Conceptual Revegetation and Wetland Mitigation and Monitoring Plan for the East County Sand Project Site*, October 15, 2013.

[c] REC Consultants, Inc., *Addendum the East County Sand Project Conceptual Revegetation and Wetland Mitigation and Monitoring Plan, P 09-016, RP 09-001, ER 09-14-008*, July 2015.

to remain the same or decrease as the flow in this area will change from open grassland to a confined channel. Flood flow alteration downstream of this area is expected to increase, as the mitigation area is substantially wider than what presently exists.

The southern coastal live oak riparian forest adjacent to Highway 67 shown on **Figure B** will be retained in its current condition throughout the life of the project. Impacts to other wetlands will be mitigated by creating, and/or restoring wetlands areas in Slaughterhouse Creek and San Vicente Creek Channels throughout the project site on parcels APN 375-041-50, 375-100- -41, and -45

3.4.5.2 Section 3704 - Performance Standards for Backfilling, Regrading, Slope Stability, and Recontouring

(A) Where backfilling is proposed for urban uses (e.g., roads, building sites, or other improvements subject to settlement), the fill material shall be compacted in accordance with Section 7010, Chapter 70 of the UBC, or the local grading ordinance:

This project will not produce any contaminants or mine waste. All fill material either generated on-site or imported to the site will be placed in accordance with each section of the design standards of Section 87-401 through 87.422 of the County Grading Ordinance.

(B) Where backfilling is required for resource conservation purposes, fill material shall be backfilled to the standards required for the resource conservation use involved:

The primary goal of the wetland mitigation/revegetation plan is to create wetland vegetation that compensates for impacts incurred by the proposed project. A total of 4.54 acres of wetland habitat will be created and/or restored to include 1.24 acres of southern willow scrub, 1.4 acres of mule-fat scrub, 1.86 acres pf disturbed riparian scrub and 10.04-acre of disturbed wetland. All wetland habitat mitigation will be in the form of riparian scrub, rather than divided into southern willow scrub, mule-fat scrub, and emergent wetland. The riparian scrub will be a shrub-dominated community characterized by mule-fat, with low numbers of willows and a variety of herbs. A subsurface dense clay plug placed at the southernmost boundary of the site will assist with ensuring a sufficient upstream groundwater elevation to accommodate the proposed plantings.

All wetland creation/restoration will occur within the 100-year floodplain. Soils are expected to be consistent with those associated with existing wetlands found within the floodplain including characteristics related to grain size, salinity and pH. Although re-soiling is not required to

implement the revegetation plan, soils will be evaluated after grading and prior to seeding and planting for compaction or decompaction with a target of not greater than 75% compaction within the top 18 inches of the soils surface. Soil would be free of trash, debris, or large rock that would effectively interfere with plantings. Soils should be generally granular in consistency and shall not include considerable clay pannes or hardpan conditions within the top 36 inches of the surface. All soil placements within the upper 36 inches of the surface shall be monitored by the Restoration Specialist to ensure that all specifications are met. If evidence suggests the need, agricultural suitability testing may be conducted at the recommendation of the Restoration Specialist. This testing would assist in identifying high alkalinity, nutrient deficits, or other conditions that may require some degree of soil amendment to ensure success.

(C) Piles or dumps of mining waste shall be stockpiled in such a manner as to facilitate phased reclamation. They shall be segregated from topsoil, etc.:

The East County Sand Mine Major Use Permit (MUP) would authorize the extraction (mining) of approximately 674,000 cubic yards or in a modified MUP up to 1,175,000 cubic yards of material, including 632,000 to 1,133,000 cubic yards of sand and 42,000 cubic yards of topsoil (see MUP **Sheet 4**). No mining wastes are anticipated because excavated sand materials will be sold and removed from the site.

All salvageable topsoil suitable for revegetation will be removed as a separate layer from areas to be disturbed by mining operations. Topsoil and vegetation removal shall not precede surface mining activities by more than one year, unless a longer time period is approved by the lead agency. The extracted topsoil will be stockpiled in the northwest corner of the project site until needed to prepare the on-site biological mitigation areas and during the implementation of the landscape plan (see **MUP Sheet 14**). The sand stockpiles will be located at various locations as the extraction and reclamation phasing progresses from Phase 1 through Phase 6; however, none of the stockpiles would be located in wetlands. The length of time that sand remains in stockpiles will vary depending upon fluctuations in market demand for the extracted sand. The anticipated phasing schedule is shown in **Table 1 and 1A** and the year-by-year material production is shown in **Table 2 and 2A**.

(D) Final reclaimed fill slopes shall not exceed 2:1 (horizontal to vertical), except with support of geologic and engineering analysis:

Fill slopes will be at a 2:1 ratio or flatter. All major slopes will be rounded into existing terrain to produce a contoured transition from cut or fill faces

to natural ground and abutting cut and fill slopes. All slopes will be planted in accordance with County specifications as shown on MUP/Reclamation Plan **Sheets 14-16**.

(E) At closure, all fill slopes, including permanent piles or dumps of mine waste and overburden, shall conform with the surrounding topography and/or approved end use:

The final reclamation of the project continues the 100-yr flood control channels for both the San Vicente Creek and the Slaughterhouse Creek originated on projects upstream and immediately adjacent to the project site. The padded areas above the 100-yr flood elevation will be similar to the adjacent properties that have been raised out of the flood plain. These areas are not intended to be created as open space, but as future sites for all designated uses in conformance with the County Zoning Ordinance. There are no permanent piles or dumps of mine waste and overburden associated with the final reclaimed project.

(F) Cut slopes, including final highwalls and quarry faces, shall have a minimum slope stability factor of safety that is suitable for the approved end use and conform with the surrounding topography and/or approved end use:

The geometry of the intermediate slopes during the extraction phase are proposed as 1.5:1 to 1.6:1 above the water table and 3:1 to 3.5:1 in the areas below the water table in accordance with the slope stability analysis by Geosoils, Inc.. The channel vegetation will also continue the upstream planting scheme. The final reclaimed surface creates padded areas with 2:1 slopes in conformance with the County Grading Ordinance and the recommendations of Geosoils, Inc.

(G) Permanent placement of piles or dumps of mining waste and overburden shall not occur within wetlands, unless mitigation acceptable to the lead agency has been proposed to offset wetland impacts and/or losses:

The southern coastal live oak riparian forest adjacent to Highway 67 shown on **Figure B** will be retained in its current condition throughout the life of the project. A description of the wetland mitigation plan is contained in 3.4.5.2(b) above. There are no permanent piles or dumps of mine waste and overburden associated with the final reclaimed project.

3.4.5.3 Section 3705 - Performance Standards for Revegetation

(A) Suitable Vegetative Cover shall be provided:

A *Conceptual Revegetation and Wetland Mitigation and Monitoring Plan for the East County Sand Mine Project* and *Addendum the East County Sand Project Conceptual Revegetation and Wetland Mitigation and Monitoring Plan, P 09-016, RP 09-001, ER 09-14-008* have been prepared and a summary of the plan is contained in 3.4.5.2(b) above. The wetland mitigation area is located in the southeast section of the project site and in the bottom of the Slaughterhouse Creek and San Vicente Creek channels. The slopes of the Slaughterhouse Creek and San Vicente Creek channels will be hydroseeded and irrigated for two to three years. Seed species will be based on the recommendation in the biological revegetation plan. The revegetation plant palette is identified in Table 2a of the *Addendum the East County Sand Project Conceptual Revegetation and Wetland Mitigation and Monitoring Plan, P 09-016, RP 09-001, ER 09-14-008*. .

The Project site will be landscaped as shown in MUP/Reclamation Plan **Sheets 14-16**. The Landscaping will be completed as each Phase is completed per the Landscape Concept Plan (see Sheets 14 - 16). The northern and southern edges of the site will be planted with low branching evergreen shade trees including native oak species and pine planted 30 feet on center.

The northern portion of the site along SR 67 will be planted with coast live oaks (20 feet on center) consistent with the adjacent southern live oak riparian forest to the south. In the area to the south, existing California pepper nursery stock will be removed and replaced with coast live oak. The Highway 67 entrance to the site will be enhanced with ornamental planting consistent with early California garden plantings including varieties of palms, flowering trees and shrubs.

Along Moreno Avenue the existing screen fence on the adjacent property to the north will be continued and setback five feet from the edge of the existing roadbed pavement. The fence will be screened with evergreen shade trees and accented with multiple palm species.

(**B) Test Plots shall be provided:**

The mitigation effort will be compared with one reference site/test plot located approximately 180 feet south of the project area (Figures1A of the Mitigation Plan Addendum).

The California Rapid Assessment Method (CRAM) would be used to compare the post-restoration functions and values with those of the reference site. As a requirement of the final Mitigation Plan, the CRAM baseline information for the reference site would be documented within a Postconstruction Baseline Monitoring Report.

CRAM is part of a comprehensive program plan consisting of three levels to monitor the health of wetlands and riparian habitats throughout California. Level 1 consists of a general landscape assessment including remote sensing and minimal field surveys (e.g., California Wetland Inventory). Level 2 consists of rapid assessment methods using visible field diagnostics and existing data to assess conditions at wetland and riparian sites, and Level 3 consists of an intensive site assessment to provide quantitative field data to calibrate and validate Level 1 and 2 methods, and to test hypotheses about the causes of habitat conditions.

The monitoring portion of the Mitigation Plan will incorporate Level 3 data collection for hydrophytic vegetation presence within the compensatory mitigation area. The presence of hydrophytic vegetation is one of three parameters used to define an area as an ACOE wetland. Specifically, fixed transects of 100 feet each would be established within each habitat type to determine total vegetative cover utilizing the point intercept method. Cover would be measured along each transect by recording each plant (or bare ground) that intercepted the measuring tape at two-foot intervals occurring above and below the tape. From these point intercepts, total plant cover, percent cover of each species, and percent cover of bare ground would be calculated for each transect; results could be extrapolated to the entire site. This method would take into account species overlap; thus percent cover could exceed 100 percent. Percent cover without overlap would also be extrapolated from the data; at sampling points where more than one native species occurred, only one of these species (the one providing the most cover) would be accounted for in the overall native cover evaluation. Also, container plants shall be counted for in order to calculate percent survivorship. In addition to transect and container plant counts, a general overview of the site will be made in order to assess the overall compliance with success criteria, species richness and average height of the shrub and tree strata, and areas requiring special modifications to the maintenance program.

The implementation of the compensatory mitigation plan will commence in the second phase of the project and continue throughout the rest of the life of the project as described in the *Conceptual Revegetation and Wetland Mitigation and Monitoring Plan for the East County Sand Project Site,* prepared by Merkel & Associates, revised June 12, 2014 and the . *Addendum the East County Sand Project Conceptual Revegetation and*

Wetland Mitigation and Monitoring Plan, P 09-016, RP 09-001, ER 09-14-008, July 2015 by REC Consultants, Inc.

(C) Where surface mining activities result in compaction of the soil, ripping or disking shall be used in areas to be revegetated:

After filling of the extraction pits and associated grading is completed within the revegetation areas, soils shall be evaluated for compaction or decompaction with a target of not greater than 75% compaction within the top 18 inches of the soils surface. Soils within the upper 36 inches of the surface shall be monitored by the Restoration Specialist to ensure that all specifications are met.

(D) Prior to closure, all access roads shall be stripped of road base materials:

The project does not propose to construct any paved access roads, haul roads, or other traffic routes during the extraction or reclamation phases; therefore, there will be no paved roads to strip of road base materials.

(E) Soil analysis shall be required to determine the presence of essential elements for plant growth:

All wetland creation/restoration will occur within the 100-year floodplain. Soils are expected to be consistent with those associated with existing wetlands found within the floodplain including characteristics related to grain size, salinity and pH. The on-site topsoil is proposed to be used to cap the revegetation area including slopes and channel side walls. Soils will be evaluated after grading and prior to seeding and planting for compaction or decompaction with a target of not greater than 75% compaction within the top 18 inches of the soils surface. Soil would be free of trash, debris, or large rock that would effectively interfere with plantings. Soils should be generally granular in consistency and shall not include considerable clay pannes or hardpan conditions within the top 36 inches of the surface. All soil placements within the upper 36 inches of the surface shall be monitored by the Restoration Specialist to ensure that all specifications are met.

Agricultural soil suitability testing will be conducted if deemed necessary by the Restoration Specialist. This testing would assist in identifying high alkalinity, nutrient deficits, or other conditions that may require some degree of soil amendment to ensure success; however, commercial fertilizers will not be used within areas revegetated with native plant materials. Mychorrhiza will be utilized if deemed necessary by the Restoration Specialist**.**

(F) Temporary access for exploration shall not disrupt the soil surface except where necessary to gain safe access:

No temporary access roads are proposed.

(G) Native species shall be used for revegetation:

The Project site will be landscaped as shown in MUP/Reclamation Plan Sheets 14-16. The Landscaping will be completed as each Phase is completed per the Landscape Concept Plan (see Sheets 14) The northern and southern edges of the site will be planted with low branching evergreen shade trees including native oak species and pine planted 30 feet on center.

The northern portion of the site along SR 67 will be planted coast live oaks (20 feet on center) consistent with the adjacent southern live oak riparian forest to the south. In the area to the south, existing California pepper nursery stock will be removed and replaced with coast live oak. The Highway 67 entrance to the site will be enhanced with ornamental planting consistent with early California garden plantings including varieties of palms, flowering trees and shrubs.

Along Moreno Avenue the existing screen fence on the adjacent property to the north will be continued and setback five feet from the edge of the existing roadbed pavement. The fence will be screened with evergreen shade trees and accented with multiple palm species.

The final slopes of the Slaughterhouse Creek and San Vicente Creek channels will be hydroseeded and irrigated for two to three years. Seed species will be based on the recommendation in the biological revegetation plan. The revegetation plant palette is identified in Table 2a of the *Addendum the East County Sand Project Conceptual Revegetation and Wetland Mitigation and Monitoring Plan, P 09-016, RP 09-001, ER 09-14-008*.

(H) Planting shall be conducted during the most favorable period of the year:

Planting of the revegetation areas will be conducted in October to December to coincide with the start of the annual wet season. Seed germination would be initiated by natural rainfall and supplemented with on-site wells as needed.

(I) Soil stabilizing practices shall be used where necessary to control erosion:

A *Stormwater Pollution Prevention Plan* (SWPPP) will be prepared for the Project as required by the SMARA. The plan will fulfill the requirements of the RWQCB Order No 200-01, NPDES No. CAS0108758 by including Best Management Practices (BMPs) to eliminate and/or minimize stormwater pollution during construction. A monitoring and reporting component of the plan would be enforced to ensure that the construction activities are in compliance with the plan

(J) If irrigation is used, the operator must demonstrate that the vegetation has been self-sustaining without irrigation for a minimum of two years prior to release of financial assurances:

Monitoring will include both qualitative and quantitative surveys. The purpose of the qualitative surveys is to ensure that the proper maintenance and establishment procedures are followed. The purpose of the quantitative surveys is to measure the establishment of the site to determine its compliance with the success milestones.

The mitigation site would be temporarily irrigated to ensure plant establishment. Excluding the main line that would remain below grade, the irrigation system would be designed as an above-grade system to facilitate removal once the system is decommissioned. When determined appropriate by the Restoration Specialist, the irrigation would be gradually phased out to allow plantings to acclimate to the reduction in water availability. The project aims to improve upon the hydrologic conditions currently associated with Slaughterhouse and San Vicente Creeks by providing enhanced ground water recharge and storm water retention. The site shall exhibit hydrological characters indicative of U.S. Army Corps of Engineers jurisdictional wetlands. All planted and naturally recruited wetland vegetation shall be self-sustaining for a minimum period of two years prior to final signoff. The irrigation system will be completely turned off a minimum of two years prior to the termination of the monitoring program. The system will be abandoned with the removal of all above grade components (including risers and sprinkler heads) subsequent to the end of the monitoring program.

(K) Noxious weeds shall be managed:

Weeds (i.e. invasive, non-native species) would be eradicated in the reclamation area during mining operations and as part of interim and final reclamation of the site consistent with established agricultural practices. Invasive weeds shall be eradicated.

(L) Protection measures, such as fencing of vegetated areas, shall be used where needed to protect from grazing, trampling, etc.:

Temporary fencing will be used to protect vegetated areas during the project reclamation phase.

(M) Success of revegetation shall be judged based upon the effectiveness of the vegetation for the approved end use:

Monitoring of test plot re-vegetation would be conducted during the mining period to insure the success of the plantings. The monitoring will be conducted as specified in the *Conceptual Revegetation and Wetland Mitigation and Monitoring Plan for the East County Sand Project Site*, prepared by Merkel & Associates, June 12, 2014.[d] The assessment criteria and maintenance action are summarized below.

Quantitative surveys will be conducted and reported utilizing the California Rapid Assessment Method (CRAM) described in the *Conceptual Revegetation and Wetland Mitigation and Monitoring Plan for the East County Sand Project Site*. CRAM has been calibrated throughout California and in various wetland types over the past six years. CRAM is part of a comprehensive program plan consisting of three levels to monitor the health of wetlands and riparian habitats throughout California. Level 1 consists of a general landscape assessment including remote sensing and minimal field surveys (e.g., California Wetland Inventory). Level 2 consists of rapid assessment methods using visible field diagnostics and existing data to assess conditions at wetland and riparian sites, and Level 3 consists of an intensive site assessment to provide quantitative field data to calibrate and validate Level 1 and 2 methods, and to test hypotheses about the causes of habitat conditions.

The monitoring portion of the Mitigation Plan will incorporate Level 3 data collection for hydrophytic vegetation presence within the compensatory mitigation area. The presence of hydrophytic vegetation is one of three parameters used to define an area as an ACOE wetland. Specifically, fixed transects of 100 feet each would be established within each habitat type to determine total vegetative cover utilizing the point intercept method. Cover would be measured along each transect by recording each plant (or bare ground) that intercepted the measuring tape at two-foot intervals occurring above and below the tape. From these point intercepts, total plant cover, percent cover of each species, and percent cover of bare ground would be calculated for each transect; results could be extrapolated to the entire site. This method would take into account species overlap; thus percent cover could exceed 100 percent. Percent cover without overlap would also be extrapolated from the data; at

[d] The Addendum to the East County Sand Project Conceptual Revegetation and Wetland Mitigation and Monitoring Plan, P 09-016, RP 09-001, ER 09-14-008 did not include any changes to the monitoring procedures.

sampling points where more than one native species occurred, only one of these species (the one providing the most cover) would be accounted for in the overall native cover evaluation. Also, container plants shall be counted for in order to calculate percent survivorship. In addition to transect and container plant counts, a general overview of the site will be made in order to assess the overall compliance with success criteria, species richness and average height of the shrub and tree strata, and areas requiring special modifications to the maintenance program

Habitat Success Milestones

Milestone	Assessment Criteria	Maintenance Action
90-Day Plant Establishment/ 0 Month	• Post-construction baseline information; no aerial coverage criteria; all planting densities achieved.	Plant densities brought up to meet requirements.
6 Months	• 100% survival overall of all container plant materials. • Target vegetative cover totals at least 10% of natural reference site, obtained by setting up fixed transects. The point intercept method would be utilized for the life of the maintenance period.	If cover or survival criteria fail to achieve minimum standards, plant densities will be brought up to 100% of the original planting density.
12 Months	• 95% survival overall of all container plant materials, unless function and value has been replaced by natural recruitment. • Target vegetative cover totals 35% or greater of that represented in natural reference site.	If cover or survival criteria fail to achieve minimum standards, plant densities will be brought up to 100% of the original planting density, unless function and value has been replaced by natural recruitment.
24 Months	• 80% survival of container plants and/or 65% target vegetative cover. • Target vegetative cover totals 50% or greater of that represented in natural reference site.	If cover criteria is not met, additional planting will be performed to bring all areas up to initial planting densities.
36 Months	• Survival of individual units dropped as criteria. Natural recruitment of target vegetation exhibited along transects. • Target vegetative cover totals 75% or greater of that represented in natural reference site. • Natural recruitment of target species noted onsite. • Supplemental irrigation must be shut off by year-end.	If cover criteria is not met, additional planting will be performed to bring all areas up to initial planting densities.
48 Months	• Target vegetative cover totals 80% or greater of that represented in natural reference site. • Natural recruitment of target species noted on transects.	If cover criteria is not met, additional planting will be performed to bring all areas up to initial planting densities. Native riparian plant substitutions will be

Milestone	Assessment Criteria	Maintenance Action
		made based on prevailing conditions and successful development of stock.
60 Months	• Target vegetative cover totals 90% or greater relative to natural reference sites. • Average canopy exceeds 6 feet; average canopies for *Salix* species, Western Sycamore, Fremont cottonwood exceed 9 feet. • Natural recruitment of target species noted onsite and evidence of wetland hydrology. • Above ground components of irrigation system removed.	If parts of the revegetation fail to achieve the outline goals, an analysis will be made by the regulatory agencies to determine reasonable alternatives, which could be exercised to satisfy mitigation requirements.
Source: Merkel & Associates, *Conceptual Revegetation and Wetland Mitigation and Monitoring Plan for the East County Sand Project Site*, Table 8, June 12, 2014.		

Inspections with County personnel will be conducted at least annually as required by SMARA and the reclamation monitoring plan. Corrections will be made as necessary based on criteria in Section (b) above.

Performance bonds and inspection deposits will be required for the implementation of the Revegetation Plan. The bonds will not be released until the County accepts the final report.

3.4.5.4 Section 3706 - Performance Standards for Drainage, Diversion Structures, Waterways and Erosion Control

(A) Surface mining and reclamation activities shall be conducted to protect on-site and downstream beneficial uses:

The Storm Water Pollution Prevention Plan and the continuous implementation of Best Management Practices would prevent substantial effects on down-stream resources and users. Erosion control methods are to be designed for not less than 20 year/1 hour intensity storm.

The NOAA 20-year 1-hour intensity at the East County Sand Mine site is about 1-inch/hr. (10 yr. is 0.859 in/hr. and 25 yr. is 1.04 in/hr.). The 100-year storm event rational method analyses included in the Drainage CEQA study is based on 6-hr precipitation depths, but the intensities included in the Drainage Study are based on much shorter durations (time of concentration [Tc]) in the 10 minute to 20 minute range, which yields approximate intensities of 5 in/hr. to 3 in/hr. depending on Tc. Therefore, the intensities used to analyze runoff from the site are larger than the required 20-year storm event.

(B) The quality of water, recharge potential, and storage capacity of groundwater aquifers shall not be diminished:

Mining of the mineral reserve and establishment of the final reclamation surface would not reduce recharge potential or the storage capacity of ground water aquifers.

Potential ground water quality impacts from fuels and lubricants will be minimized by the use a very small mobile equipment fleet in the mine area, storage of equipment away from the stream course, and regular maintenance of that equipment to limit potential releases of fuels or lubricants from that equipment. No hazardous materials will be stored on site unless provided secondary containment.

Any fill placed for reclamation will not reduce water quality, recharge potential or storage capacity of groundwater aquifers.

(C) Erosion and sedimentation shall be controlled:

Implementation of best management practices pursuant to the SWPPP shall control erosion and sedimentation (refer to Section 3706(a) above).

(D) Surface runoff and drainage from surface mining operations shall be controlled:

See Section **3.4.5.4(a) [**3706(a)] above.

(E) When stream diversions are required, they shall be constructed in accordance with the stream and lake alteration agreement between the operator and State Department of Fish and Game; and the requirements of the Federal Clean Water Act:

State or Federal agencies agreements and permits will be included in the Reclamation Plan. The 1602, 401 and 404 permits will not be available before the project is approved. The project will be conditioned to obtain these permits from the respective agencies, or evidence that these permits are not required.

(F) When no longer needed, stream diversions shall be removed:

No flow control structures are proposed.

3.4.5.5 Section 3707 – Performance Standards for Prime Agricultural Land Reclamation.

In addition to the standards for topsoil salvage, maintenance and redistribution, the following standards shall apply to mining operations on prime agricultural lands where the end use is agriculture:

(A) Mining operations which will operate on prime agricultural lands, as defined by the U.S. Soil Conservation Service (Natural Resources Conservation Service), shall return all disturbed areas to a fertility level as specified in the approved reclamation plan.

This project does not include prime agricultural land (see **Figure G**). The soils horizons will not be reconstructed.

(B) When distinct soil horizons are present, topsoil shall be salvaged and segregated by defined A, B, and C soil horizons. Upon reconstruction of the soil, the sequence of horizons shall have the A atop the B, the B atop the C, and the C atop the graded overburden.

The topsoil/colluvium mantle on-site ranges from 1’ to 6.5’ thick. The thickest topsoil/colluvium is in the northern parcels. This mantle will be removed by a dozer and stockpiled to be used on-site or exported for sale.

(C) Reclamation shall be deemed complete when productive capability of the affected land is equivalent to or exceeds, for two consecutive crop years, that of the pre-mining condition or similar crop production in the area. Productivity rates, based on reference areas described in the approved reclamation plan, shall be specified in the approved reclamation plan

The project site is not currently in crop production.

(D) Use of fertilizers or other soil amendments shall not cause contamination of surface or ground water. Note: Authority cited: Sections 2755, 2756 and 2773, Public Resources Code (Reference 2772, Public Resources Code).

Use of fertilizers or other soil amendments in the proposed project area will be limited to types and application rates consistent with applicable regulations.

3.4.5.6 Section 3708 - Performance Standards related to Other Agricultural Lands

Reclamation performance standards will include success criteria as described in the revegetation plan (see the Landscape Concept Plans **Sheets 14-16 of 17**)

3.4.5.7 Section 3709 - Performance Standards for Building, Structure and Equipment Removal

(A) All equipment, supplies and other materials shall be stored in designated areas:

All equipment and materials on the proposed project site would be stored in areas and structures designated for such uses and waste disposed of according to County ordinance requirements.

(B) All buildings, structures and equipment shall be dismantled and removed prior to final mine closure, except as necessary for the end use.

All buildings, structures and equipment shall be removed, with the exception of water wells and power lines which will serve the project site and the project office after reclamation activities have been concluded.

3.4.5.8 Section 3710 - Performance Standards for Stream Protection, including Surface and Groundwater

(A) Surface and groundwater shall be protected from pollutants:

Diesel fuel and oils are used onsite for operating equipment. Fuels and lubricants are not stored on site; instead, a mobile fuel and lubricant service vehicle serves the equipment. All waste oil generated at the project site is collected and transported for off-site disposal by properly trained and licensed personnel. This procedure will continue throughout this project life.

(B) In-stream surface mining operations shall be conducted in compliance with Section 1600 et seq. of the California Fish and Game Code, Section 404 of the Clean Water Act, and Section 10 of the Rivers and Harbors Act of 1899 (33 U.S.C. 403).

State or Federal agencies agreements and permits will be included in the Reclamation Plan. The 1602, 401 and 404 permits will not be available before the project is approved. The project will be conditioned to obtain

these permits from the respective agencies, or evidence that these permits are not required.

(C) Extraction of sand and gravel from river channels shall be regulated to control channel degradation in order to prevent undermining of bridge supports, exposure of pipelines or other structures buried within the channel, loss of spawning habitat, lowering of groundwater levels, destruction of riparian vegetation, and increased stream bank erosion (exceptions may be specified in the approved reclamation plan). Changes in channel elevations and bank erosion shall be evaluated annually using records of annual extraction quantities and benchmarked annual cross sections and/or sequential aerial photographs to determine appropriate extraction locations and rates.

Refer to discussion under 3.4.5.8 (B) above regarding the permits required to authorize in-stream mining.

(D) In accordance with the requirements of the California Fish and Game Code section 1600 et seq., in-stream mining activities shall not cause fish to become entrapped in pools or in off-channel pits, nor shall they restrict spawning or migratory activities.

The San Vicente Creek and Slaughterhouse Creek are intermittent creek with no fish population to protect.

3.4.5.9 Section 3711 - Performance Standards for Topsoil Salvage

(A) All salvageable topsoil suitable for revegetation shall be removed as a separate layer from mining area. Topsoil removal shall not precede mining activities by more than one year without approval:

The topsoil/colluvium mantle on-site ranges from 1’ to 6.5’ thick. The thickest topsoil/colluvium is in the northern parcels. This mantle will be removed by a dozer and stockpiled to be used on-site or exported for sale. All salvageable topsoil suitable for revegetation will be removed as a separate layer from areas to be disturbed by mining operations. Topsoil and vegetation removal shall not precede surface mining activities by more than one year, unless a longer time period is approved by the lead agency. The extracted topsoil will be stockpiled on-site until needed to prepare the on-site biological mitigation areas and during the implementation of the landscape plan (see **MUP Sheet 14**). The sand stockpiles will be located at various locations as the extraction and reclamation phasing progress from Phase 1 through Phase 6. The length of time that sand remains in stockpiles will vary depending upon

fluctuations in market demand for the extracted sand. The anticipated phasing schedule is shown in Table 1 and 1A and the year-by-year material production is shown in Table 2 and 2A.

The topsoil stockpiles will be located away from Slaughterhouse Creek and San Vicente Creek and the unnamed drainage course connected to Slaughterhouse Creek. The stockpiles will be completely surrounded by silt fence, fiber rolls or gravel bags and able to be covered with plastic or tarp prior to a rain event.

(B) Topsoil resources shall be mapped prior to stripping and the location of topsoil stockpiles shall be shown on the reclamation plan:

The *Update Geotechnical Investigation* reported that colluvium/topsoil mantles the site at the surface where the exploratory borings and test pits were excavated and consists of light brown to dark brown, dry to moist, loose/soft to medium dense sand to silty sands to sandy silt that are approximately ±1 to ±6 feet thick. The thickest topsoil/colluvium was generally located within the northern parcels.

Topsoils stripped from the site will be stockpiled in the northwest corner of the project site as shown on **Sheet 14**. See subsection (D) below for a description of how the stockpiles will be protected.

(C) Soil salvage operations and phases of reclamation shall be carried out in accordance with a schedule that : 1) is set forth in the approved reclamation plan; 2) minimizes the area disturbed; and 3) is designed to achieve maximum revegetation success:

Sand and topsoil extraction and site reclamation would occur in six phases over a 20-year period as illustrated on **Sheets 8 – 13** and identified in **Table 1** and 1A in Section 3.1 above. Extraction Phase 5 is dependent upon the completion of the Extraction Phase 4 and the reclamation of the Phase 1B area. The extraction areas will have 1.5:1 to 1.6:1 cut slopes down to the ground water level and 3:1 to 3.5:1 slopes below the water table during the extraction process.

The phasing sequence and quantity of material extracted in each phase is shown in **Table 2 and 2A** in Section 3.1 above and the quantity of material anticipated to be extracted on a yearly basis is shown in **Table 3 and 3A** in Section 3.1 above. However, the amount of material that would be extracted each year will fluctuate in response to market conditions.

(D) Topsoil and suitable growth media shall be used to phase reclamation as soon as can be accommodated by the mining schedule presented in the approved reclamation plan following the mining of an area. Topsoil that cannot be used immediately should be stockpiled where it will not be disturbed. Topsoil shall be clearly identified to distinguish it from mine waste. Protect stockpiles from erosion and weed growth. Relocation of topsoil stockpiles must be approved:

The encountered topsoil will be stockpiled in areas as screening from SR 67 or neighboring properties as shown on the Landscape Plans (see **Sheet 14**) and left undisturbed until its use is required for reclamation. Stockpiles should be a minimum of 50 feet away from concentrated flows of stormwater and drainage courses. Stockpiles will be protected from stormwater run-on using temporary perimeter sediment barriers such as berms, dikes, fiber rolls, silt fences, sandbag, gravel bags, or straw bale barriers. During the non-rainy season, soil stockpiles should be covered or protected with a temporary perimeter sediment barrier prior to the onset of precipitation. During the rainy season, soil stockpiles should be covered or protected with soil stabilization measures and a temporary perimeter sediment barrier at all times. Stockpiles that will be in place for lengthy periods of time should be seeded with native erosion control seed mix to prevent erosion.

(E) Topsoil and growth media shall be redistributed in a manner that results in a stable, uniform thickness consistent with the approved end use, site configuration and drainage:

Refer to the Landscape Plan included in the MUP / Reclamation Plans (**Sheets 14-16**).

3.4.5.10 Section 3712 - Performance Standards for Tailing and Mine Waste Management

State Water Resources Control Board mine waste disposal regulations in Article 7 of Chapter 15 of title 23, California Code of Regulations, shall govern mine waste and tailings and mine waste disposal units shall be reclaimed in conformance with this article:

There are no anticipated mining wastes, all excavated materials will be sold or used on-site to refill the pits during the reclamation phase.

3.4.5.11 Section 22470: SWRCB - Applicability

This article applies to all discharges of mining waste.

There are no anticipated mining wastes, all excavated materials will be sold or used on-site to refill the pits during the reclamation phase.

3.4.5.12 Section 22480: SWRCB - Groups of Mining Waste

(A) Definition:

Mining waste is waste from the mining and processing of ores and mineral commodities. Mining waste includes:

1. **Overburden:**
2. **Natural geologic material which have been removed or relocated but have not been processed (waste rock): and**
3. **The solid residues, sludges, and liquids from the processing of ores and mineral commodities.**

(B, C) Waste Group Classification:

The mining waste is classified as Group C in accordance with the criteria listed in 27 CCR 480.

(D) Treatment:

There are no anticipated mining wastes, all excavated materials will be sold or used on-site to refill the pits during the reclamation phase.

3.4.5.13 Section 22490: SWRCB - Mining Unit Siting and Construction Standards

(A) Proximity to Faults - New Mining Units

1. Holocene Faults:

There are no known active faults crossing the site, nor is the site shown in an Alquist-Priolo Earthquake fault zone on State maps.

2. Areas of Rapid Geologic Change:

The project site is not in an area affected by rapid geologic changes.

(B) Flooding - All mining units shall be protected from flooding as shown on Table 1.2 of the Section 22490 SWRCB regulations.

No stockpiles will be placed in the stream channels per Table 1.2 for Group C mining waste.

(C) Construction and Discharge standards.

The project is considered a Waste Group C project. No waste discharge is anticipated and no special provisions are required.

(D) Registered Professionals.

No containment structures are required per Table 1.3 for Waste Group C; therefore, no special construction supervision is required.

(E) General Containment Structure Criteria.

No containment structures are required per Table 1.3 for Waste Group C, therefore no special containment structure criteria applies to this project.

(F) Liners

No liners are required per Table 1.3 for Waste Group C, therefore no special criteria applies to this project.

(G) Leachate Collection and Removal Systems.

No leachate collection or removal systems are required per Table 1.3 for Waste Group C, therefore no special criteria applies to this project.

(H) Precipitation and Drainage Controls; Design Storm:

The project is considered a Waste Group C project. The design storm required is one 10 year, 24 hour storm, all on-site temporary drainage facilities will meet this requirement.

3.4.5.14 Section 22510 - Closure and Post-Closure Maintenance of Mining Units

(A) Closure Performance Standard:

The reclamation plan includes the incorporation of permanent sediment control measures including grading, drainage and limited revegetation of the proposed mine site. The reclaimed land would also meet applicable

State and County standards for stability. These measures would avoid substantial erosion of the final reclaimed slopes and preclude the potential for substantial sedimentation of nearby streams.

(B) Plan:

Upon approval, this Reclamation Plan would fulfill the requirements of this section**.**

(C) Reclamation:

East County Sand, LLC will be applying for a Waste Discharge Permit through the RWQCB and will comply with the permit requirements.

(D) Oversight and Monuments:

The final reclamation will be monitored by a registered professional engineer in accordance with Section 20950(b). Survey monuments will be place on each of the four separate property owners parcels to monitor the elevations and location of the final reclamation of the project.

(E) Inactive Units:

Containment structures at inactive Mining Units shall be subject to the same standards as apply to an active Mining Unit.

No containment structures are proposed, therefore these standards do not apply to this project.

(F,G) Financial Assurance:

The operator's financial assurance to be established under SMARA for this reclamation plan will be adequate to comply with any and all closure and post-closure maintenance requirements as verified by County and State Office of Mine Reclamation staff.

(H) Ending Post-Closure:

Post closure monitoring will be ended upon achievement of the revegetation success criteria and release of the reclamation bond.

(I) Vegetation:

Revegetation of the proposed project site will not impair the integrity of any of the containment features provided for site reclamation.

(J) Waste Pile Closure Standards.

There are no anticipated mining wastes, all excavated materials will be sold or used on-site to refill the pits during the reclamation phase.

(K) Surface Impoundment Closure Standards.

There are no surface impoundments proposed by this project.

(L) Tailings Pond Closure Standards.

There are no tailings ponds proposed by this project.

(M) Erosion and Sedimentation Protection:

The erosion, sedimentation control and revegetation features of the proposed reclamation plan are designed to minimize erosion and the threat of water quality degradation from sedimentation.

3.4.5.15 Section 3713 - Performance Standards for Closure of Surface Openings

(A) Except those used solely for blasting or those that will be mined through within one year, all drill holes, water holes, water wells, and monitoring wells shall be completed or abandoned in accordance with each of the following: (1) Water Code sections 13700, et seq. and 13800, et seq.; (2) the applicable local ordinance adopted pursuant to Water Code section 13803; (3) the applicable Department of Water Resources report issued pursuant of Water Code section 13800; and (4) Subdivisions (1) and (2) or section 2511(g) of Chapter 15 of Title 23 regarding discharge of waste to land:

The existing water wells on-site will remain in service as irrigation wells upon final reclamation, therefore these will not be abandoned.

(B) Prior to closure, all portals, shafts, tunnels, or other surface openings to underground workings shall be gated or otherwise protected from public entry to protect the public and wildlife:

No underground workings exist nor are they planned at the proposed project site. The main access road to the project site will remain protected with a locked gate.

3.5 CLEAN WATER ACT (1972) APPLICABILITY

The Federal Water Pollution Control Act as amended by the Clean Water Act of 1977 (hereafter Act, 33 U.S.C 1251 et. seq.) established national goals for controlling and reducing pollution in the nation's waters. Two of these goals specifically pertain to the reclamation plan for the proposed project.

> ***"It is the national goal that wherever attainable, an interim goal of water quality which provides for the protection and propagation of fish, shellfish, and wildlife and provides for recreation in and on the water be achieved by July 1, 1983"*** **(33 U.S.C. 1251).**
>
> ***"It is the national policy that programs for the control of nonpoint sources of pollution be developed and implemented in an expeditious manner so as to enable the goals of this Act to be met through the control of both point and nonpoint sources of pollution"*** **(33 U.S.C. 1251 (a)(7)).**

Regulations promulgated in various sections of the Act (Section 402 and Section 404) serve to cover discharges into waters of the United States, and to monitor the conditions of the nation's waters.

3.5.1 Section 402 (40 CFR Part 122) of the Act provides for the National Pollutant Discharge Elimination System (NPDES) regulatory permit program. Under this permitting program, the U.S. Environmental Protection Agency regulates stormwater discharges for point and nonpoint sources of pollution; including stormwater discharges that violate water quality standards or that significantly contribute pollutants to U.S. waters. Under the NPDES program, any person responsible for the discharge of a pollutant or pollutants into any waters of the U.S. from any point source must apply for and obtain a permit. The authority to issue NPDES permits may be delegated to the States by the U.S. EPA, as is the case in California.

Section 402 defines pollution as "…man-made or man-induced alteration of chemical, physical, biological, and radiological integrity of water" (Clean Water Act 1987). Statutory examples of point sources of pollution include runoff and drainage water form active mines. Diffuse or nonpoint sources of pollution include sources that are diffuse in nature and which are not discharged from a few localized points. Statutory nonpoint sources of pollution include land-disturbing activities. Principal pollutants of concern include chemical inputs, gaseous emissions, heavy metals, acid rain, and sediment.

The proposed East County Sand Mine and Reclamation Plan will operate under an NPDES Industrial Activities general storm water discharge permit.

3.5.2 Waters of the U.S. are defined at 33 CFR Part 328. Although this section of the Code of Federal Regulations defines the term "waters of the U.S." as it applies to the jurisdictional limits of the authority of the Corps of Engineers under Section 404 of the Act, these definitions are applicable to regulations promulgated under Section 402. The term "waters of the U.S." includes:

A. **All waters which are currently used, or were used in the past, or may be susceptible to use in interstate commerce, including all waters that are subject to the ebb and flow of the tide.**
B. **All interstate waters including interstate wetlands.**
C. **All other waters such as intrastate lakes, rivers, streams (including intermittent streams), mudflats, sand flats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds, the use, degradation or destruction of which could affect interstate or foreign commerce including any such waters:**
    i. **which are or could be used by interstate or foreign travelers for recreational or other purposes; or**
    ii. **from which fish or shellfish are or could be taken and sold in interstate or foreign commerce;**
    iii. **which are used or could be used for industrial purpose by industries in interstate commerce.**
D. **All impoundments of waters otherwise defined as waters of the U.S. under the definition.**
E. **Tributaries of waters identified above.**
F. **The territorial seas.**
G. **Wetlands adjacent to waters.**

Section 404 (33 CFR Part 320-330) enables the U.S. Army Corps of Engineers in the Department of the Army to issue permits for the discharge of dredged or fill material into waters of the U.S. at specific sites. The term "discharge of fill material" means the addition of fill material into waters of the U.S. The term "fill material" means any material used for the primary purpose of replacing an aquatic area with dry land or of changing the bottom elevation of a water body (33 CRF Part 323.2 (f)). The term does not include any pollutant discharged into the water primarily to dispose of waste as that activity is regulated under Section 402 of the Act (33 CFR Part 323.2 (e)).

The proposed project does include disturbance of jurisdictional waters. Consultation with the US Army Corps of Engineers and the California Department of Fish and Wildlife will be conducted to design and implement the proposed drainage and sediment control plan.

3.6 PORTER-COLOGNE WATER POLLUTION CONTROL ACT APPLICABILITY

The extraction and reclamation activities will be conducted to protect downstream beneficial uses of water in accordance with the Porter-Cologne Water Quality Control Act, Water Code Section 13000, et seq. and the Federal Clean Water Act, 33 U.S.C. Section 1311, et seq. and Section 404 (33 U.S.C 1344) and/or Section 10 of the Rivers and Harbors Act of 1899 (33 U.S.C. 403). Drainage from on-site will be directed to onsite pits and no discharges from on-site operations will occur from this project site. All erosion and sedimentation shall be controlled onsite in accordance with the SWPPP, as required by the Regional Water Quality Control Board. The proposed channelization of Slaughterhouse Creek and San Vicente Creek will be constructed in accordance with Department of Fish and Wildlife regulations.

3.7 Caltrans Notification

A copy of the East County Sand Mine application was sent to the California Department of Transportation (Caltrans) by the County of San Diego. Caltrans responded to the County of San Diego on November 19, 2009.

3.8 Applicant Statement of Responsibility

The East County Sand, LLC applicants submitting this Reclamation Plan accept responsibility for the implementation of this East County Sand Mine Reclamation Plan.

Property Owners

Bob Turner
APN 375-041-50 375-100-, -20, -24 -41,, 43, -45

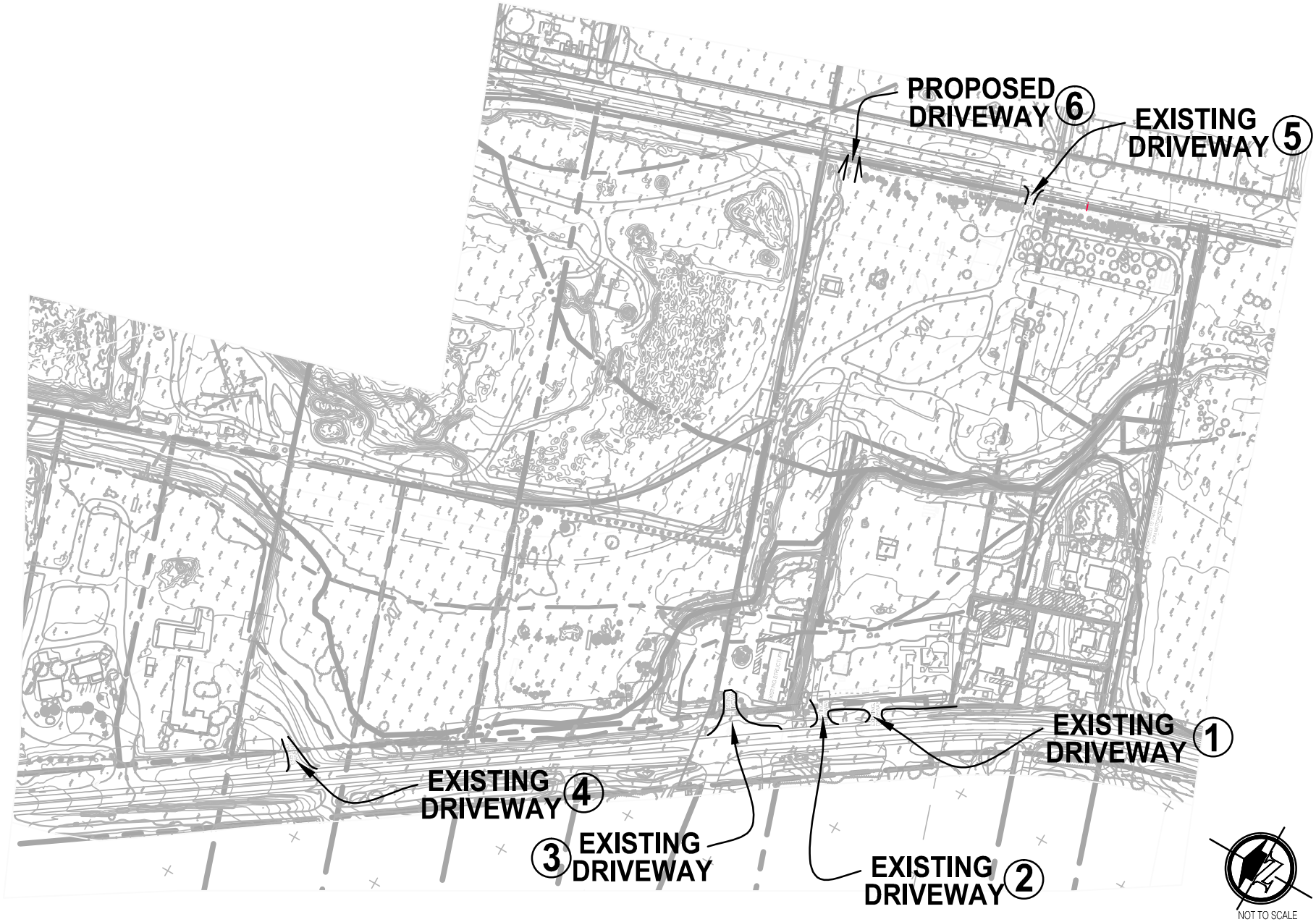
Sean Green
APN 375-041-36

George Anderson
APN 375-100-29

Project Applicant

Bob Turner
East County Sand, LLC

FIGURES



SITE DESIGN ASSOCIATES, INC.
1016 BROADWAY STE "A" EL CAJON, CALIFORNIA 92021
(619) 442-8467 FAX (619) 442-8417

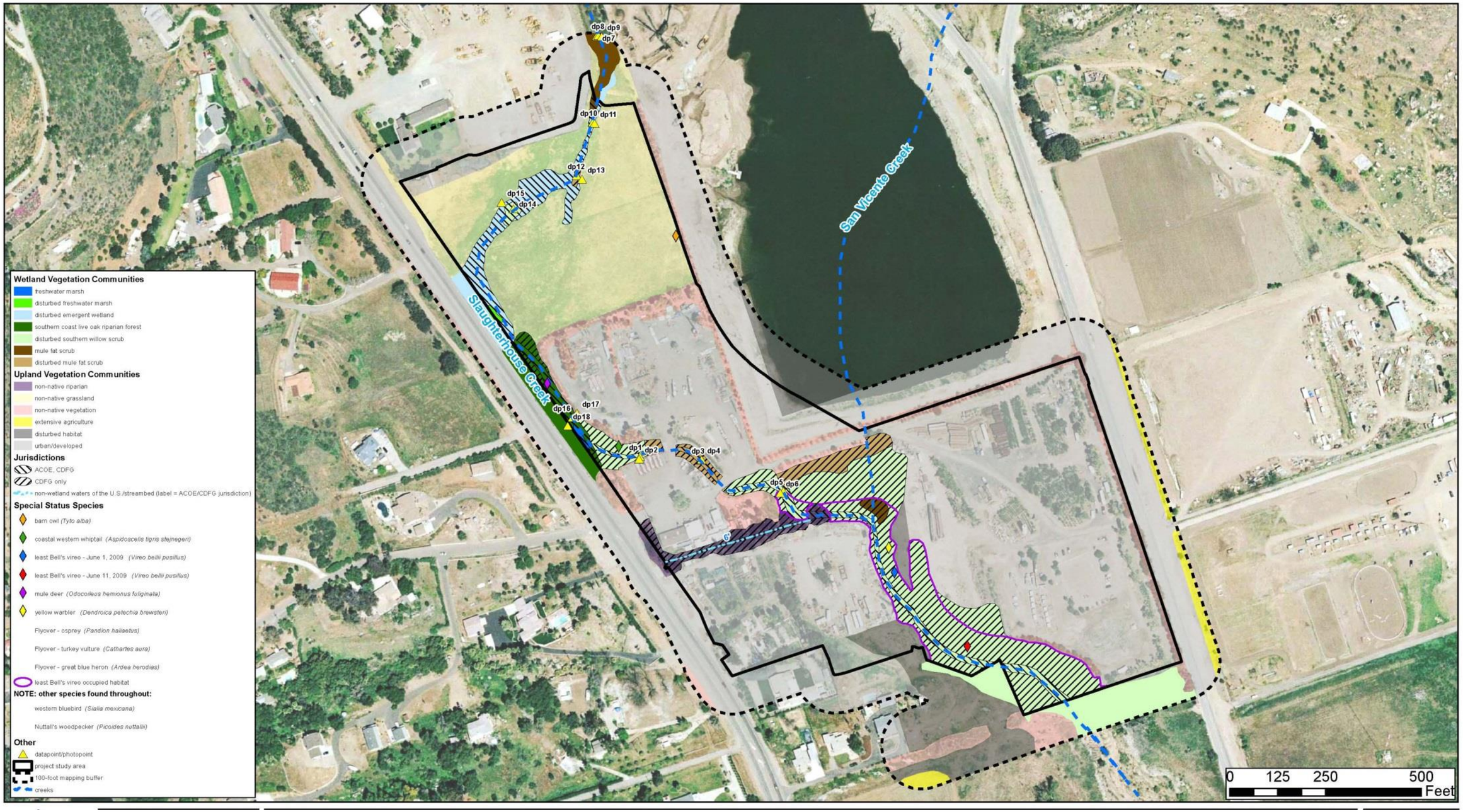
DWG: 1725 GradingMUP.dwg

EAST COUNTY SAND MINE

ACCESS DRIVEWAYS

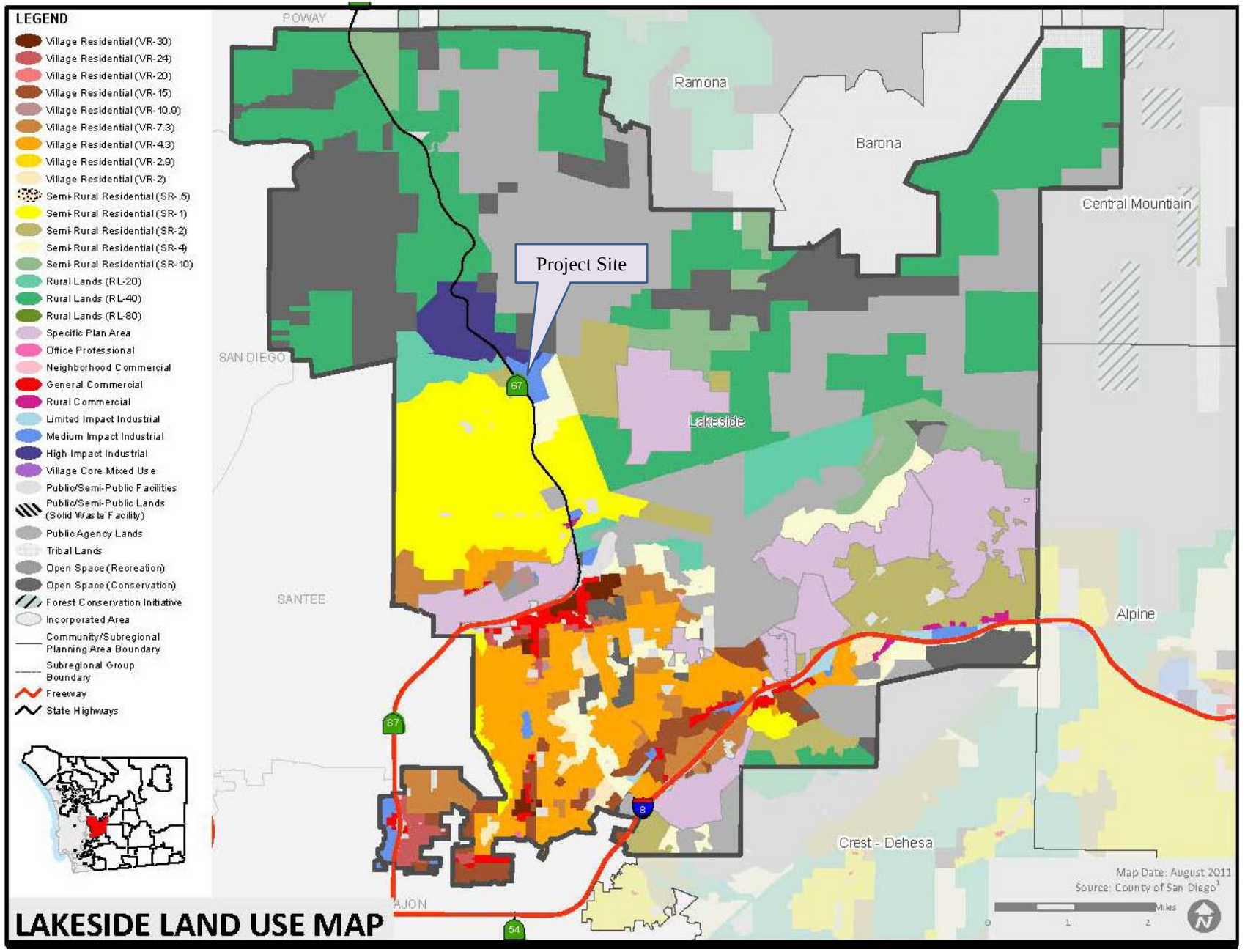
JOB NO.:	J-1725
DATE:	8/18/09
	FIGURE A

F:\1725 East County Sand Mine\1725 GradingMUP.dwg, 6/30/2014 12:04:21 PM



Source: Merkel & Associates, Inc., *East County Sand Mine Project*, June 12, 2014, Figure 5.

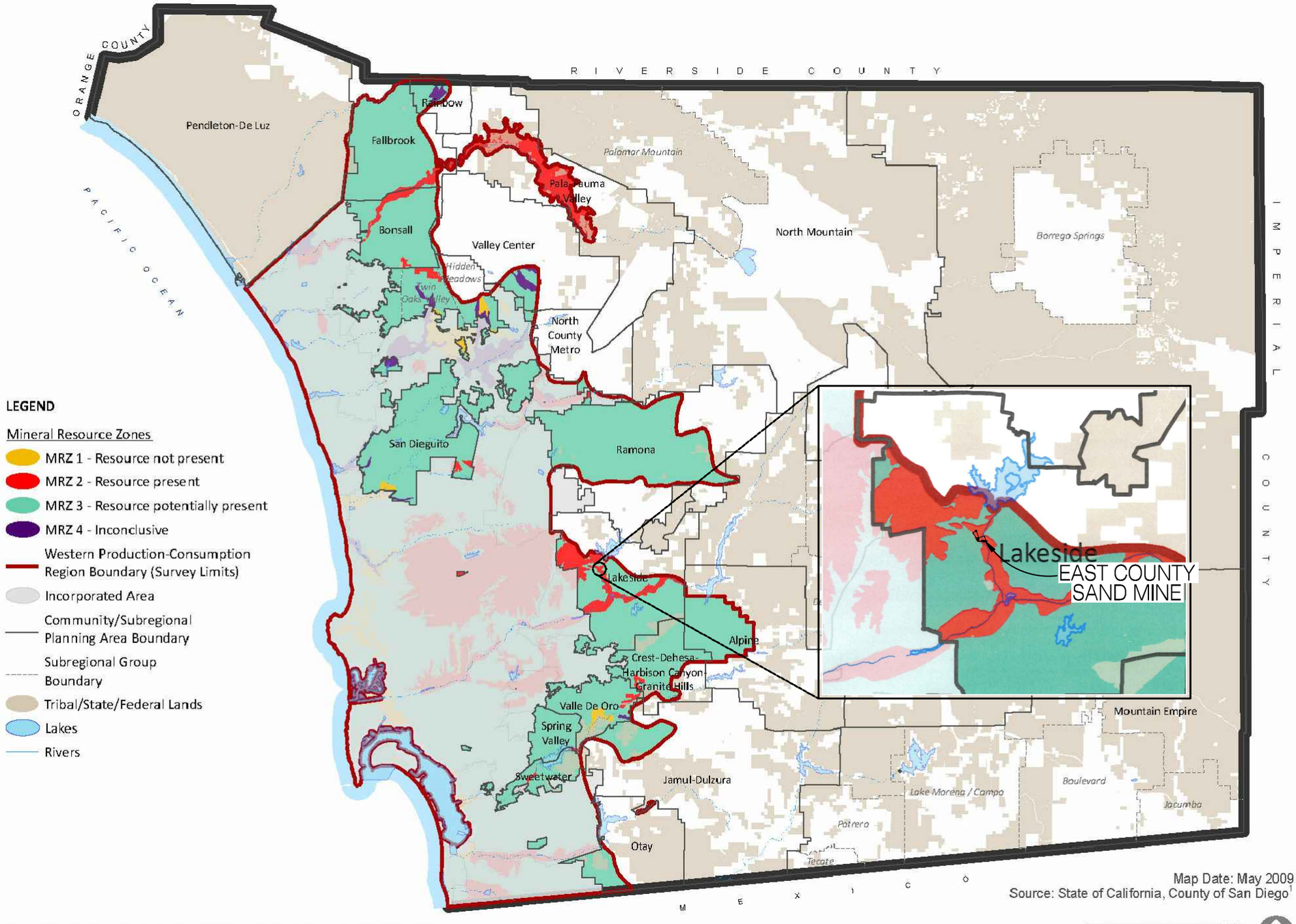
A.D. Hinshaw Associates	Biological Resources Map	Figure B



Source: San Diego County General Plan, Figure LU-A-10, August 11, 2011

A.D. Hinshaw Associates	Lakeside Community Plan	Figure C

8/11/11



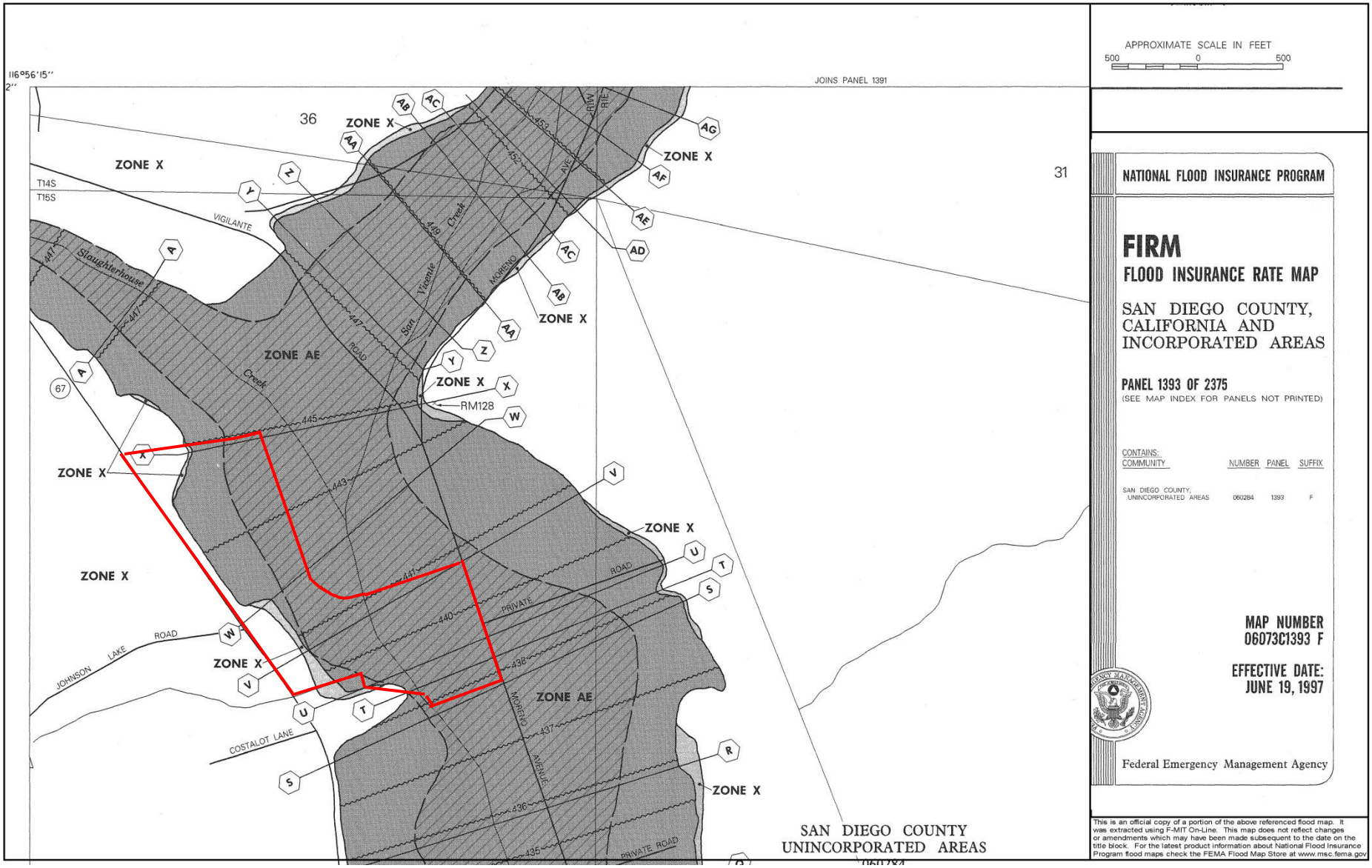
MINERAL RESOURCE ZONES

San Diego County General Plan

Figure C-4

SAN DIEGO COUNTY GENERAL PLAN FIGURE C-4, AUGUST 11, 2011

A.D. Hinshaw Associates	Mineral Land Classification Map	Figure D



A.D. Hinshaw Associates	100-Year Floodplain	Figure E-1

LEGEND

SPECIAL FLOOD HAZARD AREAS INUNDATED BY 100-YEAR FLOOD

ZONE A No base flood elevations determined.

ZONE AE Base flood elevations determined.

ZONE AH Flood depths of 1 to 3 feet (usually areas of ponding); base flood elevations determined.

ZONE AO Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.

ZONE A99 To be protected from 100-year flood by Federal flood protection system under construction; no base elevations determined.

ZONE V Coastal flood with velocity hazard (wave action); no base flood elevations determined.

ZONE VE Coastal flood with velocity hazard (wave action); base flood elevations determined.

FLOODWAY AREAS IN ZONE AE

OTHER FLOOD AREAS

ZONE X Areas of 500-year flood; areas of 100-year flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 100-year flood.

OTHER AREAS

ZONE X Areas determined to be outside 500-year floodplain.

ZONE D Areas in which flood hazards are undetermined.

UNDEVELOPED COASTAL BARRIERS

Identified 1983 | Identified 1990 | Otherwise Protected Areas

Coastal barrier areas are normally located within or adjacent to Special Flood Hazard Areas.

Flood Boundary

Floodway Boundary

Zone D Boundary

Boundary Dividing Special Flood Hazard Zones, and Boundary Dividing Areas of Different Coastal Base Flood Elevations Within Special Flood Hazard Zones.

513 — Base Flood Elevation Line; Elevation in Feet. See Map Index for Elevation Datum.

D — D — Cross Section Line

(EL 987) — Base Flood Elevation in Feet Where Uniform Within Zone. See Map Index for Elevation Datum.

RM7 — Elevation Reference Mark

M2 — River Mile

97°07'30", 32°22'30" — Horizontal Coordinates Based on North American Datum of 1927 (NAD 27) Projection.

NOTES

This map is for use in administering the National Flood Insurance Program; it does not necessarily identify all areas subject to flooding, particularly from local drainage sources of small size, or all planimetric features outside Special Flood Hazard Areas.

Coastal base flood elevations apply only landward of 0.0 NGVD, and include the effects of wave action; these elevations may also differ significantly from those developed by the National Weather Service for hurricane evacuation planning.

Areas of Special Flood Hazard (100-year flood) include Zones A, AE, AH, AO, A99, V, and VE.

Certain areas not in Special Flood Hazard Areas may be protected by flood control structures.

Boundaries of the floodways were computed at cross sections and interpo ated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the Federal Emergency Management Agency.

Floodway widths in some areas may be too narrow to show to scale. Floodway widths are provided in the Flood Insurance Study Report.

This map may incorporate approximate boundaries of Coastal Barrier Resource System Units and /or Otherwise Protected Areas established under the Coastal Barrier Improvement Act of 1990 (PL 101-591).

Corporate limits shown are current as of the date of this map. The user should contact appropriate community officials to determine if corporate limits have changed subsequent to the issuance of this map.

For community map revision history prior to countywide mapping, see Section 6.0 of the Flood Insurance Study Report.

For adjoining map panels and base map source see separately printed Map Index.

MAP REPOSITORY

Refer to Repository Listing on Map Index

EFFECTIVE DATE OF COUNTYWIDE FLOOD INSURANCE RATE MAP:

JUNE 19, 1997

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL:

Refer to the FLOOD INSURANCE RATE MAP EFFECTIVE DATE shown on this map to determine when actuarial rates apply to structures in zones where elevations or depths have been established.

To determine if flood insurance is available, contact an insurance agent or call the National Flood Insurance Program at (800) 638-6620.

NATIONAL FLOOD INSURANCE PROGRAM

FIRM

FLOOD INSURANCE RATE MAP

SAN DIEGO COUNTY, CALIFORNIA AND INCORPORATED AREAS

PANEL 1393 OF 2375

(SEE MAP INDEX FOR PANELS NOT PRINTED)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
SAN DIEGO COUNTY, UNINCORPORATED AREAS	060284	1393	F

MAP NUMBER 06073C1393 F

EFFECTIVE DATE: JUNE 19, 1997

Federal Emergency Management Agency

A.D. Hinshaw Associates	**Floodplain Map Legend**	**Figure E-2**

LEGEND

○ 0% TO 15% :	92.49% =	24.13 AC.
15% to 25% :	2.08% =	0.57 AC.
25% to 50% :	2.56% =	0.69 AC.
OVER 50% :	2.87% =	0.77 AC.
TOTAL :	100% =	26.16 AC.

AVERAGE SLOPE : 5.08%

SOURCE OF TOPO:

MERCATOR & ASSOCIATES, AERIAL MAPPING DATED 1/31/05

NOTE:

INDICATES BOUNDARY OF M.U.P./R.P.

SITE DESIGN ASSOCIATES, INC.
1016 BROADWAY SUITE "A"
EL CAJON, CALIFORNIA 92021
(619) 442-8467

EAST COUNTY SAND MINE

SLOPE ANALYSIS

ENGINEER OF WORK:

KENNETH J. DESCANCIA R.C.E. 29930 — DATE

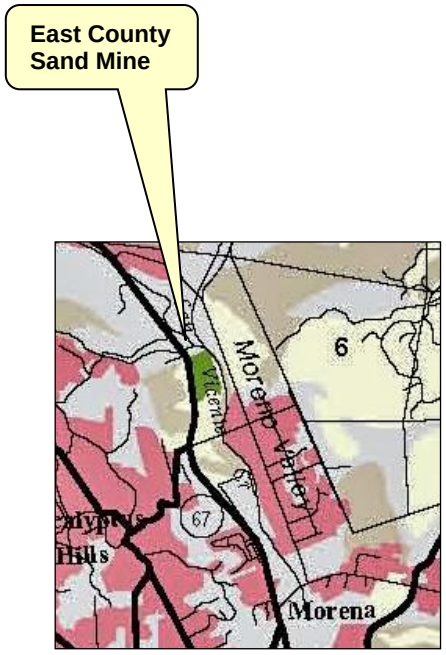
KENNETH J. DESCANCIA — No. 29930 EXPIRES — CIVIL — STATE OF CALIFORNIA

No.	Date	By	
1	8/27/11	SDA	ADDED APN NO. 375-041-20
2	6/6/14	SDA	ADJUSTED BOUNDARY LINE

SCALE: NOT TO SCALE
JOB NO.: J-1725
DATE: 8/18/09

FIGURE F

F:\1725 East County Sand Mine\1725_SLOPE-ANAL.dwg, 6/30/2014 12:01:40 PM



Source: California Department of Conservation, Farmland Mapping and Monitoring Program.

PRIME FARMLAND - 8,251 acres

PRIME FARMLAND HAS THE BEST COMBINATION OF PHYSICAL AND CHEMICAL FEATURES ABLE TO SUSTAIN LONG-TERM AGRICULTURAL PRODUCTION. THIS LAND HAS THE SOIL QUALITY, GROWING SEASON, AND MOISTURE SUPPLY NEEDED TO PRODUCE SUSTAINED HIGH YIELDS. LAND MUST HAVE BEEN USED FOR IRRIGATED AGRICULTURAL PRODUCTION AT SOME TIME DURING THE FOUR YEARS PRIOR TO THE MAPPING DATE.

FARMLAND OF STATEWIDE IMPORTANCE - 10,959 acres

FARMLAND OF STATEWIDE IMPORTANCE IS SIMILAR TO PRIME FARMLAND BUT WITH MINOR SHORTCOMINGS, SUCH AS GREATER SLOPES OR LESS ABILITY TO STORE SOIL MOISTURE. LAND MUST HAVE BEEN USED FOR IRRIGATED AGRICULTURAL PRODUCTION AT SOME TIME DURING THE FOUR YEARS PRIOR TO THE MAPPING DATE.

UNIQUE FARMLAND - 53,250 acres

UNIQUE FARMLAND CONSISTS OF LESSER QUALITY SOILS USED FOR THE PRODUCTION OF THE STATE'S LEADING AGRICULTURAL CROPS. THIS LAND IS USUALLY IRRIGATED, BUT MAY INCLUDE NONIRRIGATED ORCHARDS OR VINEYARDS AS FOUND IN SOME CLIMATIC ZONES IN CALIFORNIA. LAND MUST HAVE BEEN CROPPED AT SOME TIME DURING THE FOUR YEARS PRIOR TO THE MAPPING DATE.

FARMLAND OF LOCAL IMPORTANCE - 134,892 acres

LAND THAT MEETS ALL THE CHARACTERISTICS OF PRIME AND STATEWIDE, WITH THE EXCEPTION OF IRRIGATION.

FARMLANDS NOT COVERED BY THE ABOVE CATEGORIES BUT ARE OF SIGNIFICANT ECONOMIC IMPORTANCE TO THE COUNTY. THEY HAVE A HISTORY OF GOOD PRODUCTION FOR LOCALLY ADAPTED CROPS. THE SOILS ARE GROUPED IN TYPES THAT ARE SUITED FOR TRUCK CROPS (SUCH AS TOMATOES, STRAWBERRIES, CUCUMBERS, POTATOES, CELERY, SQUASH, ROMAINE LETTUCE, AND CAULIFLOWER) AND SOILS SUITED FOR ORCHARD CROPS (AVOCADOS AND CITRUS).

GRAZING LAND - 106,680 acres

GRAZING LAND IS LAND ON WHICH THE EXISTING VEGETATION IS SUITED TO THE GRAZING OF LIVESTOCK.

URBAN AND BUILT-UP LAND - 345,316 acres

URBAN AND BUILT-UP LAND IS OCCUPIED BY STRUCTURES WITH A BUILDING DENSITY OF AT LEAST 1 UNIT TO 1.5 ACRES, OR APPROXIMATELY 6 STRUCTURES TO A 10-ACRE PARCEL. COMMON EXAMPLES INCLUDE RESIDENTIAL, INDUSTRIAL, COMMERCIAL, INSTITUTIONAL FACILITIES, CEMETERIES, AIRPORTS, GOLF COURSES, SANITARY LANDFILLS, SEWAGE TREATMENT, AND WATER CONTROL STRUCTURES.

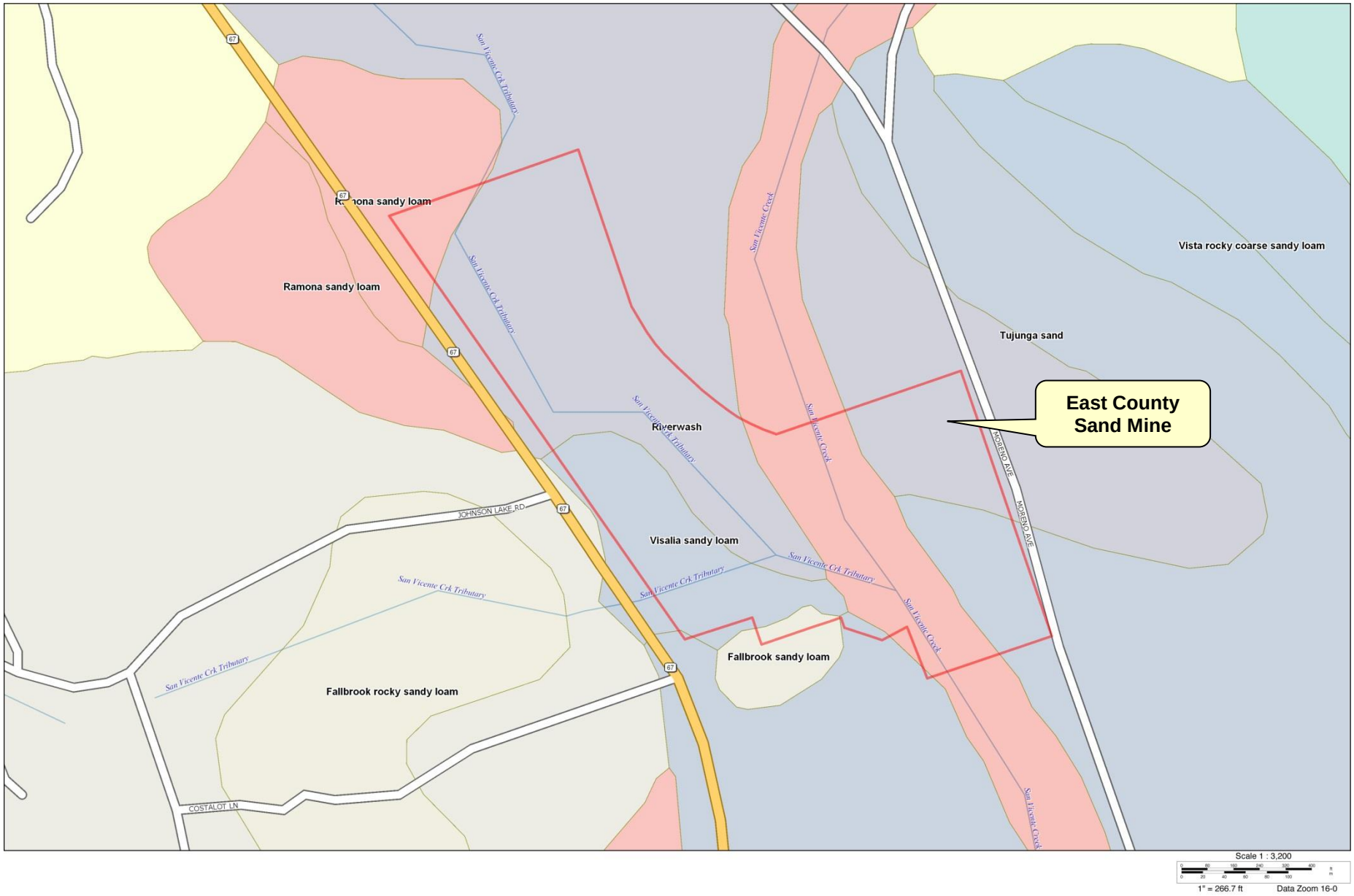
OTHER LAND - 1,494,047 acres

OTHER LAND IS LAND NOT INCLUDED IN ANY OTHER MAPPING CATEGORY. COMMON EXAMPLES INCLUDE LOW DENSITY RURAL DEVELOPMENTS, BRUSH, TIMBER, WETLAND, AND RIPARIAN AREAS NOT SUITABLE FOR LIVESTOCK GRAZING, CONFINED LIVESTOCK, POULTRY, OR AQUACULTURE FACILITIES, STRIP MINES, BORROW PITS, AND WATER BODIES SMALLER THAN 40 ACRES. VACANT AND NONAGRICULTURAL LAND SURROUNDED ON ALL SIDES BY URBAN DEVELOPMENT AND GREATER THAN 40 ACRES IS MAPPED AS OTHER LAND.

WATER - 13,298 acres

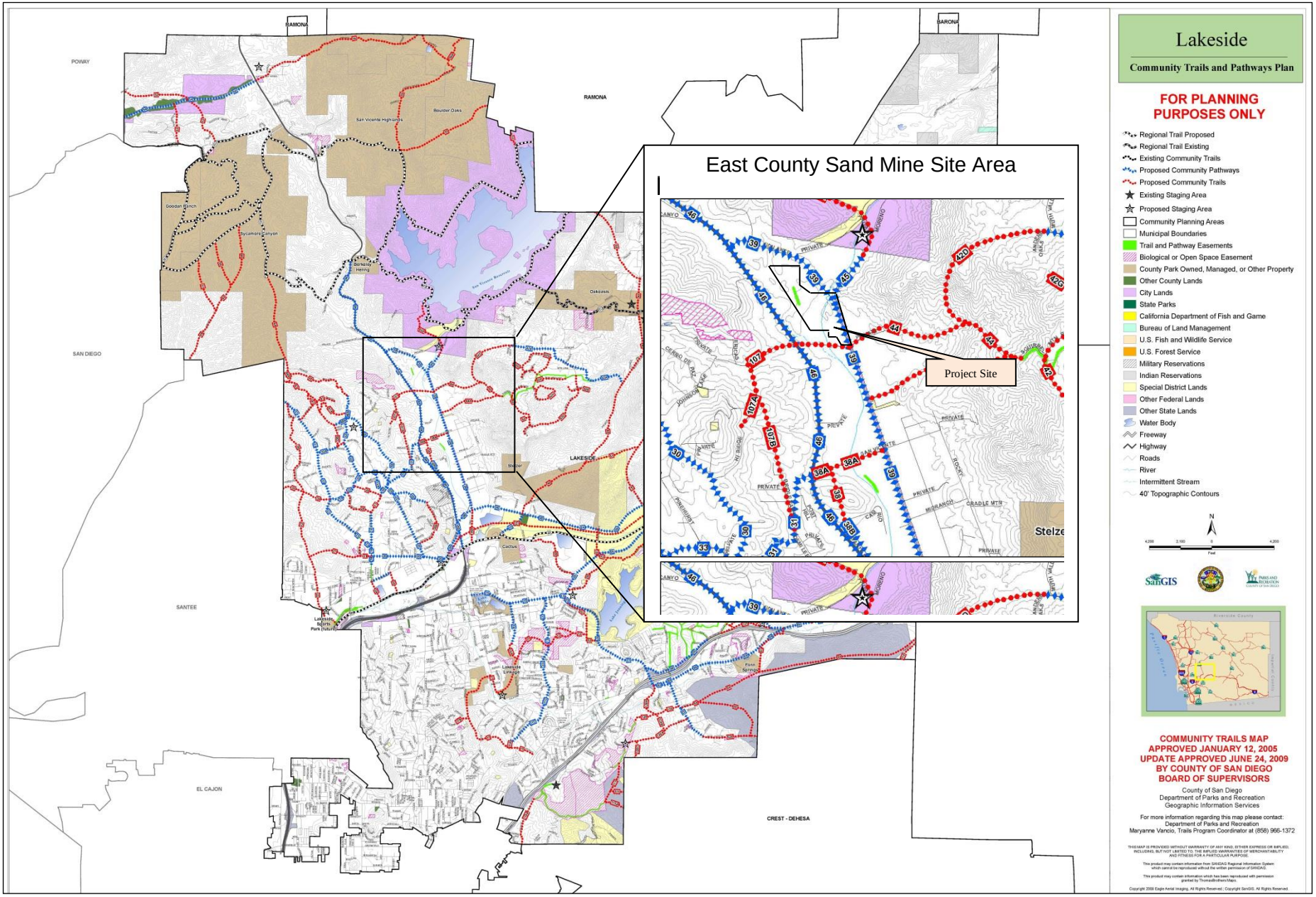
PERENNIAL WATER BODIES WITH AN EXTENT OF AT LEAST 40 ACRES.

A.D. Hinshaw Associates	Farmland Mapping and Monitoring Program	Figure G



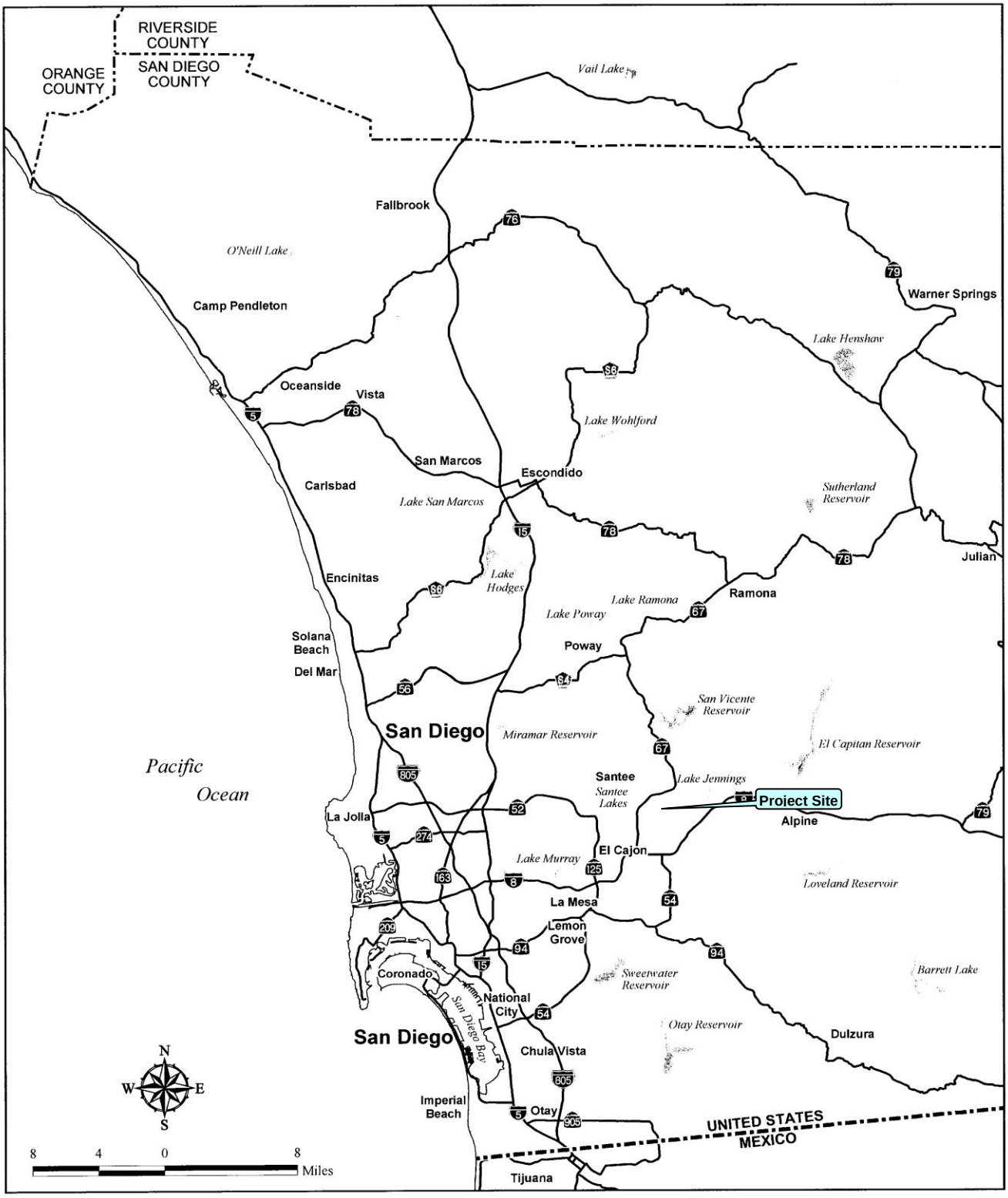
Source: United States Department of Agriculture, Natural Resources Conservation Service, December 31, 2012

A.D. Hinshaw Associates	Soil Classifications	Figure H



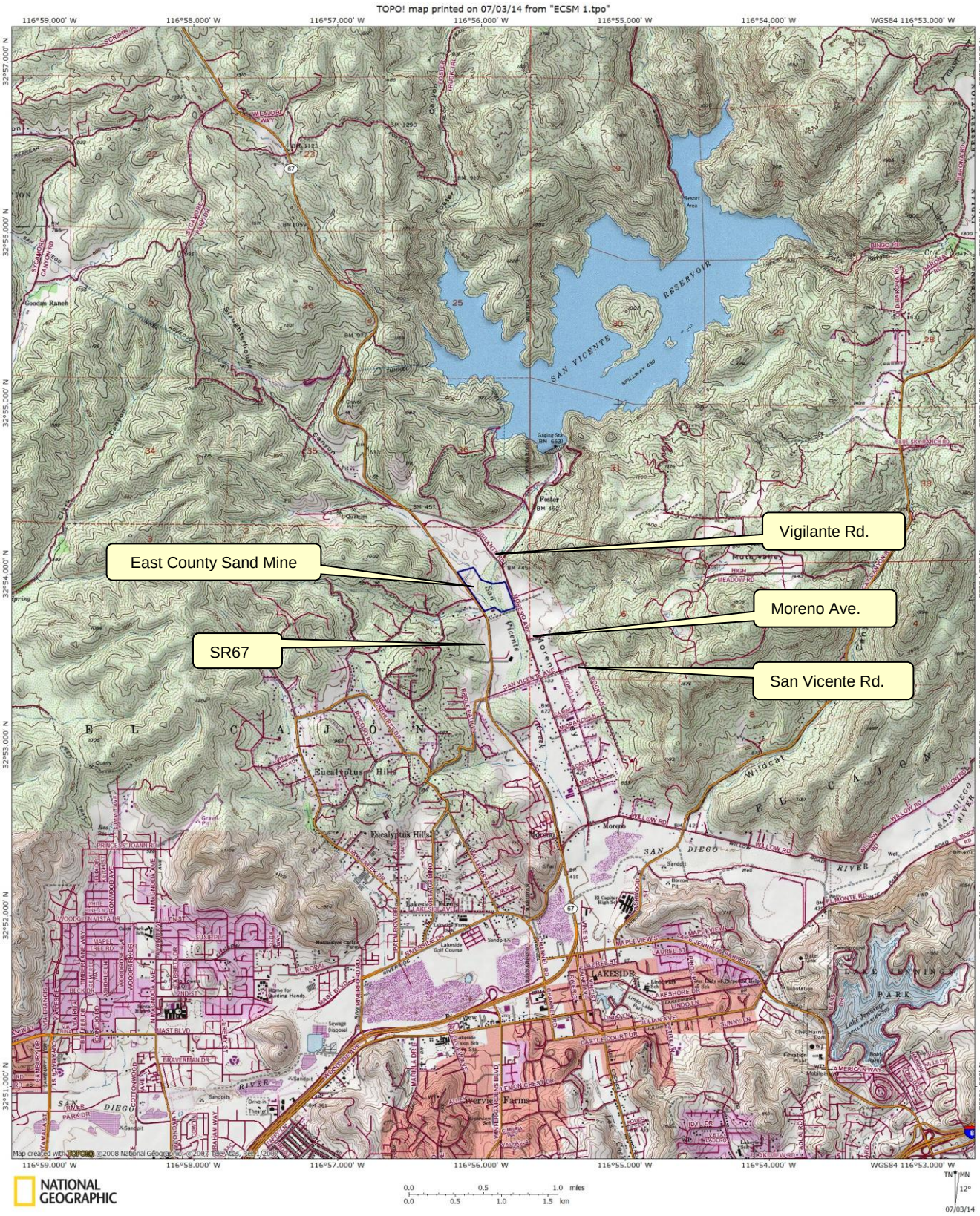
Source: Lakeside Community Trails Map, Update Approved June 24, 2009.

A.D. Hinshaw Associates	Lakeside Trails and Parkways Plan	Figure I



Source: SANDAG.

A.D. Hinshaw Associates	Regional Location	Figure J



Project Location: 32^0 53' 55" N / 116^0 55' 59" W
Datum NAD27

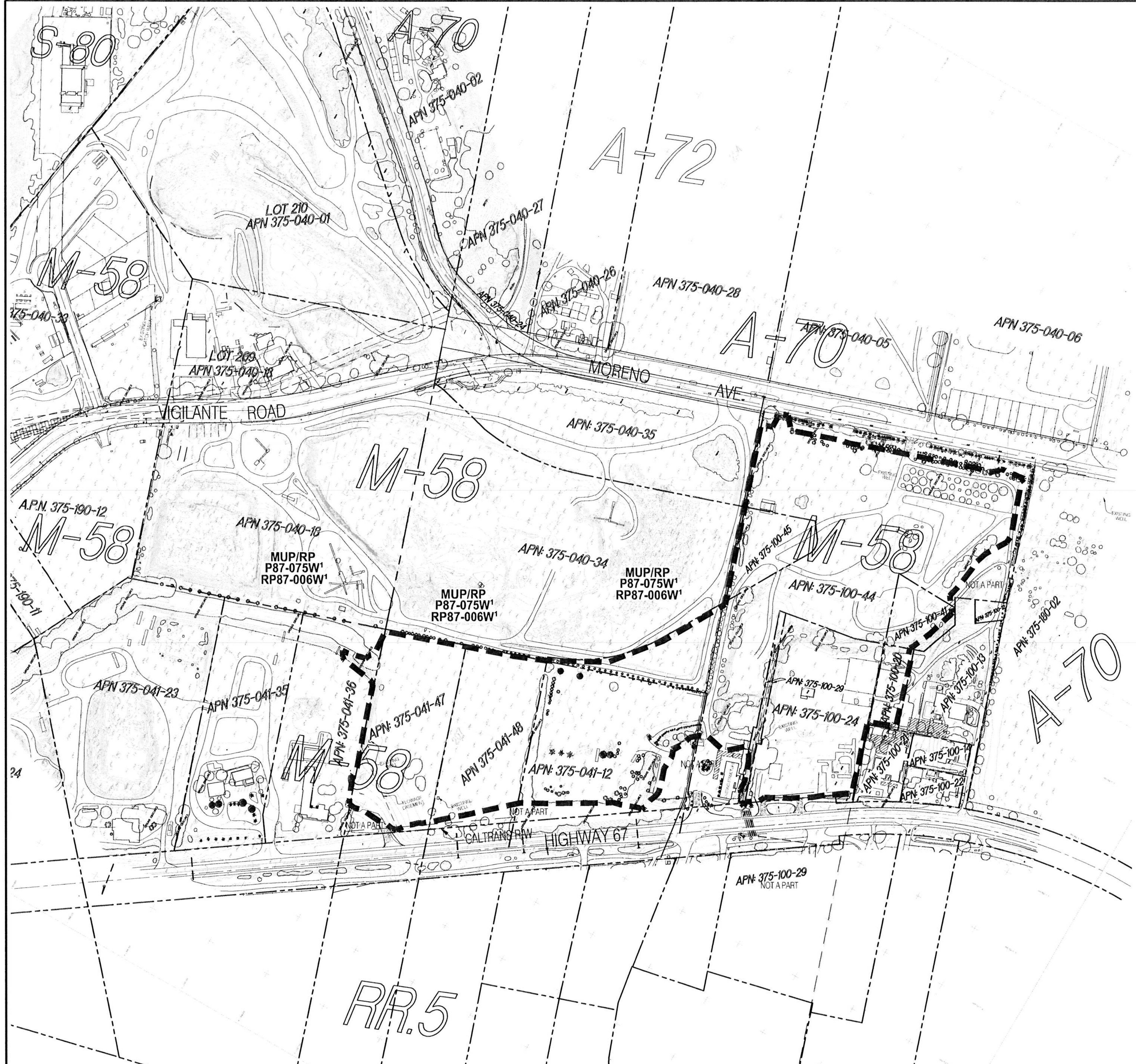
Source: TOPO!, San Vicente Reservoir Quad, 1971.

A.D. Hinshaw Associates	Vicinity Map	Figure K

SHEETS

EAST COUNTY SAND MINE

MUP 09-16/RP 09-001



GENERAL NOTES

1) THE PURPOSE OF THIS PLAN IS FOR THE APPROVAL OF THE ACCOMPANYING RECLAMATION PLAN FOR THE SAND/TOPSOIL EXTRACTION IN COMPLIANCE WITH THE STATE AND COUNTY SURFACE MINING AND RECLAMATION ACTS, ESTIMATED AS:
   - a) EXCAVATION & EXTRACTION, EXPORT ~~1,175,000 C.Y.~~ 674,000 C.Y.
   - b) RECLAMATION & PLACEMENT, IMPORT ~~1,178,000 C.Y.~~ 677,000 C.Y.

2) SITE AREAS:
   - a) GROSS AREA: 27.39 AC.
   - b) GROSS MINING AREA: 19.23 AC.
   - c) RECLAIMED AREA: 27.39 AC.

3) SUMMARY OF IMPACT AREAS:

	EXISTING	PROPOSED
a) SUBJECT TO INUNDATION (100 YEAR STORM)	24.96 AC.	14.41 AC.
b) MINING AREA	0	19.23 AC.
c) PROPOSED FLOOD FREE LANDS	2.43 AC.	12.98 AC.

4) EXTRACTION IS IN COMPLIANCE WITH SMARA AND THE COUNTY GRADING ORDINANCE.

ASSESSOR'S PARCEL NO.

POR. 375-041-12, POR. 375-041-47, POR. 375-041-48, POR. 375-041-36, 375-100-20, 375-100-24, POR. 375-100-29, POR. 375-100-41, POR. 375-100-44, 375-100-45

LEGAL DESCRIPTION

PORTIONS OF LOTS 197, 198, 201 & 202 OF MAP NO. 289, TOGETHER WITH PORTIONS OF PARCELS 1 & 2 OF PARCEL MAP 13894

OWNERS

OWNER: ROBERT V. TURNER
12101 HIGHWAY 67
LAKESIDE, CA 92040
619-443-5887
POR. 375-041-12, POR. 375-041-47, POR. 375-041-48, 375-100-20, POR. 375-100-41, POR. 375-100-44, 375-100-45

OWNER: SEAN P. GREEN
12211 HIGHWAY 67
LAKESIDE, CA. 92040
619-443-2249
PORTION OF 375-041-36

OWNER: GEORGE ANDERSON
11950 HIGHWAY 67
LAKESIDE, CA. 92040
619-390-0505
PORTION OF 375-100-29

OPERATOR

EAST COUNTY SAND, LLC
9029 PARK PLAZA DR.
SUITE 104
LA MESA, CA
619-390-6500

APPLICANT

EAST COUNTY SAND, LLC
ROBERT V. TURNER
SEAN P. GREEN
GEORGE ANDERSON

BENCHMARK

DESCRIPTION: STD. DISC IN CONCRETE MONUMENT WITH 5 FT. STEEL FENCE POST
LOCATION: LAKESIDE: FROM INT. HWY 67 & MORENO AVE., N.E. ALONG MORENO 1.9 MI TO DIRT RD. ON RT IN N.E. COR 20'N POLE P67760 86'W #72909
RECORD FROM: SAN DIEGO COUNTY
ELEVATION: 438.640
DATUM: M.S.L. (NGVD 29)

SOURCE OF TOPOGRAPHY

AERIAL TOPOGRAPHY: MERCATOR & ASSOCIATES
DATED: JUNE. 28, 2013

EXISTING ZONING:

Community Plan: LAKESIDE
General Plan: HIGH IMPACT INDUSTRIAL

ZONE		
USE REGULATIONS		M58
ANIMAL REGULATIONS		X
DEVELOPMENT REGULATIONS	Density	–
	Lot Size	–
	Building Type	W
	Maximum Floor Area	–
	Floor Area Ratio	–
	Height	G
	Lot Coverage	–
	Setback	Q
SPECIAL AREA REGULATIONS		B

VICINITY MAP
NO SCALE

THOMAS BROS. MAP PAGE 1211 GRID J5

LEGEND

EXISTING SPOT ELEVATION ... + 900.0
PROPOSED CONTOUR ... 900
PROPOSED SPOT ELEVATION ... 900.0
DIRECTION OF FLOW
DAYLIGHT LINE
CUT SLOPE
FILL SLOPE
CUT/FILL LINE
EXISTING FENCE
PROPERTY LINE
EASEMENT
CENTERLINE
EXIST. TEMPORARY STOCKPILES ... TS
EXISTING ZONING ... M-58
RIPRAP
LIMITS OF MUP

SHEET INDEX

0 100 200 300 400
SCALE : 1" = 100'

MUP 09-16
RP 09-001
ER 09-140-08

SITE DESIGN ASSOCIATES, INC.
1016 BROADWAY, SUITE 'A'
EL CAJON, CALIFORNIA 92021
(619) 442-8467

MUP PLOT PLAN

EAST COUNTY SAND MINE & ENVIRONS

ENGINEER OF WORK:
KENNETH J. DISCENZA, R.C.E. 29930
EXPIRATION DATE: 06/30/15
10/31/16
DATE

REGISTERED PROFESSIONAL ENGINEER KENNETH J. DISCENZA No. 29930 EXPIRES 6-30-17 CIVIL STATE OF CALIFORNIA

No.	Date	Revision
1	10/31/16	REDUCE PROJECT QUANTITIES & ADJUST APNs & BOUNDARY

SCALE	1" = 100'
JOB NO.	J-1725
DATE	10/31/16
SHEET	1 OF 17

FIGURE 5

EAST COUNTY SAND MINE
AERIAL PHOTO

LIMITS OF MUP . . . . ▬ ▬ ▬ ▬ ▬ ▬

MUP 09-16
RP 09-001
ER 09-140-08

SITE DESIGN ASSOCIATES, INC.
1016 BROADWAY SUITE 'A'
EL CAJON, CALIFORNIA 92021
(619) 442-8467

EAST COUNTY SAND MINE

AERIAL PHOTO
JANUARY 31, 2005

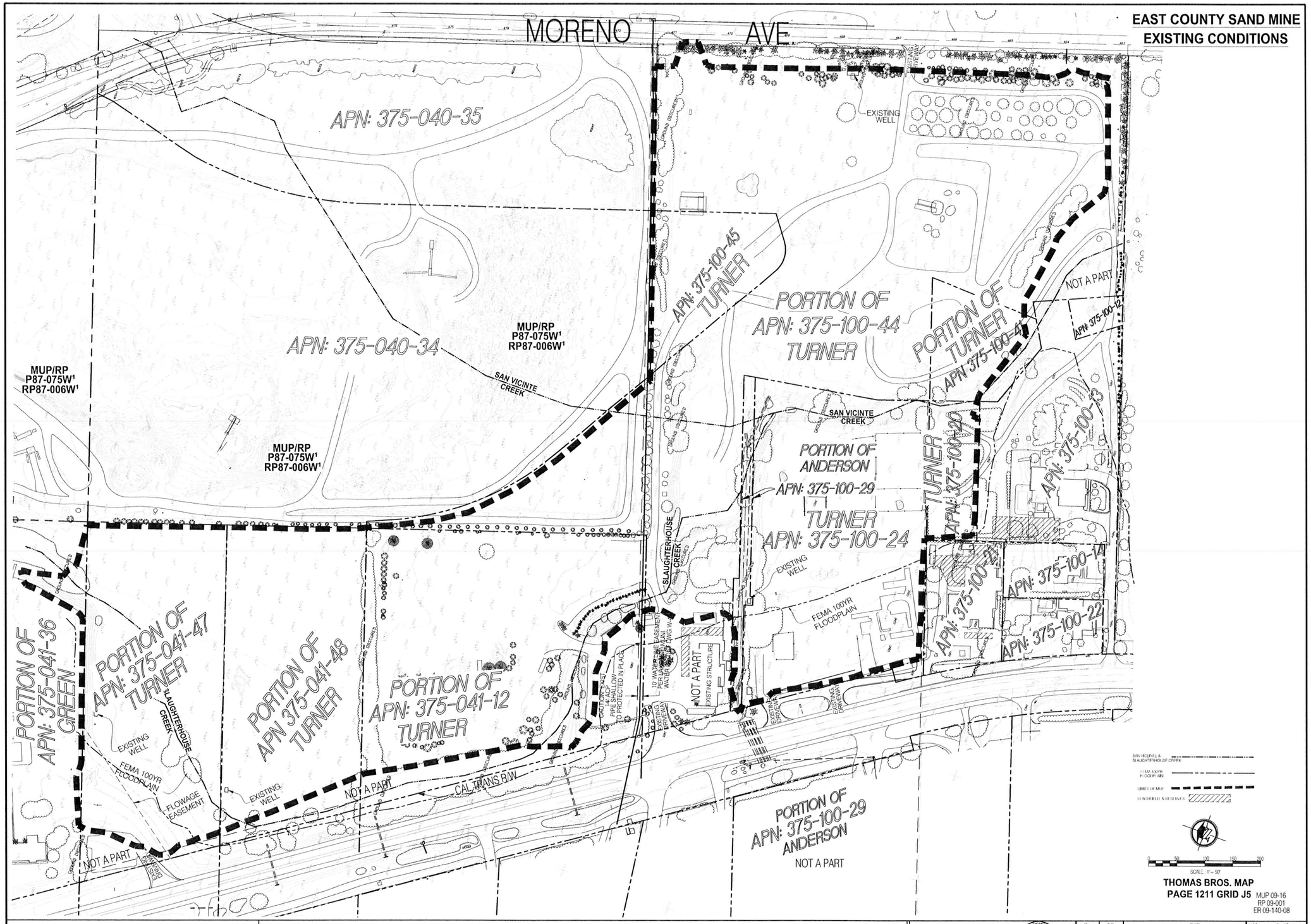
ENGINEER OF WORK:
KENNETH J. DISCENZA R.C.E. 29930 — 10-31-16 DATE
EXPIRATION DATE: 06/30/15

No.	Date	Revisions

SCALE	N.T.S.
JOB NO.	J-1725
DATE	10/31/16
SHEET 2 OF 17	

FIGURE 6

EAST COUNTY SAND MINE
EXISTING CONDITIONS



THOMAS BROS. MAP
PAGE 1211 GRID J5 MUP 09-16
RP 09-001
ER 09-140-08

SITE DESIGN ASSOCIATES, INC.
1016 BROADWAY, SUITE 'A'
EL CAJON, CALIFORNIA 92021
(619) 442-8467

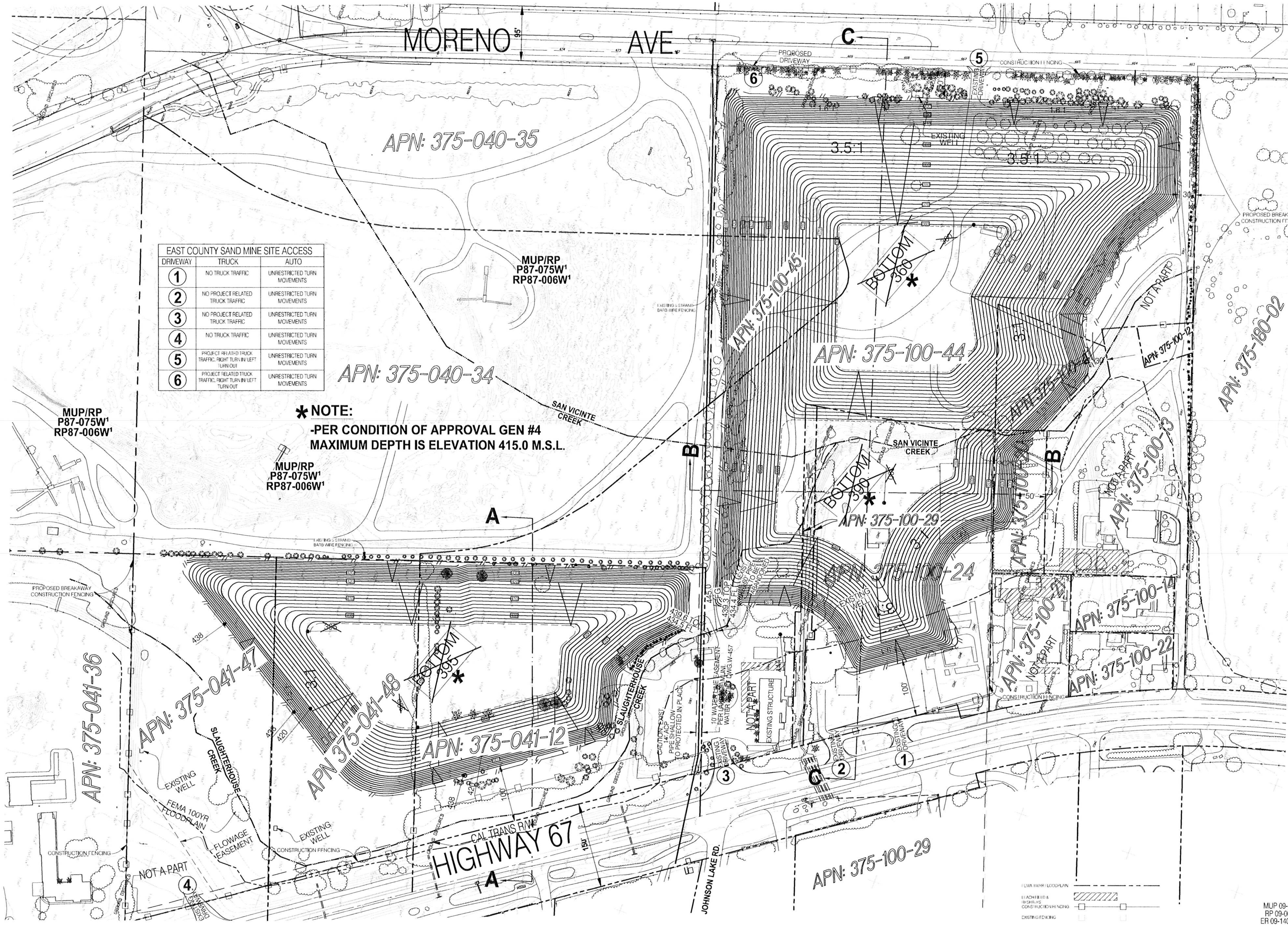
EAST COUNTY SAND MINE

EXISTING CONDITIONS

ENGINEER OF WORK:
KENNETH J. DISCENZA, R.C.E. 29930
EXPIRATION DATE: 09/30/15
10/31/16
DATE

No.	Date	Revision
1	10/31/16	REDUCE PROJECT QUANTITIES & ADJUST APNs & BOUNDARY

SCALE: 1" = 50'
PROJECT NO.: 3-1725
DATE: 10/31/16
SHEET 3 OF 17



EAST COUNTY SAND MINE SITE ACCESS		
DRIVEWAY	TRUCK	AUTO
1	NO TRUCK TRAFFIC	UNRESTRICTED TURN MOVEMENTS
2	NO PROJECT RELATED TRUCK TRAFFIC	UNRESTRICTED TURN MOVEMENTS
3	NO PROJECT RELATED TRUCK TRAFFIC	UNRESTRICTED TURN MOVEMENTS
4	NO TRUCK TRAFFIC	UNRESTRICTED TURN MOVEMENTS
5	PROJECT RELATED TRUCK TRAFFIC, RIGHT TURN IN/ LEFT TURN OUT	UNRESTRICTED TURN MOVEMENTS
6	PROJECT RELATED TRUCK TRAFFIC, RIGHT TURN IN/ LEFT TURN OUT	UNRESTRICTED TURN MOVEMENTS

MUP 09-16
RP 09-001
ER 09-140-08

SITE DESIGN ASSOCIATES, INC.
1016 BROADWAY SUITE 'A'
EL CAJON, CALIFORNIA 92021
(619) 442-8467

EAST COUNTY SAND MINE

OVERALL EXTRACTION PLAN

ENGINEER OF WORK:
KENNETH J. DISCENZA R.C.E. 29930 10/31/16
EXPIRATION DATE: 06/30/15 DATE

10/31/16 REDUCE PROJECT QUANTITIES & ADJUST APNs & BOUNDARY

SHEET 4 OF 17

FIGURE 1

EAST COUNTY SAND MINE
EXTRACTION NOTES & SECTIONS

GENERAL NOTES

1. APPROVAL OF THIS GRADING PLAN DOES NOT CONSTITUTE APPROVAL OF VERTICAL OR HORIZONTAL ALIGNMENT OF ANY PRIVATE ROAD SHOWN HEREON FOR COUNTY ROAD PURPOSES.
2. FINAL APPROVAL OF THESE GRADING PLANS SUBJECT TO FINAL APPROVAL OF THE ASSOCIATED IMPROVEMENT PLANS WHERE APPLICABLE. FINAL CURB ELEVATIONS MAY REQUIRE CHANGES IN THESE PLANS.
3. IMPORT MATERIAL SHALL BE OBTAINED FROM A LEGAL SITE.
4. A CONSTRUCTION, EXCAVATION OR ENCROACHMENT PERMIT FROM THE DEPARTMENT OF PUBLIC WORKS WILL BE REQUIRED FOR ANY WORK IN THE COUNTY RIGHT-OF-WAY.
5. ALL SLOPES OVER THREE FEET IN HEIGHT WILL BE PLANTED IN ACCORDANCE WITH SAN DIEGO COUNTY SPECIFICATIONS.
6. THE CONTRACTOR SHALL VERIFY THE EXISTENCE AND LOCATION OF ALL UTILITIES BEFORE COMMENCING WORK. NOTICE OF PROPOSED WORK SHALL BE GIVEN TO THE FOLLOWING AGENCIES:

SAN DIEGO GAS & ELECTRIC:	TELEPHONE NO. (800) 422-4133
PACIFIC TELEPHONE:	TELEPHONE NO: (800) 422-4133
CATV:	TELEPHONE NO: (800) 422-4133
LAKESIDE WATER DISTRICT	TELEPHONE NO: (619) 443-3805

7. A SOILS REPORT MAY BE REQUIRED PRIOR TO THE ISSUANCE OF A BUILDING PERMIT.
8. APPROVAL OF THESE PLANS BY THE DIRECTOR OF PUBLIC WORKS DOES NOT AUTHORIZE ANY WORK OR GRADING TO BE PERFORMED UNTIL THE PROPERTY OWNER'S PERMISSION HAS BEEN OBTAINED AND VALID GRADING PERMIT HAS BEEN ISSUED.
9. THE DIRECTOR OF PUBLIC WORKS' APPROVAL OF THESE PLANS DOES NOT CONSTITUTE COUNTY BUILDING OFFICIAL APPROVAL OF ANY FOUNDATION FOR STRUCTURES TO BE PLACED ON THE ITEMS COVERED BY THESE PLANS. NO WAIVER OF THE GRADING ORDINANCE REQUIREMENTS CONCERNING MINIMUM COVER EXPANSIVE SOIL IS MADE OR IMPLIED (SECTIONS 87.403 & 87.410). ANY SUCH WAIVER MUST BE OBTAINED FROM THE DIRECTOR OF PLANNING AND LAND USE.
10. ALL OPERATIONS CONDUCTED ON THE PREMISES, INCLUDING THE WARMING UP, REPAIR, ARRIVAL, DEPARTURE OR RUNNING OF TRUCKS, EARTHMOVING EQUIPMENT AND ANY OTHER ASSOCIATED GRADING EQUIPMENT SHALL BE LIMITED TO THE PERIOD BETWEEN 7:00 AM AND 6:00 PM EACH DAY. MONDAY THRU SATURDAY, AND NO EARTHMOVING OR GRADING OPERATIONS SHALL BE CONDUCTED ON THE PREMISES ON SUNDAYS OR HOLIDAYS.
11. ALL MAJOR SLOPES SHALL BE ROUNDED INTO EXISTING TERRAIN TO PRODUCE A CONTOURED TRANSITION FROM CUT OR FILL FACES TO NATURAL GROUND AND ABUTTING CUT OR FILL SURFACES.
12. NOTWITHSTANDING THE MINIMUM STANDARDS SET FORTH IN THE GRADING ORDIANCE AND NOTWITHSTANDING THE APPROVAL OF THESE GRADING PLANS, THE PERMITTEE IS RESPONSIBLE FOR THE PREVENTION OF DAMAGE TO ADJACENT PROPERTY. NO PERSON SHALL EXCAVATE ON LAND SO CLOSE TO THE PROPERTY LINE AS TO ENDANGER ANY ADJOINING PUBLIC STREET, SIDEWALK ALLEY, FUNCTION OF ANY SEWAGE DISPOSAL SYSTEM, OR ANY OTHER PUBLIC OR PRIVATE PROPERTY WITHOUT SUPPORTING AND PROTECTING SUCH PROPERTY FROM SETTLING, CRACKING, EROSION SILTING, SCOUR OR OTHER DAMAGE WHICH MIGHT RESULT FROM THE GRADING DESCRIBED ON THIS PLAN. THE COUNTY WILL HOLD THE PERMITTEE RESPONSIBLE FOR CORRECTION OF NON-DEDICTED IMPROVEMENTS WHICH DAMAGE ADJACENT PROPERTY.
13. SLOPE RATIOS:

    CUT-1.5:1 FOR MINOR SLOPES UNDER 15' HIGH OR IN ROCK 2:1 FOR MAJOR SLOPES
    FILL-2:1

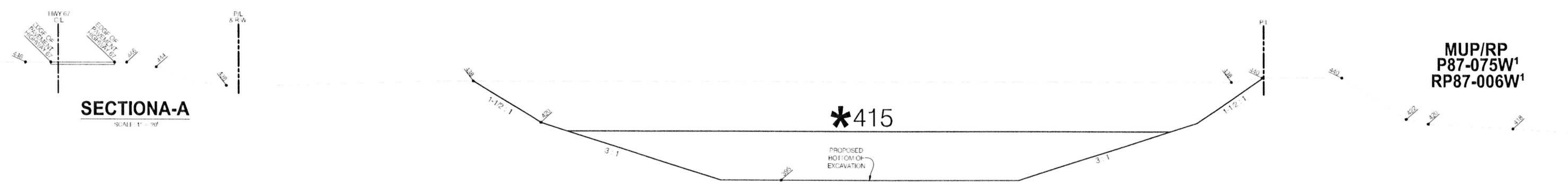
EXPORT/EXCAVATION: 1,175,000 C.Y.
IMPORT/FILL: 1,278,000 CY

(NOTE: A SEPARATE VALID PERMIT MUST EXIST FOR EITHER WASTE OR IMPORT AREAS)

14. SPECIAL CONDITION: IF ANY ARCHEOLOGICAL RESOURCES ARE DISCOVERED ON THE SITE OF THIS GRADING DURING GRADING OPERATIONS, SUCH OPERATIONS WILL CEASE IMMEDIATELY, AND THE PERMITTEE WILL NOTIFY THE DIRECTOR OF PUBLIC WORKS OF THE DISCOVERY PERMITTEE WILL NOTIFY THE DIRECTOR OF PUBLIC WORKS OF THE DISCOVERY. GRADING OPERATIONS WILL NOT RECOMMENCE UNTIL THE PERMITTEE HAS RECIEVED WRITTEN AUTHORITY FROM THE DIRECTOR OF PUBLIC WORKS
15. ALL GRADING DETAILS WILL BE IN ACCORDANCE WITH SAN DIEGO COUNTY STANDARD DRAWINGS DS-8, DS-10, DS-11, AND D-75.
16. THE CONSTRUCTION OF ONE PCC STANDARD RESIDENTIAL DRIVEWAY PER LOT, LOCATION TO BE DETERMINED IN THE FIELD BY ENGINEER OF WORK. PCC SURFACING OF DRIVEWAY TO EXTEND FROM CURB TO PROPORTY LINE. USE STANDARD DRAWINGS G-14A G-14B, G-14C, G-15 AND G-16
17. FINISHED GRADING SHALL BE CERTIFIED BY A REGISTERED CIVIL ENGINEER AND INSPECTED BY THE COUNTY ENGINEER FOR DRAINAGE CLEARANCE. (APPROVAL OF ROUGH GRADING DOES NOT CERTIFY FINISH BECAUSE OF POTENTIAL SURFACE DRAINAGE PROBLEMS THAT MAY BE CREATED BY LANDSCAPING ACCOMPLISHED AFTER ROUGH GRADING CERTIFICATION.
18. APN'S: POR. OF 375-041-12, POR. OF 375-041-28, POR. OF 375-041-29, POR. OF 375-041-36, POR. OF 375-100-09, 375-100-24, POR. OF 375-100-29, POR. OF 375-100-41, POR. OF 375-100-42
19. ALL PROPOSED EXTRACTION IS TO BE COMPLETED IN COMPLIANCE WITH "SMARA" AND THE COUNTY OF SAN DIEGO GRADING ORDINANCE.

STORMWATER PROTECTION NOTES

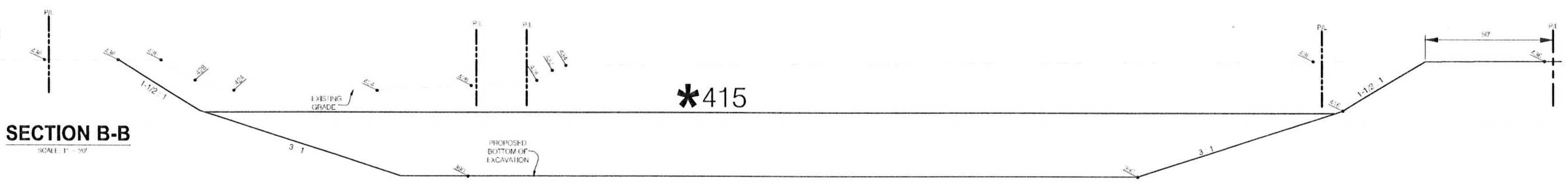
1. DURING THE RAINY SEASON THE AMOUNT OF EXPOSED SOIL ALLOWED AT ONE TIME SHALL NOT EXCEED THAT WHICH CAN BE ADEQUATELY PROTECTED BY THE PROPERTY OWNER IN THE EVENT OF A RAINSTORM. 125% OF ALL SUPPLIES NEEDED FOR BMP MEASURES SHALL BE RETAINED ON THE JOB SITE IN A MANNER THAT ALLOWS FULL DEPLOYMENT AND COMPLETE INSTALLATION IN 48 HOURS OR LESS OF A FORECAST RAIN.
2. NO AREA BEING DISTURBED SHALL EXCEED 50 ACRES AT ANY GIVEN TIME WITHOUT DEMONSTRATING TO THE SAN DIEGO COUNTY DPW DIRECTOR'S SATISFACTION THAT ADEQUATE EROSION AND SEDIMENT CONTROL CAN BE MAINTAINED. ANY DISTURBED AREA THAT IS NOT ACTIVELY GRADED FOR 10 DAYS MUST BE FULLY PROTECTED FROM EROSION. UNTIL ADEQUATE LONG-TERM PROTECTIONS ARE INSTALLED, THE DISTURBED AREA SHALL BE INCLUDED WHEN CALCULATING THE ACTIVE DISTURBANCE AREA. ALL EROSION CONTROL MEASURES SHALL REMAIN INSTALLED AND MAINTAINED DURING ANY INACTIVE PERIOD.
3. THE PROPERTY OWNER IS OBLIGATED TO INSURE COMPLIANCE WITH ALL APPLICABLE STORMWATER REGULATIONS AT ALL TIMES. THE BMP'S (BEST MANAGEMENT PRACTICES) THAT HAVE BEEN INCORPORATED INTO THIS PLAN SHALL BE IMPLEMENTED AND MAINTAINED TO EFFECTIVELY PREVENT THE POTENTIALLY NEGATIVE IMPACTS OF THIS PROJECT'S CONSTRUCTION ACTIVITIES ON STORMWATER QUALITY. THE MAINTENANCE OF THE BMP'S IS THE PERMITTEE'S RESPONSIBILITY, AND FAILURE TO PROPERLY INSTALL OR MAINTAIN THE BMP'S MAY RESULT IN ENFORCEMENT ACTION BY THE COUNTY OF SAN DIEGO OR OTHERS. IF INSTALLED BMP'S FAIL, THEY MUST BE REPAIRED OR REPLACED WITH AN ACCEPTABLE ALTERNATE WITHIN 24 HOURS, OR AS SOON AS SAFE TO DO SO.
4. ON PROJECTS OF GREATER THAN 1 ACRE, A NOTICE OF INTENT (NOI) MUST BE FILED WITH THE STATE WATER RESOURCES CONTROL BOARD (SWRCB) AND A STORMWATER POLLUTION PREVENTION PLAN (SWPPP) MUST BE PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF CALIFORNIA GENERAL PERMIT FOR STORMWATER DISCHARGES ASSOCIATED WITH CONSTRUCTION ACTIVITY (PERMIT NO. CAS000002) FOR ALL OPERATIONS ASSOCIATED WITH THESE PLANS. IF APPLICABLE, THE NOI NUMBER ASSIGNED BY SWRCB FOR THIS IS WDID# 9 37I019954 AND THE PERMITTEE SHALL KEEP A COPY OF THE SWPPP ONSITE AND AVAILABLE FOR REVIEW BY COUNTY.



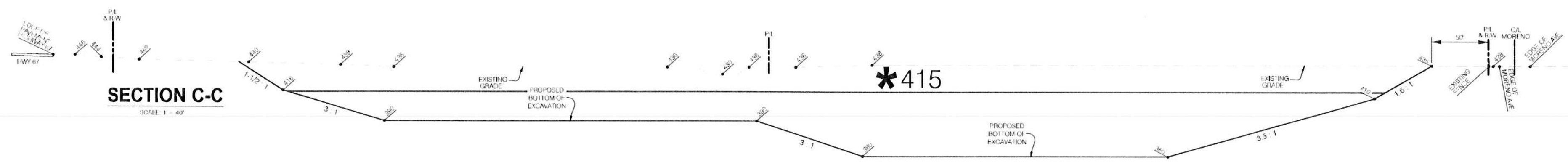
SECTIONA-A

MUP/RP
P87-075W[1]
RP87-006W[1]

MUP/RP
P87-075W[1]
RP87-006W[1]



SECTION B-B



SECTION C-C

*** NOTE:**

-PER CONDITION OF APPROVAL GEN #4 MAXIMUM DEPTH IS ELEVATION 415.0 M.S.L.

SOURCE OF TOPOGRAPHY

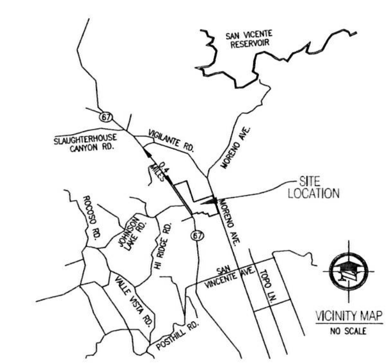
AERIAL TOPOGRAPHY: MERCATOR & ASSOCIATES
DATED: JANUARY. 31, 2005

WORK TO BE DONE

GRADING AND DRAINAGE WORK CONSISTS OF THE FOLLOWING WORK TO BE DONE ACCORDING TO THESE PLANS, THE CURRENT SAN DIEGO AREA REGIONAL STANDARD DRAWINGS, THE STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION, 2009 EDITION AND PER THE SAN DIEGO COUNTY GRADING ORDINANCE.

STANDARD DRAWINGS

1. SAN DIEGO REGIONAL STANDARD DRAWINGS (S.D.R.S.D.) DATED AUGUST, 2009



VICINITY MAP
NO SCALE

THOMAS BROS. MAP
PAGE 1211 GRID J5

LEGEND

EXISTING SPOT ELEVATION . . . + 900.0
PROPOSED CONTOUR . . . 900
PROPOSED SPOT ELEVATION . . . 900.0
DIRECTION OF FLOW
DAYLIGHT LINE
CUT SLOPE
FILL SLOPE
CUT/FILL LINE
EXISTING FENCE
PROPERTY LINE
EASEMENT
PROPERTY LINE
RIPRAP
CREEK LINE
FEMA 100YR FLOODPLAIN
STORMDRAIN

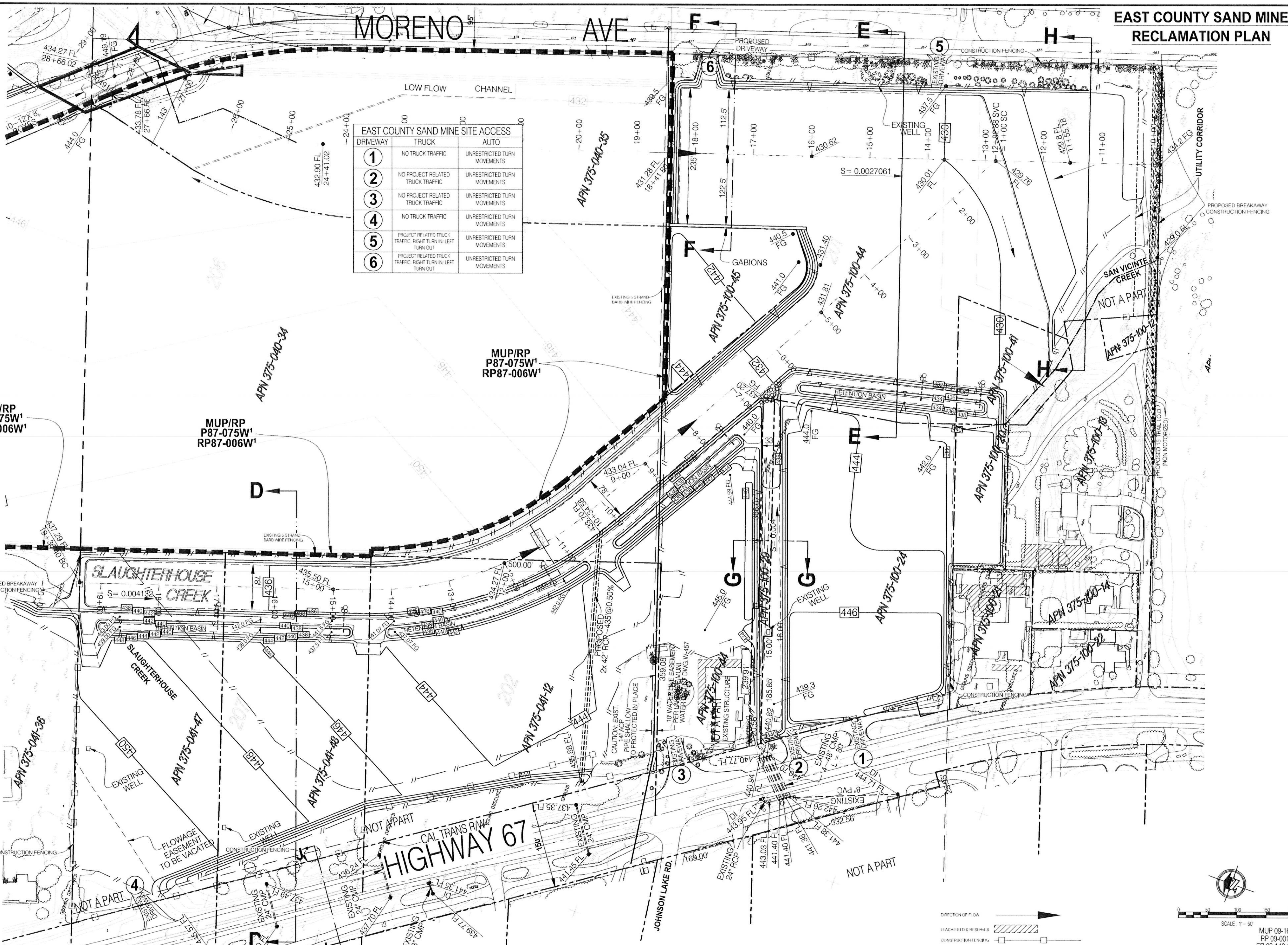
MUP 09-16
RP 09-001
ER 09-140-08

SITE DESIGN ASSOCIATES, INC. 1016 BROADWAY SUITE 'A' EL CAJON, CALIFORNIA 92021 (619) 442-8467	EAST COUNTY SAND MINE	**NOTES & EXTRACTION SECTIONS**	ENGINEER OF WORK: KENNETH J. DISCENZA R.C.E. 29930 EXPIRATION DATE: 06/30/15 — 10/31/16 DATE

No.	Date	Revision
1	10/31/16	REDUCE PROJECT QUANTITIES & ADJUST APNs & BOUNDARY

SCALE	AS SHOWN
JOB NO.	J-1725
DATE	10/31/16
SHEET	5 OF 17

EAST COUNTY SAND MINE RECLAMATION PLAN



EAST COUNTY SAND MINE SITE ACCESS		
DRIVEWAY	TRUCK	AUTO
1	NO TRUCK TRAFFIC	UNRESTRICTED TURN MOVEMENTS
2	NO PROJECT RELATED TRUCK TRAFFIC	UNRESTRICTED TURN MOVEMENTS
3	NO PROJECT RELATED TRUCK TRAFFIC	UNRESTRICTED TURN MOVEMENTS
4	NO TRUCK TRAFFIC	UNRESTRICTED TURN MOVEMENTS
5	PROJECT RELATED TRUCK TRAFFIC, RIGHT TURN IN/ LEFT TURN OUT	UNRESTRICTED TURN MOVEMENTS
6	PROJECT RELATED TRUCK TRAFFIC, RIGHT TURN IN/ LEFT TURN OUT	UNRESTRICTED TURN MOVEMENTS

SITE DESIGN ASSOCIATES, INC.
1016 BROADWAY, SUITE 'A'
EL CAJON, CALIFORNIA 92021
(619) 442-8467

EAST COUNTY SAND MINE

FINAL RECLAMATION PLAN

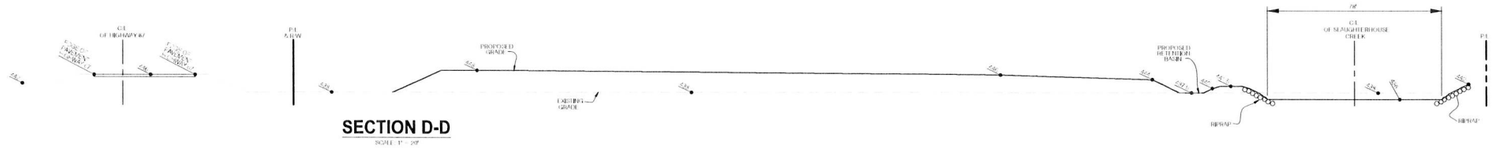
ENGINEER OF WORK:
KENNETH J. DISCENZA, R.C.E. 29930 10.31.16
EXPIRATION DATE: 06/30/15 DATE

No.	Date	Revision
1	3.12.15	REPLACE HWY 67-SH CREEK 48" RCP WITH TWO 42" RCP
2	10.31.16	REDUCE PROJECT QUANTITIES & ADJUST APNs & BOUNDARY

SHEET 6 OF 17

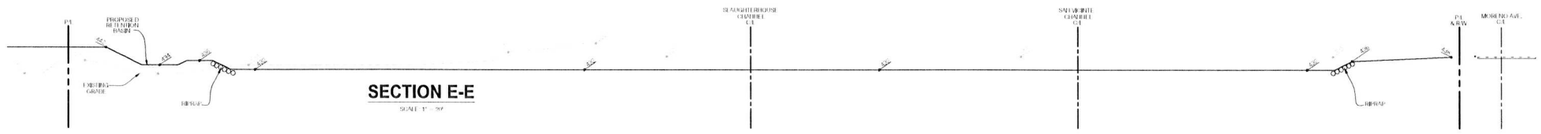
FIGURE 2

EAST COUNTY SAND MINE
RECLAMATION SECTIONS

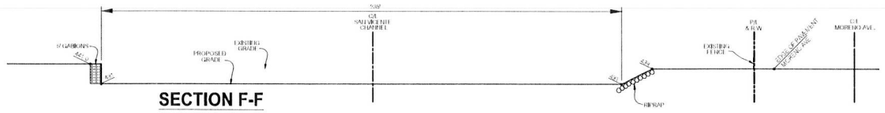


SECTION D-D

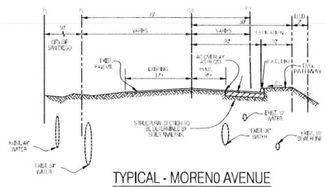
MUP/RP
P87-075W[1]
RP87-006W[1]



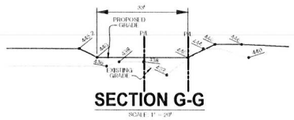
SECTION E-E



SECTION F-F



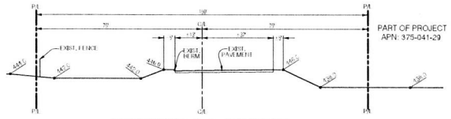
TYPICAL - MORENO AVENUE



SECTION G-G

APN: 375-100-13

SECTION H-H



SECTION J-J: HWY 67

MUP 09-16
RP 09-001
ER 09-140-08

SITE DESIGN ASSOCIATES, INC.
1016 BROADWAY, SUITE 'A'
EL CAJON, CALIFORNIA 92021
(619) 442-8467

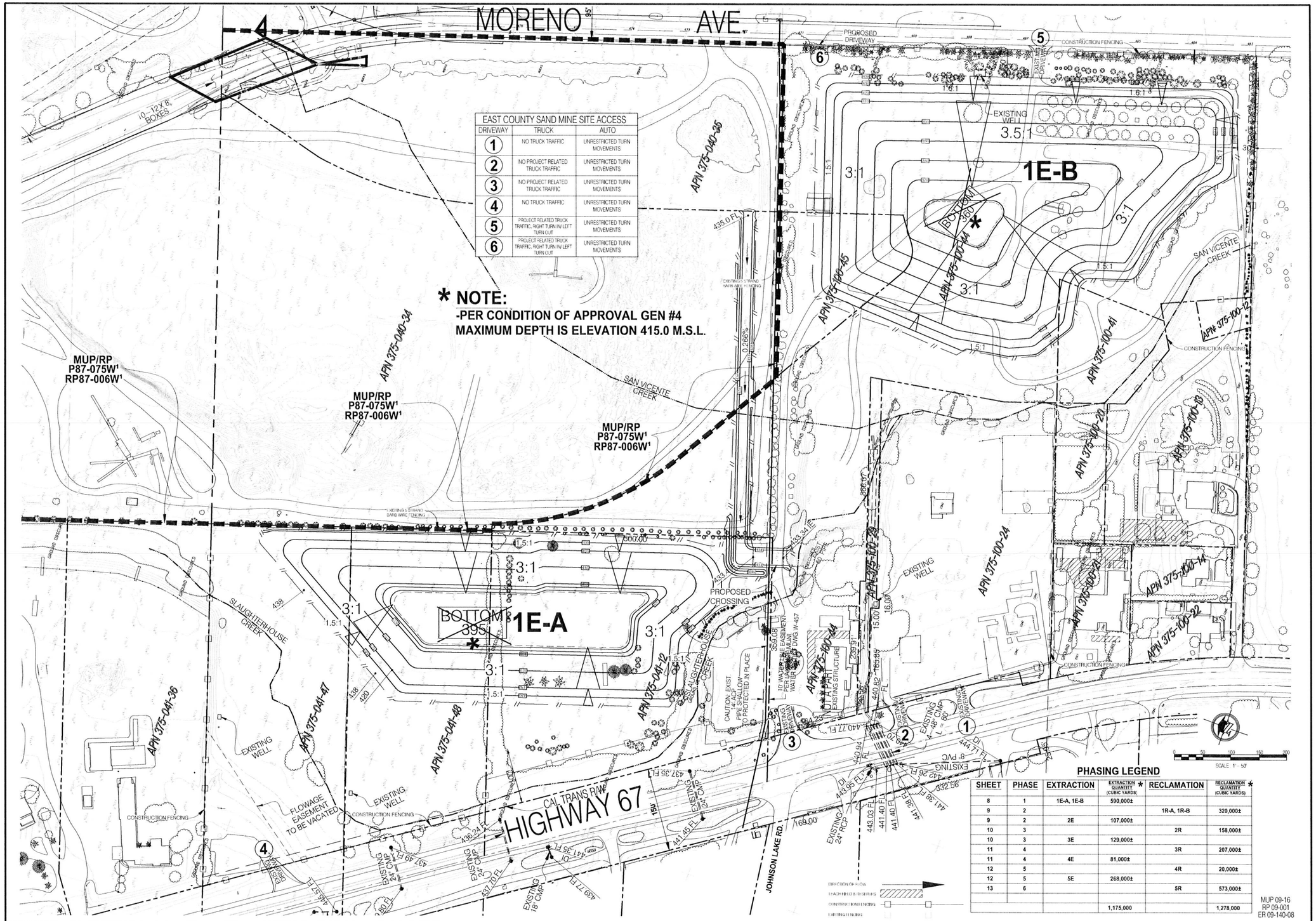
EAST COUNTY SAND MINE

RECLAMATION SECTIONS

ENGINEER OF WORK:
KENNETH J. DISCENZA, R.C.E. 29930
EXPIRATION DATE: 06/30/15
10.31.16
DATE

NO.	DATE	REVISION

SCALE: AS SHOWN
DRAWN: JH/DS
DATE: 10.31.16
SHEET 7 OF 17



PHASING LEGEND

SHEET	PHASE	EXTRACTION	EXTRACTION * QUANTITY (CUBIC YARDS)	RECLAMATION	RECLAMATION * QUANTITY (CUBIC YARDS)
8	1	1E-A, 1E-B	590,000±		
9	2			1R-A, 1R-B	320,000±
9	2	2E	107,000±		
10	3			2R	158,000±
10	3	3E	129,000±		
11	4			3R	207,000±
11	4	4E	81,000±		
12	5			4R	20,000±
12	5	5E	268,000±		
13	6			5R	573,000±
			1,175,000		1,278,000

MUP 09-16
RP 09-001
ER 09-140-08

SITE DESIGN ASSOCIATES, INC.
1016 BROADWAY, SUITE 'A'
EL CAJON, CALIFORNIA 92021
(619) 442-8467

EAST COUNTY SAND MINE

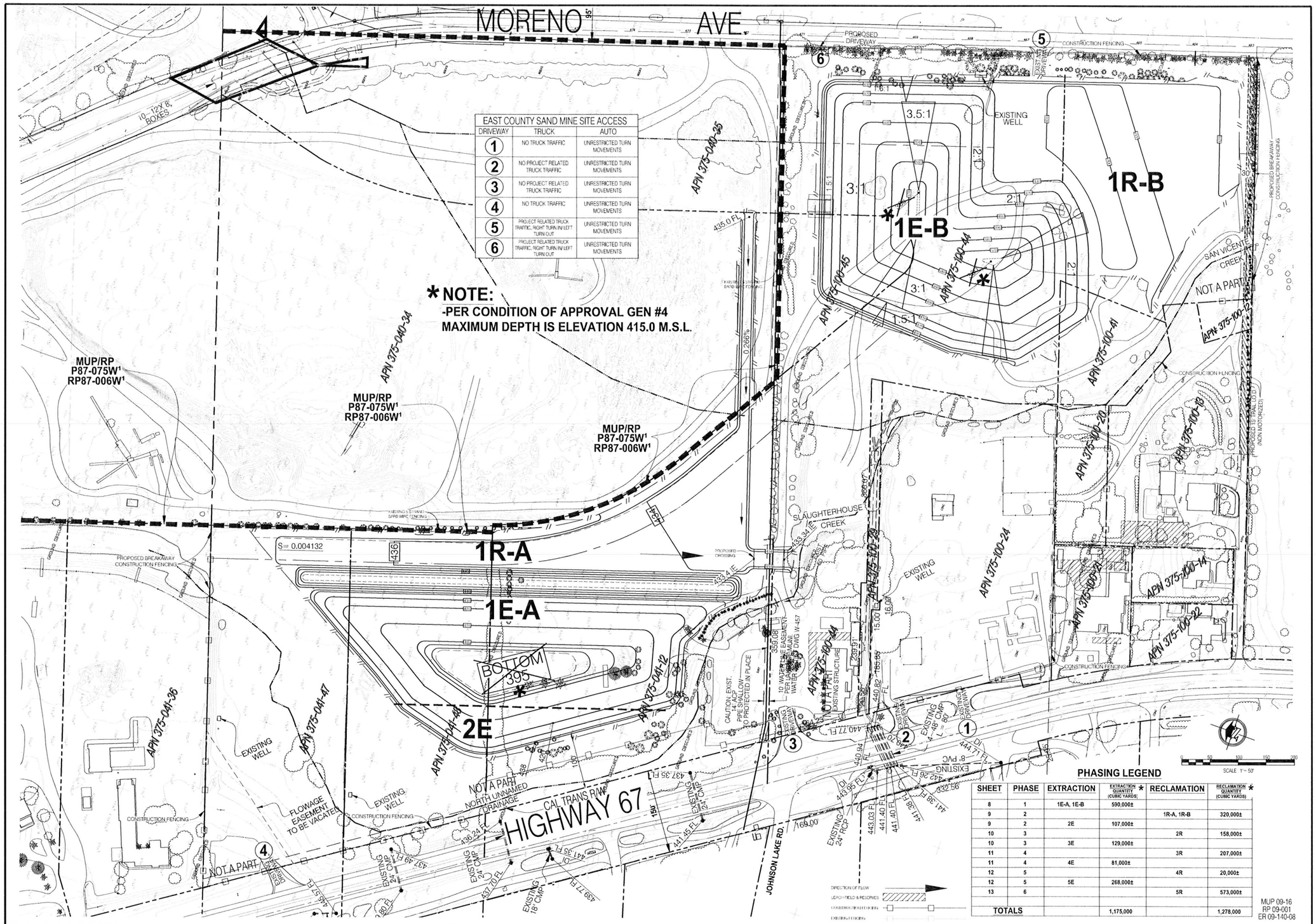
PHASE 1: AREAS 1A & 1B EXTRACTION

ENGINEER OF WORK:
KENNETH J. DISSINGER, R.C.E. 29930
EXPIRATION DATE: 06/30/15
DATE: 10/31/16

No.	Date	Revision
1	10/31/16	REVISE PROJECT QUANTITIES & ADJUST APNs & BOUNDARY

SCALE: 1" = 50'
DRWG: 3-1725
DATE: 10/31/16
SHEET 8 OF 17

FIGURE 7



SHEET	PHASE	EXTRACTION	EXTRACTION QUANTITY * (CUBIC YARDS)	RECLAMATION	RECLAMATION QUANTITY * (CUBIC YARDS)
8	1	1E-A, 1E-B	590,000±		
9	2			1R-A, 1R-B	320,000±
9	2	2E	107,000±		
10	3			2R	158,000±
10	3	3E	129,000±		
11	4			3R	207,000±
11	4	4E	81,000±		
12	5			4R	20,000±
12	5	5E	268,000±		
13	6			5R	573,000±
TOTALS			1,175,000		1,278,000

MUP 09-16
RP 09-001
ER 09-140-08

SITE DESIGN ASSOCIATES, INC.
1016 BROADWAY, SUITE 'A'
EL CAJON, CALIFORNIA 92021
(619) 442-8467

EAST COUNTY SAND MINE

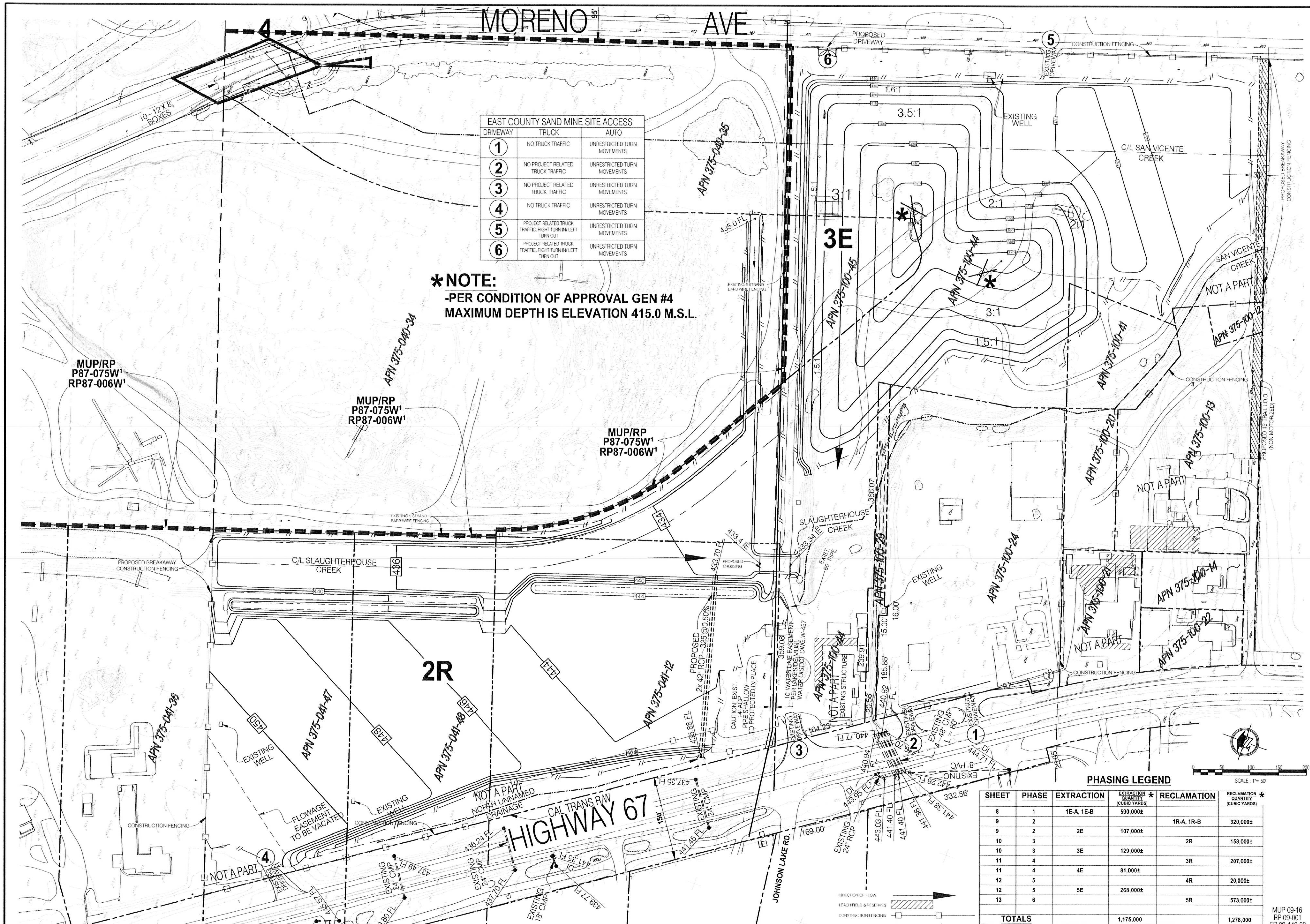
PHASE 2: AREAS 1A & 1B RECLAMATION & AREA 2 EXTRACTION

ENGINEER OF WORK:
KENNETH J. DISCENZA, R.C.E. 29930
EXPIRATION DATE: 06/30/17
10/31/16 DATE

No.	Date	Revision
1	10/31/16	REDUCE PROJECT QUANTITIES & ADJUST APNs & BOUNDARY

SCALE: 1" = 50'
DRAWN: JHT/DS
DATE: 10/31/16
SHEET 9 OF 17

FIGURE 8



EAST COUNTY SAND MINE SITE ACCESS		
DRIVEWAY	TRUCK	AUTO
1	NO TRUCK TRAFFIC	UNRESTRICTED TURN MOVEMENTS
2	NO PROJECT RELATED TRUCK TRAFFIC	UNRESTRICTED TURN MOVEMENTS
3	NO PROJECT RELATED TRUCK TRAFFIC	UNRESTRICTED TURN MOVEMENTS
4	NO TRUCK TRAFFIC	UNRESTRICTED TURN MOVEMENTS
5	PROJECT RELATED TRUCK TRAFFIC, RIGHT TURN IN/ LEFT TURN OUT	UNRESTRICTED TURN MOVEMENTS
6	PROJECT RELATED TRUCK TRAFFIC, RIGHT TURN IN/ LEFT TURN OUT	UNRESTRICTED TURN MOVEMENTS

***NOTE:**
-PER CONDITION OF APPROVAL GEN #4
MAXIMUM DEPTH IS ELEVATION 415.0 M.S.L.

PHASING LEGEND

SHEET	PHASE	EXTRACTION	EXTRACTION QUANTITY (CUBIC YARDS) *	RECLAMATION	RECLAMATION QUANTITY (CUBIC YARDS) *
8	1	1E-A, 1E-B	590,000±		
9	2			1R-A, 1R-B	320,000±
9	2	2E	107,000±		
10	3			2R	158,000±
10	3	3E	129,000±		
11	4			3R	207,000±
11	4	4E	81,000±		
12	5			4R	20,000±
12	5	5E	268,000±		
13	6			5R	573,000±
TOTALS			1,175,000		1,278,000

MUP 09-16
RP 09-001
ER 09-140-08

SITE DESIGN ASSOCIATES, INC.
1016 BROADWAY, SUITE 'A'
EL CAJON, CALIFORNIA 92021
(619) 442-8467

EAST COUNTY SAND MINE

PHASE 3: AREA 2 RECLAMATION & AREA 3 EXTRACTION

ENGINEER OF WORK:
KENNETH J. DISCENZA, R.C.E. 29930 — 10/31/16 DATE
EXPIRATION DATE: 06/30/15

No.	Date	Revision
1	3/12/15	REPLACE HWY 67-SH CREEK 48" RCP WITH TWO 42" RCP
2	10/31/16	REDUCE PROJECT QUANTITIES & ADJUST APNs & BOUNDARY

SCALE 1" = 50'
JOB NO. J-1725
DATE 10/31/16
SHEET 10 OF 17

FIGURE 9

MORENO AVE

EAST COUNTY SAND MINE SITE ACCESS		
DRIVEWAY	TRUCK	AUTO
1	NO TRUCK TRAFFIC	UNRESTRICTED TURN MOVEMENTS
2	NO PROJECT RELATED TRUCK TRAFFIC	UNRESTRICTED TURN MOVEMENTS
3	NO PROJECT RELATED TRUCK TRAFFIC	UNRESTRICTED TURN MOVEMENTS
4	NO TRUCK TRAFFIC	UNRESTRICTED TURN MOVEMENTS
5	PROJECT RELATED TRUCK TRAFFIC, RIGHT TURN IN/ LEFT TURN OUT	UNRESTRICTED TURN MOVEMENTS
6	PROJECT RELATED TRUCK TRAFFIC, RIGHT TURN IN/ LEFT TURN OUT	UNRESTRICTED TURN MOVEMENTS

***NOTE:**
-PER CONDITION OF APPROVAL GEN #4 MAXIMUM DEPTH IS ELEVATION 415.0 M.S.L.

3R

4E

MUP/RP P87-075W¹ RP87-006W¹

HIGHWAY 67

CAL TRANS R/W

JOHNSON LAKE RD.

C/L SLAUGHTERHOUSE CREEK

C/L SAN VICENTE CREEK

NOT A PART

APN 375-040-34

APN 375-040-35

APN 375-041-36

APN 375-041-47

APN 375-041-48

APN 375-041-12

APN 375-100-45

APN 375-100-44

APN 375-100-41

APN 375-100-20

APN 375-100-29

APN 375-100-22

APN 375-100-23

APN 375-100-14

APN 375-100-12

APN 375-100-13

APN 375-100-12

EXISTING WELL

CONSTRUCTION FENCING

PROPOSED BREAKAWAY CONSTRUCTION FENCING

PROPOSED DRIVEWAY

EXISTING DRIVEWAY

PROPOSED 12' ROAD (NON MOTORIZED)

LOW FLOW CHANNEL

FLOWAGE EASEMENT TO BE VACATED

NORTH UNNAMED DRAINAGE

PROPOSED 24"-42" RCP - 435@0.5%

EXIST. 60" PIPE TO BE ABANDONED

EXISTING 24" RCP

EXISTING 18" CMP

EXISTING 24" CMP

EXISTING 8" PVC

EXISTING 5 STRAND BARB WIRE FENCING

CAUTION: EXIST 14" ACP PIPE SHALLOW TO PROTECTED IN PLACE

10' WATER LINE EASEMENT PER LAKESIDE RURAL WATER DISTRICT DWG W-457

DIRECTION OF FLOW

LIMITS OF EXTRACTION

CONSTRUCTION FENCING

EXISTING FENCING

SCALE: 1" = 50'

PHASING LEGEND

SHEET	PHASE	EXTRACTION	EXTRACTION QUANTITY * (CUBIC YARDS)	RECLAMATION	RECLAMATION QUANTITY * (CUBIC YARDS)
8	1	1E-A, 1E-B	590,000±		
9	2			1R-A, 1R-B	320,000±
9	2	2E	107,000±		
10	3			2R	158,000±
10	3	3E	129,000±		
11	4			3R	207,000±
11	4	4E	81,000±		
12	5			4R	20,000±
12	5	5E	268,000±		
13	6			5R	573,000±
TOTALS			1,175,000		1,278,000

MUP 09-16
RP 09-001
ER 09-140-08

SITE DESIGN ASSOCIATES, INC.
1016 BROADWAY, SUITE 'A'
EL CAJON, CALIFORNIA 92021
(619) 442-8467

EAST COUNTY SAND MINE

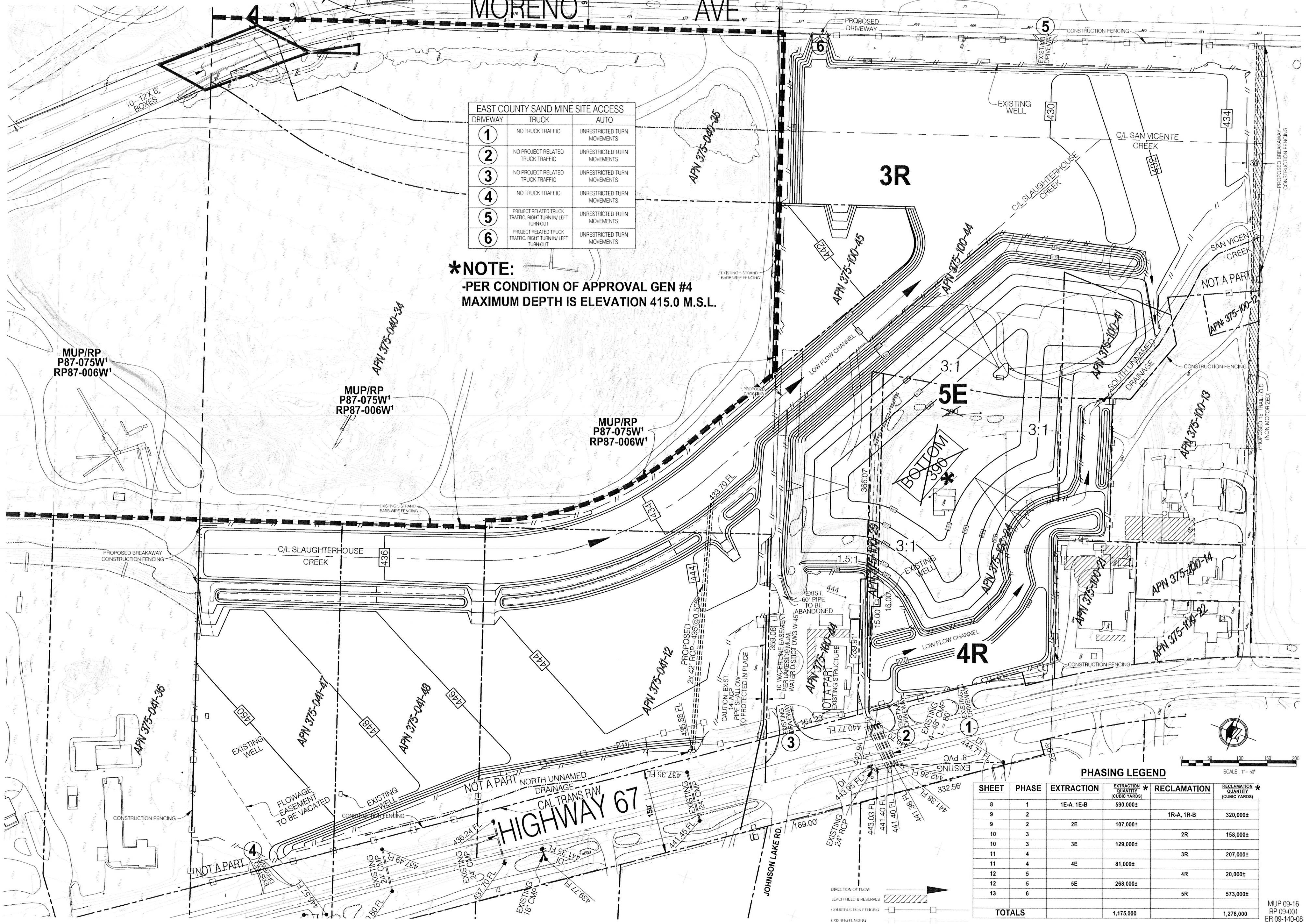
PHASE 4: AREA 3 RECLAMATION & AREA 4 EXTRACTION

ENGINEER OF WORK:
KENNETH J. DISCENZA, R.C.E. 29930
EXPIRATION DATE: 06/30/15
10.31.16
DATE

NO.	DATE	REMARKS
	3.12.15	REPLACE HWY 67/SAN VICENTE CREEK 48" RCP WITH TWO 42" RCP
1	10.31.16	REDUCE PROJECT QUANTITIES & ADJUST APNs & BOUNDARY

SCALE: 1" = 50'
JOB NO. 04-735
DATE: 10.31.16
SHEET 11 OF 17

FIGURE 10



EAST COUNTY SAND MINE SITE ACCESS		
DRIVEWAY	TRUCK	AUTO
1	NO TRUCK TRAFFIC	UNRESTRICTED TURN MOVEMENTS
2	NO PROJECT RELATED TRUCK TRAFFIC	UNRESTRICTED TURN MOVEMENTS
3	NO PROJECT RELATED TRUCK TRAFFIC	UNRESTRICTED TURN MOVEMENTS
4	NO TRUCK TRAFFIC	UNRESTRICTED TURN MOVEMENTS
5	PROJECT RELATED TRUCK TRAFFIC. RIGHT TURN IN/ LEFT TURN OUT	UNRESTRICTED TURN MOVEMENTS
6	PROJECT RELATED TRUCK TRAFFIC. RIGHT TURN IN/ LEFT TURN OUT	UNRESTRICTED TURN MOVEMENTS

***NOTE:**
-PER CONDITION OF APPROVAL GEN #4
MAXIMUM DEPTH IS ELEVATION 415.0 M.S.L.

PHASING LEGEND

SHEET	PHASE	EXTRACTION	EXTRACTION QUANTITY (CUBIC YARDS) *	RECLAMATION	RECLAMATION QUANTITY (CUBIC YARDS) *
8	1	1E-A, 1E-B	590,000±		
9	2			1R-A, 1R-B	320,000±
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11	4			3R	207,000±
11	4	4E	81,000±		
12	5			4R	20,000±
12	5	5E	268,000±		
13	6			5R	573,000±
TOTALS			1,175,000		1,278,000

SITE DESIGN ASSOCIATES, INC.
1016 BROADWAY SUITE 'A'
EL CAJON, CALIFORNIA 92021
(619) 442-8467

EAST COUNTY SAND MINE

PHASE 5: AREA 4 RECLAMATION, AREA 5 EXTRACTION

ENGINEER OF WORK:
KENNETH J. DISCENZA R.C.E. 29930 10/31/16
EXPIRATION DATE: 06/30/15 DATE

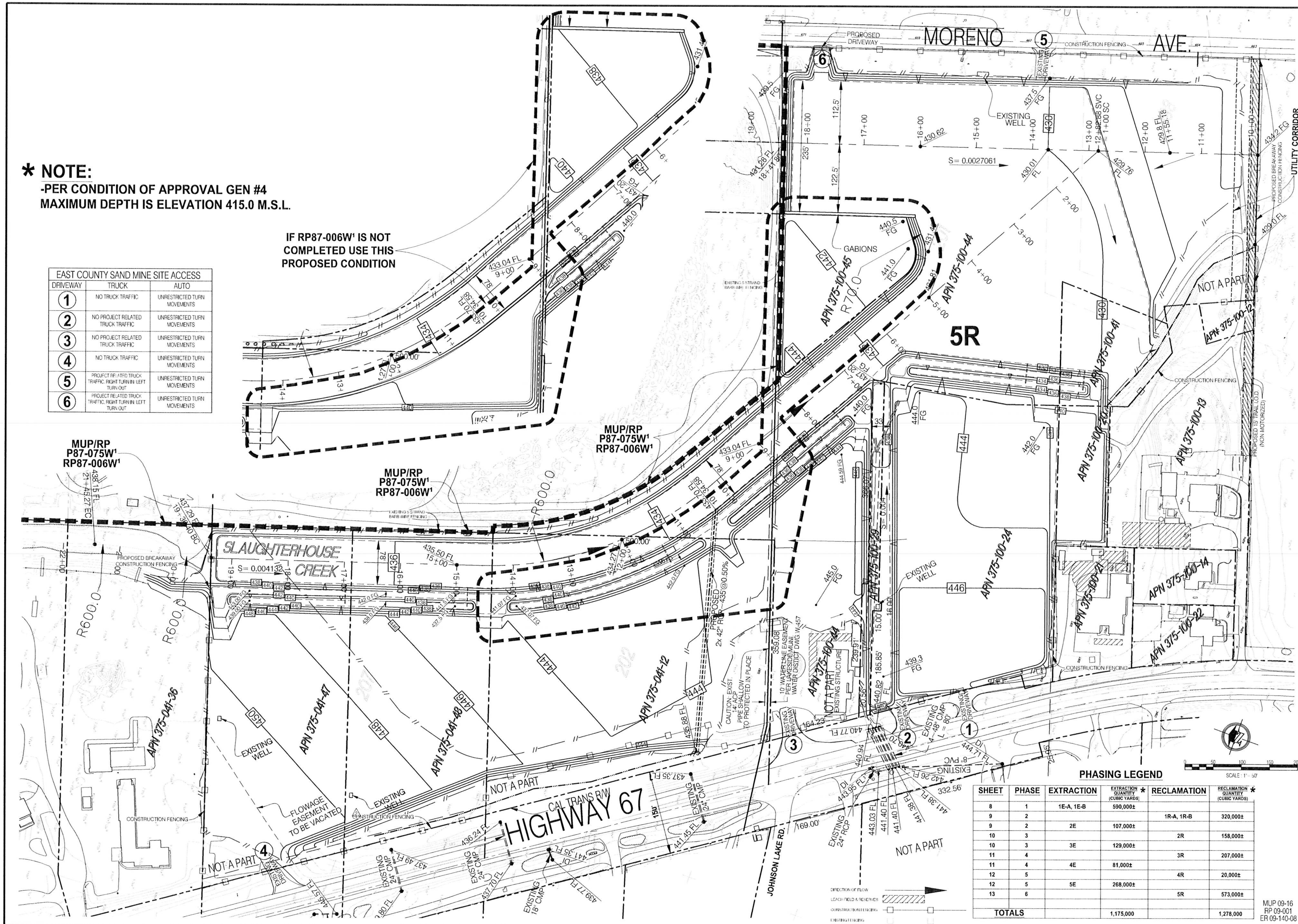
No.	Date	Revision
1	3/12/15	REPLACE HWY 67-SH CREEK 48" RCP WITH TWO 42" RCP
2	10/31/16	REDUCE PROJECT QUANTITIES & ADJUST APNs & BOUNDARY

SHEET 12 OF 17

FIGURE 11

*** NOTE:**

-PER CONDITION OF APPROVAL GEN #4 MAXIMUM DEPTH IS ELEVATION 415.0 M.S.L.



EAST COUNTY SAND MINE SITE ACCESS		
DRIVEWAY	TRUCK	AUTO
1	NO TRUCK TRAFFIC	UNRESTRICTED TURN MOVEMENTS
2	NO PROJECT RELATED TRUCK TRAFFIC	UNRESTRICTED TURN MOVEMENTS
3	NO PROJECT RELATED TRUCK TRAFFIC	UNRESTRICTED TURN MOVEMENTS
4	NO TRUCK TRAFFIC	UNRESTRICTED TURN MOVEMENTS
5	PROJECT RELATED TRUCK TRAFFIC. RIGHT TURN IN/ LEFT TURN OUT	UNRESTRICTED TURN MOVEMENTS
6	PROJECT RELATED TRUCK TRAFFIC. RIGHT TURN IN/ LEFT TURN OUT	UNRESTRICTED TURN MOVEMENTS

PHASING LEGEND

SHEET	PHASE	EXTRACTION	EXTRACTION QUANTITY * (CUBIC YARDS)	RECLAMATION	RECLAMATION QUANTITY * (CUBIC YARDS)
8	1	1E-A, 1E-B	590,000±		
9	2			1R-A, 1R-B	320,000±
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10	3			2R	158,000±
10	3	3E	129,000±		
11	4			3R	207,000±
11	4	4E	81,000±		
12	5			4R	20,000±
12	5	5E	268,000±		
13	6			5R	573,000±
TOTALS			1,175,000		1,278,000

MUP 09-16
RP 09-001
ER 09-140-08

SITE DESIGN ASSOCIATES, INC.
1016 BROADWAY SUITE 'A'
EL CAJON, CALIFORNIA 92021
(619) 442-8467

EAST COUNTY SAND MINE

PHASE 6: AREA 5R RECLAMATION

ENGINEER OF WORK:
KENNETH J. DISCENZA R.C.E. 29930 10/31/16
EXPIRATION DATE: 06/30/15
DATE

No.	Date	Revision
1	3/12/15	REPLACE HWY 67-SH CREEK 48" RCP WITH TWO 42" RCP
2	10/31/16	REDUCE PROJECT QUANTITIES & ADJUST APNs & BOUNDARY

SHEET 13 OF 17

FIGURE 12

LANDSCAPE SCREENING TREATMENTS

HIGHWAY 67 LANDSCAPE TREATMENT
DESCRIPTION: NATIVE COAST LIVE OAKS SHALL BE ADDED ALONG THE STREETSCAPE @ 20' ON CENTER TO SCREEN VIEWS INTO THE SITE WHILE CREATING A SCENIC BYWAY CONSISTENT WITH THE ADJACENT SOUTHERN LIVE OAK RIPARIAN FOREST TO THE SOUTH. . NOTE: THERE IS CURRENTLY 42' OF EXISTING LANDSCAPE BETWEEN HIGHWAY 67 AND THE PROPERTY LINE. .

HIGHWAY 67 LANDSCAPE TREATMENT @ NATIVE AREAS
DESCRIPTION: THE EXISTING STAND OF LIVE OAK TREES CREATES A NATURAL VISUAL BUFFER THAT ENHANCES THE AESTHETIC EXPERIENCE ALONG HIGHWAY 67. SEE IMAGE #1 ON SHEET #16. THE PROPOSED TEMPORARY SCREEN FENCE SHALL BE LOCATED BEHIND THE EXISTING OAK TREE AND WILL BE 100% SCREENED FROM HIGHWAY 67. PER THE ENVIRONMENTAL DOCUMENTS THIS OAK WOODLAND IS NOT TO BE DISTURBED.

HIGHWAY 67 LANDSCAPE TREATMENT @ DRIVE ENTRY
DESCRIPTION: THE PLAN PROPOSES TO ENHANCE THE DRIVE ENTRY WITH ORNAMENTAL PLANTING CONSISTENT WITH EARLY CALIFORNIA GARDEN PLANTINGS INCLUDING VARIETIES OF PALMS, FLOWERING TREES & SHRUBS. NOTE: THERE IS CURRENTLY 42' OF EXISTING LANDSCAPE BETWEEN HIGHWAY 67 AND THE PROPERTY LINE. THE HIGHWAY 67 LANDSCAPE TREATMENT PROPOSES AN ADDITIONAL 8' OF SCREENING LANDSCAPE IN FRONT OF THE TEMPORARY SCREEN FENCE.

MORENO AVE. LANDSCAPE TREATMENT
DESCRIPTION: THE EXISTING SCREEN FENCE WILL BE CONTINUED FROM THE ADJACENT NOTHERN PROPERTY SET 10'-0" FROM EXISTING MORENO AVE. PAVING EDGE. THE SITE WILL BE SCREENED WITH LANDSCAPE INCLUDING EVERGREEN SHADE TREES AND ACCENTED WITH MULTIPLE PALM SPECIES. A 10' WIDE D.G. TRAIL IS PROPOSED ADJACENT TO MORENO AVE IN ACCORDANCE WITH THE COMMUNITY TRAILS MASTERPLAN.

ADJACENT PRIVATE LANDSCAPE TREATMENT
DESCRIPTION: VIEWS FROM ADJACENT PROPERTIES WILL BE SCREENED WITH LOW BRANCHING EVERGREEN SHADE TREES INCLUDING NATIVE OAK SPECIES AND PINE PLANTED 30' ON CENTER.

PLANTING LEGEND

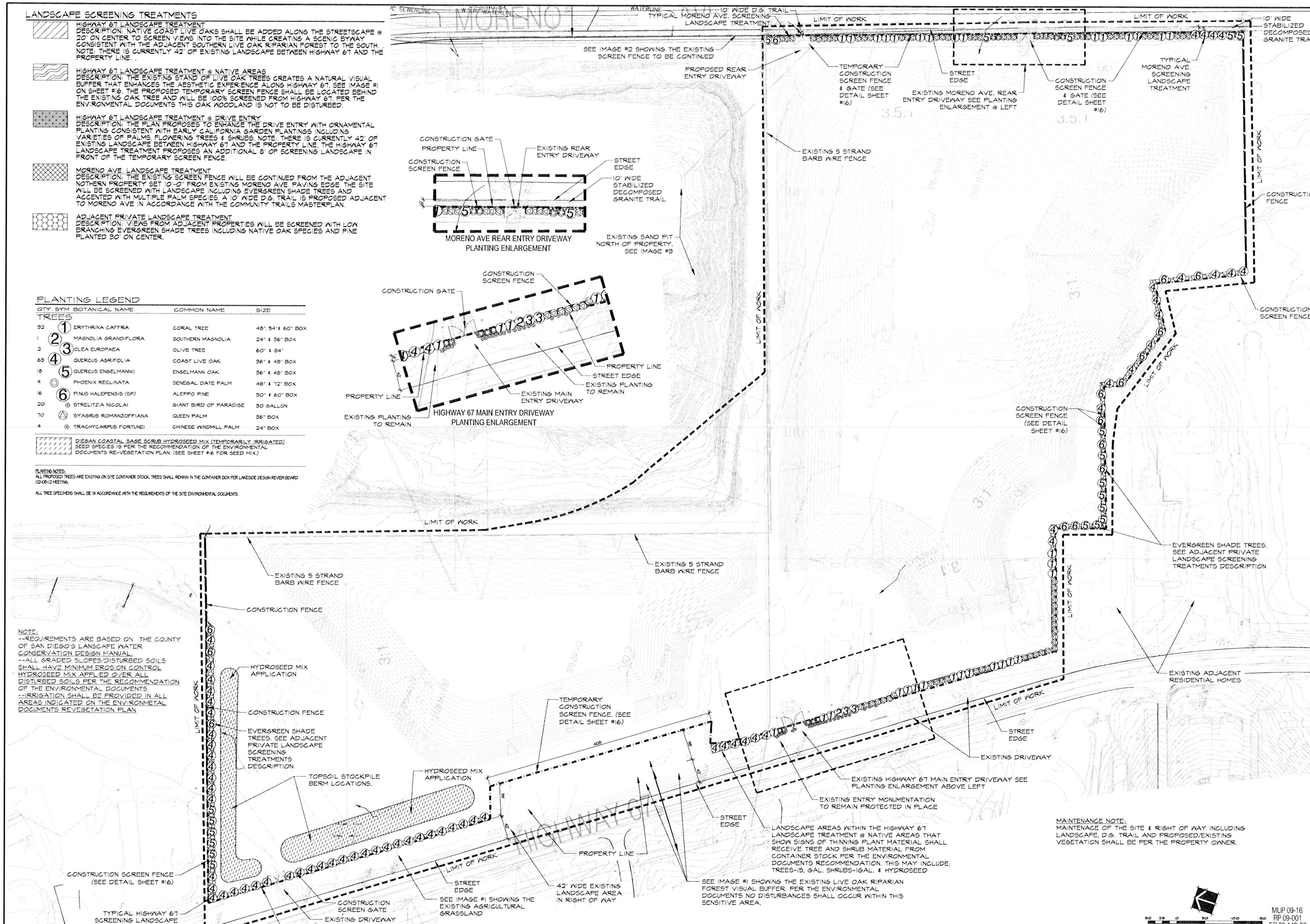
QTY	SYM	BOTANICAL NAME	COMMON NAME	SIZE
TREES				
32	1	ERYTHRINA CAFFRA	CORAL TREE	48", 54" & 60" BOX
1	2	MAGNOLIA GRANDIFLORA	SOUTHERN MAGNOLIA	24" & 36" BOX
2	3	OLEA EUROPAEA	OLIVE TREE	60" & 84"
63	4	QUERCUS AGRIFOLIA	COAST LIVE OAK	36" & 48" BOX
18	5	QUERCUS ENGELMANNII	ENGELMANN OAK	36" & 48" BOX
9	▢	PHOENIX RECLINATA	SENEGAL DATE PALM	48" & 72" BOX
16	6	PINUS HALEPENSIS (SP)	ALEPPO PINE	30" & 60" BOX
20	⊕	STRELITZIA NICOLAI	GIANT BIRD OF PARADISE	30 GALLON
70	△	SYAGRUS ROMANZOFFIANA	QUEEN PALM	36" BOX
4	⊙	TRACHYCARPUS FORTUNEI	CHINESE WINDMILL PALM	24" BOX

DIEGAN COASTAL SAGE SCRUB HYDROSEED MIX (TEMPORARILY IRRIGATED)
SEED SPECIES IS PER THE RECOMMENDATION OF THE ENVIRONMENTAL DOCUMENTS RE-VEGETATION PLAN. (SEE SHEET #16 FOR SEED MIX.)

PLANTING NOTES:
ALL PROPOSED TREES ARE EXISTING ON SITE CONTAINER STOCK. TREES SHALL REMAIN IN THE CONTAINER BOX PER LAKESIDE DESIGN REVIEW BOARD 02-08-12 MEETING.

ALL TREE SPECIMENS SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF THE SITE ENVIRONMENTAL DOCUMENTS.

NOTE:
--REQUIREMENTS ARE BASED ON THE COUNTY OF SAN DIEGO'S LANSCAPE WATER CONSERVATION DESIGN MANUAL.
--ALL GRADED SLOPES/DISTURBED SOILS SHALL HAVE MINIMUM EROSION CONTROL HYDROSEED MIX APPLIED OVER ALL DISTURBED SOILS PER THE RECOMMENDATION OF THE ENVIRONMENTAL DOCUMENTS.
--IRRIGATION SHALL BE PROVIDED IN ALL AREAS INDICATED ON THE ENVIRONMETAL DOCUMENTS REVEGETATION PLAN



MAINTENANCE NOTE:
MAINTENACE OF THE SITE & RIGHT OF WAY INCLUDING LANDSCAPE, D.G. TRAIL AND PROPOSED/EXISTING VEGETATION SHALL BE PER THE PROPERTY OWNER.

MUP 09-16
RP 09-001
ER 09-140-08

gmp Gillespie Moody Patterson, Inc. LANDSCAPE ARCHITECTURE & PLANNING
4125 SORRENTO VALLEY BOULEVARD, SUITE 'D'
SAN DIEGO, CALIFORNIA 92121
858 . 558 . 8977 FAX 858 . 558 . 9188

EAST COUNTY SAND MINE

LANDSCAPE CONCEPTUAL PLAN: EXTRACTION PHASE

LANDSCAPE ARCHITECT OF WORK:
JOHN PATTERSON #3503 — DATE 10/31/14
EXPIRATION DATE: 02/15
LICENSED LANDSCAPE ARCHITECT — STATE OF CALIFORNIA

SCALE:	NONE
JOB NO.:	J-1725
DATE:	10/31/14
SHEET	14 OF 17

LANDSCAPE SCREENING TREATMENTS

HIGHWAY 67 LANDSCAPE TREATMENT
DESCRIPTION: NATIVE COAST LIVE OAKS SHALL BE ADDED ALONG THE STREETSCAPE @ 20' ON CENTER TO SCREEN VIEWS INTO THE SITE WHILE CREATING A SCENIC BYWAY CONSISTENT WITH THE ADJACENT SOUTHERN LIVE OAK RIPARIAN FOREST TO THE SOUTH. NOTE: THERE IS CURRENTLY 42' OF EXISTING LANDSCAPE BETWEEN HIGHWAY 67 AND THE PROPERTY LINE. .

HIGHWAY 67 LANDSCAPE TREATMENT @ NATIVE AREAS
DESCRIPTION: THE EXISTING STAND OF LIVE OAK TREES CREATES A NATURAL VISUAL BUFFER THAT ENHANCES THE AESTHETIC EXPERIENCE ALONG HIGHWAY 67. SEE IMAGE #1 ON SHEET #16. THE PROPOSED TEMPORARY SCREEN FENCE SHALL BE LOCATED BEHIND THE EXISTING OAK TREE AND WILL BE 100% SCREENED FROM HIGHWAY 67. PER THE ENVIRONMENTAL DOCUMENTS THIS OAK WOODLAND IS NOT TO BE DISTURBED.

HIGHWAY 67 LANDSCAPE TREATMENT @ DRIVE ENTRY
DESCRIPTION: THE PLAN PROPOSES TO ENHANCE THE DRIVE ENTRY WITH ORNAMENTAL PLANTING CONSISTENT WITH EARLY CALIFORNIA GARDEN PLANTINGS INCLUDING VARIETIES OF PALMS, FLOWERING TREES & SHRUBS. NOTE: THERE IS CURRENTLY 42' OF EXISTING LANDSCAPE BETWEEN HIGHWAY 67 AND THE PROPERTY LINE. THE HIGHWAY 67 LANDSCAPE TREATMENT PROPOSES AN ADDITIONAL 8' OF SCREENING LANDSCAPE IN FRONT OF THE TEMPORARY SCREEN FENCE.

MORENO AVE. LANDSCAPE TREATMENT
DESCRIPTION: THE EXISTING SCREEN FENCE WILL BE CONTINUED FROM THE ADJACENT NOTHERN PROPERTY SET 10'-0" FROM EXISTING MORENO AVE. PAVING EDGE. THE SITE WILL BE SCREENED WITH LANDSCAPE INCLUDING EVERGREEN SHADE TREES AND ACCENTED WITH MULTIPLE PALM SPECIES. A 10' WIDE D.G. TRAIL IS PROPOSED ADJACENT TO MORENO AVE IN ACCORDANCE WITH THE COMMUNITY TRAILS MASTERPLAN.

ADJACENT PRIVATE LANDSCAPE TREATMENT
DESCRIPTION: VIEWS FROM ADJACENT PROPERTIES WILL BE SCREENED WITH LOW BRANCHING EVERGREEN SHADE TREES INCLUDING NATIVE OAK SPECIES AND PINE PLANTED 30' ON CENTER.

PLANTING LEGEND

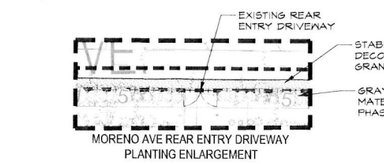
QTY	SYM	BOTANICAL NAME	COMMON NAME	SIZE
TREES				
32	1	ERYTHRINA CAFFRA	CORAL TREE	48", 54"& 60" BOX
1	2	MAGNOLIA GRANDIFLORA	SOUTHERN MAGNOLIA	24" & 36" BOX
2	3	OLEA EUROPAEA	OLIVE TREE	60" & 84"
68	4	QUERCUS AGRIFOLIA	COAST LIVE OAK	36" & 48" BOX
18	5	QUERCUS ENGELMANNII	ENGELMANN OAK	36" & 48" BOX
9		PHOENIX RECLINATA	SENEGAL DATE PALM	48" & 72" BOX
16	6	PINUS HALEPENSIS (SP)	ALEPPO PINE	30" & 60" BOX
20	⊕	STRELITZIA NICOLAI	GIANT BIRD OF PARADISE	30 GALLON
70		SYAGRUS ROMANZOFFIANA	QUEEN PALM	36" BOX
4	⊙	TRACHYCARPUS FORTUNEI	CHINESE WINDMILL PALM	24" BOX

DIEGAN COASTAL SAGE SCRUB HYDROSEED MIX (TEMPORARILY IRRIGATED) SEED SPECIES IS PER THE RECOMMENDATION OF THE ENVIRONMENTAL DOCUMENTS RE-VEGETATION PLAN. (SEE SHEET #16 FOR SEED MIX.)

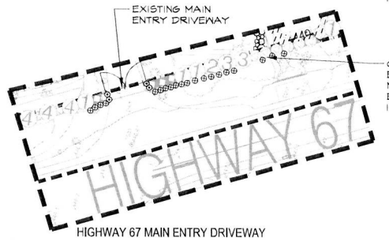
PLANTING NOTES:
ALL PROPOSED TREES ARE EXISTING ON SITE CONTAINER STOCK. TREES SHALL REMAIN IN THE CONTAINER BOX PER LAKESIDE DESIGN REVIEW BOARD 02-08-12 MEETING.

ALL TREE SPECIMENS SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF THE SITE ENVIRONMENTAL DOCUMENTS

NOTE:
PLANT MATERIAL IN PLANTING LEGEND AND LANDSCAPE SCREENING TREATMENT HAS BEEN GRAYED BACK. THESE PLANT MATERIALS SHALL BE INSTALLED AS PART OF THE THE EXTRACTION PHASE. THEY ARE SHOWN ON THIS RECLAMATION SHEET FOR REFERENCE ONLY.



MORENO AVE REAR ENTRY DRIVEWAY
PLANTING ENLARGEMENT



HIGHWAY 67 MAIN ENTRY DRIVEWAY
PLANTING ENLARGEMENT

NOTE:
--REQUIREMENTS ARE BASED ON THE COUNTY OF SAN DIEGO'S LANDSCAPE WATER CONSERVATION DESIGN MANUAL.
--ALL GRADED SLOPES/DISTURBED SOILS SHALL HAVE MINIMUM EROSION CONTROL HYDROSEED MIX APPLIED OVER ALL DISTURBED SOILS PER THE RECOMMENDATION OF THE ENVIRONMENTAL DOCUMENTS.
--IRRIGATION SHALL BE PROVIDED IN ALL AREAS INDICATED ON THE ENVIRONMETAL DOCUMENTS RE-VEGETATION PLAN

SCALE: 1" = 50'

MUP 09-16
RP 09-001
ER 09-140-08

gmp Gillespie Mann Patterson, Inc. LANDSCAPE ARCHITECTURE & PLANNING
4125 SORRENTO VALLEY BOULEVARD, SUITE D
SAN DIEGO, CALIFORNIA 92121
858 - 558 - 0477 FAX 858 - 558 - 4108

EAST COUNTY SAND MINE

LANDSCAPE CONCEPTUAL PLAN: RECLAMATION PHASE

LANDSCAPE ARCHITECT OF WORK:
JOHN PATTERSON #3563
EXPIRATION DATE: 02/15
10/31/14
DATE

SCALE:	NONE		
JOB NO:	2-1175		
DATE:	10/31/14		
SHEET	15	OF	17

PLANTING NOTES

1. GENERAL:
ALL LANDSCAPE AREAS SHALL BE LANDSCAPED IN ACCORDANCE WITH SAN DIEGO COUNTY CODE, STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION (GREEN BOOK), SAN DIEGO REGIONAL STANDARD DRAWINGS AND THE STANDARDS AND CRITERIA OF THE LANDSCAPE TECHNICAL MANUAL.

2. IRRIGATION:
ALL PLANTING AREAS WILL BE IRRIGATED WITH AN ELECTRICALLY OPERATED REMOTE CONTROLLED, UNDERGROUND PIPED, OVERHEAD SPRAY IRRIGATION SYSTEM. THE SYSTEM WILL BE DESIGNED TO MEET THE REQUIREMENTS OF THE STATE OF CALIFORNIA WATER CONSERVATION ORDINANCE TITLE 24.

3. MAINTENANCE:
ALL PUBLIC LANDSCAPE AREAS SHALL BE MAINTAINED IN ACCORDANCE WITH ALL COUNTY ORDINANCES BY A THE PROPERTY OWNER. ALL AREAS SHALL BE MAINTAINED IN A NEED FREE CONDITION. LITTER SHALL BE REMOVED AND PLANTS SHALL BE REGULARLY TRIMMED. IRRIGATED AND FERTILIZED. ALL BRUSH MANAGEMENT AREAS SHALL BE MAINTAINED PER THE CALIFORNIA PUBLIC RESOURCES CODE SECTION 4291.

4. ALL SOILS WILL BE FERTILIZED, AMENDED AND TILLED TO CONFORM TO RECOMMENDATIONS MADE BY A SOIL TESTING LABORATORY. NATIVE PLANTING AREAS SHALL UTILIZE NATURAL SOIL AMENDMENTS TO ACHIEVE SUITABLE GROWING CONDITIONS. NATIVE PLANTINGS SHALL UTILIZE NURSERY PLANTING SOIL WITH MYCORRHIZA DEVELOPMENT IN EACH PLANTING PIT. A SOIL MANAGEMENT REPORT, AS REQUIRED BY SECTION 86.707 (c.1) OF THE WATER CONSERVATION IN LANDSCAPE ORDINANCE SHALL BE SUBMITTED WITH THE LANDSCAPE DOCUMENT PACKAGE.

5. ALL PLANTING AND MULCHED AREAS WILL BE MAINTAINED IN A WEED AND DEBRIS FREE CONDITION.

6. ALL LANDSCAPE AREAS SHALL HAVE POSITIVE DRAINAGE.

7. "BIOBARRIER" ROOTGUARDS SHALL BE INSTALLED ADJACENT TO ALL HARDSCAPE WITHIN SIX FEET OF ANY TREE.

8. NATIVE TREES IN TEMPORARILY IRRIGATED NATIVE AREAS WILL BE SERVED BY A SEPARATE BUBBLER IRRIGATION SYSTEM.

9. A RAIN SENSING DEVICE SHALL BE INSTALLED ON THE CENTRALLY CONTROLLED AUTOMATIC IRRIGATION SYSTEM.

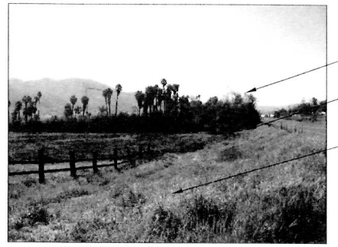
10. ALL PLANTING BEDS AND SLOPES LESS THAN 3:1 SLOPE THAT DO NOT HAVE A HYDROSEED APPLICATION SHALL RECEIVE 2" LAYER OF ORGANIC MULCH.

11. ANY GRADING ABOVE A 25% SLOPE SHALL BLEND WITH THE SURROUNDING AREA AND BE LANDSCAPED TO LOOK NATURAL.

12. COMPLETED SLOPES THAT ARE MORE THAN FIVE FEET IN HEIGHT, MORE THAN 250 SQUARE FEET IN TOTAL AREA, AND STEEPER THAN 3:1 (RUN-TO-RISE) THAT HAVE BEEN DISTURBED AT ANY TIME BY CLEARING, GRADING, OR LANDSCAPING, SHALL BE PROTECTED FROM EROSION PRIOR TO THE FIRST RAINY SEASON FOLLOWING COMPLETION OF THE SLOPE, AND CONTINUOUSLY THEREAFTER.

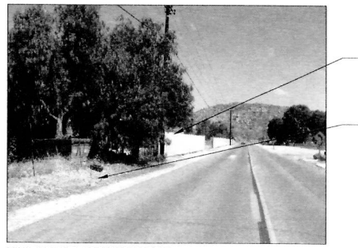
13. PROPOSED PLANTING AREAS SHALL BE IRRIGATED WITH POTABLE WATER. THE LAKESIDE WATER DISTRICT DOES NOT CURRENTLY HAVE RECYCLED WATER AVAILABLE AND THEY DO NOT INTEND TO HAVE RECYCLED WATER AVAILABLE IN THE NEXT TEN YEARS.

DESIGN IMAGES



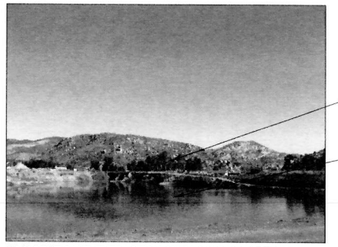
#1 HIGHWAY 67 LOOKING SOUTH

- LIVE OAK RIPARIAN FOREST VISUAL BUFFER
- SEE PLAN FOR PROPOSED QUERCUS AGRIFOLIA (COAST LIVE OAK) PLANTING LOCATIONS ALONG HIGHWAY 67
- AGRICULTURAL GRASSLAND



#2 MORENO AVE. LOOKING NORTH

- EXISTING SCREEN FENCE TO BE CONTINUED FROM ADJACENT SITE TO THE NORTH. SEE PLAN FOR LOCATION
- SEE PLAN FOR PROPOSED EVERGREEN SHADE TREE AND PALM PLANTING LOCATIONS ALONG MORENO AVE.



#3 ADJACENT SAND EXTRACTION SITE LOOKING NORTH

- EXISTING EVERGREEN SHADE TREE VISUAL BUFFER @ ADJACENT RESIDENTIAL PROPERTY
- EXISTING ADJACENT EXTRACTION SITE TO THE NORTH

PLANTING LEGEND

QTY	SYM	BOTANICAL NAME	COMMON NAME	SIZE
TREES				
32	1	ERYTHRINA CAFFRA	CORAL TREE	48", 54" & 60" BOX
1	2	MAGNOLIA GRANDIFLORA	SOUTHERN MAGNOLIA	24" & 36" BOX
2	3	OLEA EUROPAEA	OLIVE TREE	60" & 84"
63	4	QUERCUS AGRIFOLIA	COAST LIVE OAK	36" & 48" BOX
18	5	QUERCUS ENGELMANNII	ENGELMANN OAK	36" & 48" BOX
9		PHOENIX REGLINATA	SENEGAL DATE PALM	48" & 72" BOX
16	6	PINUS HALEPENSIS (SP)	ALEPPO PINE	30" & 60" BOX
20		STRELITZIA NICOLAI	GIANT BIRD OF PARADISE	30 GALLON
70		SYAGRUS ROMANZOFFIANA	QUEEN PALM	36" BOX
4		TRACHYCARPUS FORTUNEI	CHINESE WINDMILL PALM	24" BOX

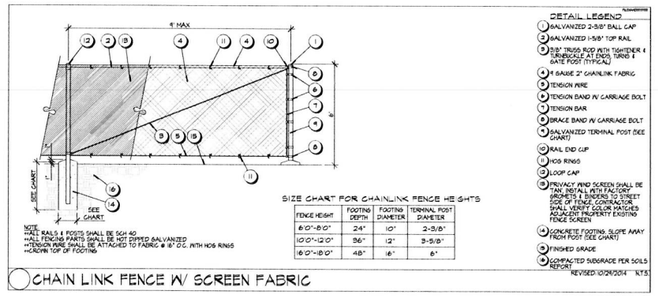
DIEGAN COASTAL SAGE SCRUB HYDROSEED MIX (TEMPORARILY IRRIGATED)
SEED SPECIES IS PER THE RECOMMENDATION OF THE ENVIRONMENTAL DOCUMENTS RE-VEGETATION PLAN. (SEE SHEET #6 FOR SEED MIX.)

BOTANICAL NAME	COMMON NAME	LBS./ACRE	PURITY/SERMINATION
Artemisia californica	California sagebrush	2.0	15/50
Baccharis pilularis	Coyote brush	2.0	90/80
Bromus carinatus	California brome	20.0	95/80
Encelia californica	California encelia	1.0	40/60
Eriogonum f. var. fasciculatum	Flat-top buckwheat	7.0	10/65
Graphalim californicum	California pearly everlasting	2.0	90/80
Lotus s. var. scoparius	Deerweed	3.0	90/80
Rhus integrifolia	Lemonade berry	8.0	90/80
Salvia apiana	White sage	2.0	70/50
Salvia mellifera	Black sage	2.0	70/50
Trifolium tridentatum	Tomcat clover	8.0	90/80
Vulpia microstachys	Pacific fescue	8.0	90/80

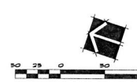
Hydroseed Slurry Materials
Wood Fiber Mulch 2,500 lbs./acre
SuperTack Binder 160 lbs./acre

PLANTING NOTES:
ALL PROPOSED TREES ARE EXISTING ON SITE CONTAINER STOCK. TREES SHALL REMAIN IN THE CONTAINER BOX PER LAKESIDE DESIGN REVIEW BOARD 02-08-12 MEETING.

ALL TREE SPECIMENS SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF THE SITE ENVIRONMENTAL DOCUMENTS



CHAIN LINK FENCE W/ SCREEN FABRIC



MUP 09-16
RP 09-001
ER 09-140-08

gmp Landscape Architecture & Planning
4125 SORRENTO VALLEY BOULEVARD, SUITE D
SAN DIEGO, CALIFORNIA 92121
858 . 558 . 5477 FAX 858 . 558 . 4159

EAST COUNTY SAND MINE

LANDSCAPE CONCEPTUAL PLANTING NOTES, LEGEND & DESIGN IMAGES:

LANDSCAPE ARCHITECT OF WORK:
JOHN PATTERSON #3603
EXPIRATION DATE: 02/15
10/31/14
DATE

No.	Date	Revision	
			SCALE: NONE
			DRAWN: A.HITE
			DATE: 10.31.14

SHEET 16 OF 17

BIOLOGICAL MITIGATION PHASING NOTES:

1. SLAUGHTERHOUSE CREEK LOW FLOWS TO REMAIN INTACT FROM POINT (A) TO POINT (C) DURING PHASES 1 & 2.
2. SLAUGHTERHOUSE CREEK LOW FLOWS TO BE DIVERTED TO FOLLOW THE NEW CHANNEL ALIGNMENT FROM POINT (A) TO POINT (B) PRIOR TO PHASE 3 EXTRACTION BEGINS.
3. SLAUGHTERHOUSE CREEK LOW FLOWS TO BE DIVERTED TO THE NEW CHANNEL FROM POINT (B) TO POINT (C) PRIOR TO THE START OF EXTRACTION PHASE 5.
4. THE FLOWS FROM SLAUGHTERHOUSE CREEK AND SAN VICENTE CREEK TO BE DIVERTED FROM POINT (A) TO POINT (C) THRU THE NEW CHANNEL AT THE PROJECT COMPLETION.

SEA CARGO CONTAINERS NOTES:

1. THE EXISTING SEA CARGO CONTAINERS ON APN 375-100-44, 375-100-45 AND 375-041-12 MUST BE REMOVED PRIOR TO THE WETLAND CREATION IN THESE AREAS.
2. THE MINIMUM SETBACK FROM TOP OF ANY MINING PIT WILL BE 30 FEET.

LEGEND

- EXISTING SEA CARGO CONTAINER
- FEMA 100 YR FLOODWAY
- FEMA 100 YR FLOODPLAIN
- ALLOWABLE STORAGE AREA PER "NO-RISE CERTIFICATION" BY RICK ENGR. DATED 3-27-14
- HABITAT BOUNDARY AREA
- MITIGATION AREA
- BUFFER AREA
- FUTURE ALLOWABLE STORAGE AREA

0 50 100 150 200

SITE DESIGN ASSOCIATES, INC.
1016 BROADWAY, SUITE 'A'
EL CAJON, CALIFORNIA 92021
(619) 442-8467

EAST COUNTY SAND MINE

SITE PLAN - SEA CARGO CONTAINERS & BIOLOGICAL MITIGATION PHASING

ENGINEER OF WORK:
KENNETH J. DISZNOK, R.C.E. 29930
EXPIRATION DATE: 09/30/15
10-31-16
DATE

No.	Date	Revision
2	10-31-16	REDUCE PROJECT QUANTITIES & ADJUST APNs & BOUNDARY

SCALE: 1" = 50'
J.O. NO.: J-725
DATE: 10-31-16
SHEET 17 OF 17

APPENDIX A

UPDATE GEOTECHNICAL INVESTIGATION

UPDATE GEOTECHNICAL INVESTIGATION
EAST COUNTY SAND MINE
MUP 09-16, RP09-001, ER. 09-140-08, KIVA PROJECT: 09-0115560
APN(S): 375-100-20, 24, 41, & 42;
PORTIONS OF 375-041-12, 28, 29, 36 AND 375-100-09, 29
12101 HIGHWAY 67
LAKESIDE COMMUNITY PLANNING AREA
SAN DIEGO COUNTY, CALIFORNIA

FOR

EAST COUNTY SAND, LLC
475 W. BRADLEY AVENUE
EL CAJON, CALIFORNIA 92020

W.O. 5855-A1-SC SEPTEMBER 14, 2011

GeoSoils, Inc.

Geotechnical • Geologic • Coastal • Environmental

5741 Palmer Way • Carlsbad, California 92010 • (760) 438-3155 • FAX (760) 931-0915 • www.geosoilsinc.com

September 14, 2011

W.O. 5855-A1-SC

East County Sand, LLC
475 W. Bradley Avenue
El Cajon, California 92020

Attention: Mr. Mike Shaw

Subject: Update Geotechnical Investigation, East County Sand Mine, MUP 09-16, RP09-001, ER. 09-140-08, KIVA Project: 09-0115560, APN(s): 375-100-20, 24, 41, & 42; Portions of 375-041-12, 28, 29, 36 and 375-100-09, 29, 12101 Highway 67, Lakeside Community Planning Area, San Diego County, California

Dear Mr. Shaw:

In accordance with your request, and in response to review comments from the County of San Diego, Department of Planning and Land Use (CSDDPLU, 2009), GeoSoils, Inc. (GSI) has performed an update geotechnical investigation of the subject site with respect to the proposed East County Sand Mine (ECSM) development. The purpose of the study was to update and re-evaluate the onsite geotechnical and geologic conditions, and their affect on the proposed ECSM, from a geotechnical viewpoint, in light of the current plan, and changing standards of practice. This update report has been prepared considering the Surface Mining And Reclamation Act and Associated Regulations ([SMARA], 2007).

EXECUTIVE SUMMARY

Based on our review of the available data (see Appendix A), field exploration, laboratory testing, geologic and engineering analyses, the proposed ECSM project appears feasible from a geotechnical viewpoint, provided the recommendations presented in the text of this report are properly incorporated into the design, construction, and maintenance of the project. The most significant elements of this evaluation are summarized below:

- Based on GSI's review of a "Project Scoping Review Meeting" letter by the County of San Diego, Department of Planning and Land Use (2009), and the MUP Plot Plan by Site Design Associates, Inc., revision dated August 12, 2011 (SDA, 2009), the proposed project is a Major Use Permit and Reclamation Plan for extractive use (sand mine), that would occur in six (6) phases over a ±20-year period. Approval of the Major Use Permit will allow the extraction of approximately 1,175,000 cubic yards (cy) of material in a gross mining area of 19.76 acres.

- As indicated in the "Update of Mineral land Classification: Aggregate Materials in the Western San Diego County Production-Consumption Region," DMG Open-File Report 96-04, by the California Department of Conservation Division of Mines and Geology ([CDMG], 1996), the adjacent Ennis Materials Company has been mining PCC-grade sand from San Vincente Creek since 1991. Based on this work, the deposits in San Vincente Creek, downstream of San Vincente Reservoir Dam were reclassified from MZR-4 to MRZ-2 for PCC-grade aggregate resources. This newly identified Aggregate Resource Area covers about 450 acres, and consists of sand deposits in the San Vicente Creek Flood plain. The deposits are at least 70 feet thick. The Turner Sand Mine project is located within both MRZ-2 and MRZ-4.

- Based on the updated extraction plan by SDA (2009 [revision dated 2011]), a number of composite gradient cut slopes are planned. The cut slopes are proposed at a 1.5:1 (horizontal:vertical [h:v]) gradient, above groundwater, and at a maximum slope gradient of 3:1 (h:v), below groundwater. It is GSI's understanding that the proposed ECSM is to be mined in six (6) phases. Therefore, only the steeper portions of the proposed cut slopes will be temporarily exposed during mining. GSI further understands that the duration of the entire project is approximately 20-years (i.e., until infill and reclamation). It is also GSI's understanding that letters of permission for entry and grading have been issued for the adjacent Andrews, Ennis, and Green properties to complete the proposed reclamation grading.

- For the most part, the mining operation is proposed in the alluvial areas, wherein primarily granular relatively unconsolidated sediments exist. Excessive deformation of any oversteepened slopes could be caused by ground shaking, erosion, natural raveling, etc. Due to the expected open pit mining method already in use to the north (Ennis Sand Mine), much practical "hands on" experience has dictated general slope stability characteristics. However, there are other natural forces which may not have occurred in the past to induce any such failure (i.e., design basis earthquake, ground shaking, etc.). Therefore, considering site conditions, the potential for seismically induced landsliding is reasonably considered a potential risk, and a slope stability analysis has been performed. As stated within SMARA (2007), with respect to proposed slopes critical gradient, "The maximum stable inclination of an unsupported slope under the most adverse conditions that it will likely experience, as determined by current engineering technology," should be considered. Therefore, GSI has performed static and seismic slope stability analyses for temporary conditions.

- Based on GSI's updated slope stability analyses, the proposed cut or mined slope portions above groundwater may be constructed at a maximum slope gradient of 1.5:1 to 1.6:1 (h:v) or flatter, and the portions below the groundwater may be constructed at a maximum slope gradient of 3:1 to 3.5:1 (h:v) or flatter, for temporary conditions. The mined slope inclinations of 1.6:1 (h:v) above groundwater, and 3.5:1 (h:v) below the groundwater, are recommended on the

eastern portion of the site along Moreno Avenue, based on the available data. In order to evaluate the temporary slope stability, GSI reviewed the previous available slope evaluations (see Appendix A), the land use within the influence of the top-of-slope, groundwater, earth materials to be mined, and the effects of seismic shaking. The static Factor-of-Safety (F.O.S.) in each section analyses met a temporary static F.O.S. of 1.25 or greater. The seismic F.O.S, owing to groundwater proximity, was also evaluated. The seismic F.O.S. was calculated to be approximately 1.0 or greater. This seismic F.O.S. against sliding appears reasonable given the assumed Probabilistic Horizontal Site Acceleration (PHSA of 0.35 g) in the top 100 feet of the soil column, and the associated low magnitude of seismic deformation evaluated for this project. Please refer to the "Slope Stability Analysis" section of this report for a more detailed discussion.

- Slope stability was also performed on the area where the largest fill slope of 10 feet is planned following the completion of the extraction activities, as shown on the Final Reclamation Plan by SDA 2009 [revision dated 2011]), sheet 6. The static Factor-of-Safety (F.O.S.) in this section analysis was greater than 3.0. The seismic F.O.S. was not calculated as it is not required if the static F.O.S. is greater than 1.8, as indicated in Special Publication 117A. Please refer to the "Slope Stability Analysis" section of this report for a more detailed discussion.

- A geotechnical investigation for the Ennis Sand Mine was reviewed by GSI at the County. The geotechnical investigation was performed by Hetherington Engineering, Inc. (HEI), dated January 30, 2006 (HEI, 2006). In addition, a response to review comments was also prepared by HEI, dated March 21, 2008 (HEI, 2008). These documents were reviewed and pertinent information was evaluated and utilized in the preparation of this current report.

- Regional groundwater was encountered during our previous field exploration and is expected to be a factor during construction of the proposed project. Regional groundwater during prior GSI site explorations was generally at an elevation of ±408 feet Mean Sea Level (MSL) within the permeable alluvial sand deposits. Perched groundwater was also encountered during this investigation and is anticipated to generally be at an elevation of ±416 feet (MSL) within areas of alluvium with contrasting permeabilities, such as aquifers within aquitards/aquacludes, on the western portions of the project. A review of the "Updated" Groundwater Information Letter; East County Sand Mine, MPA 08-123, dated September 19, 2011, by Wieldlin & Associates, indicates that "groundwater levels have been acquired from four other sources. These sources are aerial photography of the adjacent quarry ponds, geologist logs of soil borings completed on the property, a groundwater level measured in 1988 and reported in the Draft EIR for the quarry operation at the adjacent property and soil boring work conducted by GeoSoils, Inc. in March 2009." Based on this review, the historic groundwater levels range from ±403 feet (MSL) to 446 feet (MSL). The broad range of historic groundwater levels is likely a direct result of the variable topography,

contrasts in sediment permeabilities (such as bar and overbank deposits), proximity of granitic basement rocks, and precipitation variances over time.

- Our evaluation indicates that portions of the site currently have some potential for liquefaction. Therefore, a limited liquefaction evaluation was performed at this phase of the project. The F.O.S. against liquefaction is typically greater than 1.3 for the site soils over granitic bedrock, using a peak ground acceleration of 0.35g for the maximum considered earthquake, based on GSI's evaluation of the average soil properties in the top 100 feet. It should be noted that the peak ground acceleration of 0.35g is reasonably conservative with respect to the ECSM project. The layers within the profile that may exhibit some seismic deformation (liquefaction or densification) may potentially manifest at or near the top-of-slope as a slump. The lateral spreading analysis (enclosed) assumes that some liquefaction within these layers has occurred and the worst case lateral deformation within 'H' of the top-of-slope will occur. Therefore, this potential magnitude of calculated lateral deformation is not likely at this site, especially in light of the temporary nature of the proposed mine slopes and the peak ground acceleration utilized in the analysis.

- The updated seismic parameters provided herein should be considered during the design of the proposed future reclamation project. The adverse effects of seismic shaking on the future structure(s), if any, will likely be some wall cracks, foundation/slab distress, and seismic induced settlement.

- As a result of the relatively non-cohesive, sandy soils at depth on portions of the site, vertical excavations shall conform to CalOSHA requirements for Type "C" soils. Temporary cut slopes, up to a maximum height of ±20 feet, may be excavated at a 1½:1 (h:v) gradient, or flatter in alluvium, based on the available data, provided adverse geologic conditions or groundwater are not present. This does not preclude localized slumps of materials below the water table.

- Our evaluation indicates there are no known active faults crossing the site, nor is the site shown in an Alquist-Priolo Earthquake fault zone on State maps.

- Adverse geologic features that would preclude project feasibility were not encountered.

- The recommendations presented in this report should be incorporated into planning and mining considerations of the project.

- With respect to code references herein, in case of conflicts, the most current or onerous applicable code should be utilized.

The opportunity to be of service is greatly appreciated. If you have any questions concerning this report, or if we may be of further assistance, please do not hesitate to contact any of the undersigned.

Respectfully submitted,

GeoSoils, Inc.

Bryan E. Voss
Project Geologist, PG 8709

John P. Franklin
Engineering Geologist, CEG 1340

Andrew T. Guatelli
Geotechnical Engineer, GE 2320

BEV/JPF/ATG/jh

Distribution: (1) Addressee (CD)
(4) Site Design Associates, Inc., Attn: Mr. Ken Discenza (CD)

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SCOPE OF SERVICES

The scope of our services has included the following:

1. Review of the available geologic literature for the site, including a review of reports at the County of San Diego (see Appendix A).

2. Geologic site reconnaissance, and review of previous subsurface explorations (see Appendix B).

3. General update areal seismicity evaluation (see Appendix C).

4. Review of laboratory testing of representative soil samples (Appendix D).

5. Update Liquefaction evaluation (see Appendix E).

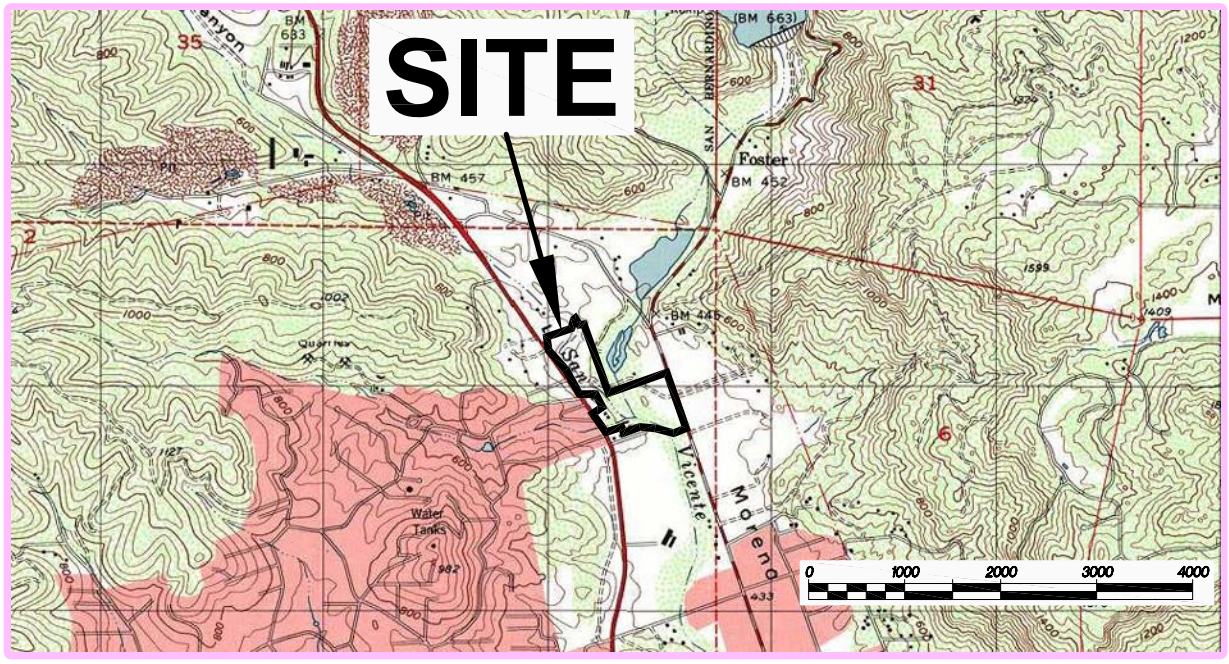
6. Update Slope Stability Analysis (see Appendix F).

7. Engineering and geologic analysis of data collected.

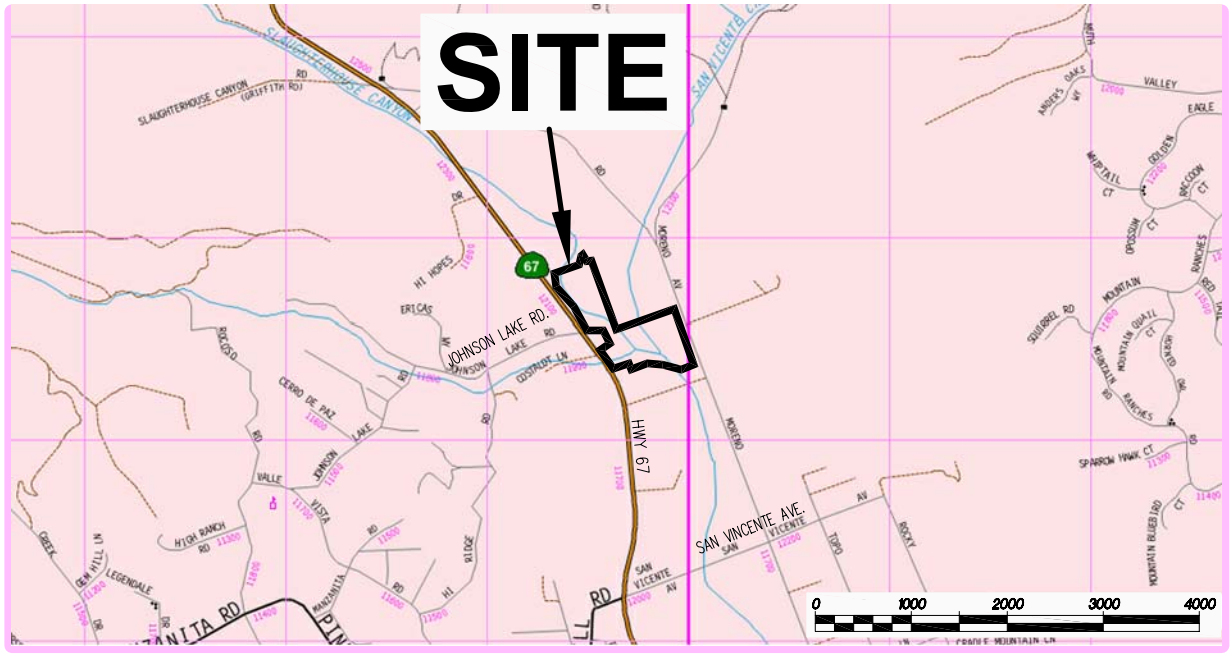
8. Preparation of this report and accompaniments.

SITE DESCRIPTION AND PROPOSED DEVELOPMENT

The overall site consists of approximately ±26 acres of relatively flat lying to gently sloping ground, located in the Moreno Valley area of the Lakeside Community (see Site Location Map, Figure 1). The proposed project includes a total of ten (10) parcels, belonging to four (4) different property owners. There are four (4) on-site water wells and one (1) on-site septic system. It should be noted, that the one (1) on-site septic system is not included in the MUP boundary and is not included in the project area even though it is in one (1) of the parcels included in the project. A 14-inch lakeside Municipal Water District water line crosses the property in a 10-foot wide easement located along the boundary between APN 375-041-12 and 375-100-09. Road access to all the properties is obtained from existing driveways off of State Highway 67, and the Tuner property is also accessed from a driveway off of Morena Avenue. Based on geologic mapping in the vicinity, the site is underlain by Quaternary-age alluvial deposits consisting of unconsolidated to locally poorly consolidated silt, clay, sand and gravel, and granitic bedrock at depth. A relatively shallow groundwater table occurs at depths on the order of approximately 30 feet below existinggrades. A relatively shallow perched groundwater table occurs at depths on the order of approximately 18 feet below existing grades on the western portion of the site.



Base Map: National Geographic, 2004, TOPO! Digital Map Software, U.S.G.S. Valley Center Quadrangle, California -- San Diego Co., 7.5 Minute, dated 1996, current 1999.



Base Map: The Thomas Guide, San Diego County, Street Guide and Directory, 2008 Edition, by Thomas Bros. Maps, pages 1211 and 1212.

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SITE LOCATION MAP

Figure 1

It is GSI's understanding that the proposed project includes processing a Major Use Permit and Reclamation Plan. Approval of the Major Use Permit will allow the extraction of approximately 1,175,000 cubic yards of material, within ±20 acres on ten parcels. Excavation operations to extract sand will result in the construction of cut slopes with overall heights controlled by inherent engineering properties of site soils, and the depth to groundwater. It is GSI's understanding that the extraction operations will be completed by an excavator in dry areas above groundwater, and by a dragline dredge in areas below the groundwater. It is also GSI's understanding that the Reclamation Plan proposes to improve a portion of Slaughterhouse Creek and San Vicente Creek channels, in order to accommodate, and convey, a 100-year storm water event. We further understand that future improvement of the site is proposed to create approximately ±12.68 acres of terraced property, above the 100-year flood level.

PREVIOUS INVESTIGATIONS

Previous investigation have been performed within the site and the adjacent Ennis Sand Mine. GSI (2009) performed a preliminary geotechnical investigation for the proposed ECSM. Allied Earth Technology ([AET], 2007) performed a Soil Boring Log Report for the subject project. Hetherington Engineering, Inc. ([HEI], 2006 and 2008), prepared geotechnical investigations for the adjacent Ennis Sand Mine. All pertinent geotechnical data (i.e., boring logs and laboratory data) from earlier studies on the subject project and adjacent Ennis Sand Mine, are included within the appendices of this report.

PREVIOUS GSI SITE EXPLORATION

Surface observations and subsurface exploration were performed in March 2009, by a representative of this office. A survey of line and grade for the subject parcel was not conducted by this firm at the time of our field exploration. Near-surface soil conditions were explored with five small diameter borings and eight track-hoe excavated test pits within the site to evaluate soil and geologic conditions. The approximate location of the borings and test pits are shown on the attached Boring, Test Pit, and Cross-Section Location Map (see Plate 1). The previous Boring and Test Pit Logs are presented in Appendix B.

REGIONAL GEOLOGY

The subject property is located within a prominent natural geomorphic province in southwestern California known as the Peninsular Ranges. It is characterized by steep, elongated mountain ranges and valleys that trend northwesterly. The mountain ranges are underlain by basement rocks consisting of pre-Cretaceous metasedimentary rocks, Jurassic metavolcanic rocks, and Cretaceous plutonic rocks of the southern California batholith.

In the San Diego County region, deposition occurred during the Cretaceous Period and Cenozoic Era in the continental margin of a forearc basin. Sediments, derived from Cretaceous-age plutonic rocks and Jurassic-age volcanic rocks, were deposited into the narrow, steep, coastal plain and continental margin of the basin. These rocks have been uplifted, eroded, and deeply incised. During early Pleistocene time, a broad coastal plain was developed. During mid- to late-Pleistocene time, this plain was uplifted, eroded, and incised. Alluvial deposits have since filled the lower valleys, and young marine sediments are currently being deposited/eroded within coastal and beach areas. The regional geology of the San Vicente area is shown on Figure 2.

SITE GEOLOGIC UNITS

The site geologic units encountered during our subsurface investigation and site reconnaissance included topsoil/colluvium, Quaternary-age alluvial deposits, and Cretaceous-age granitics. The earth materials are generally described below from the youngest to the oldest. The distribution of these materials is shown on Plate 1.

Topsoil/Colluvium (Not Mapped)

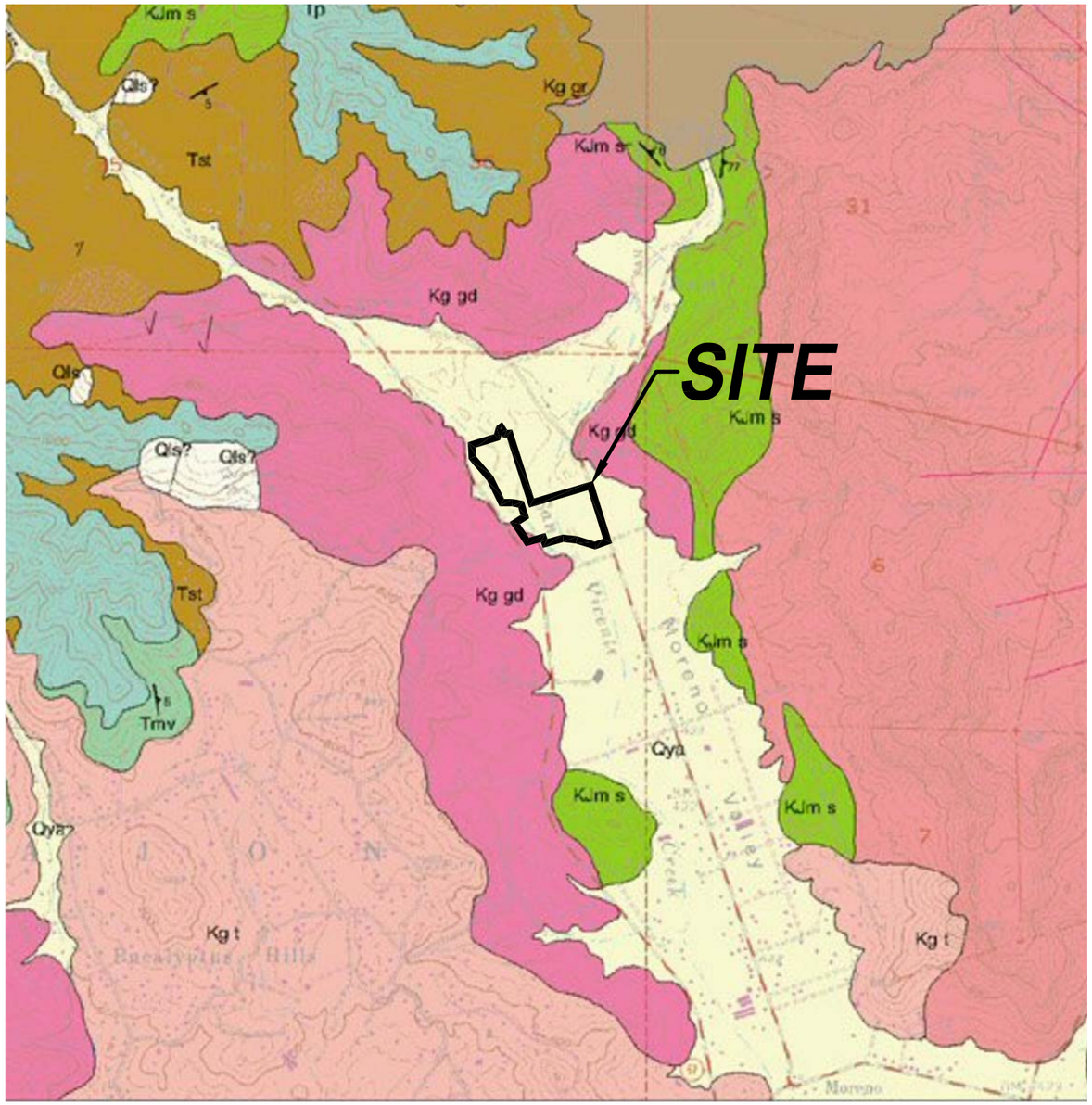
Colluvium/topsoil mantles the site at the surface where the exploratory borings and test pits were excavated and consists of light brown to dark brown, dry to moist, loose/soft to medium dense sand to silty sands to sandy silt that are approximately ±1 to ±6½ feet thick. The thickest topsoil/colluvium was generally located within the northern parcels.

Quaternary-age Alluvial Deposits (Map Symbol - Qal)

The colluvial soils are underlain by the Quaternary-age alluvial deposits, which consist of light brown to dark brown to reddish brown, loose/soft to medium dense sand to silty sand to sandy silt to silty clay, poorly graded sands with little or no fines to well graded sands. The alluvium is generally dry to moist above the water table and saturated below the water table. The observed alluvium was up to ±55 feet thick, mantling the underlying dense granitic rock.

Granitics (Map Symbol - Kgr)

Bedrock consisting of Cretaceous-age plutonic rocks (commonly called "granitics") was encountered in our borings underlying the alluvium at the site, and also observed locally outcropping at the surface nearby. These plutonic rocks are the crystalline basement rock of the region. The plutonic rocks have been mapped as a Tonalite (Tan, 2002). The granitics encountered during our investigation generally were observed to be dense to very dense. These materials were moderately weathered near the surface, producing a uniform "decomposed granite" texture. A few "floaters" (hard, resistive granitic clasts) were observed on the surface in localized offsite areas.



GRAPHIC SCALE

2000 0 1000 2000 4000 8000

1" = 2000'

N

DEPARTMENT OF CONSERVATION
California
Geological Survey

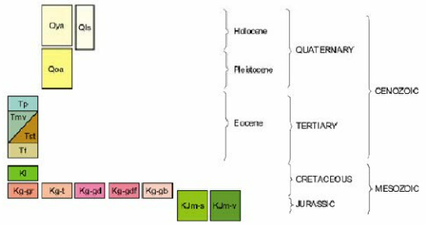
GEOLOGIC MAP OF THE SAN VICENTE RESERVOIR 7.5' QUADRANGLE SAN DIEGO COUNTY, CALIFORNIA: A DIGITAL DATABASE

by
Siang S. Tan

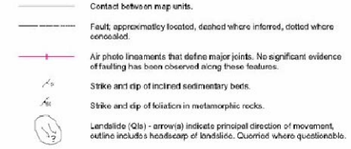
Digital Preparation by
Kelly Corriea and Sybil Jorgensen
2002

USGS science for a changing world

CORRELATION OF MAP UNITS



MAP SYMBOLS



DESCRIPTION OF MAP UNITS

Qya Alluvial deposits (Holocene); unconsolidated to locally poorly consolidated silt, clay, sand and gravel. Includes modern sediments along small drainage channels.

Qls Landslide deposits (Holocene and late Pleistocene); landslide slump and rock fall deposits. On map, the deposit is depicted by landslide arrows (see "MAP SYMBOLS").

Qoa Alluvial deposits (late to middle Pleistocene); moderately consolidated, poorly sorted flood plain deposits consisting of gravel, sand, silt and clay.

Tp Pomerado Conglomerate (middle Eocene); poorly to moderately cemented massive cobble conglomerate with sandstone interbeds.

Tmv Mission Valley Formation (middle Eocene); poorly to moderately indurated, light-colored, medium-to fine-grained marine sandstone with cobble conglomerate lenses. Interfingers with underlying Stadium Conglomerate.

Tst Stadium Conglomerate (middle Eocene); poorly to moderately cemented massive cobble conglomerate with sandstone interbeds. Interfingers with overlying Mission Valley Formation.

Tf Friars Formation (middle Eocene); poorly indurated non-marine and near-shore marine claystone and sandstone, with lenses of cobble conglomerate. The formation contains many landslides.

Kl Lusardi Formation (Upper Cretaceous); poorly-cemented non-marine boulder conglomerate with sandstone intermix.

Kg-gr Granite (Cretaceous); includes some granodiorite; mostly leucocratic; medium-to coarse-grained.

Kg-t Tonalite (Cretaceous); includes some granodiorite and quartz diorite; medium-grained; generally dark colored and severely weathered.

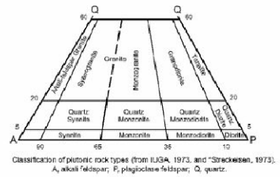
Kg-gd Granodiorite (Cretaceous); includes some tonalite and monzogranite; medium- to coarse-grained.

Kg-gb Fine-grained granodiorite (Cretaceous); includes some tonalite; fine- to medium-grained; mostly dark colored.

Kjm-v Gabbro (Cretaceous); includes some peridotite, norite, quartz gabbro; medium- grained and dark colored.

Kjm-s Metavolcanic rocks (Jurassic and Cretaceous); mildly metamorphosed volcanic, volcaniclastic and sedimentary rocks. Volcanic rocks range from basalt to rhyolite, but are predominantly andesite and dacite. In general, metavolcaniclastic rocks are most abundant. Also includes minor metasedimentary rocks listed under Kjm-s.

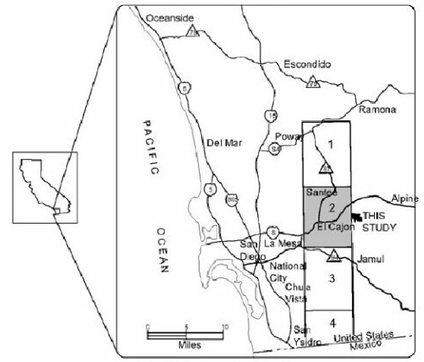
Metasedimentary rocks (Jurassic and Cretaceous); mildly metamorphosed (greenschist facies) sandstone, siltstone and chalk, schist, quartzite, metabasalt, metatuff-breccia with gneiss, fine-grained granodiorite, tonalite, and minor amounts of rocks listed under Kjm-v.



Classification of plutonic rock types (from IUGS, 1973, and *Streckeisen, 1973). A, alkali feldspar; P, plagioclase feldspar; Q, quartz.

*Streckeisen, A.L., 1973, Plutonic rocks--Classification and nomenclature recommended by the IUGS Subcommission on Systematics of Igneous Rocks: Geotimes, vol.18, pp.26-30.

INDEX MAP



1. San Vicente Reservoir quadrangle
2. El Cajon quadrangle
3. Jamul Mountains quadrangle
4. Otay Mesa quadrangle

REFERENCES

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Tan, S.S., 1992, Landslide hazards in the San Vicente Reservoir quadrangle, San Diego County, California: California Division of Mines and Geology Open-File Report 92-04, Geologic Map - Plate 2AB, scale 1:24,000.

Todd, V.R., 1983, Geologic map of the El Cajon Mountain quadrangle, San

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REGIONAL GEOLOGIC MAP

Figure 2

W.O. 5855-A1-SC	DATE 09/11	SCALE : 1" = 2000'

UPDATE FAULTING AND REGIONAL SEISMICITY

Our review indicates that there are no known active faults crossing this site, and the site is not within an Alquist-Priolo Earthquake Fault Zone (Bryant and Hart, 2007), or County Fault Zone (County of San Diego, Guidelines for Determining Significant Geologic Hazards, [CSD], 2007). However, the site is situated in a region of active faulting. These faults include, but are not limited to: the San Andreas fault; the San Jacinto fault; the Elsinore fault; the Coronado Bank fault zone; and the Newport-Inglewood - Rose Canyon fault zone. The location of these, and other regional faults relative to the site, are indicated on southern California seismicity from 1984 to 2002 is presented as Figure 3 for context. The possibility of ground acceleration, or shaking at the site, may be considered as approximately similar to the southern California region as a whole. Major active fault zones that may have a significant affect on the site, should they experience activity, are listed in Appendix C (modified from Blake, 2000a).

Local Faulting

No local faulting was observed to transect the site during the field investigation. Additionally, a review of regional geologic maps does not indicate the presence of local faults crossing the site.

Seismicity

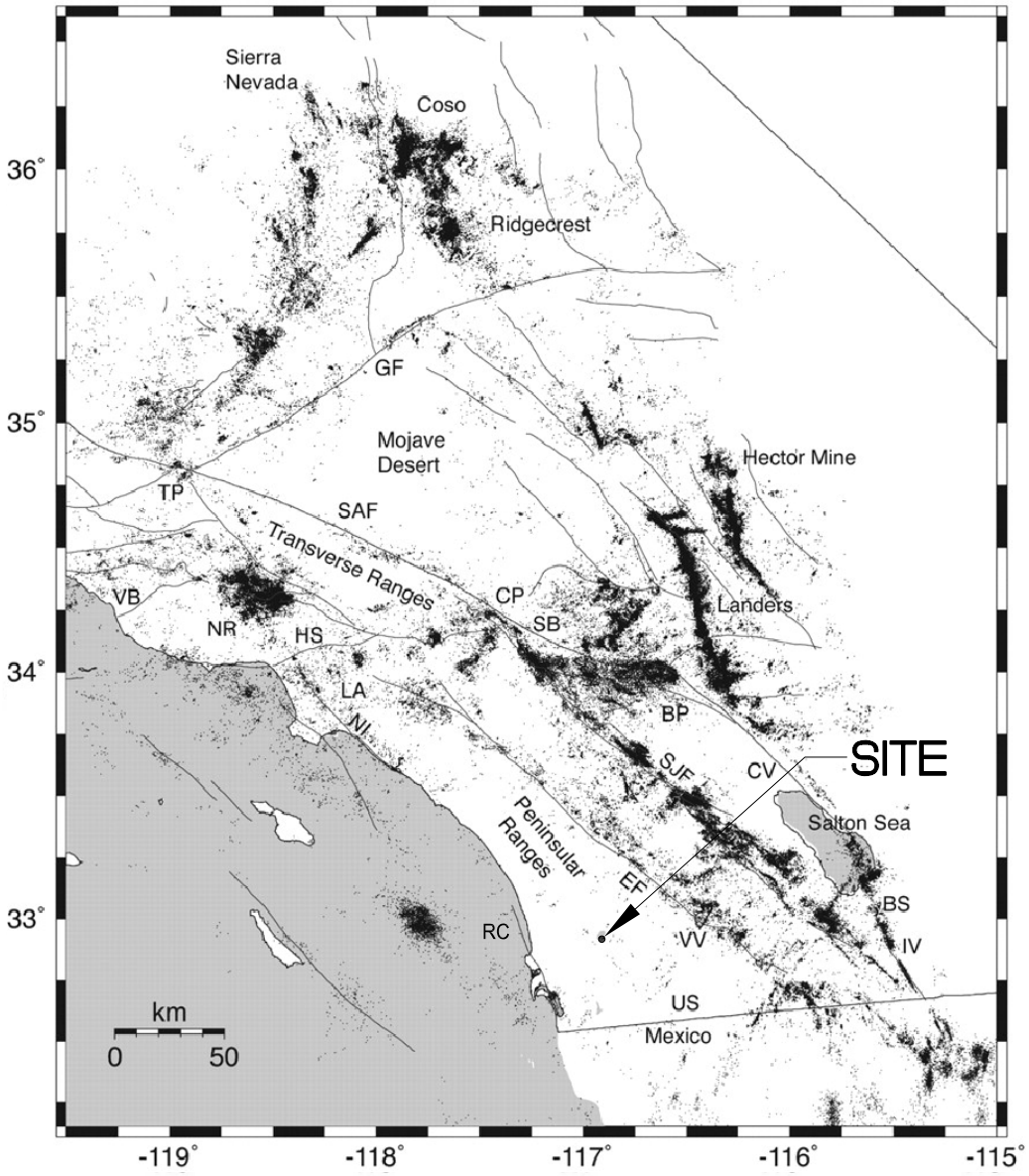
The acceleration-attenuation relation of Bozorgnia, Campbell, and Niazi (1999) and Campbell and Bozorgnia (1994 and1997) have been incorporated into EQFAULT (Blake, 2000a). EQFAULT is a computer program developed by Thomas F. Blake (2000a), which performs deterministic seismic hazard analyses using digitized California faults as earthquake sources.

The program estimates the closest distance between each fault and a given site. If a fault is found to be within a user-selected radius, the program estimates peak horizontal ground acceleration that may occur at the site from an upper bound ("maximum credible") earthquake on that fault. Site acceleration (g) was computed by one user-selected acceleration-attenuation relation that is contained in EQFAULT.

Based on the EQFAULT program, a deterministic peak horizontal ground acceleration from an upper bound event at the site may be on the order of 0.22 g to 0.28 g. The computer printouts of pertinent portions of the EQFAULT program are included within Appendix C.

Historical site seismicity was evaluated with the acceleration-attenuation relation of Bozorgnia, Campbell, and Niazi (1999), and the computer program EQSEARCH (Blake, 2000b). This program performs a search of the historical earthquake records for magnitude 5.0 to 9.0 seismic events within a 100-kilometer radius, between the years 1800 through December 2010. Based on the selected acceleration-attenuation relationship, a peak horizontal ground acceleration is estimated, which may have effected the site during the specific event listed. Based on the available data and the attenuation

Southern California Seismicity 1984 - 2002



The relocated southern California seismicity 1984-2002 by using the double-difference method. BP, Banning Pass; BS, Brawley seismic zone; CP, Cajon Pass; CV, Coachella Valley; EF, Elsinore fault; GF, Garlock fault; HS, Hollywood-Santa Monica fault; IV, Imperial Valley; LA, Los Angeles; NI, Newport-Inglewood fault; NR, Northridge; RC, Rose Canyon fault; SAF, San Andreas fault; SB, San Bernardino Mountains; SJF, San Jacinto fault; TP, Tejon Pass; VB, Ventura Basin; VV, Vallecitos Valley.

From Hauksson and Shearer, 2005

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SOUTHERN CALIFORNIA SEISMICITY 1984-2002

Figure 3

W.O. 5855-A1-SC	DATE 09/11	SCALE Bar Scale

relationship used, the estimated maximum (deterministic peak) site acceleration during the period 1800 through December 2010 was about 0.18 g. A historic earthquake epicenter map and a seismic recurrence curve are also estimated/generated from the historical data. Computer printouts of the EQSEARCH program are presented in Appendix C.

A probabilistic seismic hazards analysis was performed using the 2008 Interactive Deaggregations (2010 Beta) Seismic Hazard Analysis tool available at the USGS website (https://geohazards.usgs.gov/deaggnit/2008/) which evaluates the site specific probabilities of exceedance for selected spectral periods. Based on a review of these data, and considering the relative seismic activity of the southern California region, a probabilistic horizontal ground acceleration (PHGA) of 0.19g and 0.34g were calculated. These values were chosen as they correspond to a 10 percent and 2 percent probability of exceedance in 50 years, respectively, and are based on GSI's evaluation of the average soil properties in the top 100 feet. Printouts from this analysis are also included in Appendix C.

Seismic Shaking Parameters

Based on the site conditions, the following table summarizes the site-specific design criteria obtained from the 2010 CBC (CBSC, 2010), Chapter 16 Structural Design, Section 1613, Earthquake Loads, which is based on the 2009 edition of the IBC (International Building Code), and ASCE Standard 7-05 (American Society of Civil Engineers, 2005). The computer program Seismic Hazard Curves and Uniform Hazard Response Spectra, provided by the United States Geologic Survey (U.S.G.S.) was utilized for design. The short spectral response utilizes a period of 0.2 seconds.

CBC SEISMIC DESIGN PARAMETERS		
PARAMETER	VALUE	2010 CBC REFERENCE
Site Class	C	Table 1613.5.2
Spectral Response - (0.2 sec), S_s	1.01g	Figure 1613.5(1)
Spectral Response - (1 sec), S_1	0.35g	Figure 1613.5(2)
Site Coefficient, F_a	1.0	Table 1613.5.3(1)
Site Coefficient, F_v	1.45	Table 1613.5.3(2)
Maximum Considered Earthquake Spectral Response Acceleration (0.2 sec), S_{MS}	1.01g	Section 1613.5.3 (Eqn 16-36)
Maximum Considered Earthquake Spectral Response Acceleration (1 sec), S_{M1}	0.51g	Section 1613.5.3 (Eqn 16-37)
5% Damped Design Spectral Response Acceleration (0.2 sec), S_{DS}	0.68g	Section 1613.5.4 (Eqn 16-38)
5% Damped Design Spectral Response Acceleration (1 sec), S_{D1}	0.34g	Section 1613.5.4 (Eqn 16-39)

GENERAL SEISMIC DESIGN PARAMETERS	
Distance to Seismic Source (Rose Canyon fault zone)	17.5 mi. (28.2 km)
Upper Bound Earthquake (Rose Canyon fault zone)	M_w 6.9**
Probabilistic Horizontal Ground Acceleration ([PHGA] 10%/2% probability of exceedance in 50 years)	0.19g/0.34g
** International Conference of Building Officials (ICBO, 1998)	

Conformance to the criteria above for seismic design does not constitute any kind of guarantee or assurance that significant structural damage or ground failure will not occur in the event of a large earthquake. The primary goal of seismic design is to protect life, not to eliminate all damage, since such design may be economically prohibitive. Cumulative effects of seismic events are not addressed in the 2010 CBC (CBSC, 2010) and regular maintenance and repair following locally significant seismic events (i.e., M_w5.0) will likely be necessary.

Seismic Hazards

The following list includes other seismic related hazards that have been considered during our evaluation of the site. The hazards listed are considered negligible and/or mitigated as a result of site location, soil characteristics, and typical site development procedures:

- Surface Fault Rupture
- Ground Lurching or Shallow Ground Rupture
- Tsunami

Although seiche is possible within the mined pit, it is GSI's opinion that this water will be contained in the pit due to the anticipated freeboard (25 to 30 feet) from the top edge of the mine pit. This does not preclude some slope damage within the mine pit due to seiche or associated "sloshing" of contained water.

Liquefaction and lateral spreading due to the seismic induced effect on unconsolidated alluvial deposits are possible onsite. A discussion of this phenomenon and the potential deformation associated with densification/liquefaction are provided herein.

It is important to keep in perspective that in the event of an upper bound earthquake occurring on any of the nearby major faults, strong ground shaking would occur in the subject site's general area. Potential damage to any structure(s) would likely be greatest from the vibrations and impelling force caused by the inertia of a structure's mass than from those induced by the hazards considered above. This potential would be no greater than that for other existing structures and improvements in the immediate vicinity that comply with current and adopted building standards.

GROUNDWATER

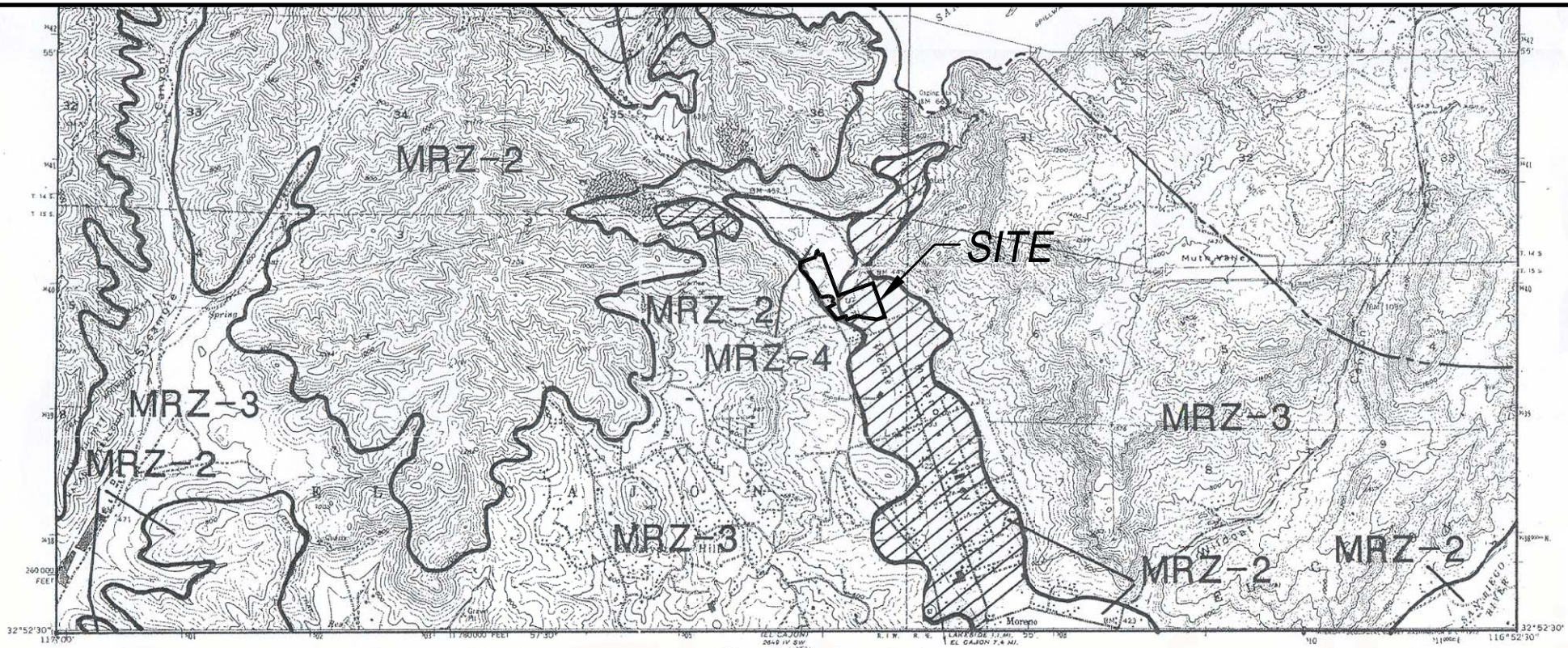
Regional groundwater was encountered during our previous field exploration (GSI, 2009) and is expected to be a factor during construction of the proposed project. Regional groundwater during prior GSI site explorations was generally at an elevation of ±408 feet Mean Sea Level (MSL) within the permeable alluvial sand deposits. Perched groundwater was also encountered during this investigation and is anticipated to generally be at an elevation of ±416 feet (MSL) within areas of alluvium with contrasting permeabilities, such as aquifers within aquitards/aquacludes, on the western portions of the project or between granitic and alluvium. A review of the "Draft" Groundwater Information Letter; East County Sand Mine, MPA 08-123, dated March 27, 2009, by Wieldlin & Associates, indicates that "groundwater level information on groundwater levels have been acquired from three other sources. These sources are aerial photography of the adjacent quarry ponds, geologist logs of soil borings completed on the property, and groundwater levels measured in 1988 and reported in the Draft EIR for the quarry operation at the adjacent property." Based on this review, the historic groundwater levels range from ±403 feet (MSL) to 446 feet (MSL). The broad range of historic groundwater levels is likely a direct result of the variable topography, contrasts in sediment permeabilities (such as bar and overbank deposits), proximity of granitic basement rocks, and precipitation variances over time. The elevation of the groundwater within the excavated alluvium is anticipated to vary with the speed of mining activities and length of time between phases of mining activity.

MINERAL LAND CLASSIFICATION

As indicated in the "Update of Mineral land Classification: Aggregate Materials in the Western San Diego County Production-Consumption Region," DMG Open-File Report 96-04, by the California Department of Conservation Division of Mines and Geology ([CDMG], 1996), the Ennis Materials Company has been mining PCC-grade sand from San Vincente Creek since 1991. Based on this work, the deposits in San Vincente Creek, downstream of San Vincente Reservoir Dam are reclassified from MZR-4 to MRZ-2 for PCC-grade aggregate resources. This newly identified Aggregate Resource Area covers about 450 acres, and consists of sand deposits in the San Vicente Creek Flood plain. The deposits are at least 70 feet thick. The ECSM project is located within both MRZ-2 and MRZ-4 (see Figure 4).

ANGLE OF REPOSE

The angle of repose is an engineering property of granular materials. The angle of repose is the maximum angle of a stable slope determined by friction, cohesion and the shapes of the particles. When bulk granular materials are poured onto a horizontal surface, a conical pile will form. The internal angle between the surface of the pile and the horizontal surface is known as the angle of repose. Based on the review of the "Angle of Repose of



TOPOGRAPHIC BASE MAP BY U.S. GEOLOGICAL SURVEY
Reduced from 1:24,000

SCALE = 1:48,000

1 0 1 MILE
4000 0 4000 FEET
1 0 1 KILOMETER

N
14 1/2°
MAGNETIC NORTH AND DECLINATION

STUDY AREA

EXPLANATION

PRODUCTION-CONSUMPTION REGION BOUNDARY (see text for discussion)

MINERAL RESOURCE ZONE BOUNDARIES

MRZ-2

MRZ-1 Areas where adequate information indicates that no significant mineral deposits are present, or where it is judged that little likelihood exists for their presence.

MRZ-2 Areas where adequate information indicates that significant mineral deposits are present or where it is judged that a high likelihood exists for their presence.

MRZ-3 Areas containing mineral deposits the significance of which cannot be evaluated from available data.

MRZ-4 Areas where available information is inadequate for assignment to any other MRZ zone.

Area reclassified to MRZ-2.

REVISED MINERAL LAND CLASSIFICATION MAP
AGGREGATE RESOURCES ONLY
WESTERN SAN DIEGO COUNTY PRODUCTION-CONSUMPTION REGION

By
Russell V. Miller

1996

GeoSoils, Inc.

RIVERSIDE CO.
ORANGE CO.
SAN DIEGO CO.

MRZ LOCATION MAP

Figure 4

W.O. 5855-A1-SC	DATE 09/11	SCALE AS SHOWN

Various Materials" table in the Caterpillar Performance Hand Book Edition 33 (CPH, 2002), the angle between horizontal and slope of a heaped pile is provided in the table below:

MATERIAL	SLOPE RATIO (H:V)	DEGREES
Common Earth, Moist	2.1:1-1.0:1	25-45
Common Earth, wet	2.1:1-1.7:1	25-30
Sand & Clay	2.8:1-1.4:1	20-35
Sand, Moist	1.8:1-1.0:1	30-45
Sand, Wet	2.8:1-1.0:1	20-45
Table reproduced from Caterpillar Performance Hand Book Edition 33		

Submerged granular earth materials are anticipated to be at the lower end of the ranges noted above; hence, the maximum recommended 3:1 (h:v) submerged slope inclination presented in this report.

LABORATORY TESTING

General

Laboratory tests were performed on GSI's previous study (2009), on the onsite earth materials in order to evaluate their physical characteristics. The test procedures used and results obtained are reproduced below.

Classification

Soils were classified visually according to the Unified Soils Classification System (Sowers and Sowers, 1979). The soil classifications are shown on the Boring and Test Pit Logs in Appendix B.

Moisture-Density Relations

The field moisture contents and dry unit weights were evaluated for selected undisturbed samples in the laboratory in general accordance with ASTM 2937. The dry unit weight was determined in pounds per cubic foot (pcf), and the field moisture content was determined as a percentage of the dry weight. The results of these tests are shown on the Boring Logs in Appendix B.

Laboratory Standard

The maximum dry density and optimum moisture content was determined for the major soil types encountered in the trenches. The laboratory standard used was ASTM D 1557. The moisture-density relationship obtained for this soil is shown below:

SOIL TYPE	TEST PIT AND DEPTH (ft.)	MAXIMUM DRY DENSITY (pcf)	OPTIMUM MOISTURE CONTENT (%)
Silty SAND, Brown	B-1 Composite	123.5	12.5
SAND with Silt, Brown	B-3 @ 25'-28'	122.0	11.5

Direct Shear Tests

Shear testing was performed on remolded and undisturbed samples of site soils in general accordance with ASTM test method D 3080. The remolded samples were remolded to 90 percent relative compaction at optimum moisture content. Test results are presented in Appendix D.

SAMPLE LOCATION	PRIMARY		RESIDUAL	
	COHESION (PSF)	FRICTION ANGLE (DEGREES)	COHESION (PSF)	FRICTION ANGLE (DEGREES)
B-1 @ 10' (undisturbed)	221	30	145	31
B-1 @ 35' (remolded)	139	29	144	28
B-2 @ 20' (undisturbed)	1047	25	452	31
B-3 @ 20' (undisturbed)	285	34	236	35
B-3 @ 35' (remolded)	86	37	102	35
B-4 @ 10' (undisturbed)	39	39	42	38
B-5 @ 20' (undisturbed)	129	35	75	35

Sieve Analysis

Sieve analysis was performed on representative soil samples in general accordance with ASTM test method D 2435. The sieve analyses results are presented in Appendix D.

LIQUEFACTION AND DYNAMIC SETTLEMENT EVALUATION

Liquefaction

Liquefaction describes a phenomenon in which cyclic stresses, produced by earthquake induced ground motion, create excess pore pressures in relatively cohesionless soils. These soils may thereby acquire a high degree of mobility, which can lead to lateral movement sliding, consolidation and settlement of loose sediments, sand boils, and other damaging deformations. This phenomenon occurs only below the water table, but after liquefaction has developed, it can propagate upward into overlying, non-saturated soil, as excess pore water dissipates.

Seismic induced densification or volumetric strain of loose, relatively dry (significantly drier than optimum moisture), granular soils above the groundwater table may occur when considering the seismic loading of the design basis earthquake. For this review, we have assumed a lack of regional groundwater within the upper 25 to 30 feet Based on our observations and laboratory tests, the relative density (D_r) of 55 to 80 percent is indicative of low susceptible soils. Seismic densification of granular alluvium above the water table may be subject to some low magnitude seismic densification and result in limited surface settlement.

Liquefaction susceptibility is related to numerous factors and the following conditions must exist for liquefaction to occur: 1) sediments must be relatively young in age and not have developed large amount of cementation; 2) sediments must consist mainly of medium to fine grained relatively cohesionless sands; 3) the sediments must have low relative density; 4) free groundwater must be present in the sediment; and 5) the site must experience seismic event of a sufficient duration and large enough magnitude, to induce straining of soil particles. At the subject site, four of the five of the conditions which are necessary for liquefaction to occur exist in the alluvial soils within the proposed project area, and the site is in an area capable of experiencing a significant seismic event.

One of the primary factors controlling the potential for liquefaction is depth to groundwater. Liquefaction susceptibility generally decreases as the groundwater depth increases for two reasons: 1) the deeper the water table, the greater normal effective stress acting on saturated sediments at any given depth and liquefaction susceptibility decreases with increased normal effective stress; and 2) age, cementation, and relative density of sediments generally increase with depth. Thus, as the depth to the water table increases, and as the saturated sediments become older, more cemented, have higher relative

density, and confining normal stresses increase, the less likely they are to liquefy during a seismic event. Typically, liquefaction has a relatively low potential where groundwater is greater than 50 feet deep and not likely and/or will produce vertical strains well below 1 percent where the depth to groundwater is greater than 60 feet or where relative densities are 40 to 60 percent and the effective overburden pressures are two or more atmospheres (i.e., 4,232 pounds per square foot (Seed, 2005). On the site, dense crystalline granitic bedrock exists below about 55 feet.

Following an evaluation of the laboratory data and boring logs, a conservative soil profile was established to evaluate the potential for liquefaction to occur in the subsurface soils in the central area of the proposed development area. The soil profile was constructed using Boring B-1a as an information base. This soil profile was established to represent initial case site conditions prior to mining and dredging. For the purpose of this analyses, groundwater was assumed to be at 30 feet. If the groundwater surface rises above that level, the potential for liquefaction/deformation will also increase. The liquefaction analysis was performed using the LiquefyPro version 5.4b computer program developed by Civiltech (2006 [see Appendix A]).

The liquefaction analysis were performed in general accordance with the recommendations provided in Publication 117A "Guidelines for Analyzing and Mitigating Liquefaction in California, 2008." The maximum groundwater for analysis was assumed to be located at a depth of 25 to 30 feet below the existing grade. The peak ground acceleration was obtained using the 2008 Interactive Deaggregations (Beta) Seismic Hazard Analysis tool available at the USGS website (https://geohazards.usgs.gov/deaggnit/2008/) for 2 percent probability of exceedance in 50 years was 0.34g. A peak ground acceleration of 0.35g has been assumed in the analyses. Based on the results of our analyses, thick layers of silty sand to sandy silt exist below the water table that may be potentially susceptible to liquefaction; however, the F.O.S. against liquefaction is typically greater than 1.0 for the site soils over granitic bedrock using a peak ground acceleration of 0.35g for the maximum considered earthquake. However, the submerged soils from ±25-30 feet to approximately 37 feet, and 48 to 51 feet are susceptible, and liquefy under the design basis earthquake. These potentially liquefiable layers may be up to 10 to 20 feet in thickness. The results of our liquefaction analyses are presented in Appendix E.

The sequence of construction will affect the amount of liquefaction potential. That is, at the start of construction the ground surface will be similar to the profile with the thickest alluvium and saturated alluvium overlying the bedrock. As the phases of sand mining progress, the potential for liquefaction and/or densification will be reduced based on the amount of left-in-place alluvium.

Seismic Settlements

Initially the potential for liquefaction/densification near the central portions of the mine area will be approximately 2 to 2½ inches with a differential settlement of approximately 1½ inches over 100 feet (laterally). However, this will be reduced to less than ½ inch of total settlement as the mine nears the target depth/elevation of ±390 feet MSL. However, the differential settlement will increase to 2 to 3 inches over the distance of the toe to the top of mined slopes. Please note, that since the alluvium under Highway 67 is above the groundwater table, this liquefaction is not anticipated to significantly affect the areas beyond the mine slopes (see Geologic Cross Sections, Plate 2). These estimates do not include the effects of lateral spreading. The magnitude of potential seismic settlement was computed in accordance with the "Seed & Tokimatsu" methodology for sands as recommended by Publication 117A "Guidelines for Analyzing and Mitigating Liquefaction in California." On a preliminary basis, the anticipated strain or surface settlement assumes approximately 20 feet of saturated and 30 feet of unsaturated granular alluvium above the water table.

Lateral Spreading

Lateral spread phenomenon is described as the lateral movement of stiff, surficial, mostly intact blocks of sediment displaced downslope towards a free face along a shear zone that has formed within the liquefied sediment. The resulting ground deformation typically has extensional fissures at the head of the failure, shear deformations along the side margins, and compression or buckling of the soil at the toe. The extent of lateral displacement typically ranges from a half inch to several feet. Two types of lateral spread can occur: 1) lateral spread towards a free face (e.g., temporary pond or embankment); and 2) lateral spread down a gentle ground slope where a free face is absent. Factors such as earthquake magnitude, distance from the seismic energy source, thickness of the liquefiable layers, and the fines content and particle size of those sediments also correlate with ground displacement. The assumption for this deformation to occur is a continuos liquefaction within a layer during a seismic event. GSI anticipated this impact to affect the soils near the top-of-slopes, and less so, as the distance increases from planned slopes.

Based on the current plans, there are proposed free-face type conditions in areas susceptible to liquefaction. However, based on our borings, it appears the liquefiable layers are relatively continuous with the existing gentle ground slope. Seismically-induced lateral spread, in our opinion, poses a low to moderate risk to the proposed site mine development with regards to the current plans, because of temporary planned conditions during mining operations and the PHSA of 0.35g. Some seismic mobility of the temporary slopes may occur during the design seismic event, but due to the 30- to +100-foot setback, the shallow elevation of bedrock near the perimeter of the project at Highway 67, and the general land use/development densities, this may be considered a low risk for development. The potential for lateral spreading may be re-evaluated when additional development plans become available.

Seismic Induced Surface Deformation

Due to the site conditions reviewed some surface settlement may occur near or within a distance H from the top of slope(s) for this proposed mine project. This will likely take the form of near top-of-slope slumps, settlements, and ground cracking. However, due to the low magnitude of the vertical seismic deformation calculated (less than 3 inches) and the PSHA, the effects on existing roads, and significant improvements beyond H from the top-of-slope, will be low.

OTHER GEOLOGIC HAZARDS

Fault Rupture

Fault rupture is generally considered most likely to occur along pre-existing faults. As previously discussed no known local faulting was observed to transect the site during the field investigation. Additionally, a review of regional geologic maps in does not indicate the presence of local faults crossing the site nor is the site shown in an Alquist-Priolo Earthquake fault zone by state maps. Consequently, the likelihood for fault repture at the site is considered remote.

Ground Shaking

The Turner Sand mine, like much of California, is located within a seismically active area. Therefore, the potential for future earthquake effects in the vicinity of the Turner Sand Mine within its lifetime is high. As discussed above in Faulting and Regional Seismicity section, the degree of ground shaking anticipated was assessed using EQFAULT (Blake, 2000a), and deterministic peak horizontal ground acceleration from an upper bound event at the site may be on the order of 0.22 g to 0.28 g. A probabilistic seismic hazards analysis was performed using the 2008 Interactive Deaggregations (Beta) Seismic Hazard Analysis tool available at the USGS website (https://geohazards.usgs.gov/deaggnit/2008/) which evaluates the site specific probabilities of exceedance for selected spectral periods. Based on a review of these data, and considering the relative seismic activity of the southern California region, a probabilistic horizontal ground acceleration (PHGA) of 0.19g and 0.34g were calculated. These values were calculated as they correspond to a 10 percent and 2 percent probability of exceedance in 50 years, respectively.

Landslides

Based on a review of California Department of Conservation Division of Mines and Geology "Landslide Hazards in the San Vicente Reservoir Quadrangle, San Diego County, California," Open-File Report 92-04 (CDMG, 1992), the site is classified as "least susceptible" for the relative landslide susceptibility areas. In this classification, landslides and other features related to slope instability are very rare with this area due to the absence of steep slopes. Included in this area are topographically low-lying valley bottoms

and alluviated flood plains. Some seismic induced slope deformation is anticipated near the top-of-slopes as preciously discussed.

Unstable Cut and Fill Slopes/Trench Wall Stability

Any proposed cut and fill slopes or trench walls have the potential for failure if the soil conditions have not been evaluated properly. For the most part, the mining operation is proposed to used the alluvial areas wherein granular unconsolidated sediments exist. Failure of any oversteepened slopes could be caused by ground shaking, erosion, natural raveling, etc. Due to the expected open pit mining method already in use to the north (Ennis Sand Mine), much practical "hands on" experience has dictated general slope stability characteristics. However, there are other natural forces which may not have occurred in the past to induce any such failure (i.e., ground shaking, etc.). Therefore, the potential for seismically induced landsliding is considered moderate and a slope stability analysis has been performed. All CalOSHA guidelines should be followed for site slopes.

Mass Wasting

Mass wasting refers to the various processes by which earth materials are moved downslope in response to the force of gravity. Examples of these processes within the site include slope creep and minor slump deposits. Most of the proposed cut slopes within the site are subject to downslope creep of surface or near surface materials. The materials most subject to creep are, topsoil, slopewash, and alluvium deposits. Creep is the slowest form of mass wasting, and generally involves the outer 5 to 10 feet of the slope surface. During heavy rains, such as those in 1969, 1978, 1980, 1983, 1992, 1993, 1995,1998, 2055, and 2010, creep-affected materials may become saturated, resulting in a more rapid form of downslope movement (i.e., landslides and/or surficial failures). This type of slope instability has the potential to exist locally within proposed cut slope areas. However, as mentioned above, downslope creep generally involves the outer 5 to 10 feet of the slope surface. Given the minimum setback distance of 30 to 100 feet, the potential for downslope creep is considered to have a minimum affect on offsite improvements, considering the area potentially susceptible to such, and in view of the time likely available to mitigate any such potential occurrence.

Land Subsidence

Land subsidence occurring from extraction of underground reserves (groundwater, oil, etc.) is not expected to pose any significant threat to this project. Presently, GSI understands that water would be supplied to the site partially by import and by on-site sources. Deep pumping is not proposed at this time, and the site sediments may be generally characterized as an unconfined aquifer, which is not typically prone to land subsidence.

SLOPE STABILITY

Conventional slope stability analyses were performed utilizing computer program GSTABL7 v.2. The program performs a two-dimensional limit equilibrium analysis to compute the factor of safety for a layered slope using the simplified Bishop or Janbu methods. Representative geologic cross sections were prepared for analysis, utilizing field and laboratory data from our referenced report and the 100-scale design study, depicting maximum cut slopes, as indicated on Geologic Cross Sections A-A' through D-D'. The results of the analyses are included in Appendix F. The cross sections show the interpreted geologic structures indicated by the geotechnical data obtained from previous field investigations (see Appendix A). The presence or absence of adverse geologic structure should be further evaluated during excavation so the mitigative measures can be provided, if warranted. Sampling of exposed materials to confirm anticipated soil parameters also should be performed during excavation.

Temporary Stability Analysis

A temporary calculated factor-of-safety (F.O.S.) greater than 1.25 or 1.0 has been obtained for the proposed, maximum temporary height cut slopes, when analyzed from a static or seismic viewpoint, respectively. The results of the analyses for various inclinations are included in Appendix F. Generally, the slope inclination of 1.5:1 to 1.6:1 (h:v) above the groundwater table and 3:1 to 3.5:1 (h:v) below the groundwater table are considered acceptable to meet these minimum factor-of-safety. The mined slope inclinations of 1.6:1 (h:v) above groundwater, and 3.5:1 (h:v) below the groundwater, are recommended on the eastern portion of the site along Moreno Avenue, based on the available data.

Temporary Surficial Slope Stability

The surficial stability of the proposed slopes have been analyzed. GSI has utilized cumulative averages for soil parameters above the water table in this evaluation. The soil parameters utilized are indicted on Plates F-1 through F-10. Our evaluation indicates a surficial safety factor greater than 1.25 for the proposed slopes, at the inclinations indicated in Appendix F.

Final Reclamation Stability Analysis

A calculated factor-of-safety greater than 3.0 has been obtained for the proposed, maximum height fill slopes, when analyzed from a static viewpoint. The seismic F.O.S. was not calculated as it is not required if the static F.O.S. is greater than 1.8, as indicated in Special Publication 117A. Therefore, slopes that are less than the maximum planned 10 height fill slopes will have a F.O.S greater than 3.0, and were evaluated by inspection given the same slope earth materials. The results of the analysis are included in Appendix F.

PRELIMINARY CONCLUSIONS AND RECOMMENDATIONS

Based on our field exploration, laboratory testing, and geotechnical engineering analysis, it is our opinion that the site appears suitable for the proposed ECSM from a geotechnical engineering and geologic viewpoint, provided that the recommendations presented in the following sections are properly incorporated into the design and construction phases of site development. The primary geotechnical concerns with respect to the currently proposed development are:

- Earth materials characteristics.
- Groundwater during mining extraction.
- Slope stability.
- Regional seismic activity.

The recommendations presented herein consider these as well as other aspects of the site. The engineering analyses, performed, concerning site preparation and the recommendations presented herein have been completed using the information provided and obtained during our field work. In the event that any significant changes are made to proposed site excavation or reclamation, the conclusions and recommendations contained in this report shall not be considered valid unless the changes are reviewed and the recommendations of this report are evaluated or modified in writing by this office.

1. Geologic observations should be performed to further evaluate geologic conditions during mining operations. Although unlikely, if adverse geologic structures are encountered, supplemental recommendations and earthwork may be warranted.

2. In order to provide the minium factor-of-safety (F.O.S) of 1.2 (static) and 1.0 (pseudo-static) the proposed cut slopes above groundwater may be constructed at a maximum slope gradient of 1.5:1 (h:v) or flatter, and the portions below the groundwater may be constructed at a maximum slope gradient of 3:1 to 3.5:1 (h:v) or flatter (see Appendix F), for temporary (mining) conditions. The 3.5:1 (h:v) maximum slope gradient is recommended on the eastern portion of the site along Moreno Avenue, based on the available data. In addition, construction materials and/or stockpiled material should not be stored within 30 feet of the top of any temporary slope. Excessive pumping of groundwater and excessive stockpiling of earth materials near top-of-slopes are not recommended and may reduce these factors of safety.

3. Temporary/permanent provisions should be made to direct any potential runoff away from the top of any temporary excavation.

4. In general and based upon the available data to date, groundwater is expected to be encountered during mining excavation and reclamation at the site.

5. The probabilistic horizontal site acceleration (PHSA) values provided herein should be considered during the design and construction of the future proposed development.

6. General Earthwork, Grading Guidelines, and Preliminary Criteria are provided at the end of this report as Appendix G. Specific recommendations are provided below.

EARTHWORK CONSTRUCTION RECOMMENDATIONS

General

All mining excavation and reclamation should conform to the guidelines presented in the California Building Code and Surface Mining and Reclamation Act and Associated Regulations(CBSC, 2010; SMARA, 2007), the requirements of the governing agency, and the Grading Guidelines presented in Appendix G, except where specifically superceded in the text of this report. In case of conflict, the more onerous code or recommendations should govern. Prior to operations, a GSI representative should be present at the preconstruction meeting to provide additional guidelines, if needed, and review the earthwork schedule.

During earthwork construction for reclamation, all site preparation and the general grading procedures of the contractor should be observed and the fill selectively tested by a representative(s) of GSI. If unusual or unexpected conditions are exposed in the field, they should be reviewed by this office and, if warranted, modified and/or additional recommendations will be offered. All applicable requirements of local and national construction and general industry safety orders, the Occupational Safety and Health Act (OSHA), and the Construction Safety Act should be met. It is the operators responsibility to provide a safe working environment for the site. GSI does not consult in the area of safety engineering.

Temporary Slopes

As a result of the relatively non-cohesive, sandy soils at depth on portions of the site, vertical excavations shall conform to CalOSHA requirements for Type "C" soils. Temporary cut slopes, up to a maximum height of ±20 feet, may be excavated at a 1½:1 (h:v) gradient, or flatter in alluvium, based on the available data, provided adverse geologic conditions or groundwater are not present. This does not preclude localized slumps of materials below the water table and headward migration. Human occupation of temporary slope areas that are pumped "dry" are not recommended unless adequate shoring and/or shielding are designed. Additional geotechnical evaluations and recommendations will be needed if this type of temporary slopes/excavations are needed.

OTHER DESIGN PROFESSIONALS/CONSULTANTS

The design civil engineer, etc., should review the recommendations provided herein, incorporate those recommendations into all their respective plans, and by explicit reference, make this report part of their project plans.

PLAN REVIEW

Final project plans (extraction, reclamation, etc.), should be reviewed by this office prior to construction, so that construction is in accordance with the conclusions and recommendations of this report. Based on our review, supplemental recommendations and/or further geotechnical studies may be warranted.

LIMITATIONS

The materials encountered on the project site and utilized for our analysis are believed representative of the area; however, soil and bedrock materials vary in character between excavations and natural outcrops or conditions exposed during mining excavation or reclamation. Site conditions may vary due to seasonal changes or other factors.

Inasmuch as our study is based upon our review and engineering analyses and laboratory data, the conclusions and recommendations are professional opinions. These opinions have been derived in accordance with current standards of practice, and no warranty, either express or implied, is given. Standards of practice are subject to change with time. GSI assumes no responsibility or liability for work or testing performed by others, or their inaction; or work performed when GSI is not requested to be onsite, to evaluate if our recommendations have been properly implemented. Use of this report constitutes an agreement and consent by the user to all the limitations outlined above, notwithstanding any other agreements that may be in place. In addition, this report may be subject to review by the controlling authorities. Thus, this report brings to completion our scope of services for this portion of the project. All samples will be disposed of after 30 days, unless specifically requested by the client, in writing.

APPENDIX A

REFERENCES

APPENDIX A

REFERENCES

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APPENDIX B

BORING AND TEST PIT LOGS

UNIFIED SOIL CLASSIFICATION SYSTEM

Major Divisions			Group Symbols	Typical Names
Coarse-Grained Soils More than 50% retained on No. 200 sieve	Gravels 50% or more of coarse fraction retained on No. 4 sieve	Clean Gravels	GW	Well-graded gravels and gravel-sand mixtures, little or no fines
			GP	Poorly graded gravels and gravel-sand mixtures, little or no fines
		Gravel with	GM	Silty gravels gravel-sand-silt mixtures
			GC	Clayey gravels, gravel-sand-clay mixtures
	Sands more than 50% of coarse fraction passes No. 4 sieve	Clean Sands	SW	Well-graded sands and gravelly sands, little or no fines
			SP	Poorly graded sands and gravelly sands, little or no fines
		Sands with Fines	SM	Silty sands, sand-silt mixtures
			SC	Clayey sands, sand-clay mixtures
Fine-Grained Soils 50% or more passes No. 200 sieve	Silts and Clays Liquid limit 50% or less		ML	Inorganic silts, very fine sands, rock flour, silty or clayey fine sands
			CL	Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays
			OL	Organic silts and organic silty clays of low plasticity
	Silts and Clays Liquid limit greater than 50%		MH	Inorganic silts, micaceous or diatomaceous fine sands or silts, elastic silts
			CH	Inorganic clays of high plasticity, fat clays
			OH	Organic clays of medium to high plasticity
Highly Organic Soils			PT	Peat, mucic, and other highly organic soils

CONSISTENCY OR RELATIVE DENSITY

CRITERIA

Standard Penetration Test

Penetration Resistance N (blows/ft)	Relative Density
0 - 4	Very loose
4 - 10	Loose
10 - 30	Medium
30 - 50	Dense
> 50	Very dense

Standard Penetration Test

Penetration Resistance N (blows/ft)	Consistency	Unconfined Compressive Strength (tons/ft^2)
<2	Very Soft	<0.25
2 - 4	Soft	0.25 - .050
4 - 8	Medium	0.50 - 1.00
8 - 15	Stiff	1.00 - 2.00
15 - 30	Very Stiff	2.00 - 4.00
>30	Hard	>4.00

3" 3/4" #4 #10 #40 #200 U.S. Standard Sieve

Unified Soil Classification	Cobbles	Gravel		Sand			Silt or Clay
		coarse	fine	coarse	medium	fine	

MOISTURE CONDITIONS

Dry	Absence of moisture: dusty, dry to the touch
Slightly Moist	Below optimum moisture content for compaction
Moist	Near optimum moisture content
Very Moist	Above optimum moisture content
Wet	Visible free water; below water table

MATERIAL QUANTITY

trace	0 - 5 %
few	5 - 10 %
little	10 - 25 %
some	25 - 45 %

OTHER SYMBOLS

C Core Sample
S SPT Sample
B Bulk Sample
▽ Groundwater
Qp Pocket Penetrometer

BASIC LOG FORMAT:
Group name, Group symbol, (grain size), color, moisture, consistency or relative density. Additional comments: odor, presence of roots, mica, gypsum, coarse grained particles, etc.

EXAMPLE:
Sand (SP), fine to medium grained, brown, moist, loose, trace silt, little fine gravel, few cobbles up to 4" in size, some hair roots and rootlets.

File:Mgr: c;\SoilClassif.wpd

PLATE B-1

GeoSoils, Inc.

W.O. 5855-A-SC
East County Sand, LLC
Tuner Sand Mine
Logged By: BEV
March 12, 2009

LOG OF EXPLORATORY TEST PITS

TEST PIT NO.	ELEV.	DEPTH (ft.)	GROUP SYMBOL	SAMPLE DEPTH (ft.)	MOISTURE (%)	FIELD DRY DENSITY (pcf)	DESCRIPTION
TP-1		0-6½	SM				TOPSOIL/COLLUVIUM: SILTY SAND, light brown, moist, loose.
		6½-10	CL				ALLUVIUM: SILTY CLAY, dark brown, moist to wet, soft to medium stiff.
		10-14	SM				SILTY SAND, reddish brown, dry to moist, dense.
							Total Depth = 14' No Groundwater Encountered Backfilled 3-12-09
TP-2		0-4	SM				TOPSOIL/COLLUVIUM: SILTY SAND, light brown, moist, loose.
		4-16½	SM				ALLUVIUM: SILTY SAND, light brown, moist, loose to medium dense.
		16½-18	SM				SILTY SAND, reddish brown, dry to moist, dense.
							Total Depth = 18' No Groundwater Encountered Backfilled 3-12-09
TP-3		0-1	SM				TOPSOIL/COLLUVIUM: SILTY SAND, light brown, loose to medium dense.
		1-16	SP				ALLUVIUM: SAND, light brown, moist, loose; poorly graded sand, little or no fines.
							Total Depth = 16' No Groundwater Encountered Backfilled 3-12-09

PLATE B-2

GeoSoils, Inc.

W.O. 5855-A-SC
East County Sand, LLC
Tuner Sand Mine
Logged By: BEV
March 12, 2009

LOG OF EXPLORATORY TEST PITS

TEST PIT NO.	ELEV.	DEPTH (ft.)	GROUP SYMBOL	SAMPLE DEPTH (ft.)	MOISTURE (%)	FIELD DRY DENSITY (pcf)	DESCRIPTION
TP-4		0-1	SM				TOPSOIL/COLLUVIUM: SILTY SAND, brown, moist, loose.
		1-13	SP				ALLUVIUM: SAND, light brown, moist to wet, loose to medium dense; poorly graded sand, little or no fines.
		13-16	SM				SILTY SAND, brown to dark brown, moist, medium dense.
							Total Depth = 16' No Groundwater Encountered Backfilled 3-12-09
TP-5		0-2	SM				TOPSOIL/COLLUVIUM: SILTY SAND, light brown, moist, loose.
		2-18	SP	Bulk @ 5-8			ALLUVIUM: SAND, light brown, moist, loose; poorly graded sand, little or no fines.
							Total Depth = 18' No Groundwater Encountered Backfilled 3-12-09
TP-6		0-3	SM				TOPSOIL/COLLUVIUM: SILTY SAND, brown, moist, loose.
		3-18	SM/ML				ALLUVIUM: SILTY SAND to SANDY SILTY, light brown to brown, moist to wet, loose to soft.
		18-23	SP	Bulk @ 19			SAND, light brown, wet to saturated, loose; poorly graded sand, little or no fines.
							Total Depth = 23' Groundwater Encountered @ ±23' Backfilled 3-12-09

GeoSoils, Inc.

W.O. 5855-A-SC
East County Sand, LLC
Tuner Sand Mine
Logged By: BEV
March 12, 2009

LOG OF EXPLORATORY TEST PITS

TEST PIT NO.	ELEV.	DEPTH (ft.)	GROUP SYMBOL	SAMPLE DEPTH (ft.)	MOISTURE (%)	FIELD DRY DENSITY (pcf)	DESCRIPTION
TP-7		0-3	SM/ML				TOPSOIL/COLLUVIUM: SILTY SAND to SANDY SILT, brown to dark brown, moist, loose to soft.
		3-5	ML				ALLUVIUM: SANDY SILT, brown, moist, soft.
		5-6	SW				SAND, light brown, moist, loose; well graded sand.
		6-18	ML				SANDY SILT, dark brown, moist, soft to medium stiff.
							Total Depth = 18' No Groundwater Encountered Backfilled 3-12-09
TP-8		0-3	SM				TOPSOIL/COLLUVIUM: SILTY SAND, light brown, moist, loose.
		3-6	ML				ALLUVIUM: SANDY SILT, dark brown, moist, soft.
		6-7	SW				SAND, light brown, moist, loose; well graded sand.
		7-20	ML				SANDY SILT, dark brown, moist to wet, soft.
		20-23	SP				SAND, light brown, saturated, loose; poorly graded sand.
							Total Depth = 23' Groundwater Encountered @ 23' Backfilled 3-12-09

BORING LOG

GeoSoils, Inc.

W.O. 5855-A-SC

PROJECT: EAST COUNTY SAND, LLC
Turner Sand Mine

BORING B-1A *SHEET* 1 *OF* 3

DATE EXCAVATED 3-10-09 *LOGGED BY:* BEV

SAMPLE METHOD: 140 Lb. Hammer @ 30" Drop

Approx. Elevation: 438' MSL

Standard Penetration Test

Undisturbed, Ring Sample

Groundwater

Depth (ft.)	Sample: Bulk	Sample: Undisturbed	Sample: Blows/ft.	USCS Symbol	Dry Unit Wt. (pcf)	Moisture (%)	Saturation (%)	Description of Material
				SM				**TOPSOIL/COLLUVIUM:** @ 0-3' SILTY SAND, brown, damp, loose.
				SM				**ALLUVIUM:** @ 3-5' SILTY SAND, light brown, damp, loose.
5			19		102.8	7.7	33.6	@ 5-10' SILTY SAND, brown, damp, medium dense; porous.
10			12		94.4	10.0	35.1	@ 10-15' SILTY SAND, reddish brown, damp, medium dense; mica, minor coarse sand clasts, porous.
15			21		99.2	8.3	32.9	@ 15-20' SILTY SAND, light brown, damp, medium dense; mica, minor coarse sand.
20			12	SM/ML	84.0	10.3	28.3	@ 20-25' SILTY SAND to SANDY SILT, brown, damp, medium dense to stiff; mica, minor coarse clast.
25			18	SM	Poor Recovery			@ 25-30' SILTY SAND, brown, moist to wet, medium dense, no recovery.

BORING LOG

GeoSoils, Inc.

W.O. 5855-A-SC

PROJECT: EAST COUNTY SAND, LLC
Turner Sand Mine

BORING B-1A SHEET 2 OF 3

DATE EXCAVATED 3-10-09 LOGGED BY: BEV

SAMPLE METHOD: 140 Lb. Hammer @ 30" Drop

Approx. Elevation: 438' MSL

Standard Penetration Test

Undisturbed, Ring Sample

Groundwater

Depth (ft.)	Sample: Bulk	Sample: Undisturbed	Sample: Blows/ft.	USCS Symbol	Dry Unit Wt. (pcf)	Moisture (%)	Saturation (%)	Description of Material
			14	SM	Poor Recovery			@ 30-35' SILTY SAND, brown, saturated, medium dense. @ 30' Groundwater encountered. @ 30' Flowing sands, bentonite grout well added.
35			16	CL/ML				@ 35-40' SILTY CLAY to SANDY SILT, brown, saturated, stiff; trap used in sample.
40			21	SM				@ 40-45' SILTY SAND, brown, saturated, medium dense; mica, minor coarse sand clast.
45			29	SW				@ 45-50' SAND, light brown, saturated, medium dense; medium to coarse grained, little fine material, well graded sand.
50			13					@ 50-55' SAND, brown, saturated, medium dense; fine to medium grained, well graded sand.
55			42					**WEATHERED GRANITICS:** @ 55' Decomposed Granite, light brown to olive gray, dense.

BORING LOG

GeoSoils, Inc.

W.O. 5855-A-SC

PROJECT: EAST COUNTY SAND, LLC
Turner Sand Mine

BORING B-1A *SHEET* 3 *OF* 3

DATE EXCAVATED 3-10-09 *LOGGED BY:* BEV

SAMPLE METHOD: 140 Lb. Hammer @ 30" Drop

Approx. Elevation: 438' MSL

Standard Penetration Test

Undisturbed, Ring Sample

Groundwater

Depth (ft.)	Sample: Bulk	Sample: Undisturbed	Sample: Blows/ft.	USCS Symbol	Dry Unit Wt. (pcf)	Moisture (%)	Saturation (%)	Description of Material
			50					@ 60' Decomposed Granite, light brown, dense.
65			50					@ 65' Decomposed Granite, light brown, dense.
70								
75			84					**GRANITIC ROCK:** @ 75' Granitic Rock, olive green, very dense.
								Total Depth = 76½' Groundwater Encountered @ 30' @ 30' Flowing Sand, Bentonite Grout Well Added Backfilled 3-10-2009 with Bentonite Grout.
80								
85								

BORING LOG

GeoSoils, Inc.

W.O. 5855-A-SC

PROJECT: EAST COUNTY SAND, LLC
Turner Sand Mine

BORING B-2A SHEET 1 OF 2

DATE EXCAVATED 3-10-09 LOGGED BY: BEV

SAMPLE METHOD: 140 Lb. Hammer @ 30" Drop

Approx. Elevation: 438' MSL

Standard Penetration Test

Undisturbed, Ring Sample

Groundwater

Depth (ft.)	Sample: Bulk	Sample: Undisturbed	Sample: Blows/ft.	USCS Symbol	Dry Unit Wt. (pcf)	Moisture (%)	Saturation (%)	Description of Material
				SM				**TOPSOIL/COLLUVIUM:** @ 0-5' SILTY SAND, brown, moist, loose to medium dense.
5			14	SM	87.2	19.7	58.4	**ALLUVIUM:** @ 5-10' SILTY SAND, brown, moist, medium dense.
10			16		94.3	16.1	56.4	@ 10-15' SILTY SAND, brown, moist, medium dense.
15			11	CL	94.7	27.6	97.9	@ 15-20' SILTY CLAY, dark brown, saturated, stiff.
								@ 18' Groundwater stabilized after 30 minutes.
20			35		105.0	21.2	97.5	@ 20' SILTY CLAY, light brown to brown, saturated, very stiff.
								@ 22' Groundwater encountered.
25			22		105.0	21.0	96.6	@ 25' SANDY CLAY, light brown, saturated, very stiff.

BORING LOG

GeoSoils, Inc.

W.O. 5855-A-SC

PROJECT: EAST COUNTY SAND, LLC
Turner Sand Mine

BORING B-2A *SHEET* 2 *OF* 2

DATE EXCAVATED 3-10-09 *LOGGED BY:* BEV

SAMPLE METHOD: 140 Lb. Hammer @ 30" Drop

Approx. Elevation: 438' MSL

Standard Penetration Test

Undisturbed, Ring Sample

Groundwater

Depth (ft.)	Sample: Bulk	Sample: Undisturbed	Sample: Blows/ft.	USCS Symbol	Dry Unit Wt. (pcf)	Moisture (%)	Saturation (%)	Description of Material
			15	CL				@ 30' SANDY CLAY, brown, saturated, stiff.
35			29					**GRANITICS:** @ 35' Decomposed Granitic Rock, light brown, medium dense.
								Total Depth = 36½' Initial Groundwater Measured @ 22' Groundwater After 30 Minutes = 18' Backfilled 3-10-2009 With Bentonite Grout
40								
45								
50								
55								

BORING LOG

GeoSoils, Inc.

W.O. 5855-A-SC

PROJECT: EAST COUNTY SAND, LLC
Turner Sand Mine

BORING B-3A SHEET 1 OF 2

DATE EXCAVATED 3-11-09 LOGGED BY: BEV

SAMPLE METHOD: 140 Lb. Hammer @ 30" Drop

Approx. Elevation: 439' MSL

Standard Penetration Test

Undisturbed, Ring Sample

Groundwater

Depth (ft.)	Sample: Bulk	Sample: Undisturbed	Sample: Blows/ft.	USCS Symbol	Dry Unit Wt. (pcf)	Moisture (%)	Saturation (%)	Description of Material
				SM				**TOPSOIL/COLLUVIUM:** @ 0-3' SILTY SAND, dark brown to brown, moist, loose.
5				SM				**ALLUVIUM:** @ 3-10' SILTY SAND, brown, moist, loose to medium dense.
10			12		99.4	9.9	39.4	@ 10' SILTY SAND, brown, damp, medium dense; minor coarse grained sand clasts, mica.
15								
20			23	SP	105.7	8.2	38.4	@ 20' SAND with SILT, light brown, damp, medium dense; poorly graded sand, little or no fines.
25								

BORING LOG

GeoSoils, Inc.

W.O. 5855-A-SC

PROJECT: EAST COUNTY SAND, LLC
Turner Sand Mine

BORING B-3A SHEET 2 OF 2

DATE EXCAVATED 3-11-09 LOGGED BY: BEV

SAMPLE METHOD: 140 Lb. Hammer @ 30" Drop

Approx. Elevation: 439' MSL

Standard Penetration Test

Undisturbed, Ring Sample

Groundwater

Depth (ft.)	Sample: Bulk	Sample: Undisturbed	Sample: Blows/ft.	USCS Symbol	Dry Unit Wt. (pcf)	Moisture (%)	Saturation (%)	Description of Material
			21	SP				@ 30' SAND with SILT, light brown, saturated, medium dense; poorly graded sand, little or no fines. @ 30' Groundwater encountered.
35			20	SW				@ 35' SAND with SILT, brown, saturated, medium dense; coarse grained sands, well graded sand.
40			20					@ 40' SAND with SILT, brown, saturated, medium dense; coarse grained sand with silt, well graded sand.
45								
50			56					@ 50' SAND with SILT, orange brown, saturated, very dense; coarse grained sand.
								Total Depth = 51½' because of slowing sands in auger. Removed 3 augers and still had flowing sands, hole abandoned. Bentonite well grout added at 30' and 40' Groundwater Encountered @ 30' Backfilled 3-11-2009 With Bentonite Grout
55								

BORING LOG

GeoSoils, Inc.

W.O. 5855-A-SC

PROJECT: EAST COUNTY SAND, LLC
Turner Sand Mine

BORING B-4A SHEET 1 OF 2

DATE EXCAVATED 3-11-09 LOGGED BY: BEV

SAMPLE METHOD: 140 Lb. Hammer @ 30" Drop

Approx. Elevation: 435' MSL

Standard Penetration Test

Undisturbed, Ring Sample

Groundwater

Depth (ft.)	Sample: Bulk	Sample: Undisturbed	Sample: Blows/ft.	USCS Symbol	Dry Unit Wt. (pcf)	Moisture (%)	Saturation (%)	Description of Material
				SP/SM				**TOPSOIL/COLLUVIUM:** @ 0-2' SAND to SILTY SAND, light brown, dry, loose.
				SP				**ALLUVIUM:** @ 2-10' SAND, light brown, dry, loose to medium dense; poorly graded sand, little or no fines.
5								
10			18		95.6	3.0	10.7	@ 10' SAND, light brown, dry, medium dense; poorly graded sand, little of no fines.
15								
20			20		Poor Recovery			@ 20' SAND, reddish brown, wet, medium dense; poorly graded sand, little or no fines.
								@ 23' Groundwater encountered.
25								@ 27' Scattered gravels.

BORING LOG

GeoSoils, Inc.

W.O. 5855-A-SC

PROJECT: EAST COUNTY SAND, LLC
Turner Sand Mine

BORING B-4A SHEET 2 OF 2

DATE EXCAVATED 3-11-09 LOGGED BY: BEV

SAMPLE METHOD: 140 Lb. Hammer @ 30" Drop

Approx. Elevation: 435' MSL

Standard Penetration Test

Undisturbed, Ring Sample

Groundwater

Depth (ft.)	Sample: Bulk	Sample: Undisturbed	Sample: Blows/ft.	USCS Symbol	Dry Unit Wt. (pcf)	Moisture (%)	Saturation (%)	Description of Material
			4	SM				@ 30' SILTY SAND, brown, wet, very loose.
35								
40			42					@ 40' SILTY SAND, reddish brown, saturated, dense; rock fragments in sampler.
45			50-6"					**GRANITICS:** @ 45' GRANITE, reddish brown, very dense. Total Depth = 45½' Groundwater Encountered @ 23' Backfilled 3-11-2009
50								
55								

BORING LOG

GeoSoils, Inc.

W.O. 5855-A-SC

PROJECT: EAST COUNTY SAND, LLC
Turner Sand Mine

BORING B-5A SHEET 1 OF 2

DATE EXCAVATED 3-11-09 LOGGED BY: BEV

SAMPLE METHOD: 140 Lb. Hammer @ 30" Drop

Approx. Elevation: 438' MSL

Standard Penetration Test

Undisturbed, Ring Sample

Groundwater

Depth (ft.)	Sample: Bulk	Sample: Undisturbed	Sample: Blows/ft.	USCS Symbol	Dry Unit Wt. (pcf)	Moisture (%)	Saturation (%)	Description of Material
				ML				**DISTURBED TOPSOIL/COLLUVIUM:** @ 0-4' SANDY SILT, light brown, dry to moist, soft.
5				SM				**ALLUVIUM:** @ 4-10' SILTY SAND, brown, damp, medium dense.
10			19		97.2	5.7	21.6	
15								@ 16-17' Driller indicated denser material.
20			34		104.2	7.2	32.7	@ 20' SILTY SAND, reddish brown, moist, medium dense.
25				CL				@ 25' SANDY to SILTY CLAY, reddish brown to light brown, wet, medium stiff.

BORING LOG

GeoSoils, Inc.

W.O. 5855-A-SC

PROJECT: EAST COUNTY SAND, LLC
Turner Sand Mine

BORING B-5A SHEET 2 OF 2

DATE EXCAVATED 3-11-09 LOGGED BY: BEV

SAMPLE METHOD: 140 Lb. Hammer @ 30" Drop

Approx. Elevation: 438' MSL

Standard Penetration Test

Undisturbed, Ring Sample

Groundwater

Depth (ft.)	Sample: Bulk	Sample: Undisturbed	Sample: Blows/ft.	USCS Symbol	Dry Unit Wt. (pcf)	Moisture (%)	Saturation (%)	Description of Material
			15	CL	91.4	31.4	100.0	@ 30' SANDY CLAY, yellowish brown, saturated, stiff. @ 30' Groundwater encountered.
35								
40			41					@ 40' SANDY CLAY, reddish brown, saturated, hard.
								@ 43' Harder drilling.
45			71		No Recovery			**GRANITICS:** @ 45' Decomposed Granitic Rock, light brown, very dense.
								Total Depth = 46½' Groundwater Encountered @ 30' Backfilled 3-11-2009 With Bentonite Grout
50								
55								

BORING LOG SHEET

BORING NO. 1

ELEVATION 440.2' MSL

FT.	DESCRIPTION	SOIL TYPE
5	Dark brown, damp, loose clay binder	SILTY SANDS (SM)
10	Brown, very moist	
15		
20		
25		
30		
35	Light brown, moist, slightly dense	FINE TO MEDIUM SAND (SW)
40	▽ Encountered groundwater @ 37.0'	
45	Light reddish brown/light gray, saturated, some fractured rocks	SILTY SANDS/CLAYEY SANDS (SM/SC)
50		
55	Light reddish brown, saturated, dense, fractured rocks	FINE TO COARSE SANDS (SW)
60		
65		
70		
75		
80	Very dense	

BOTTOM OF BORING @ 80.0' (Refusal in disintegrated granite)

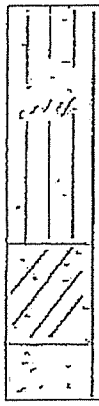
Project No. 06-1211J7

Figure No. 2

BORING LOG SHEET

BORING NO. 2

ELEVATION 437.8' MSL

	FT.	DESCRIPTION	SOIL TYPE
	5	Dark brown/gray, moist, loose Pockets of clay	SILTY SANDS (SM)
	10	Light brown/gray, moist, medium dense	SILTY SANDS (SM)
	15	Dark brow, moist, medium dense	CLAYEY SANDS (SC)
	20		
	25	Light reddish brown/light gray, moist, dense to very dense	FINE TO COARSE SANDS (SW)

BOTTOM OF BORING @ 27.0' (Refusal in disintegrated granite)

Project No. 06-121137

Figure No. 3

BORING LOG SHEET

BORING NO. 3

ELEVATION 438.5' MSL

FT.	DESCRIPTION	SOIL TYPE
5	Light brown/gray, moist, loose Pockets of clay	SILTY SANDS (SM)
10		
15	Light gray, moist, medium dense	FINE TO COARSE SANDS (SW)
20	Pebbles to 1/2" dia.	
25	Reddish brown, very moist, medium dense	CLAYEY SANDS (SC)
30	Light olive green/gray, light reddish brown, very moist, medium dense	CLAYEY SANDS (SC)
35	Some fractured rocks	
40		
45		
50	Dense Increase in fractured rocks	
55	Very dense	

BOTTOM OF BORING @ 55.0' (Refusal in disintegrated granite)

Project No. 06-121 1J7

Figure No. 4

BORING LOG SHEET

BORING NO. 4

ELEVATION 438.5' MSL

FT.	DESCRIPTION	SOIL TYPE
5	Dark brown, moist, loose Clay binder	SILTY SANDS (SM)
10		
15		
20	Light brown, very moist, medium moist	FINE TO COARSE SANDS (SW)
	▽ Groundwater @ 24.0'	
25	Dark brown, saturated, loose	CLAYEY SANDS (SC)
30	Brown/gray, saturated, loose	SILTY FINE SANDS (SM)
35	Dark brown/gray	
40		
45	Light brown, saturated, loose Some pebbles	FINE TO COARSE SANDS (SW)
50		
55		
60	Medium dense	
65		
70	Dense	
75		
80	Very dense	

BOTTOM OF BORING @ 80.0' (Refusal in disintegrated granite)

Project No. 06-1211J7

Figure No. 5

BORING LOG SHEET

BORING NO. 5

ELEVATION 436.2' MSL

FT.	DESCRIPTION	SOIL TYPE
5	Light brown/gray, moist, loose Pebbles to ½" dia.	FINE TO MEDIUM SAND (SW)
10		
15		
20		
25	▽ Dark gray, saturated, loose Groundwater @ 27'	SILTY FINE SANDS (SM)
30		
35		
40		
45		
50	Brown, saturated, loose Some pebbles to ½" dia.	CLAYEY SANDS (SC)
55		
60		
65		
70		
75		

BOTTOM OF BORING @ 75.0' (Refusal in disintegrated granite)

Project No. 06-121137

Figure No. 6

BORING LOG SHEET

BORING NO. 6

ELEVATION 435.7' MSL

FT.		DESCRIPTION	SOIL TYPE
5		Brown, moist, loose	SILTY SANDS (SM)
10			
15		Medium brown, moist, loose	SILTY SANDS (SM)
20			
25	▽	Groundwater @ 26'	
30			
35			
40			
45			
50		Light brown, loose, saturated Some pebbles to ¼" dia	FINE TO COARSE SANDS (SW)
55			
60		Dense	
65			
70			
75		Very dense	

BOTTOM OF BORING @ 75.0' (Refusal in disintegrated granite)

Project No. 06-121137

Figure No. 7

BORING LOG SHEET

BORING NO. 7

ELEVATION 435.8' MSL

FT.	DESCRIPTION	SOIL TYPE
5	Light brown/gray, moist, loose Pebbles to ¼ "dia.	SILTY FINE TO COARSE SAND (SM)
10		
15	brown/gray, very moist, loose	CLAYEY SANDS (SM)
20		
25	▽ Groundwater @ 26'	
30		
35		
40		
45	Medium to light brown, saturated	FINE TO COARSE SANDS (SW)
50	Brown/reddish brown, saturated dense	CLAYEY SANDS (SC)
55		

BOTTOM OF BORING @ 54.0' (Refusal in disintegrated granite)

Project No. 06-121137

Figure No. 8

APPENDIX C

EQFAULT, EQSEARCH, AND FRISKSP

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*        *
*  E Q F A U L T  *
*        *
*  Version 3.00  *
*        *
**********
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DETERMINISTIC ESTIMATION OF
PEAK ACCELERATION FROM DIGITIZED FAULTS

JOB NUMBER: 5855-A1-SC

DATE: 09-12-2011

JOB NAME: EAST COUNTY SAND MINE

CALCULATION NAME: Test Run Analysis

FAULT-DATA-FILE NAME: C:\Program Files\EQFAULT1\CGSFLTE.DAT

SITE COORDINATES:
SITE LATITUDE: 32.8977
SITE LONGITUDE: 116.9322

SEARCH RADIUS: 62.14 mi

ATTENUATION RELATION: 10) Bozorgnia Campbell Niazi (1999) Hor.-Holocene Soil-Cor.
UNCERTAINTY (M=Median, S=Sigma): S Number of Sigmas: 1.0
DISTANCE MEASURE: cdist
SCOND: 1
Basement Depth: .07 km Campbell SSR: 0 Campbell SHR: 0
COMPUTE PEAK HORIZONTAL ACCELERATION

FAULT-DATA FILE USED: C:\Program Files\EQFAULT1\CGSFLTE.DAT

MINIMUM DEPTH VALUE (km): 3.0

EQFAULT SUMMARY

DETERMINISTIC SITE PARAMETERS

Page 1

ABBREVIATED FAULT NAME	APPROXIMATE DISTANCE mi (km)	ESTIMATED MAX. EARTHQUAKE EVENT: MAXIMUM EARTHQUAKE MAG. (Mw)	ESTIMATED MAX. EARTHQUAKE EVENT: PEAK SITE ACCEL. g	ESTIMATED MAX. EARTHQUAKE EVENT: EST. SITE INTENSITY MOD. MERC.
ROSE CANYON	17.5(28.2)	7.2	0.279	IX
ELSINORE (JULIAN)	23.7(38.1)	7.1	0.196	VIII
EARTHQUAKE VALLEY	28.3(45.6)	6.5	0.110	VII
CORONADO BANK	30.6(49.3)	7.6	0.213	VIII
ELSINORE (COYOTE MOUNTAIN)	33.4(53.8)	6.8	0.113	VII
ELSINORE (TEMECULA)	33.5(53.9)	6.8	0.112	VII
NEWPORT-INGLEWOOD (Offshore)	33.9(54.6)	7.1	0.136	VIII
SAN JACINTO-COYOTE CREEK	44.9(72.2)	6.6	0.072	VII
SAN JACINTO-ANZA	46.2(74.3)	7.2	0.106	VII
SAN JACINTO - BORREGO	47.7(76.7)	6.6	0.068	VI
ELSINORE (GLEN IVY)	56.9(91.6)	6.8	0.065	VI
SAN JACINTO-SAN JACINTO VALLEY	58.2(93.7)	6.9	0.068	VI
SUPERSTITION MTN. (San Jacinto)	59.0(95.0)	6.6	0.054	VI
LAGUNA SALADA	62.1(100.0)	7.0	0.068	VI

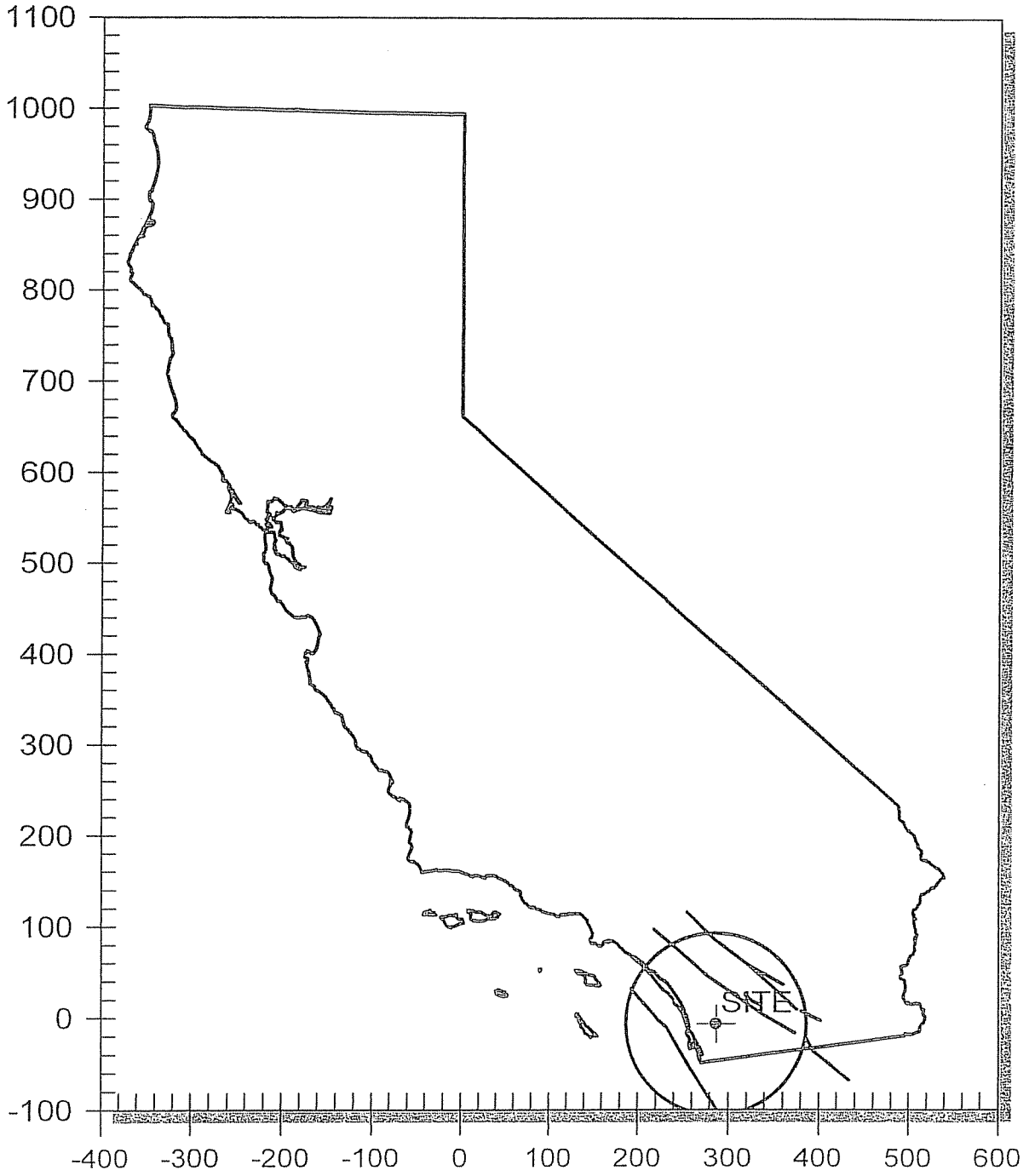
-END OF SEARCH- 14 FAULTS FOUND WITHIN THE SPECIFIED SEARCH RADIUS.

THE ROSE CANYON FAULT IS CLOSEST TO THE SITE.
IT IS ABOUT 17.5 MILES (28.2 km) AWAY.

LARGEST MAXIMUM-EARTHQUAKE SITE ACCELERATION: 0.2791 g

CALIFORNIA FAULT MAP

EAST COUNTY SAND MINE

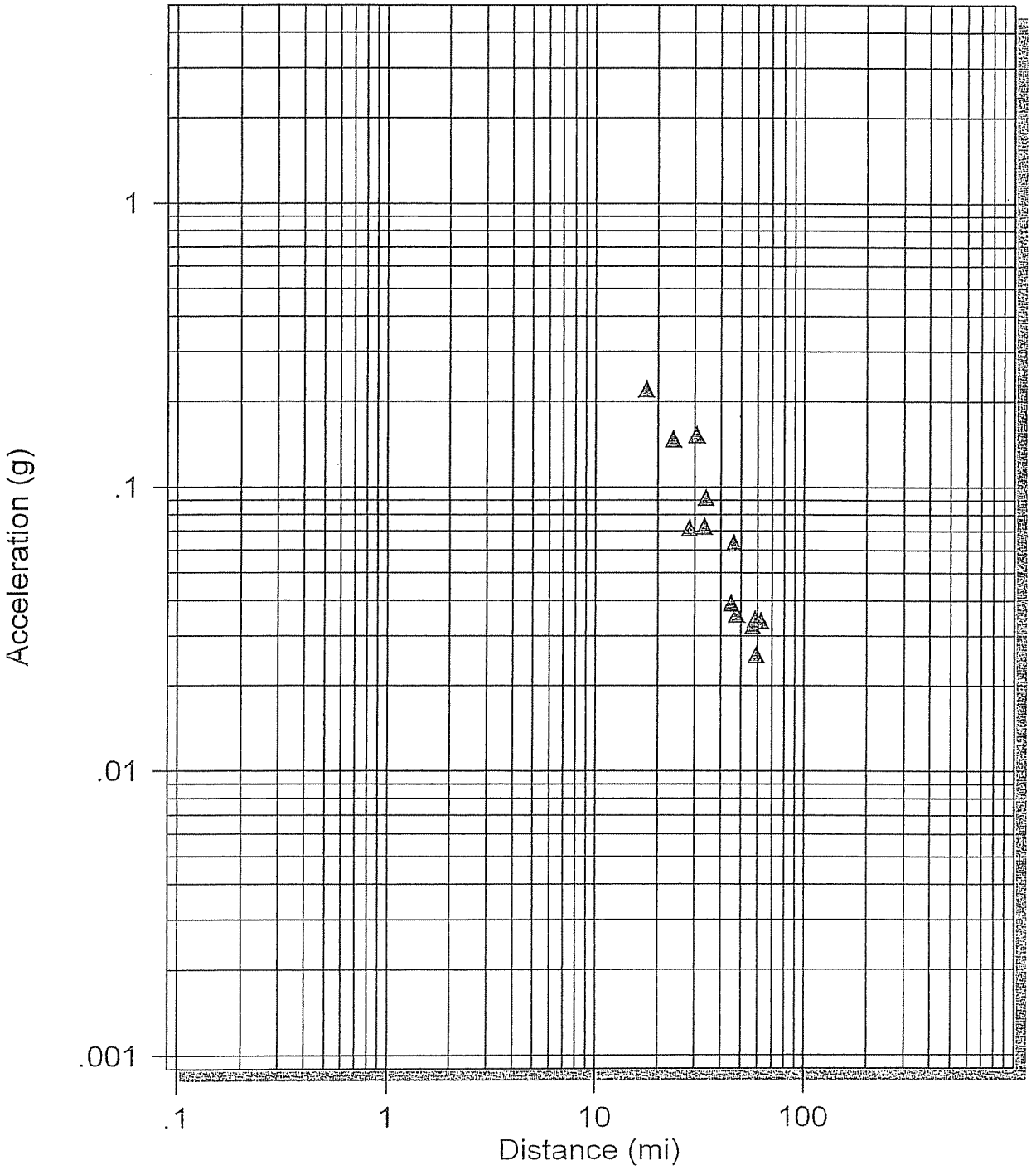


W.O. 5855-A1-SC

Plate C-3

MAXIMUM EARTHQUAKES

EAST COUNTY SAND MINE



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*                        *
*    E Q S E A R C H     *
*                        *
*     Version 3.00       *
*                        *
**************************
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ESTIMATION OF
PEAK ACCELERATION FROM
CALIFORNIA EARTHQUAKE CATALOGS

JOB NUMBER: 5855-A1-SC

DATE: 09-12-2011

JOB NAME: EAST COUNTY SAND MINE

EARTHQUAKE-CATALOG-FILE NAME: ALLQUAKE.DAT

SITE COORDINATES:
SITE LATITUDE: 32.8977
SITE LONGITUDE: 116.9322

SEARCH DATES:
START DATE: 1800
END DATE: 2010

SEARCH RADIUS:
62.1 mi
100.0 km

ATTENUATION RELATION: 10) Bozorgnia Campbell Niazi (1999) Hor.-Holocene Soil-Cor.
UNCERTAINTY (M=Median, S=Sigma): S Number of Sigmas: 1.0
ASSUMED SOURCE TYPE: SS [SS=Strike-slip, DS=Reverse-slip, BT=Blind-thrust]
SCOND: 1 Depth Source: A
Basement Depth: .07 km Campbell SSR: 0 Campbell SHR: 0
COMPUTE PEAK HORIZONTAL ACCELERATION

MINIMUM DEPTH VALUE (km): 3.0

EARTHQUAKE SEARCH RESULTS

Page 1

FILE CODE	LAT. NORTH	LONG. WEST	DATE	TIME (UTC) H M Sec	DEPTH (km)	QUAKE MAG.	SITE ACC. g	SITE MM INT.	APPROX. DISTANCE mi [km]
MGI	33.0000	117.0000	09/21/1856	730 0.0	0.0	5.00	0.142	VIII	8.1(13.0)
DMG	32.8000	116.8000	10/23/1894	23 3 0.0	0.0	5.70	0.182	VIII	10.2(16.4)
MGI	32.8000	117.1000	05/25/1803	0 0 0.0	0.0	5.00	0.103	VII	11.8(19.0)
DMG	32.7000	117.2000	05/27/1862	20 0 0.0	0.0	5.90	0.103	VII	20.7(33.3)
T-A	32.6700	117.1700	12/00/1856	0 0 0.0	0.0	5.00	0.059	VI	20.9(33.7)
T-A	32.6700	117.1700	10/21/1862	0 0 0.0	0.0	5.00	0.059	VI	20.9(33.7)
T-A	32.6700	117.1700	05/24/1865	0 0 0.0	0.0	5.00	0.059	VI	20.9(33.7)
DMG	33.0000	117.3000	11/22/1800	2130 0.0	0.0	6.50	0.139	VIII	22.4(36.1)
DMG	33.2000	116.7000	01/01/1920	235 0.0	0.0	5.00	0.050	VI	24.8(39.9)
MGI	33.2000	116.6000	10/12/1920	1748 0.0	0.0	5.30	0.052	VI	28.4(45.7)
DMG	33.0000	116.4330	06/04/1940	1035 8.3	0.0	5.10	0.044	VI	29.8(47.9)
DMG	32.7000	116.3000	02/24/1892	720 0.0	0.0	6.70	0.089	VII	39.1(63.0)
PDG	33.4200	116.4890	07/07/2010	235333.5	14.0	5.50	0.037	V	44.2(71.2)
DMG	33.3430	116.3460	04/28/1969	232042.9	20.0	5.80	0.042	VI	45.8(73.6)
DMG	33.2000	116.2000	05/28/1892	1115 0.0	0.0	6.30	0.056	VI	47.2(76.0)
PAS	33.5010	116.5130	02/25/1980	104738.5	13.6	5.50	0.033	V	48.2(77.5)
GSP	33.5290	116.5720	06/12/2005	154146.5	14.0	5.20	0.028	V	48.3(77.7)
DMG	33.5000	116.5000	09/30/1916	211 0.0	0.0	5.00	0.025	V	48.5(78.1)
GSP	33.5080	116.5140	10/31/2001	075616.6	15.0	5.10	0.026	V	48.6(78.2)
DMG	33.4000	116.3000	02/09/1890	12 6 0.0	0.0	6.30	0.053	VI	50.4(81.1)
DMG	33.1900	116.1290	04/09/1968	22859.1	11.1	6.40	0.056	VI	50.7(81.5)
DMG	33.2830	116.1830	03/23/1954	41450.0	0.0	5.10	0.025	V	50.8(81.8)
DMG	33.2830	116.1830	03/19/1954	102117.0	0.0	5.50	0.032	V	50.8(81.8)
DMG	33.2830	116.1830	03/19/1954	95429.0	0.0	6.20	0.049	VI	50.8(81.8)
DMG	33.2830	116.1830	03/19/1954	95556.0	0.0	5.00	0.024	IV	50.8(81.8)
DMG	33.2170	116.1330	08/15/1945	175624.0	0.0	5.70	0.035	V	51.2(82.4)
DMG	33.4080	116.2610	03/25/1937	1649 1.8	10.0	6.00	0.042	VI	52.4(84.3)
DMG	32.2000	116.5500	11/04/1949	204238.0	0.0	5.70	0.034	V	53.1(85.4)
DMG	32.2000	116.5500	11/05/1949	43524.0	0.0	5.10	0.024	V	53.1(85.4)
DMG	33.1130	116.0370	04/09/1968	3 353.5	5.0	5.20	0.025	V	53.9(86.8)
DMG	32.9670	116.0000	10/21/1942	162519.0	0.0	5.00	0.022	IV	54.2(87.3)
DMG	32.9670	116.0000	10/21/1942	162654.0	0.0	5.00	0.022	IV	54.2(87.3)
DMG	32.9670	116.0000	10/22/1942	181326.0	0.0	5.00	0.022	IV	54.2(87.3)
DMG	32.9670	116.0000	10/21/1942	162213.0	0.0	6.50	0.055	VI	54.2(87.3)
PAS	32.9710	117.8700	07/13/1986	1347 8.2	6.0	5.30	0.026	V	54.6(87.8)
DMG	32.9830	115.9830	05/23/1942	154729.0	0.0	5.00	0.022	IV	55.3(89.0)
T-A	32.2500	117.5000	01/13/1877	20 0 0.0	0.0	5.00	0.022	IV	55.6(89.5)
DMG	33.7100	116.9250	09/23/1963	144152.6	16.5	5.00	0.021	IV	56.1(90.3)
DMG	32.0830	116.6670	11/25/1934	818 0.0	0.0	5.00	0.020	IV	58.3(93.9)
DMG	33.2310	116.0040	05/26/1957	155933.6	15.1	5.00	0.020	IV	58.4(94.0)
DMG	33.7500	117.0000	06/06/1918	2232 0.0	0.0	5.00	0.020	IV	59.0(94.9)
DMG	33.7500	117.0000	04/21/1918	223225.0	0.0	6.80	0.062	VI	59.0(94.9)
PDG	32.7000	115.9210	06/15/2010	042658.5	5.0	5.80	0.032	V	60.3(97.0)
DMG	33.7000	117.4000	05/13/1910	620 0.0	0.0	5.00	0.019	IV	61.6(99.2)
DMG	33.7000	117.4000	05/15/1910	1547 0.0	0.0	6.00	0.035	V	61.6(99.2)
DMG	33.7000	117.4000	04/11/1910	757 0.0	0.0	5.00	0.019	IV	61.6(99.2)

****

Page 2

-END OF SEARCH- 46 EARTHQUAKES FOUND WITHIN THE SPECIFIED SEARCH AREA.

TIME PERIOD OF SEARCH: 1800 TO 2010

LENGTH OF SEARCH TIME: 211 years

THE EARTHQUAKE CLOSEST TO THE SITE IS ABOUT 8.1 MILES (13.0 km) AWAY.

LARGEST EARTHQUAKE MAGNITUDE FOUND IN THE SEARCH RADIUS: 6.8

LARGEST EARTHQUAKE SITE ACCELERATION FROM THIS SEARCH: 0.182 g

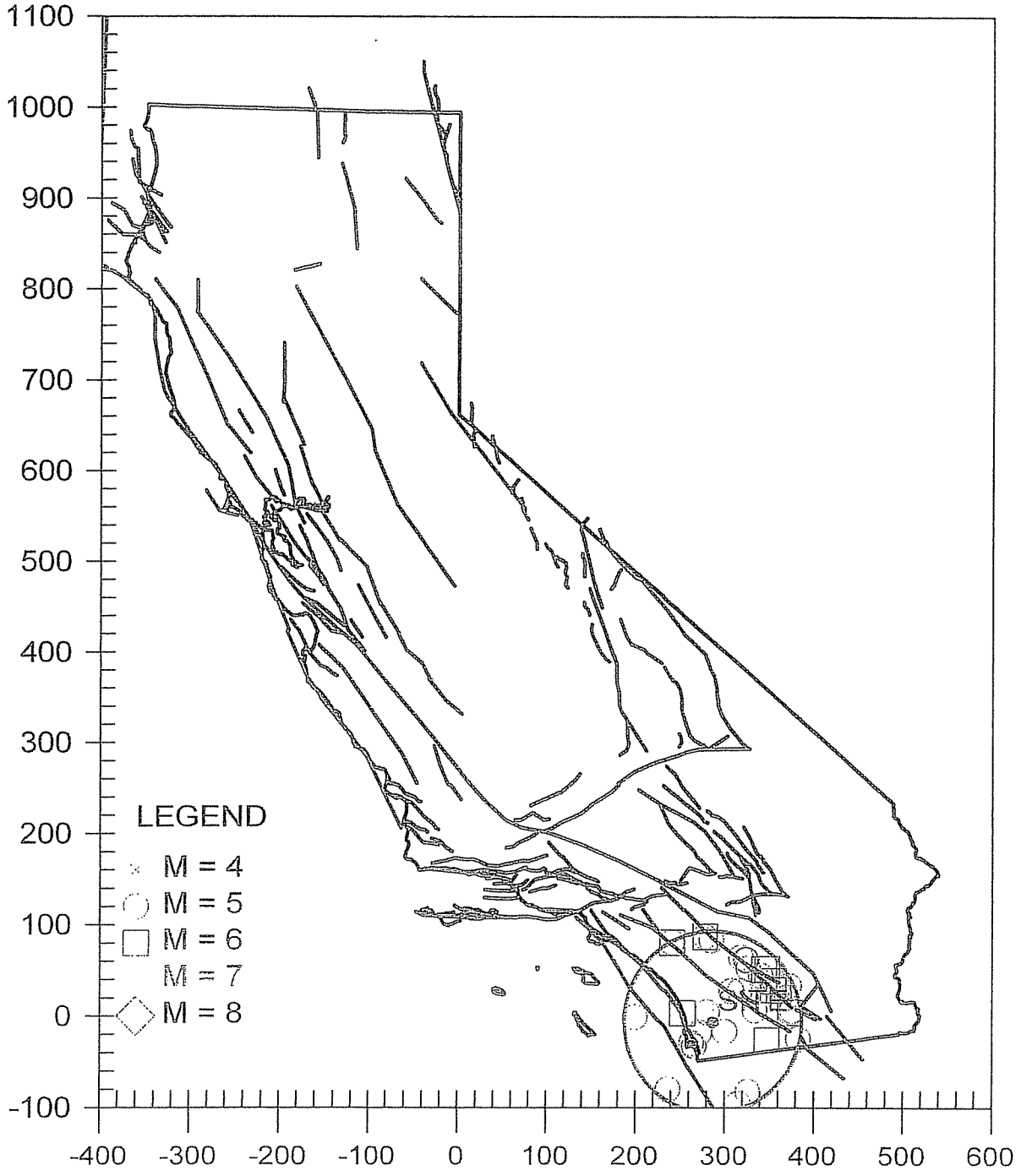
COEFFICIENTS FOR GUTENBERG & RICHTER RECURRENCE RELATION:
a-value= 0.839
b-value= 0.342
beta-value= 0.787

TABLE OF MAGNITUDES AND EXCEEDANCES:

Earthquake Magnitude	Number of Times Exceeded	Cumulative No. / Year
4.0	46	0.21905
4.5	46	0.21905
5.0	46	0.21905
5.5	19	0.09048
6.0	10	0.04762
6.5	4	0.01905

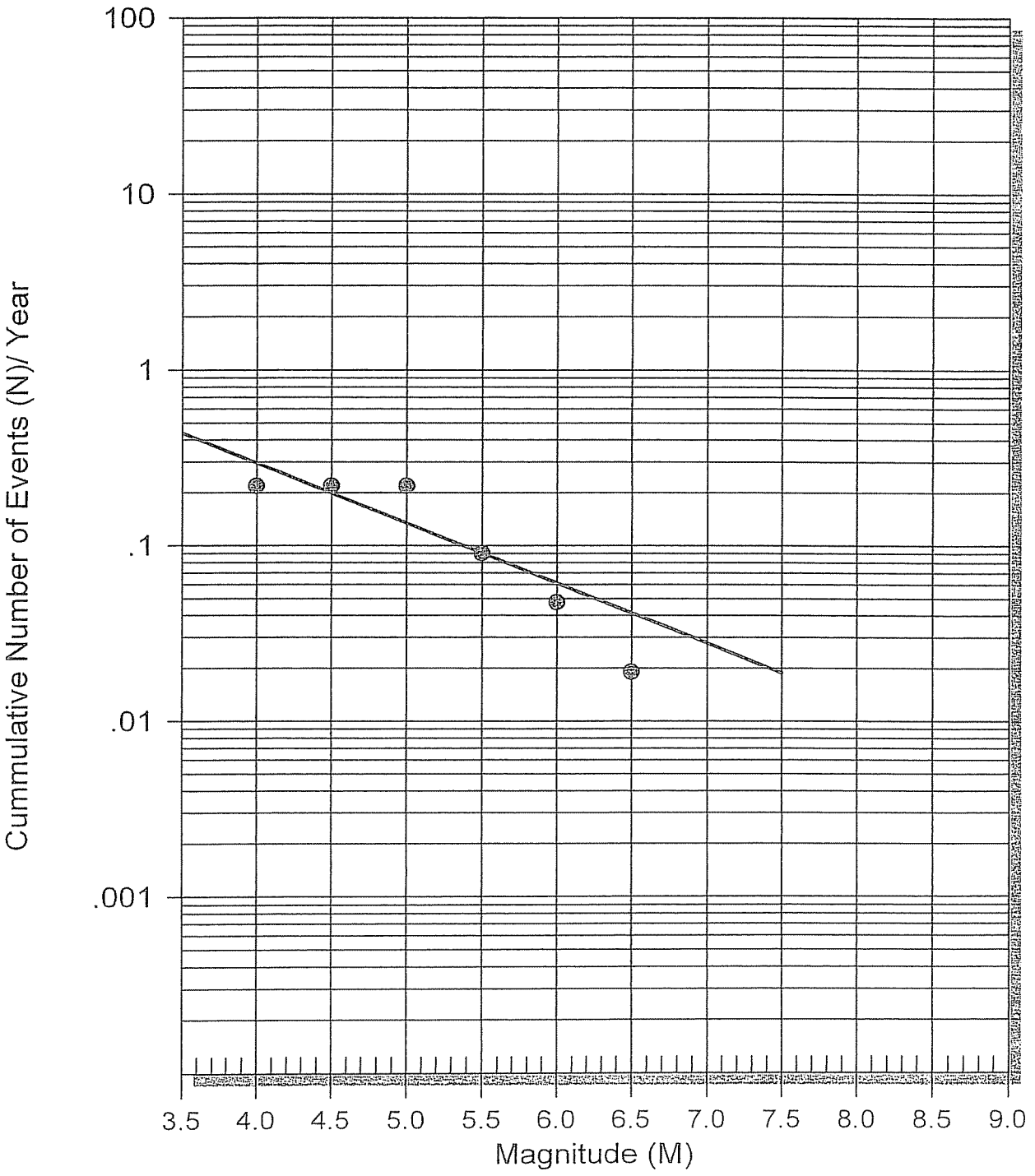
EARTHQUAKE EPICENTER MAP

EAST COUNTY SAND MINE



EARTHQUAKE RECURRENCE CURVE

EAST COUNTY SAND MINE



ECSM Geographic Deagg. Seismic Hazard
for 0.00-s Spectral Accel, 0.1871 g
PGA Exceedance Return Time: 475 year
Max. significant source distance 168. km.
View angle is 35 degrees above horizon
Gridded-source hazard accum. in 45° intervals
Rock site. Vs30(m/s) = 750.0

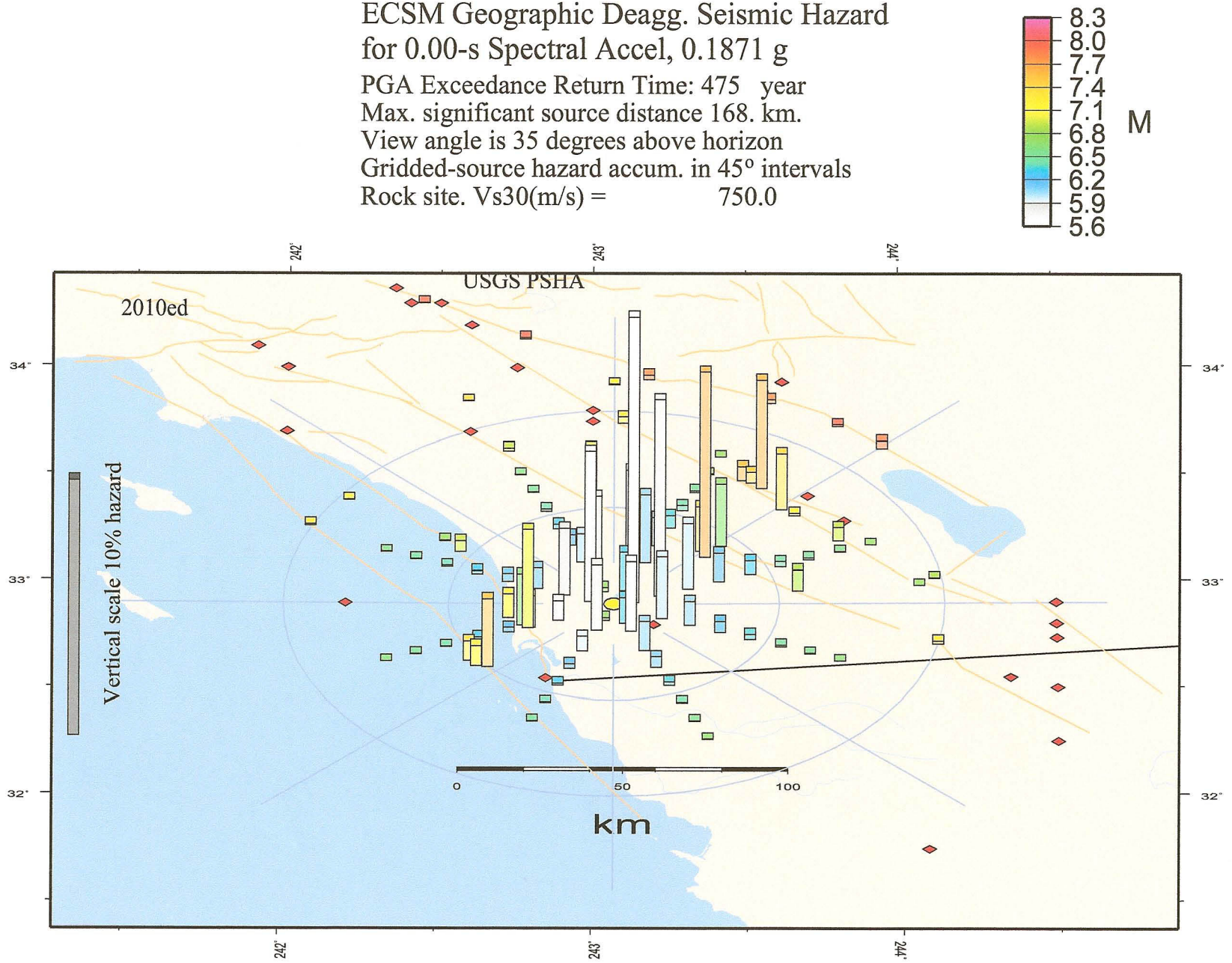


Plate C-10

GMT 2011 Sep 12 22:46:31 Site Coords:-116.932 32.8977 (yellow disk) Vs30= 750.0. Max annual ExcdRate .2353E-03 (column height prop. to ExRate). Red diamonds: historical earthquakes, M>6

ECSM Geographic Deagg. Seismic Hazard
for 0.00-s Spectral Accel, 0.3379 g
PGA Exceedance Return Time: 2475 year
Max. significant source distance 117. km.
View angle is 35 degrees above horizon
Gridded-source hazard accum. in 45° intervals
Rock site. Vs30(m/s) = 750.0

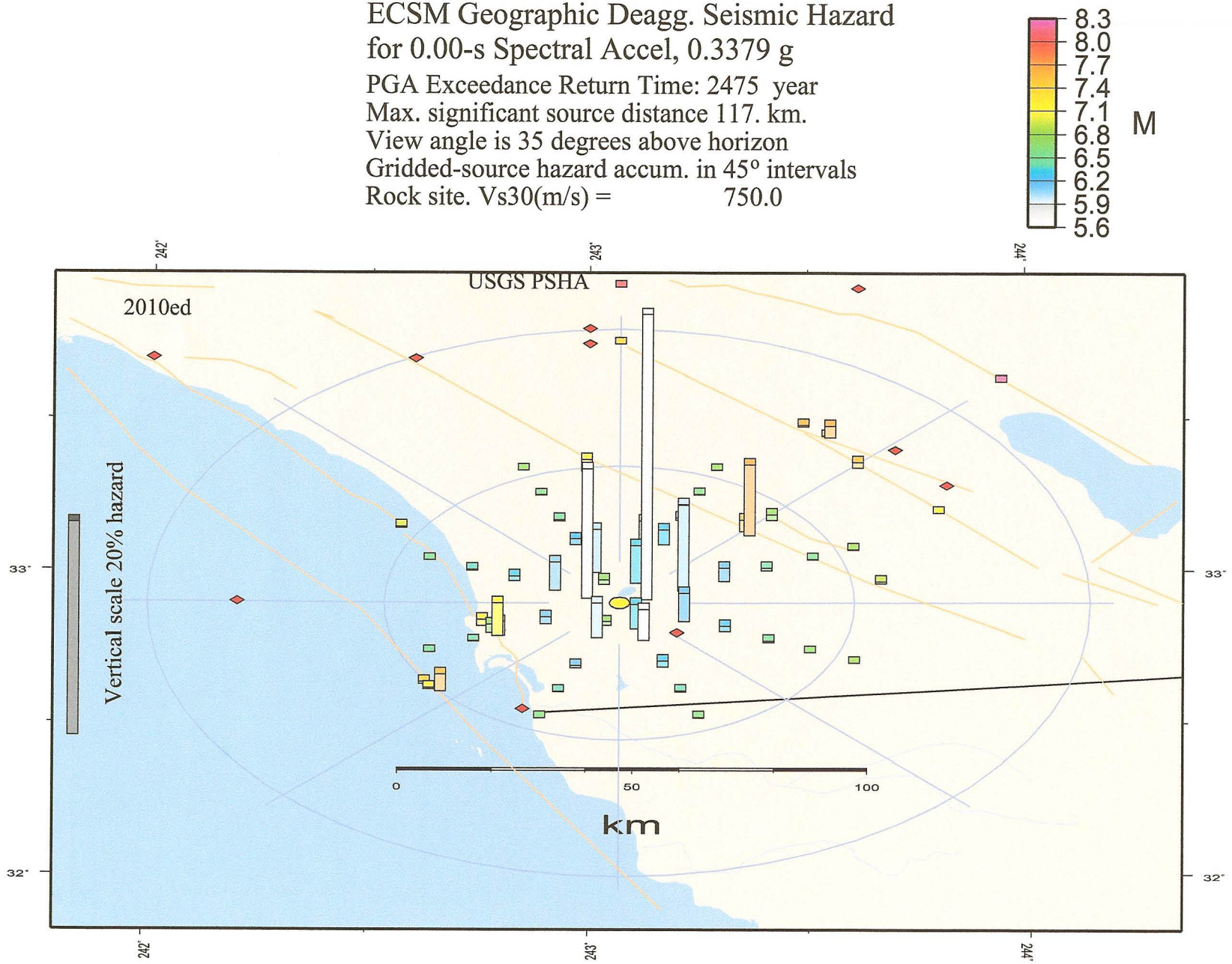
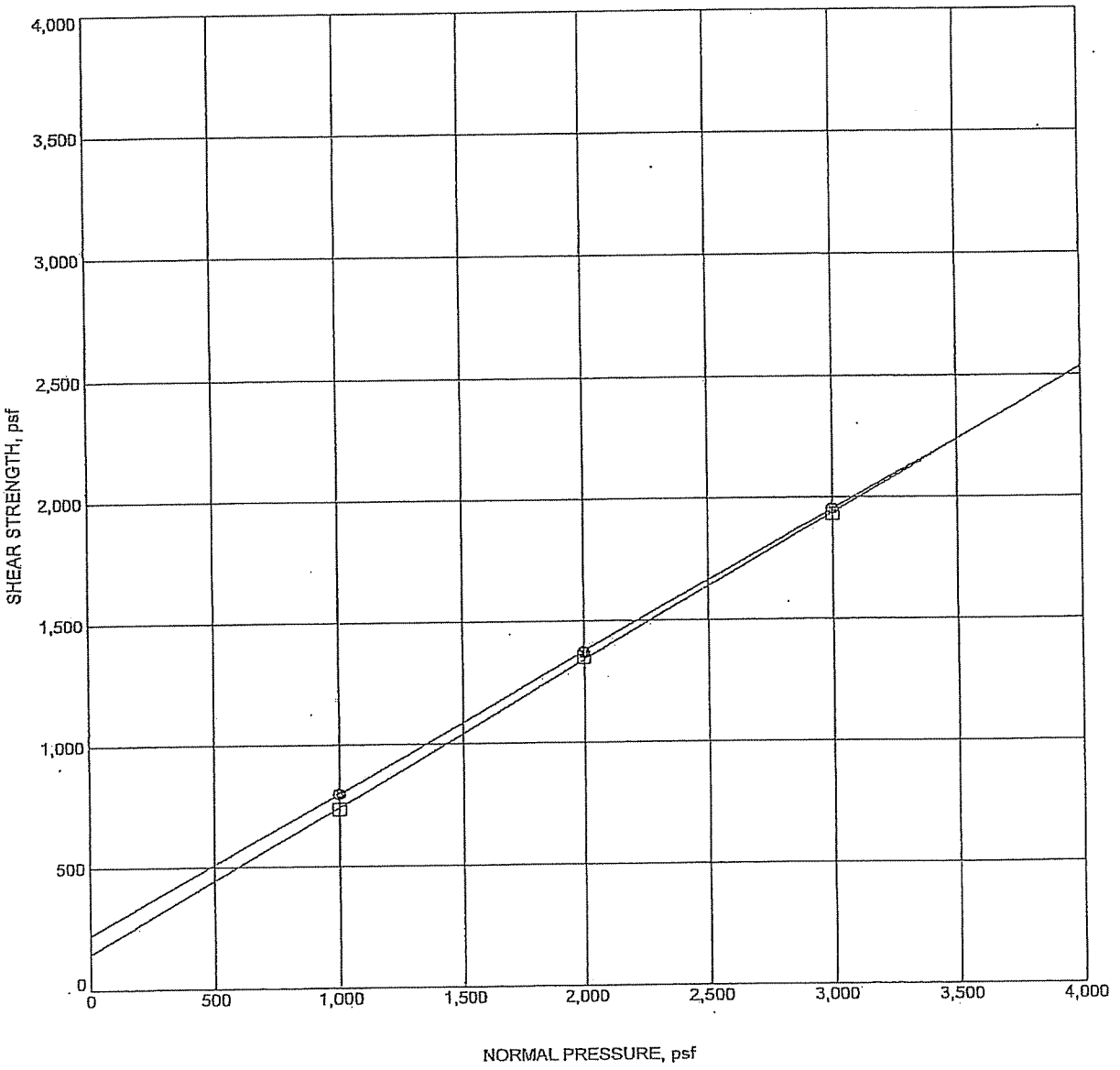


Plate C-11

GMT 2011 Sep 12 22:47:32 Site Coords:-116.932 32.8977 (yellow disk) Vs30= 750.0. Max annual ExcdRate .1079E-03 (column height prop. to ExRate). Red diamonds: historical earthquakes, M>6

APPENDIX D

LABORATORY DATA



Sample		Depth/El.	Range	Classification	Primary/Residual	Sample Type	γ_d	MC%	c	ϕ
⊕	B-1	10.0		Silty Sand	Primary Shear	Undisturbed	97.6	10.0	221	30
□	B-1	10.0			Residual Shear	Undisturbed	97.6	10.0	145	31

Note: Sample Innundated prior to testing

GeoSoils, Inc.
5741 Palmer Way
Carlsbad, CA 92008
Telephone: (760) 438-3155
Fax: (760) 931-0915

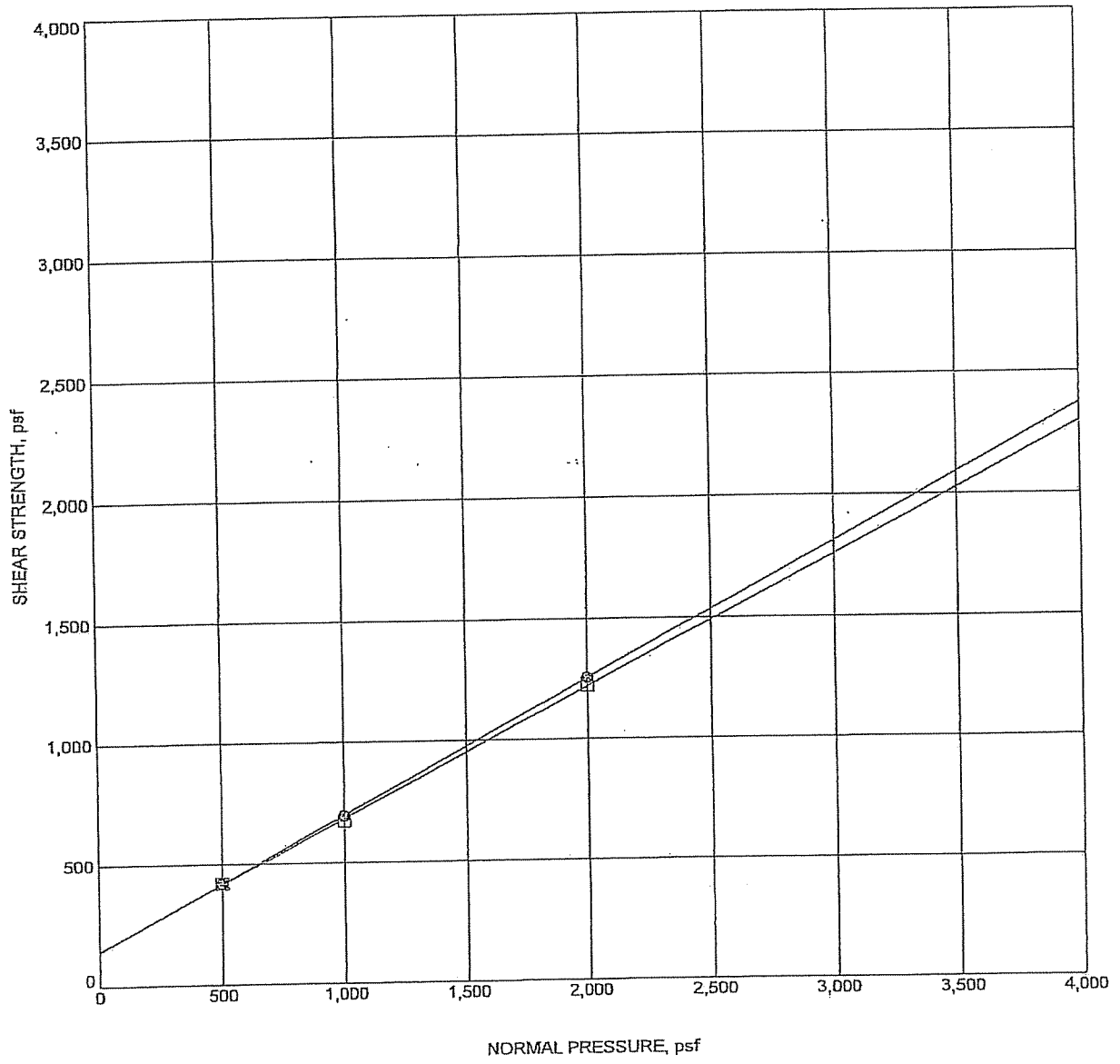
DIRECT SHEAR TEST

Project: EAST COUNTY SAND, LLC.

Number: 5855-A-SC

Date: March 2009 Plate: D - 1

US_DIRECT_SHEAR_5855.GPJ US_LAB.GDT 3/25/09



Sample		Depth/El.	Range	Classification	Primary/Residual	Sample Type	γ_d	MC%	c	ϕ
◉	B-1	35.0		SILTY SAND(SM)	Primary Shear	Remolded	105.0	12.5	139	29
□	B-1	35.0			Residual Shear	Remolded	105.0	12.5	144	28

Note: Sample Innundated prior to testing

GeoSoils, Inc.
5741 Palmer Way
Carlsbad, CA 92008
Telephone: (760) 438-3155
Fax: (760) 931-0915

DIRECT SHEAR TEST

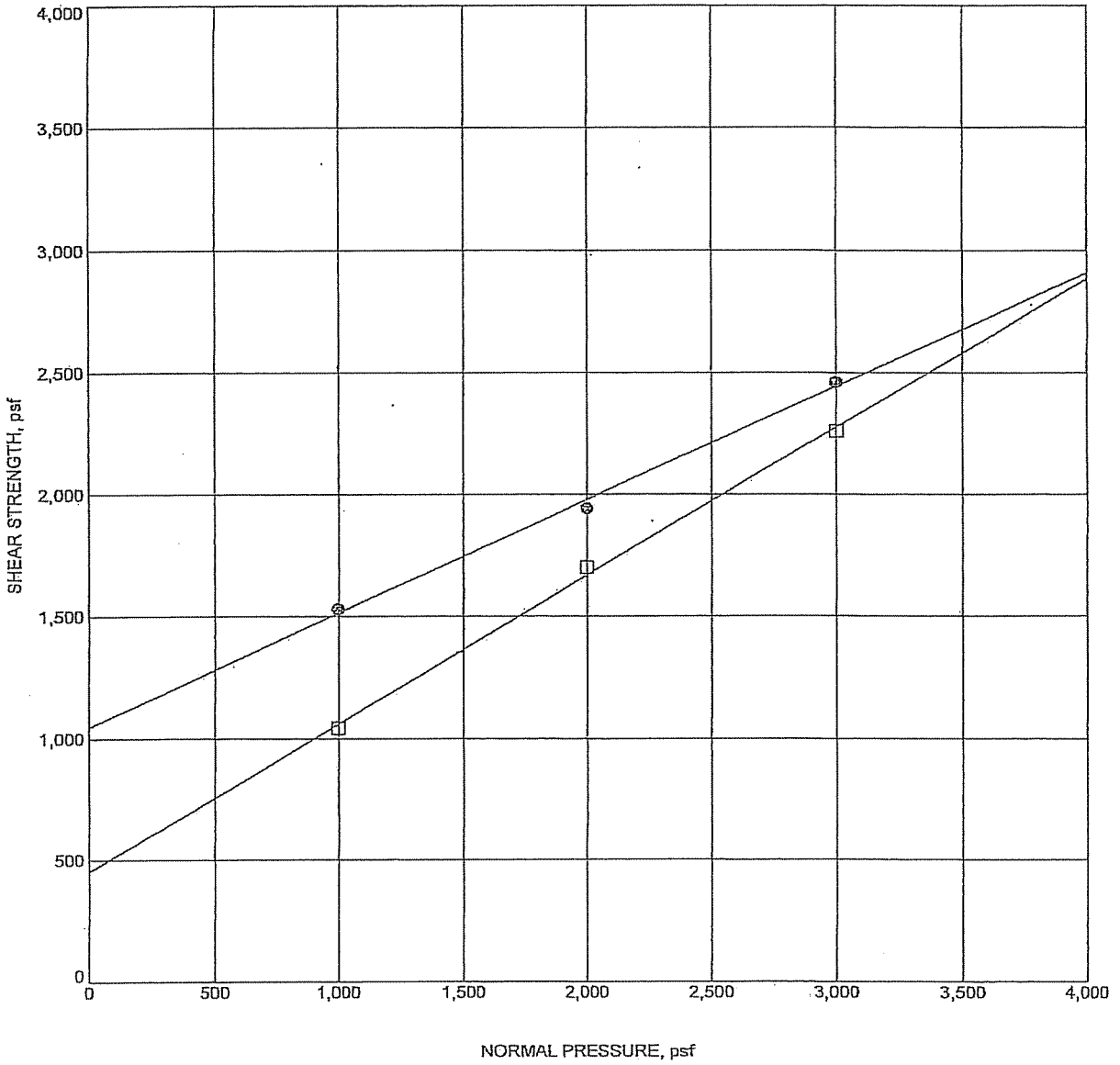
Project: EAST COUNTY SAND, LLC.

Number: 5855-A-SC

Date: March 2009

Plate: D - 2

US_DIRECT_SHEAR_5855.GPJ US_LAB.GDT 3/25/09



	Sample	Depth/El.	Range	Classification	Primary/Residual	Sample Type	γ_d	MC%	c	ϕ
⊗	B-2	20.0		Sandy Clay	Primary Shear	Undisturbed	101.7	21.1	1047	25
□	B-2	20.0			Residual Shear	Undisturbed	101.7	21.1	452	31

Note: Sample Innundated prior to testing

GeoSoils, Inc.
5741 Palmer Way
Carlsbad, CA 92008
Telephone: (760) 438-3155
Fax: (760) 931-0915

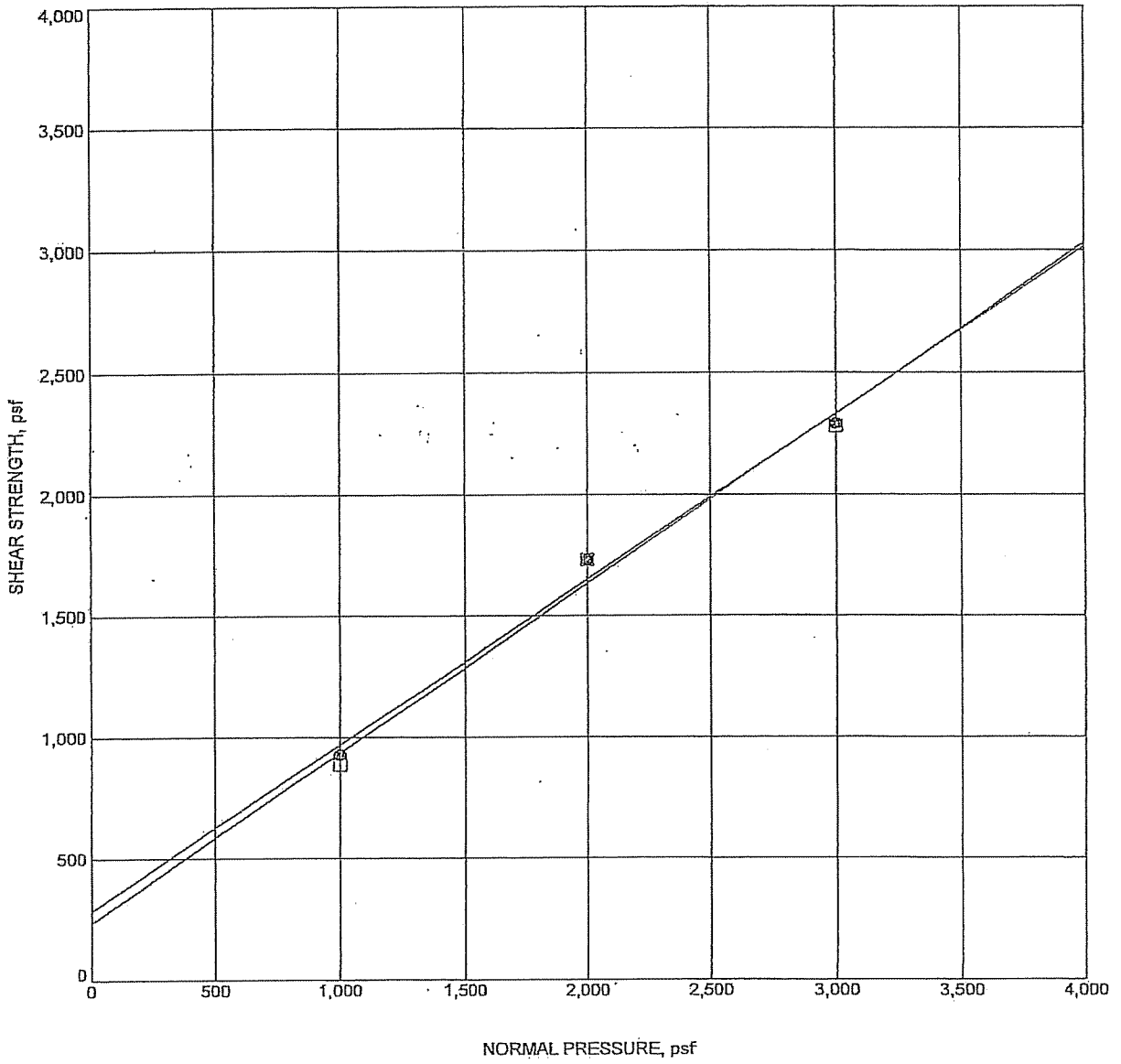
DIRECT SHEAR TEST

Project: EAST COUNTY SAND, LLC.

Number: 5855-A-SC

Date: March 2009 Plate: D - 3

US DIRECT SHEAR 5855.GPJ US LAB.GDT 3/25/09



Sample		Depth/El.	Range	Classification	Primary/Residual	Sample Type	γ_d	MC%	c	ϕ
⊘	B-3	20.0		Silty Sand	Primary Shear	Undisturbed	106.9	8.2	285	34
☐	B-3	20.0			Residual Shear	Undisturbed	106.9	8.2	236	35

Note: Sample Innundated prior to testing

GeoSoils, Inc.
5741 Palmer Way
Carlsbad, CA 92008
Telephone: (760) 438-3155
Fax: (760) 931-0915

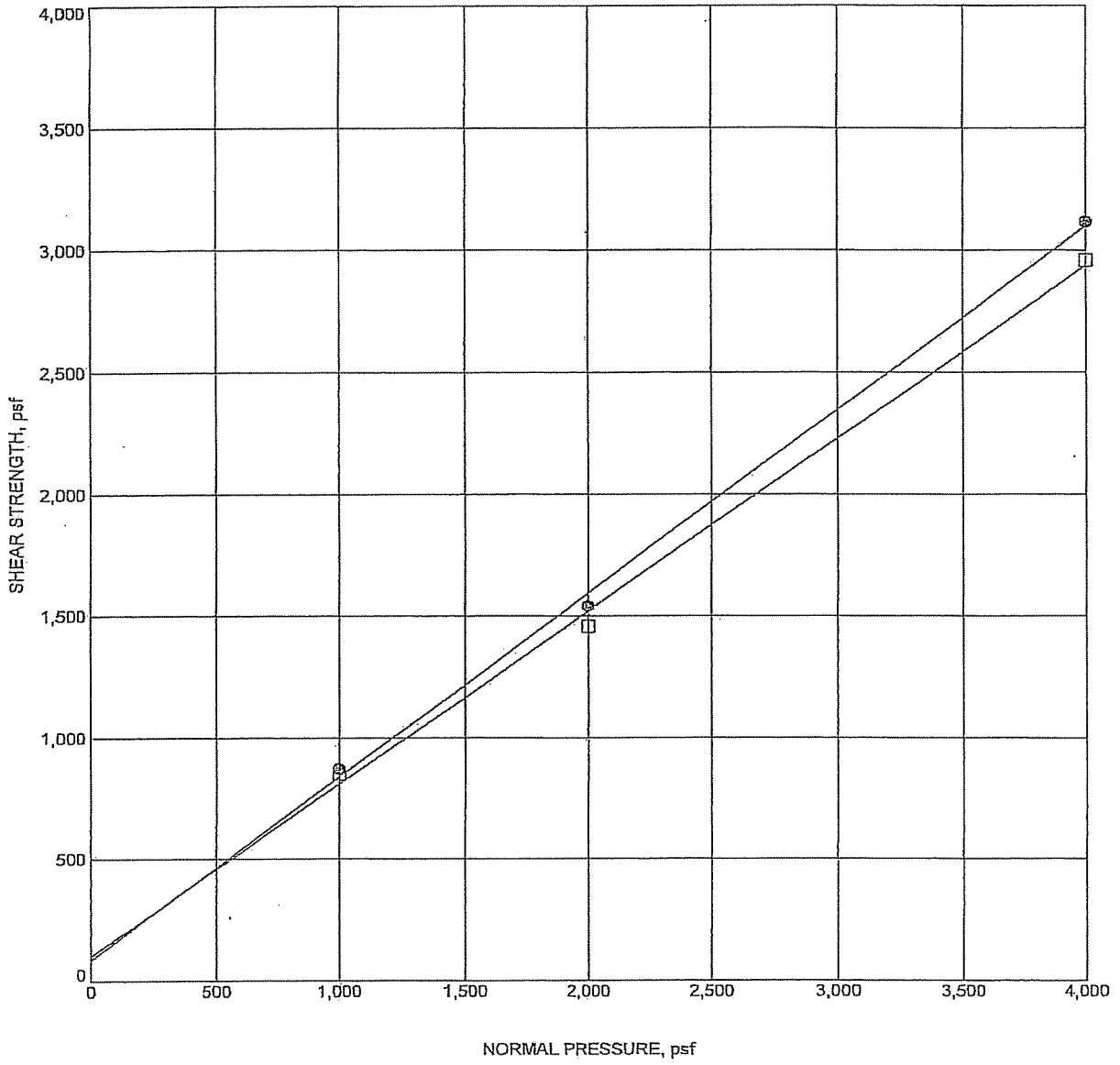
DIRECT SHEAR TEST

Project: EAST COUNTY SAND, LLC.

Number: 5855-A-SC

Date: March 2009 Plate: D - 4

US_DIRECT_SHEAR_5855.GPJ US_LAB.GDT 3/25/09



	Sample	Depth/El.	Range	Classification	Primary/Residual	Sample Type	γ_d	MC%	c	ϕ
⊕	B-3	35.0	35-50	Sand w/ Silt	Primary Shear	Remolded	103.7	11.5	86	37
□	B-3	35.0			Residual Shear	Remolded	103.7	11.5	102	35

Note: Sample Innundated prior to testing

GeoSoils, Inc.
5741 Palmer Way
Carlsbad, CA 92008
Telephone: (760) 438-3155
Fax: (760) 931-0915

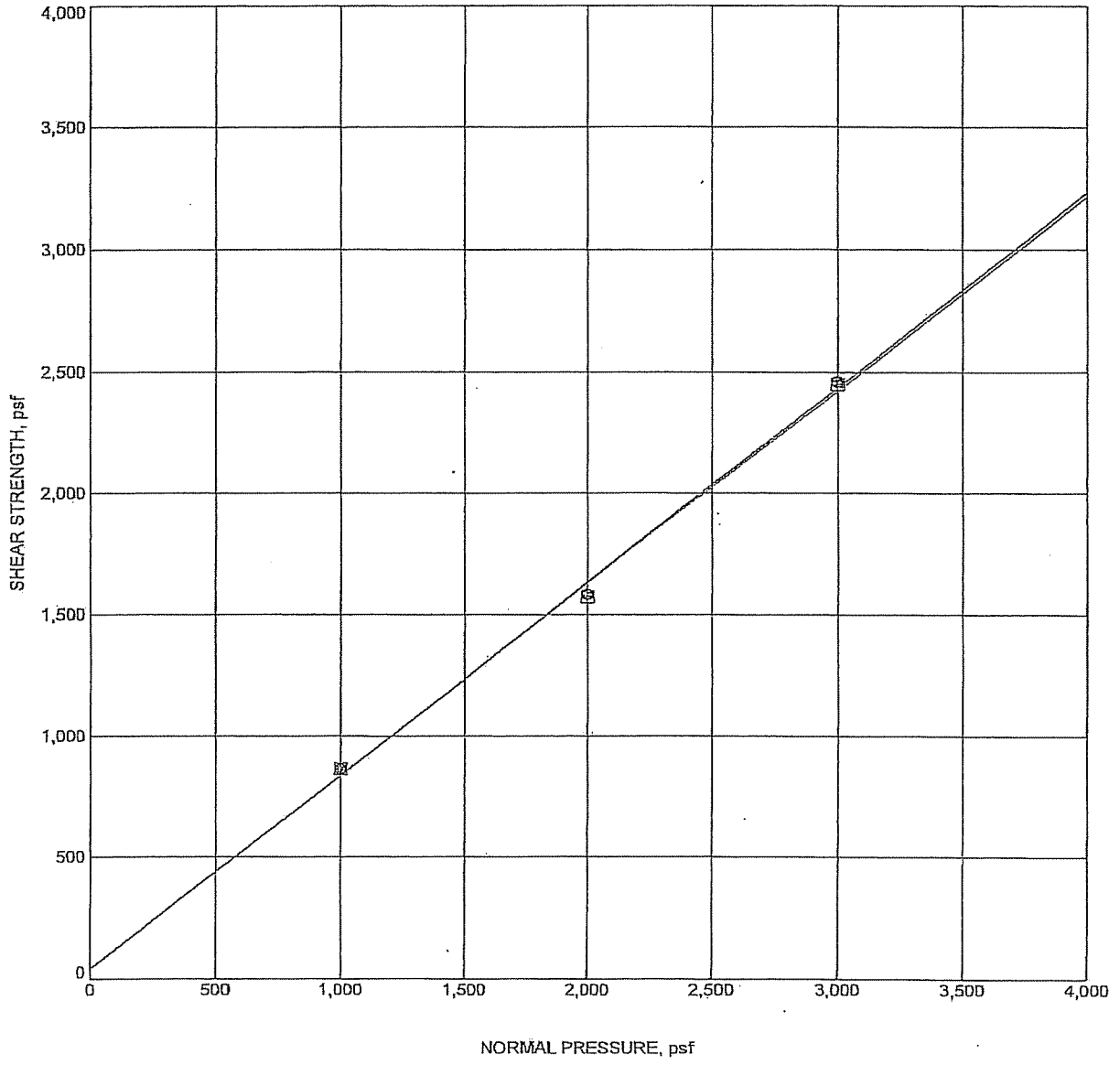
DIRECT SHEAR TEST

Project: EAST COUNTY SAND, LLC.

Number: 5855-A-SC

Date: March 2009 Plate: D - 5

US_DIRECT_SHEAR_5855.GPJ US_LAB.GDT 3/25/09



	Sample	Depth/El.	Range	Classification	Primary/Residual	Sample Type	γ_d	MC%	c	ϕ
◉	B-4	10.0		Sand	Primary Shear	Undisturbed	99.5	3.0	39	39
☐	B-4	10.0			Residual Shear	Undisturbed	99.5	3.0	42	38

Note: Sample Innundated prior to testing

GeoSoils, Inc.
5741 Palmer Way
Carlsbad, CA 92008
Telephone: (760) 438-3155
Fax: (760) 931-0915

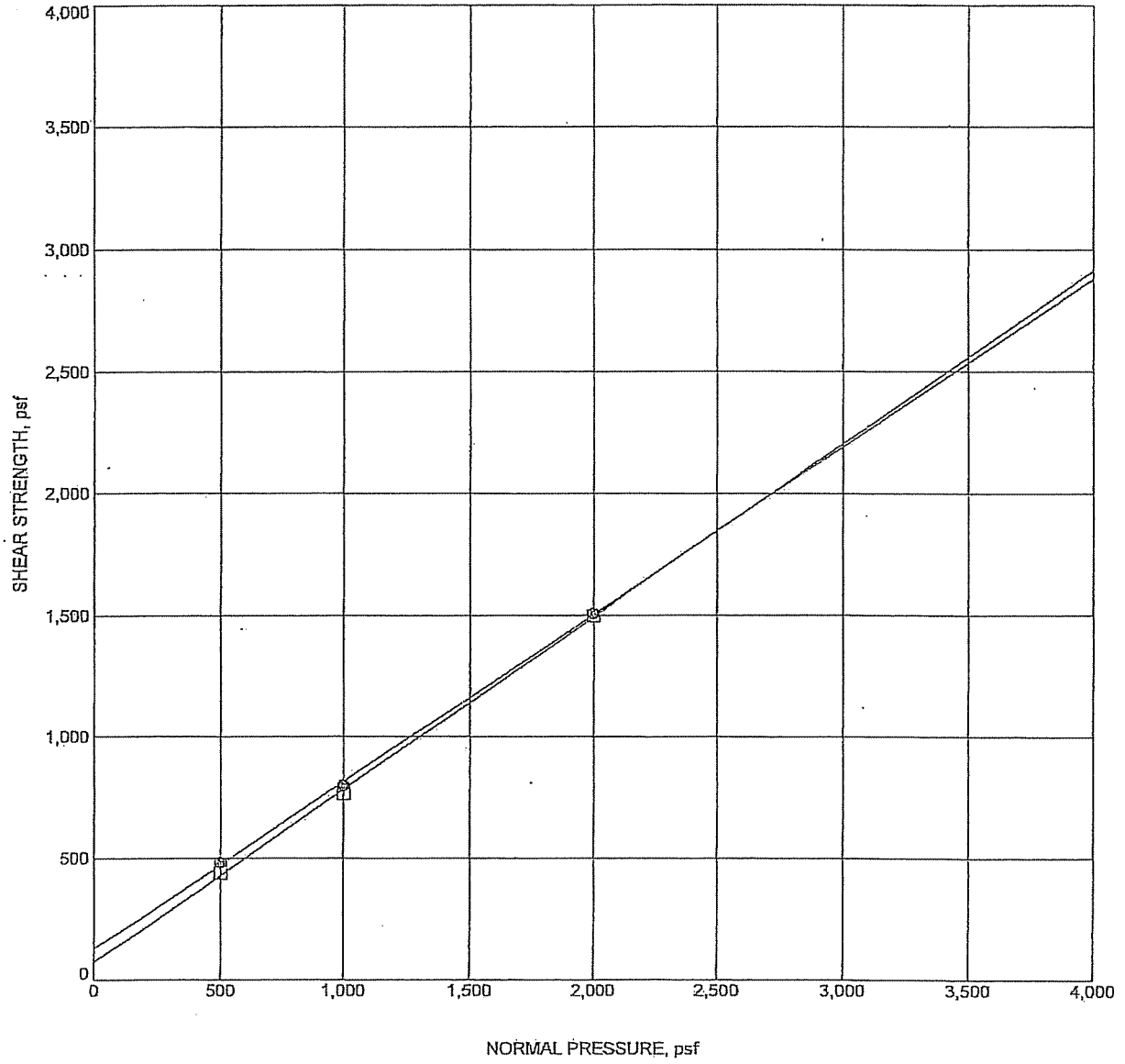
DIRECT SHEAR TEST

Project: EAST COUNTY SAND, LLC.

Number: 5855-A-SC

Date: March 2009 Plate: D - 6

US_DIRECT_SHEAR_5855.GPJ US_LAB.GDT 3/25/09



	Sample	Depth/El.	Range	Classification	Primary/Residual	Sample Type	γ_d	MC%	c	ϕ
●	B-5	20.0		Silty Sand	Primary Shear	Undisturbed	104.4	7.2	129	35
□	B-5	20.0			Residual Shear	Undisturbed	104.4	7.2	75	35

Note: Sample Innundated prior to testing

GeoSoils, Inc.
5741 Palmer Way
Carlsbad, CA 92008
Telephone: (760) 438-3155
Fax: (760) 931-0915

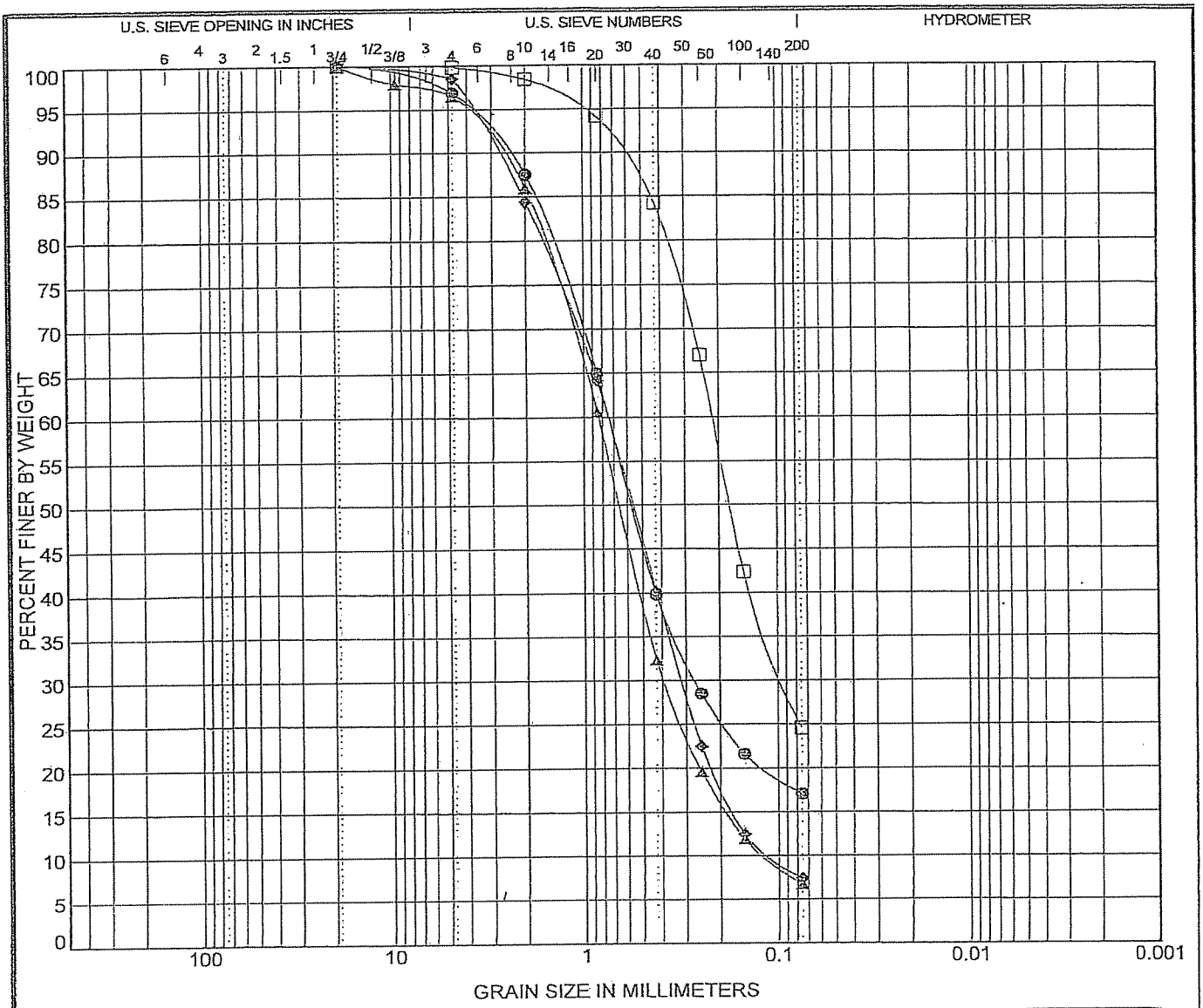
DIRECT SHEAR TEST

Project: EAST COUNTY SAND, LLC.

Number: 5855-A-SC

Date: March 2009 Plate: D - 7

US_DIRECT_SHEAR_5855.GPJ US_LAB.GDT 3/25/09



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Sample	Depth	Range	Visual Classification/USCS CLASSIFICATION	LL	PL	PI	Cc	Cu
⊕	B-1	35.0		SILTY SAND(SM)	NP	NP	NP		
□	B-1	40.0		SILTY SAND(SM)	NP	NP	NP		
△	B-1	45.0		WELL-GRADED SAND with SILT(SW-SM)	NP	NP	NP	1.53	7.20
◇	B-3	25.0	25-28	WELL-GRADED SAND with SILT(SW-SM)	NP	NP	NP	1.22	7.07

	Sample	Depth	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
⊕	B-1	35.0	19	0.741	0.268		3.1	79.8	17.1	
□	B-1	40.0	19	0.216	0.093		0.2	75.2	24.6	
△	B-1	45.0	19	0.837	0.386	0.116	3.5	89.8	6.7	
◇	B-3	25.0	19	0.753	0.313	0.107	1.4	91.1	7.4	

GeoSoils, Inc.
5741 Palmer Way
Carlsbad, CA 92008
Telephone: (760) 438-3155
Fax: (760) 931-0915

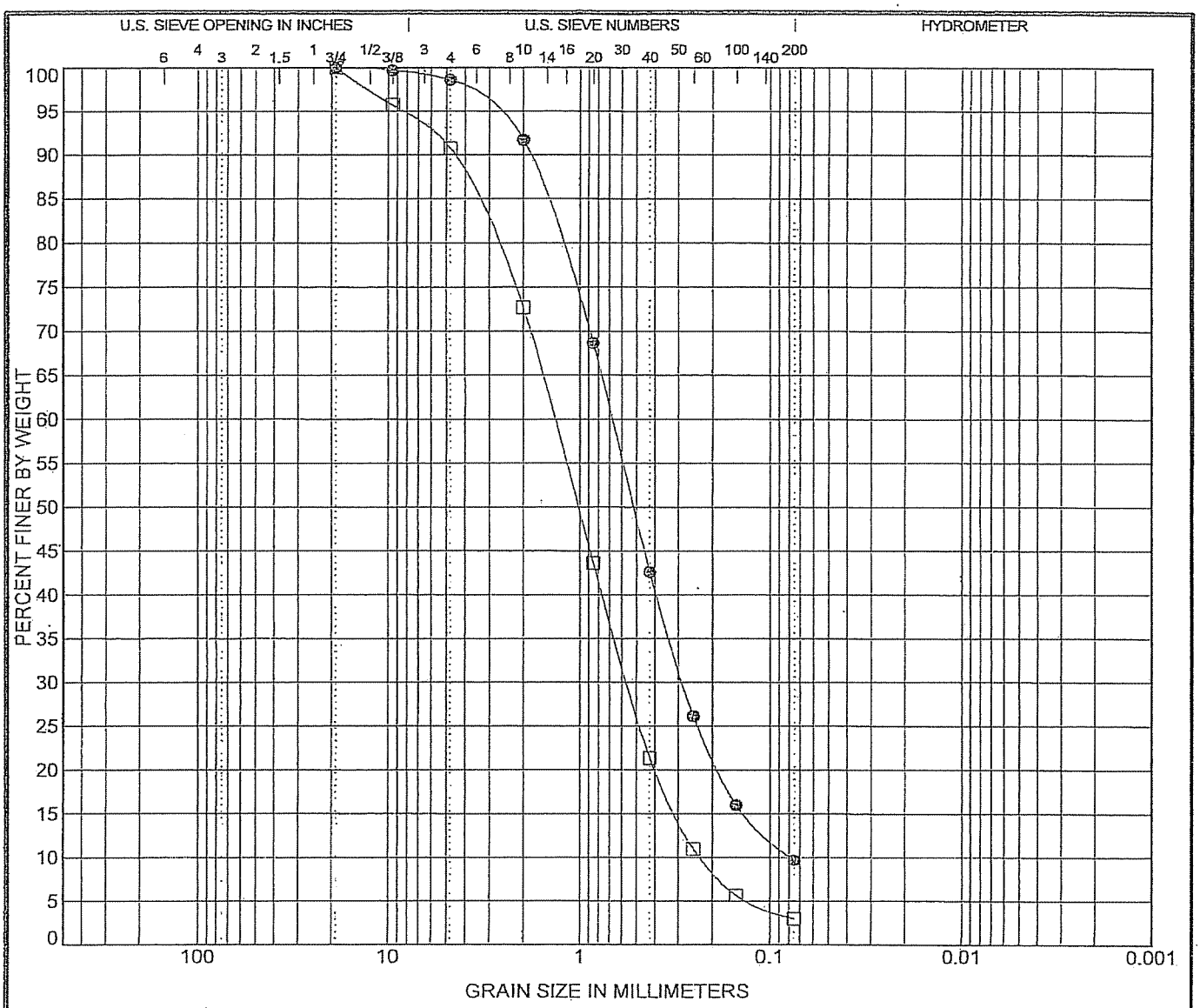
GRAIN SIZE DISTRIBUTION

Project: EAST COUNTY SAND, LLC.

Number: 5855-A-SC

Date: April 2009 Plate: D - 8

US GRAIN SIZE 5855.GPJ US LAB.GDT 4/9/09



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Sample	Depth	Range	Visual Classification/USCS CLASSIFICATION	LL	PL	PI	Cc	Cu
⊕	B-3	40.0		WELL-GRADED SAND with SILT(SW-SM)	NP	NP	NP	1.53	8.69
□	B-4	12.0	12-14	POORLY GRADED SAND(SP)	NP	NP	NP	0.99	6.05

	Sample	Depth	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
⊕	B-3	40.0	19	0.675	0.283	0.078	1.4	88.9	9.7	
□	B-4	12.0	19	1.377	0.556	0.228	9.2	87.8	3.0	

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5741 Palmer Way
Carlsbad, CA 92008
Telephone: (760) 438-3155
Fax: (760) 931-0915

GRAIN SIZE DISTRIBUTION

Project: EAST COUNTY SAND, LLC.

Number: 5855-A-SC

Date: April 2009

Plate: D - 9

US_GRAIN_SIZE_5855.GPJ US_LAB.GDT 4/9/09

APPENDIX E

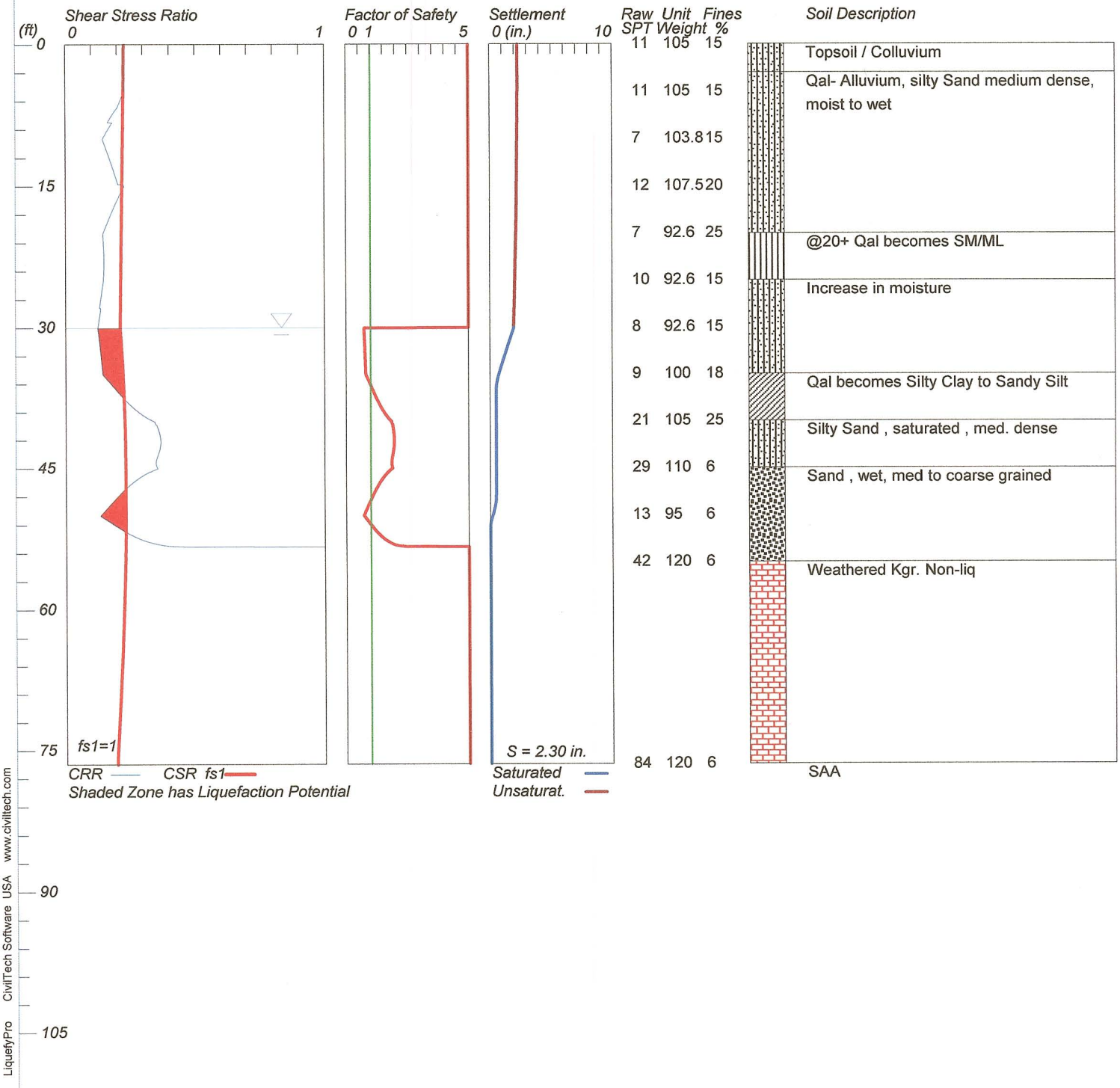
LIQUEFACTION EVALUATION

Seismic Vertical Deformation Analysis

East County Sand , LLC

Hole No.=B-1a Water Depth=30 ft Surface Elev.=438

Magnitude=6.9
Acceleration=0.35g



LATERAL SPREAD ANALYSIS FOR FREE FACE CONDITION

East County Sand, LLC 5855-A1-SC

SECTION A-A' -UP TO 210' AWAY FROM SLOPE BASE EDGE OF Moreno Ave.(REPRESENTED BY B-1a)

M	EARTHQUAKE MOMENT MAGNITUDE	6.9
R	HORIZONTAL OR MAPPED DISTANCE TO THE NEAREST BOUND OF SEISMIC ENERGY SOURCE (KM)	26.2
H	FREE FACE HEIGHT (FEET)	75
L	DISTANCE FROM THE BASE OF FREE FACE TO THE POINT IN QUESTION IN SAME UNITS AS H	210
T_{15}	CUMULATIVE THICKNESS OF SATURATED GRANULAR LAYERS WITH N1(60)<=15 (METERS)	7.62
F_{15}	AVERAGE FINES CONTENT (<#200) FOR GRANULAR MATERIALS INCLUDED WITHIN T_{15} (%)	15
$D50_{15}$	AVERAGE MEAN GRAIN SIZE, D50 , FOR GRANULAR MATERIALS WITHIN T_{15} (mm)	0.4

OUTPUT

Ro	DISTANCE TERM THAT IS A FUNCTION OF MAGNITUDE (KM)	3.17
R*	MODIFIED SOURCE DISTANCE (KM)	29.37
W	FREE FACE RATIO- H/L %	35.71
LOG D_H	-0.300500186	
D_H	ESTIMATED LATERAL GROUND DISPLACEMENT IN (METERS)	0.50
D_H	ESTIMATED LATERAL GROUND DISPLACEMENT IN (FEET)	1.67
RESULT:	*SINCE DH>1 FOOT DAMAGE TO IMPROVEMENTS FROM LATERAL SPREADING IS LIKELY*	

ESTIMATION OF LATERAL DISPLACEMENT MAGNITUDE IN ACCORDANCE WITH "UPDATED YOUD & BARTLET" METHODOLOGY FOR FREE FACE CONDITION, AS RECOMMENDED BY CDMG SPECIAL PUBLICATION 117

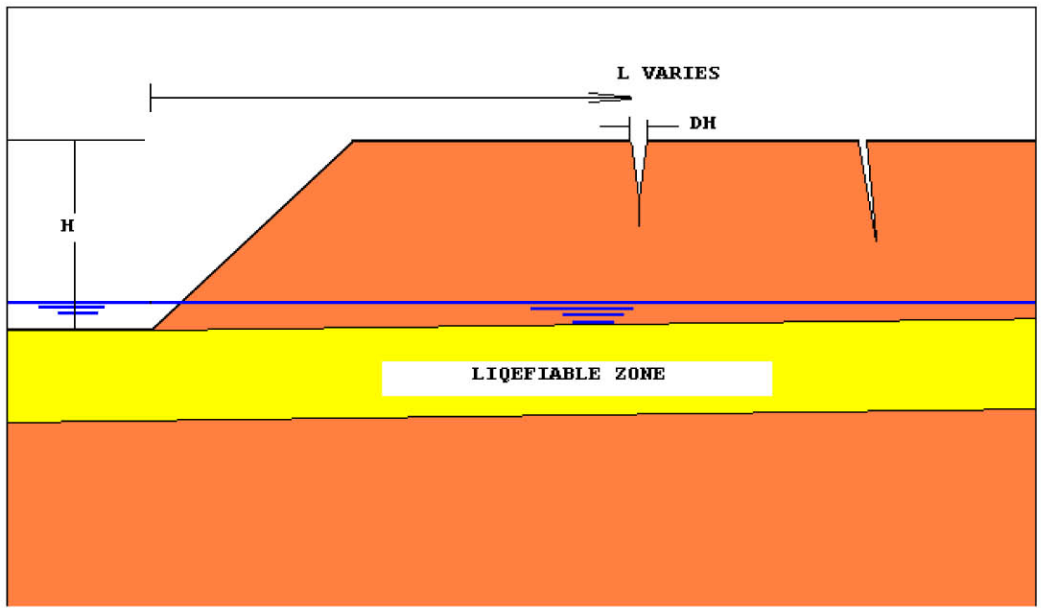


Plate E-2

APPENDIX F

SLOPE STABILITY ANALYSES

APPENDIX F

SLOPE STABILITY ANALYSIS

INTRODUCTION OF GSTABL7 v.2 COMPUTER PROGRAM

Introduction

GSTABL v.2 is a fully integrated slope stability analysis program. It permits the engineer to develop the slope geometry interactively and perform slope analysis from within a single program. The slope analysis portion of GSTABL v.2 uses a modified version of the popular STABL program, originally developed at Purdue University.

GSTABL v.2 performs a two dimensional limit equilibrium analysis to compute the factor of safety for a layered slope using the modified Bishop or Janbu methods. This program can be used to search for the most critical surface or the factor of safety may be determined for specific surfaces. GSTABL v.2.005 is programmed to handle:

1. Heterogenous soil systems
2. Anisotropic soil strength properties
3. Reinforced slopes
4. Nonlinear Mohr-Coulomb strength envelope
5. Pore water pressures for effective stress analysis using:
    a. Phreatic and piezometric surfaces
    b. Pore pressure grid
    c. R factor
    d. Constant pore water pressure
6. Pseudo-static earthquake loading
7. Surcharge boundary loads
8. Automatic generation and analysis of an unlimited number of circular, noncircular and block-shaped failure surfaces
9. Analysis of right-facing slopes
10. Both SI and Imperial units

General Information

If the reviewer wishes to obtain more information concerning slope stability analysis, the following publications may be consulted initially:

1. The Stability of Slopes, by E.N. Bromhead, Surrey University Press, Chapman and Hall, 374 pages, ISBN 412 01061 5, 1985.

2. Rock Slope Engineering, by E. Hoek and J.W. Bray, Inst. of Mining and Metallurgy, London, England, Third Edition, 358 pages, ISNB 0 900488 573, 1981.

3. Landslides: Analysis and Control, by R.L. Schuster and R.J. Krizek (editors), Special Report 176, Transportation Research Board, National Academy of Sciences, 234 pages, ISBN 0 309 02804 3, 1978.

GSTABL v.2.005 Features

The present version of GSTABL v.2.005 contains the following features:

1. Allows user to calculate factors of safety for static stability and dynamic stability situations.

2. Allows user to analyze stability situations with different failure modes.

3. Allows user to edit input for slope geometry and calculate corresponding factor of safety.

4. Allows user to readily review on-screen the input slope geometry.

5. Allows user to automatically generate and analyze unlimited number of circular, non-circular and block-shaped failure surfaces (i.e., bedding plane, slide plane, etc.).

Input Data

Input data includes the following items:

1. Unit weight, residual cohesion, residual friction angle, peak cohesion, and peak friction angle of fill material, bedding plane, and bedrock, respectively. Residual cohesion and friction angle is used for static stability analysis, whereas peak cohesion and friction angle is for seismic stability analysis.

2. Slope geometry and surcharge boundary loads.

3. The seismic coefficient utilized for pseudo-static earthquake loading was reasonably and conservatively estimated at 0.12.

Seismic Discussion

Seismic stability analyses were approximated using a pseudo-static approach. The major difficulty in the pseudo-static approach arises from the appropriate selection of the seismic coefficient used in the analysis. The use of a static inertia force equal to this acceleration during an earthquake (rigid-body response) would be extremely conservative for several reasons including: 1) only low height, stiff/dense embankments or embankments in confined areas may respond essentially as rigid structures; 2) an earthquake's inertia force is enacted on a mass for a short time period. Therefore, replacing a transient force by a pseudo-static (seismic) force representing the maximum acceleration is considered

unrealistic; 3) assuming that total pseudo-static loading is applied evenly throughout the embankment for an extended period of time is an incorrect assumption, as the length of the failure surface analyzed is usually much greater than the wave length of seismic waves generated by earthquakes; and 4) the seismic waves would place portions of the mass in compression and some in tension, resulting in only a limited portion of the failure surface analyzed moving in a downslope direction, at any one instant of time.

The coefficients usually suggested by regulating agencies, counties and municipalities are in the range of 0.05 to 0.25. For example, past regulatory guidelines within the City and County indicated that the slope stability pseudostatic coefficient should be 0.15.

The method developed by Krinitzsky, Gould, and Edinger (1993) which was in turn based on Taniguchi and Sasaki (T&S, 1986), was referenced. This method is based on empirical data and the performance of existing earth embankments during seismic loading. Our review of "Guidelines for Evaluating and Mitigating Seismic Hazards in California (California Dept. of Conservation, 1997) indicates the State of California recommends using pseudo-static coefficient of 0.15 for design earthquakes of M 8.25 or greater and using 0.1 for earthquake parameter M 6.5. When reviewing the methodology in SP 117 (2008) and Blake and others (2002), indicated a K_{eq} of 0.115 with Feg = 0.41 for a threshold of 6 inches (deemed by GSI appropriate for temporary mine slopes). Based on theses analyses, a reasonably conservative seismic coefficient of 0.12 was used in our analysis.

GSI has utilized a 20 percent increase in the static soil strength to model the transient loads during the design seismic event for alluvium above the water table and granitics. No percent increase in the static soil strength to model the transient loads during the design seismic event for alluvium below the water table was used. Due to the soil conditions and the anticipated relatively low design seismic horizontal ground acceleration (0.20 g), this is a reasonably conservative assumption.

Output Information

Output information includes:

1. All input data.

2. Factors of safety for the ten most critical surfaces for static and pseudo-static stability situation.

3. High quality plots can be generated. The plots include the slope geometry, the critical surfaces and the factor of safety.

Results of Slope Stability Calculation

Table F-1 shows parameters used in slope stability calculations. Detailed output information is presented in Plates F-1 to F-10.

Based on our experience on similar projects, temporary back cuts steeper than 33 degrees have experienced failure during construction. Therefore, we recommend all back-cuts to be excavated at gradients of 1.5:1 to 1.6:1 (h:v) or shallower above the water table, and 3:1 (h:v) to 3.5:1 (h:v)or shallower below the water table, in order to achieve a minimum temporary factor of safety during construction of 1.2.

TABLE F-1
SOIL PARAMETERS USED

SOIL MATERIALS	DENSITY PARAMETERS		SHEAR STRENGTH			
			STATIC ANALYSIS		SEISMIC ANALYSIS*	
	MOIST (PCF)	SAT (PCF)	C (PSF)	ϕ (DEGREES)	C (PSF)	ϕ (DEGREES)
Qalm Moist Alluvium above water table	120	120	145	30.0	174	34.7
Qals Saturated Alluvium below water table	110	127	125	28.0	125	28.0
Kgr Bedrock (Granitics)	119.9	126.0	500	32	600	36.8
* A 20 percent increase in soil strengths were used to model seismic strength for the moist alluvium and granitic bedrock.						

TABLE F-2
SUMMARY OF SLOPE ANALYSIS

STABILITY	SLOPE	SLOPE GRADIENT ABOVE WATER TABLE	SLOPE GRADIENT BELOW WATER TABLE	FACTORS OF SAFETY	
				STATIC	SEISMIC*
Temporary	Section A-A'	1.6:1	3.5:1	1.26	1.03
Temporary	Section B-B'	1.5:1	3:1	1.42	1.00
Temporary	Section C-C'	1.5:1	3:1	1.27	1.02
Temporary	SectionD1-D1'	–	3:1	2.21	1.38
Temporary	Section D2-D2'	1.5:1	3:1	1.37	1.04
Final Gross	Section E-E'	2:1	–	3.05	Not Required**
Final Gross	***	2:1	–	>3.0	Not Required**

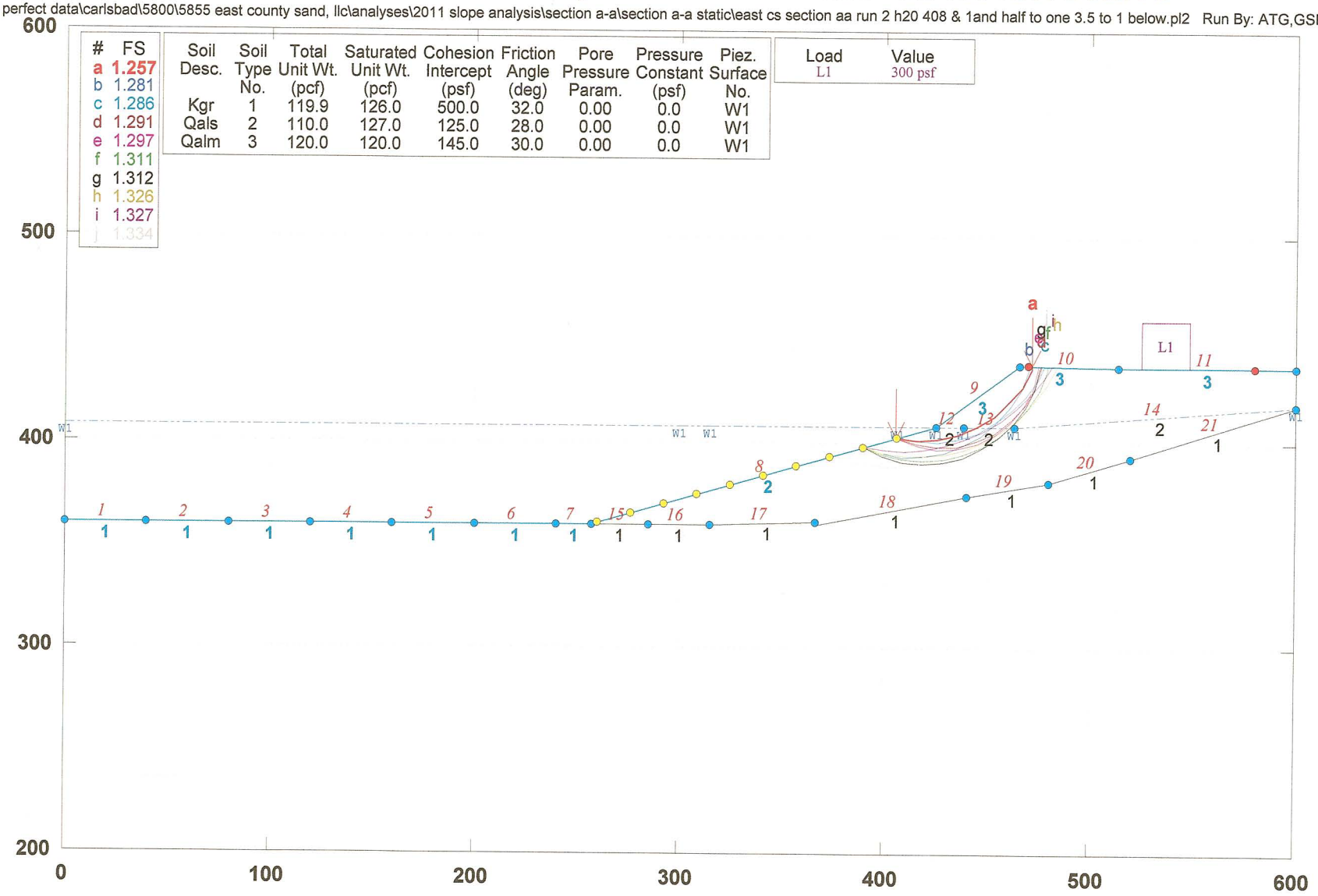
* Although F.O.S.> 1.0 for all cases evaluated, the deformation for these slopes could occur due to the Design Basis Earthquake being close to the yield acceleration for this site/slopes.

** The seismic F.O.S. was not calculated as it is not required if the static F.O.S. is greater than 1.8, as indicated in Special Publication 117.

*** All compacted fill slopes <10' in height.

W.O. 5855- A1-SC/ East County Sand Sec A-A' w/ H2O - EL 408 1.6:1 a 3.5:1 b

x:\shared\word perfect data\carlsbad\5800\5855 east county sand, llc\analyses\2011 slope analysis\section a-a\section a-a static\east cs section aa run 2 h20 408 & 1and half to one 3.5 to 1 below.pl2 Run By: ATG,GSI 9/21/2011 0E



GSTABL7 v.2 FSmin=1.257

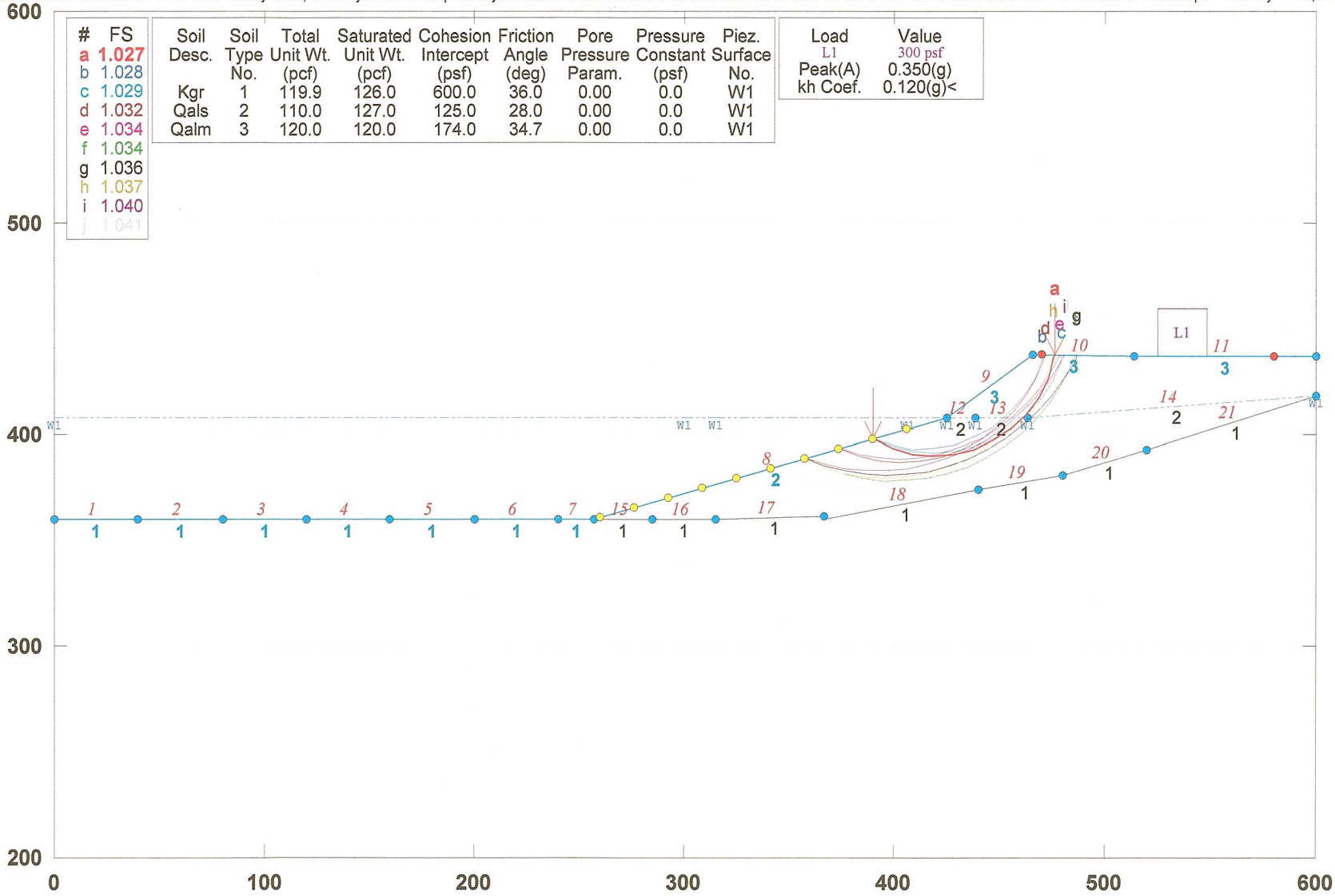
Safety Factors Are Calculated By The Simplified Janbu Method for the case of c=0

PLATE F-1

GSTABL7

W.O. 5855- A1-SC/ East County Sand Sec A-A' w/ H2O - EL 408 1.6:1 a 3.5:1 b

x:\shared\word perfect data\carlsbad\5800\5855 east county sand, llc\analyses\2011 slope analysis\section a-a\section a-a seismic\east cs section aa run 2 h20 408 & 1and six tenths to one 3.5 to 1 below.pl2 Run By: ATG,GSI 9/21/2011 05



GSTABL7 v.2 FSmin=1.027

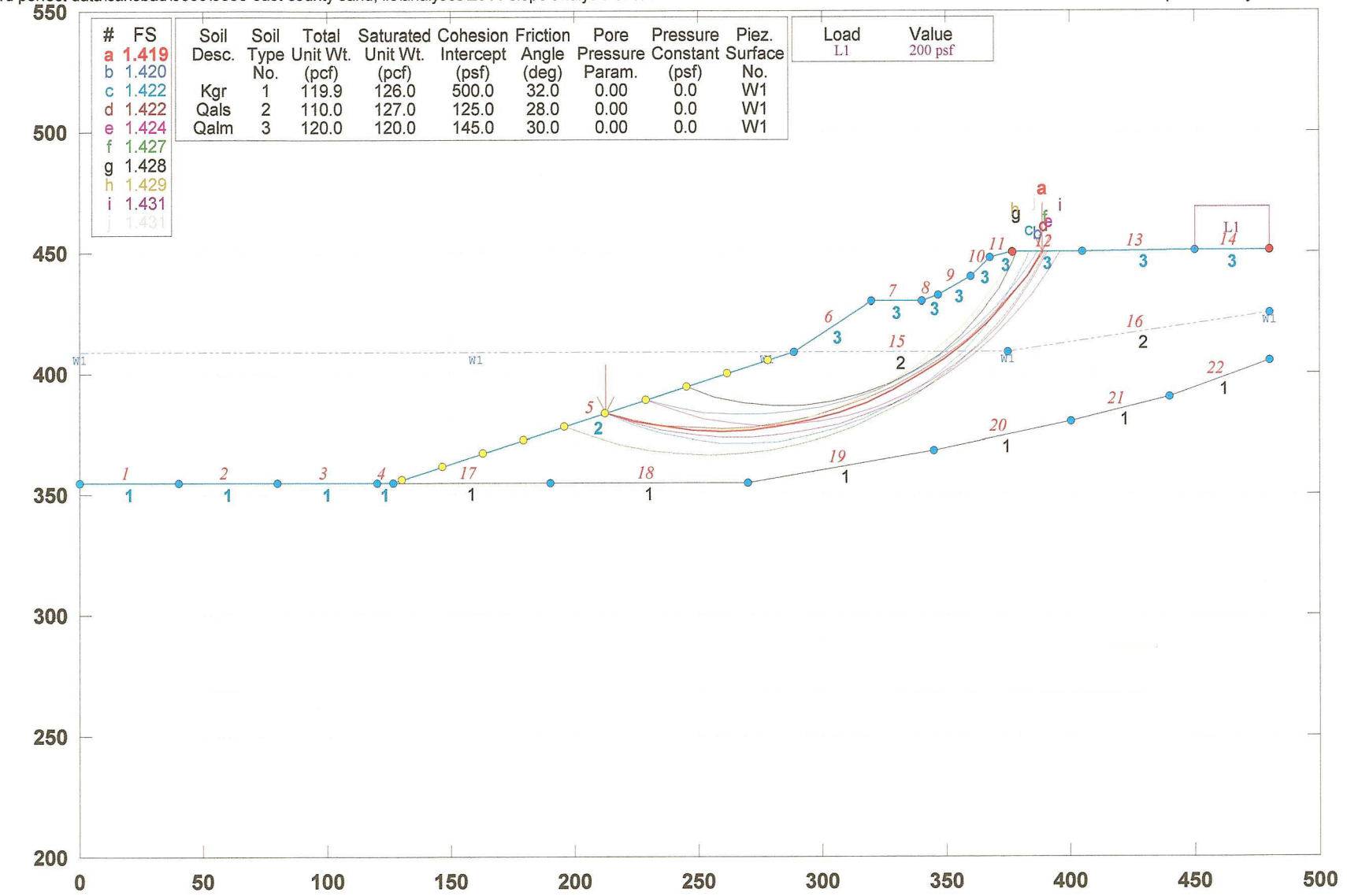
Safety Factors Are Calculated By The Simplified Janbu Method for the case of c=0

GSTABL7

PLATE F-2

W.O. 5855- A1-SC/ East County Sand Sec B-B' w/ H2O - EL 409 1.5:1 a 3:1b

x:\shared\word perfect data\carlsbad\5800\5855 east county sand, llc\analyses\2011 slope analysis\section b-b\section b-b static\east cs section aa static run 1 h20 408 with vert.pl2 Run By: ATG,GSI 9/13/2011 11



GSTABL7 v.2 FSmin=1.419

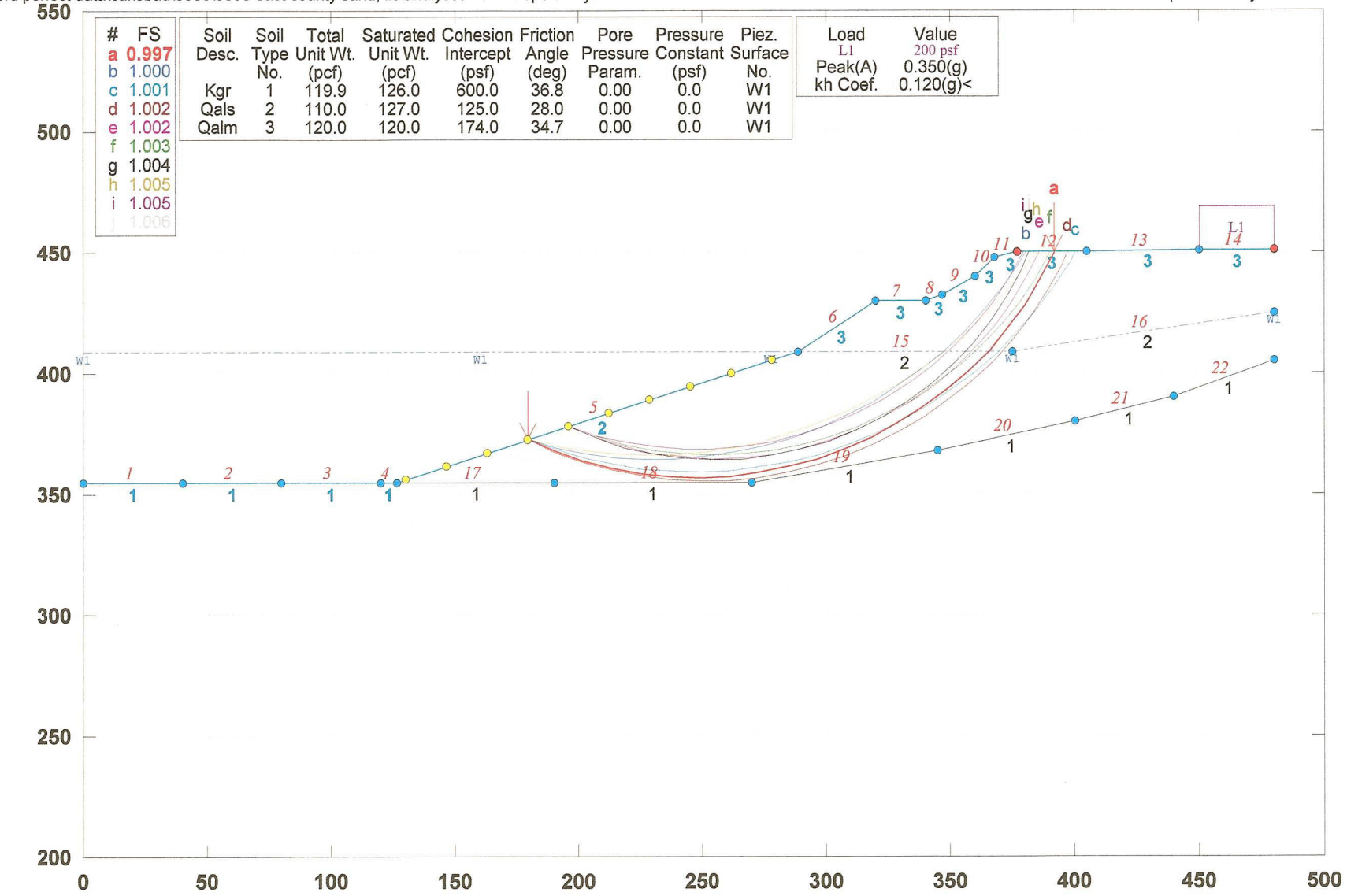
Safety Factors Are Calculated By The Simplified Janbu Method

GSTABL7

Plate F-3

W.O. 5855- A1-SC/ East County Sand Sec B-B' w/ H2O - EL 409 1.5:1 a 3:1b

x:\shared\word perfect data\carlsbad\5800\5855 east county sand, llc\analyses\2011 slope analysis\section b-b\sec b-b seismic\east cs section aa seismic run 1 h20 408 with vert.pl2 Run By: ATG,GSI 9/13/2011 11



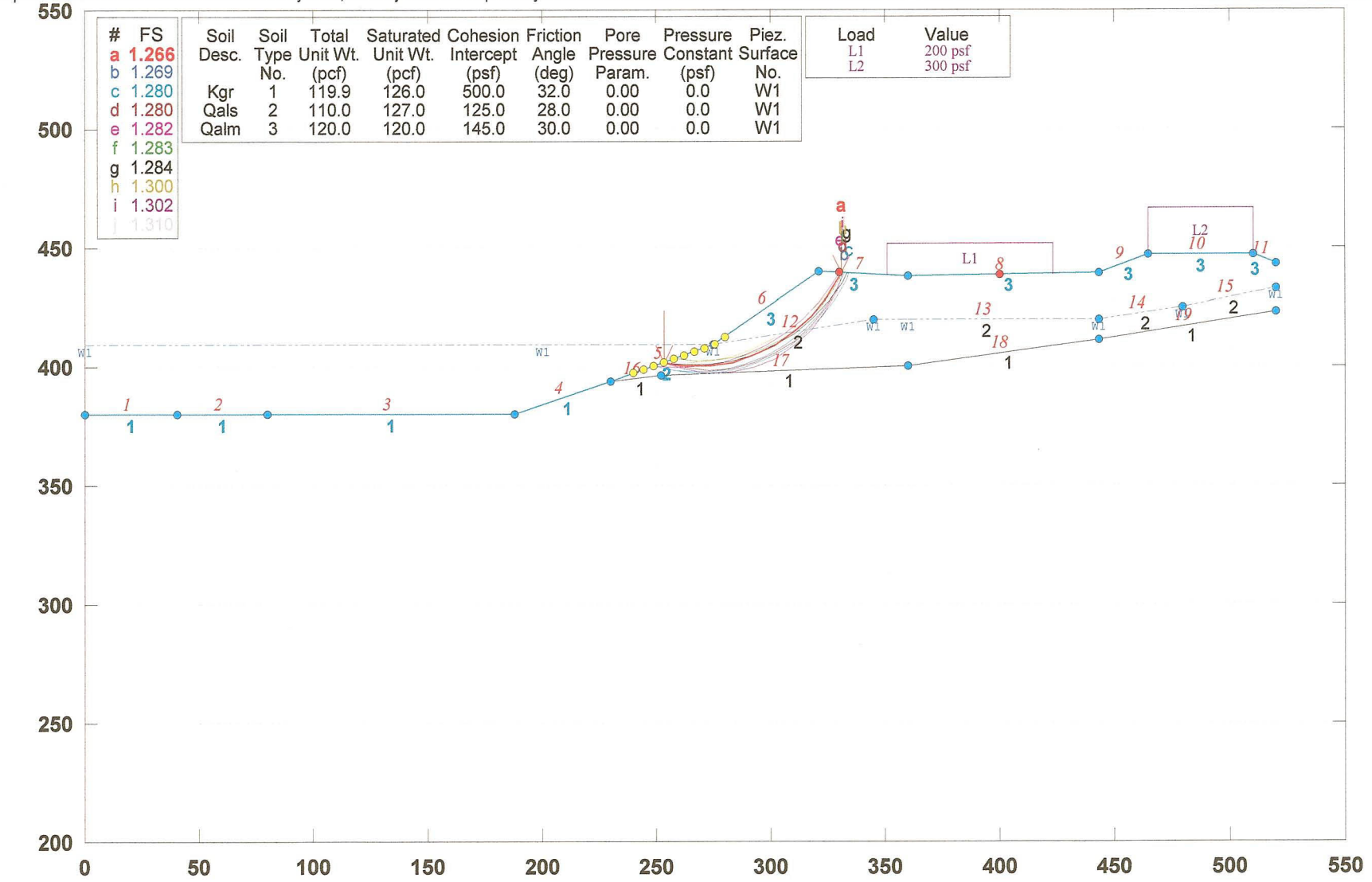
GSTABL7 v.2 FSmin=0.997

Safety Factors Are Calculated By The Simplified Janbu Method

Plate F-4

W.O. 5855- A1-SC/ East County Sand Sec C-C' w/ H2O - EL 409

x:\shared\word perfect data\carlsbad\5800\5855 east county sand, llc\analyses\2011 slope analysis\section c-c\sec c-c static\east cs section cc static run 1 h20 408 w 1and half above and 3 to 1 below.pl2 Run By: ATG,GSI 9/13/2011 1



GSTABL7 v.2 FSmin=1.266

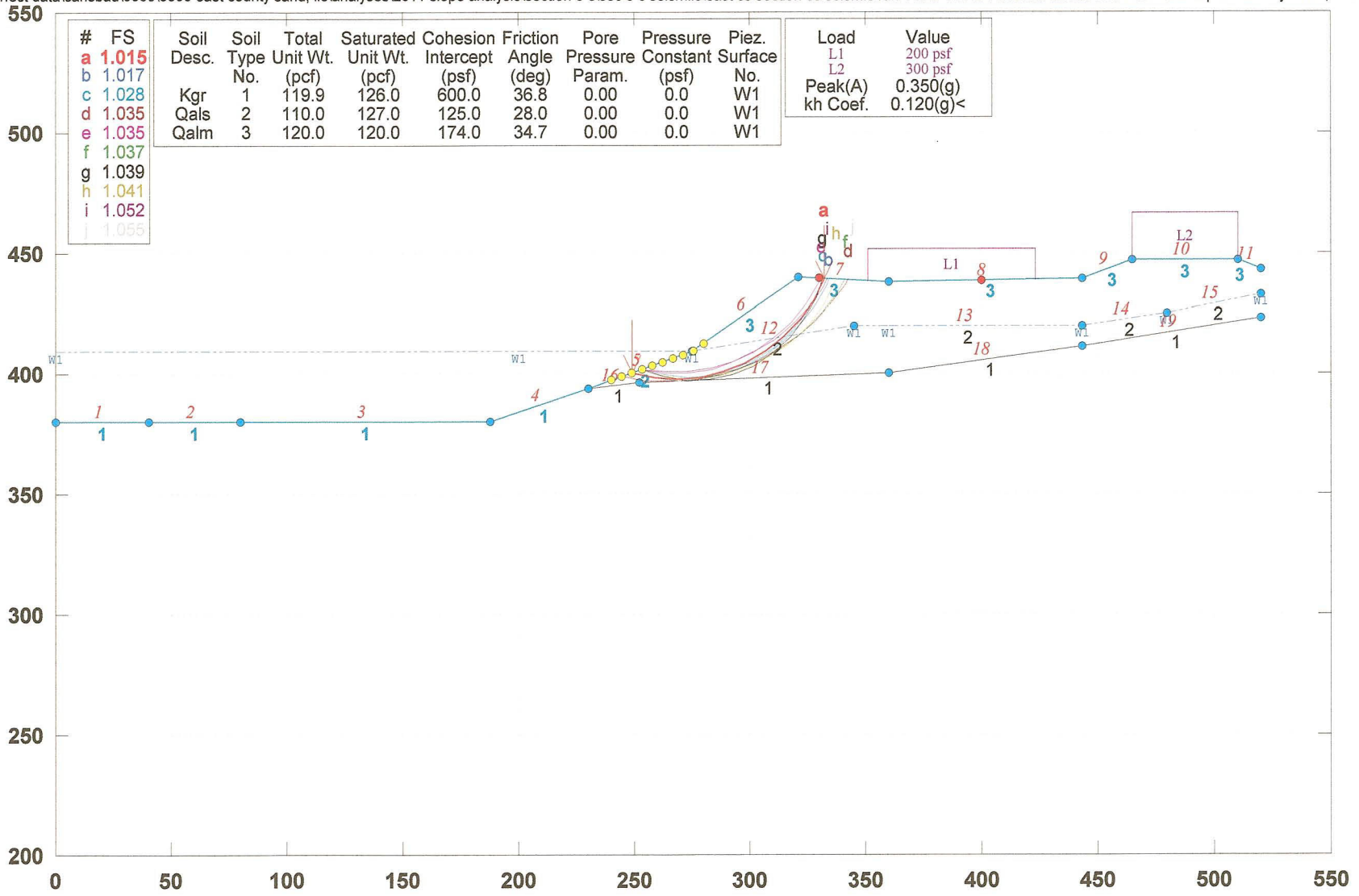
Safety Factors Are Calculated By The Modified Bishop Method

GSTABL7

Plate F-5

W.O. 5855- A1-SC/ East County Sand Sec C-C' w/ H2O - EL 409

x:\shared\word perfect data\carlsbad\5800\5855 east county sand, llc\analyses\2011 slope analysis\section c-c\sec c-c seismiic\east cs section cc seismic run 1 h20 408 w 1and half above and 3 to 1 below.pl2 Run By: ATG,GSI 9/13/2011 11



GSTABL7 v.2 FSmin=1.015

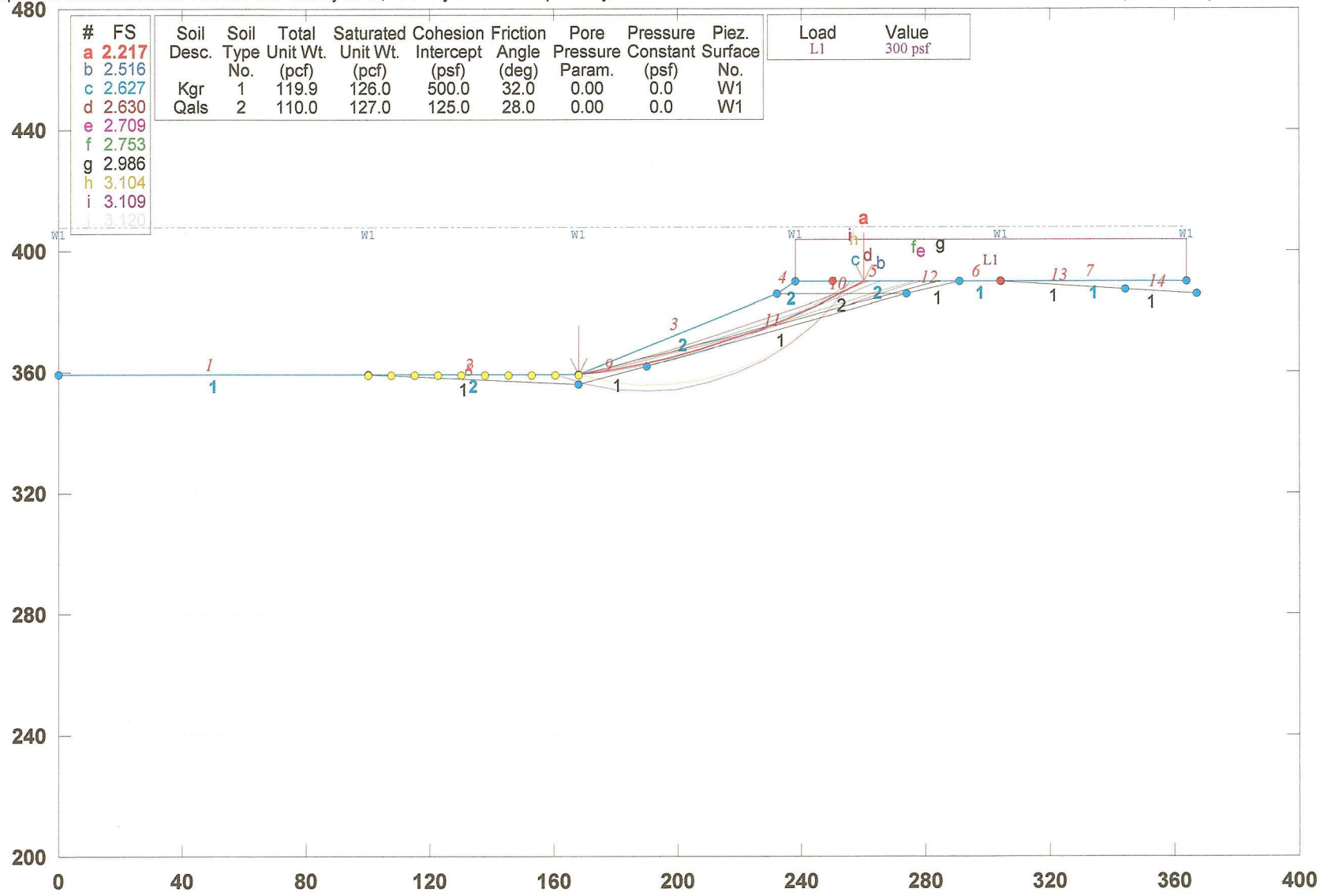
Safety Factors Are Calculated By The Modified Bishop Method

GSTABL7

Plate F-6

W.O. 5855- A1-SC/ East County Sand Sec D1-D1' w/ H2O @ E408

x:\shared\word perfect data\carlsbad\5800\5855 east county sand, llc\analyses\2011 slope analysis\section d1-d1\sec d1-d1 static\east cs section dd1 run 1 h20 408.pl2 Run By: ATG,GSI 9/13/2011 11:



#	FS
a	2.217
b	2.516
c	2.627
d	2.630
e	2.709
f	2.753
g	2.986
h	3.104
i	3.109
j	3.120

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Param.	Pressure Constant (psf)	Piez. Surface No.
Kgr	1	119.9	126.0	500.0	32.0	0.00	0.0	W1
Qals	2	110.0	127.0	125.0	28.0	0.00	0.0	W1

Load	Value
L1	300 psf

GSTABL7 v.2 FSmin=2.217

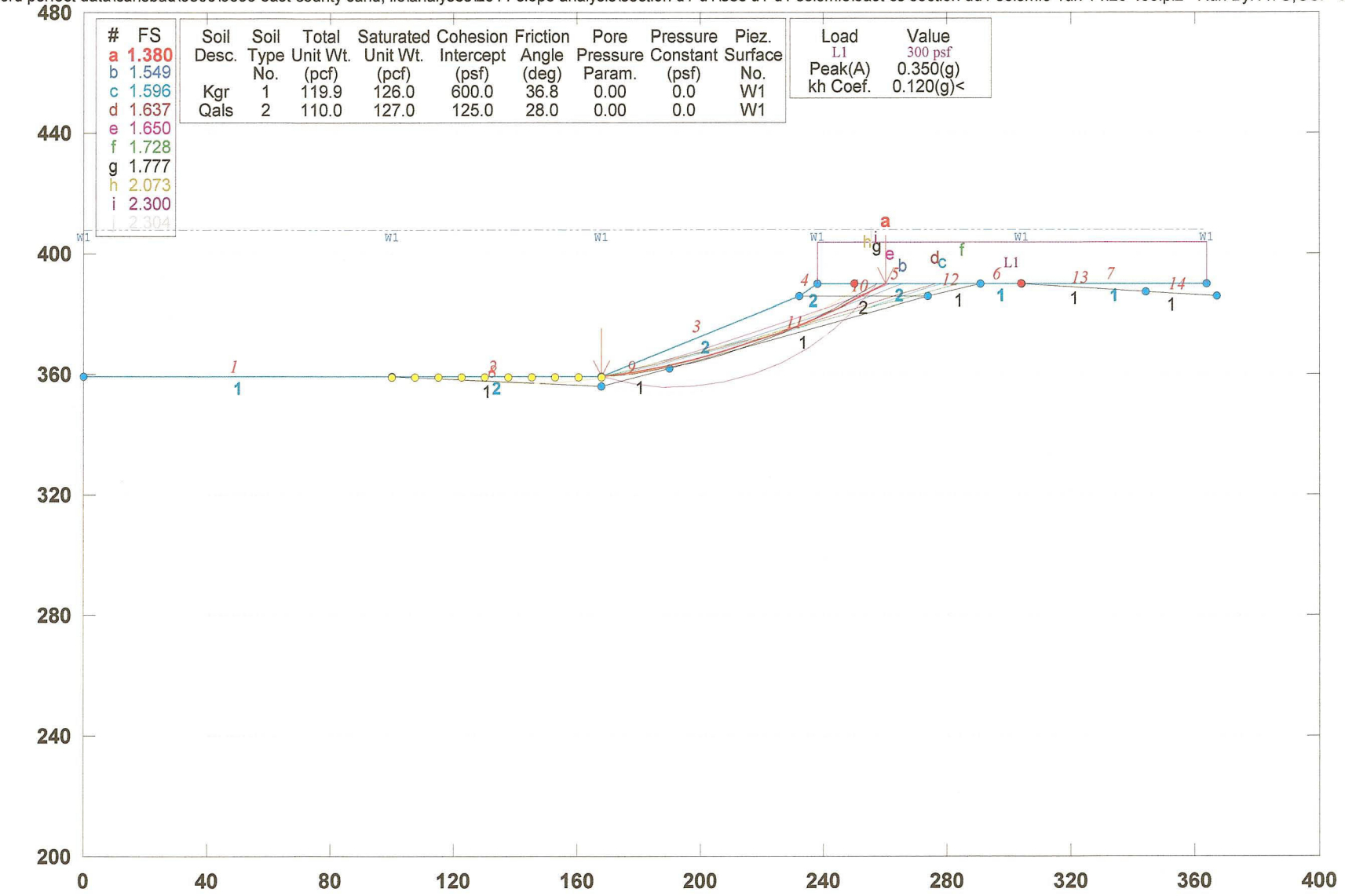
Safety Factors Are Calculated By The Simplified Janbu Method for the case of c=0

GSTABL7

Plate F-7

W.O. 5855- A1-SC/ East County Sand Sec D1-D1' w/ H2O @ E408

x:\shared\word perfect data\carlsbad\5800\5855 east county sand, llc\analyses\2011 slope analysis\section d1-d1\sec d1-d1 seismic\east cs section dd1 seismic run 1 h20 408.pl2 Run By: ATG,GSI 9/13/2011 11:



#	FS
a	1.380
b	1.549
c	1.596
d	1.637
e	1.650
f	1.728
g	1.777
h	2.073
i	2.300
j	2.304

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Param.	Pressure Constant (psf)	Piez. Surface No.
Kgr	1	119.9	126.0	600.0	36.8	0.00	0.0	W1
Qals	2	110.0	127.0	125.0	28.0	0.00	0.0	W1

Load	Value
L1	300 psf
Peak(A)	0.350(g)
kh Coef.	0.120(g)<

GSTABL7 v.2 FSmin=1.380

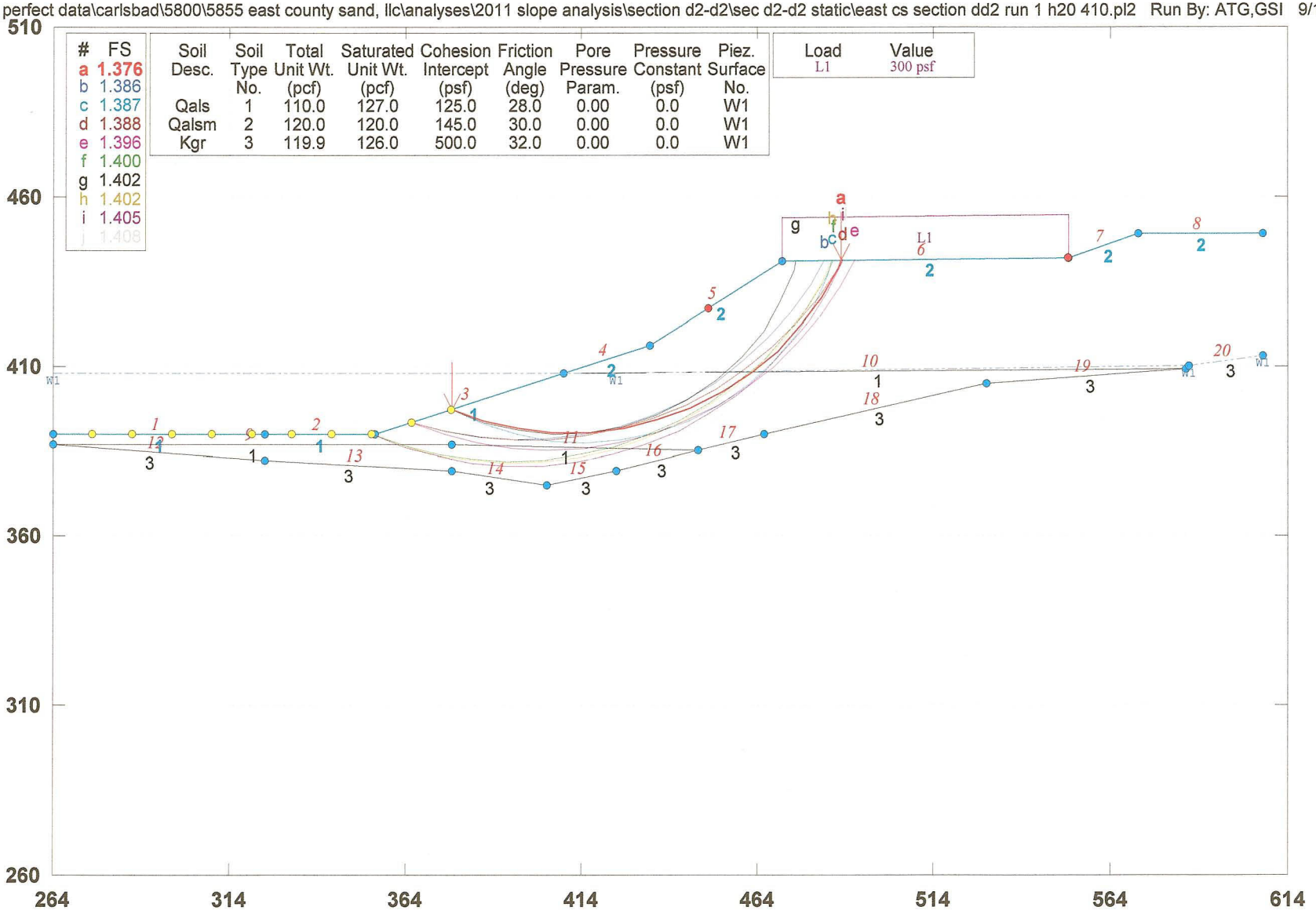
Safety Factors Are Calculated By The Simplified Janbu Method for the case of c=0

GSTABL7

Plate F-8

W.O. 5855- A1-SC/ East County Sand Sec D2-D2' w/ H2O @ E408

x:\shared\word perfect data\carlsbad\5800\5855 east county sand, llc\analyses\2011 slope analysis\section d2-d2\sec d2-d2 static\east cs section dd2 run 1 h20 410.pl2 Run By: ATG,GSI 9/13/2011 01:



GSTABL7 v.2 FSmin=1.376

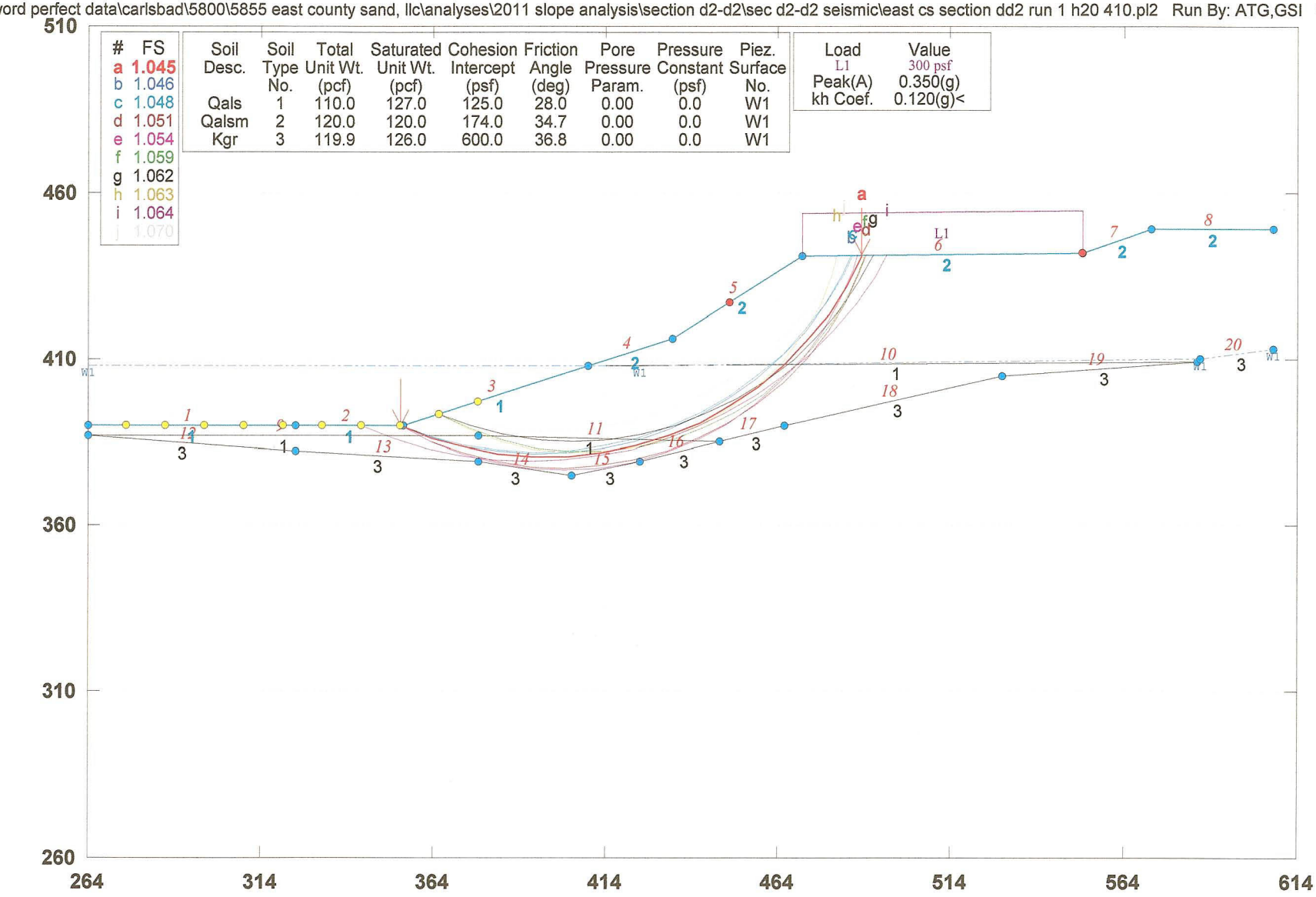
Safety Factors Are Calculated By The Simplified Janbu Method for the case of c=0

GSTABL7

Plate F-9

W.O. 5855- A1-SC/ East County Sand Sec D2-D2' w/ H2O @ E408

x:\shared\word perfect data\carlsbad\5800\5855 east county sand, llc\analyses\2011 slope analysis\section d2-d2\sec d2-d2 seismic\east cs section dd2 run 1 h20 410.pl2 Run By: ATG,GSI 9/13/2011 01



#	FS
a	1.045
b	1.046
c	1.048
d	1.051
e	1.054
f	1.059
g	1.062
h	1.063
i	1.064
j	1.070

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Param.	Pressure Constant (psf)	Piez. Surface No.
Qals	1	110.0	127.0	125.0	28.0	0.00	0.0	W1
Qalsm	2	120.0	120.0	174.0	34.7	0.00	0.0	W1
Kgr	3	119.9	126.0	600.0	36.8	0.00	0.0	W1

Load	Value
L1	300 psf
Peak(A)	0.350(g)
kh Coef.	0.120(g)<

GSTABL7 v.2 FSmin=1.045

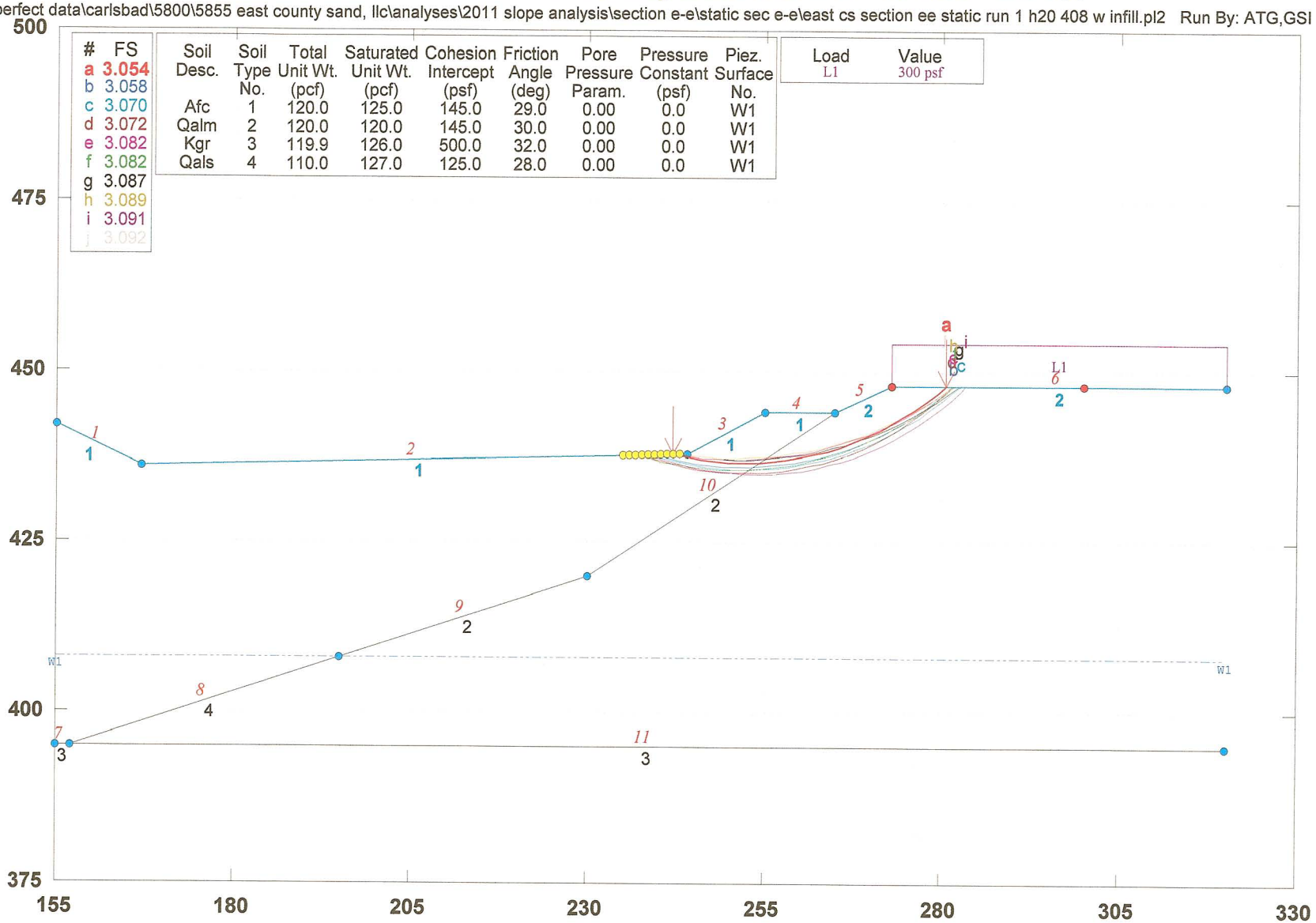
Safety Factors Are Calculated By The Simplified Janbu Method for the case of c=0

GSTABL7

Plate F-10

W.O. 5855- A1-SC/ East County Sand Sec E-E' w/ H2O - EL 408

x:\shared\word perfect data\carlsbad\5800\5855 east county sand, llc\analyses\2011 slope analysis\section e-e\static sec e-e\east cs section ee static run 1 h20 408 w infill.pl2 Run By: ATG,GSI 9/21/2011 0(



GSTABL7 v.2 FSmin=3.054

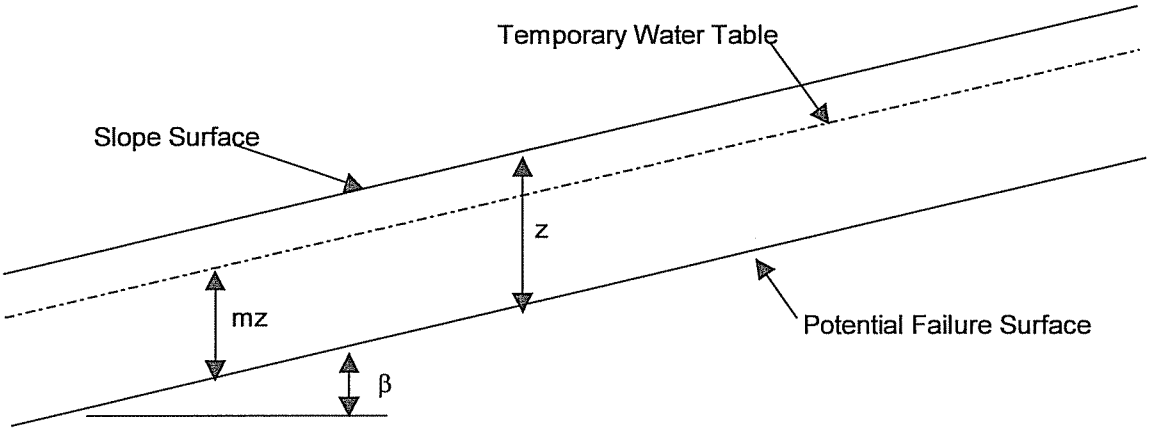
Safety Factors Are Calculated By The Modified Bishop Method

GSTABL7

PLATE F-11

SURFICIAL SLOPE STABILITY

Date: September, 2010



Assume:

F.S. = Factor of Safety
C = Cohesion of Soil
γ_s = Unit Weight of Soil
m = Fraction of z such that mz is the vertical height of the temporary water table above the failure surface
γ_ω = Unit Weight of Water
z = Vertical Depth of Failure Surface
β = Slope Angle
ϕ = Friction Angle of Soil

Given:

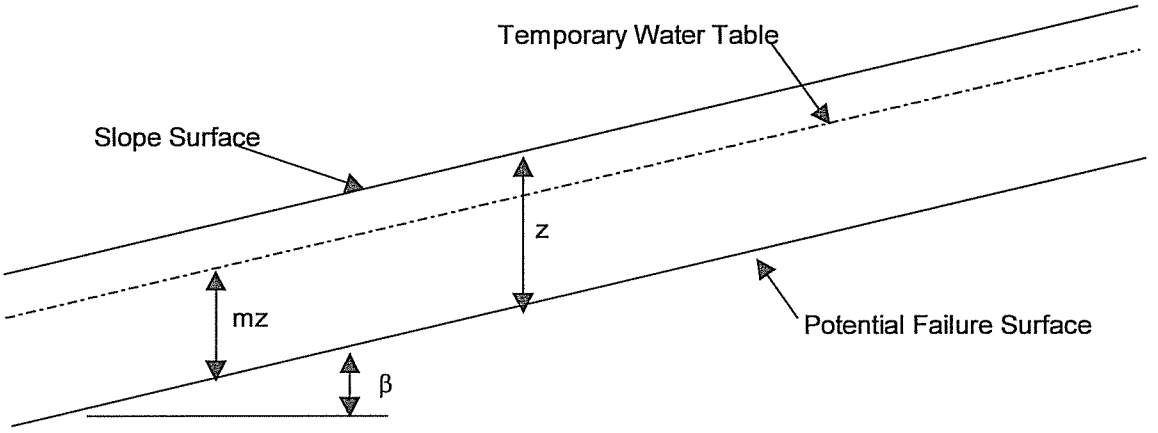
C =	190	psf		
γ_s =	115	pcf		
m =	0.50			
γ_ω =	62.4	pcf		
z =	4.00	feet		
β =	33.7	degrees	β in radians	0.58818
ϕ =	34	degrees	ϕ in radians	0.59341

$$F.S. = \frac{C + (\gamma_s - m\gamma_\omega) z \cos^2\beta \tan\phi}{\gamma_s z \sin\beta \cos\beta}$$

F.S. = 1.63

SURFICIAL SLOPE STABILITY

Date: September, 2011



Assume:

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C = Cohesion of Soil
γ_s = Unit Weight of Soil
m = Fraction of z such that mz is the vertical height of the temporary water table above the failure surface
γ_ω = Unit Weight of Water
z = Vertical Depth of Failure Surface
β = Slope Angle
ϕ = Friction Angle of Soil

Given:

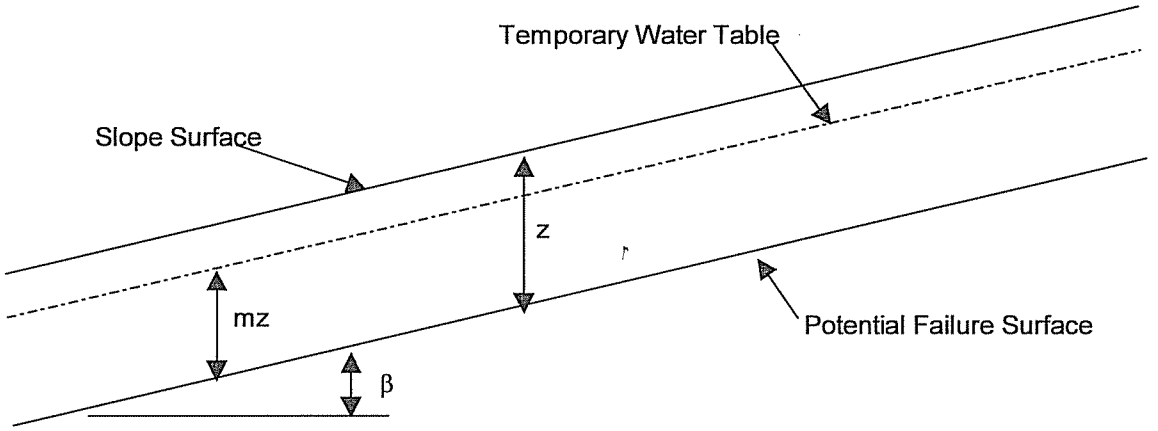
C =	190	psf		
γ_s =	125	pcf		
m =	0.50			
γ_ω =	62.4	pcf		
z =	4.00	feet		
β =	33.7	degrees	β in radians	0.58818
ϕ =	34	degrees	ϕ in radians	0.59341

$$F.S. = \frac{C + (\gamma_s - m\gamma_\omega) z \cos^2\beta \tan\phi}{\gamma_s z \sin\beta \cos\beta}$$

F.S. = 1.58

SURFICIAL SLOPE STABILITY

Date: September, 2011



Assume:

F.S. = Factor of Safety
C = Cohesion of Soil
γ_s = Unit Weight of Soil
m = Fraction of z such that mz is the vertical height of the temporary water table above the failure surface
γ_ω = Unit Weight of Water
z = Vertical Depth of Failure Surface
β = Slope Angle
ϕ = Friction Angle of Soil

Given:

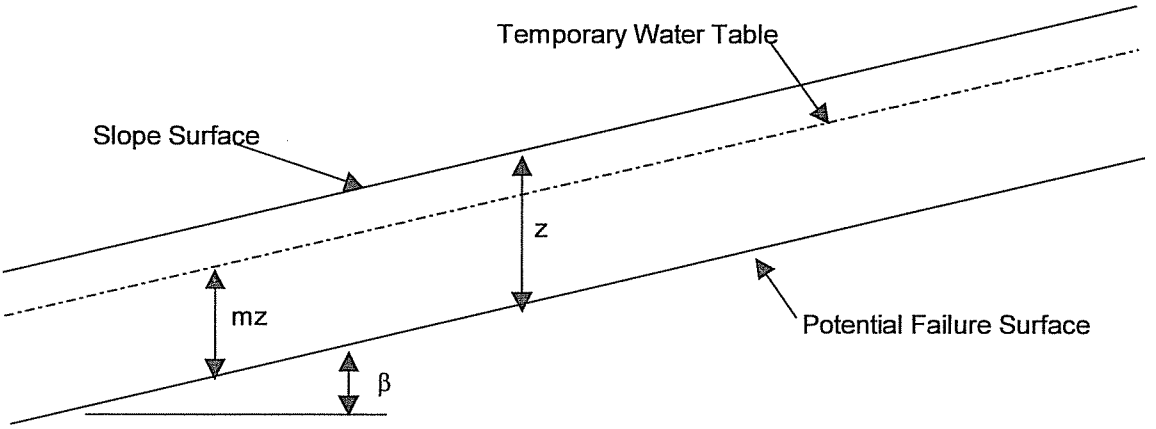
C =	150	psf		
γ_s =	115	pcf		
m =	0.50			
γ_ω =	62.4	pcf		
z =	4.00	feet		
β =	33.7	degrees	β in radians	0.58818
ϕ =	34	degrees	ϕ in radians	0.59341

$$F.S. = \frac{C + (\gamma_s - m\gamma_\omega) z \cos^2\beta \tan\phi}{\gamma_s z \sin\beta \cos\beta}$$

F.S. = 1.44

SURFICIAL SLOPE STABILITY

Date: September, 2011



Assume:

F.S. = Factor of Safety
C = Cohesion of Soil
γ_s = Unit Weight of Soil
m = Fraction of z such that mz is the vertical height of the temporary water table above the failure surface
γ_ω = Unit Weight of Water
z = Vertical Depth of Failure Surface
β = Slope Angle
ϕ = Friction Angle of Soil

Given:

C =	150	psf		
γ_s =	125	pcf		
m =	0.50			
γ_ω =	62.4	pcf		
z =	4.00	feet		
β =	33.7	degrees	β in radians	0.58818
ϕ =	34	degrees	ϕ in radians	0.59341

$$F.S. = \frac{C + (\gamma_s - m\gamma_\omega) z \cos^2\beta \tan\phi}{\gamma_s z \sin\beta \cos\beta}$$

F.S. = 1.41

APPENDIX G

GENERAL EARTHWORK, GRADING GUIDELINES AND PRELIMINARY CRITERIA

GENERAL EARTHWORK, GRADING GUIDELINES, AND PRELIMINARY CRITERIA

General

These guidelines present general procedures and requirements for earthwork and grading as shown on the approved grading plans, including preparation of areas to be filled, placement of fill, installation of subdrains, excavations, and appurtenant structures or flatwork. The recommendations contained in the geotechnical report are part of these earthwork and grading guidelines and would supercede the provisions contained hereafter in the case of conflict. Evaluations performed by the consultant during the course of grading may result in new or revised recommendations which could supercede these guidelines or the recommendations contained in the geotechnical report. Generalized details follow this text.

The operator is responsible for the satisfactory completion of all earthwork in accordance with provisions of the project plans and specifications and latest adopted code. In the case of conflict, the most onerous provisions shall prevail. The project geotechnical engineer and engineering geologist (geotechnical consultant), and/or their representatives, should provide observation and testing services, and geotechnical consultation during the duration of the project.

EARTHWORK OBSERVATIONS AND TESTING

Geotechnical Consultant

Prior to the commencement of grading, a qualified geotechnical consultant (soil engineer and engineering geologist) should be employed for the purpose of observing earthwork procedures and testing the fills for general conformance with the recommendations of the geotechnical report(s), the approved grading plans, and applicable grading codes and ordinances.

The geotechnical consultant should provide testing and observation so that an evaluation may be made that the work is being accomplished as specified. It is the responsibility of the contractor to assist the consultants and keep them apprised of anticipated work schedules and changes, so that they may schedule their personnel accordingly.

All remedial removals, clean-outs, prepared ground to receive fill, key excavations, and subdrain installation should be observed and documented by the geotechnical consultant prior to placing any fill. It is the operator's responsibility to notify the geotechnical consultant when such areas are ready for observation.

Laboratory and Field Tests

Maximum dry density tests to determine the degree of compaction should be performed in accordance with American Standard Testing Materials test method ASTM designation D 1557. Random or representative field compaction tests should be performed in accordance with test methods ASTM designation D 1556, D 2937 or D 2922, and D 3017,

at intervals of approximately ±2 feet of fill height or approximately every 1,000 cubic yards placed. These criteria would vary depending on the soil conditions and the size of the project. The location and frequency of testing would be at the discretion of the geotechnical consultant.

Operator's Responsibility

All clearing, site preparation, and earthwork performed on the project should be conducted by the operator, with observation by a geotechnical consultant, and staged approval by the governing agencies, as applicable. It is the operator's responsibility to prepare the ground surface to receive the fill, to the satisfaction of the geotechnical consultant, and to place, spread, moisture condition, mix, and compact the fill in accordance with the recommendations of the geotechnical consultant. The operator should also remove all non-earth material considered unsatisfactory by the geotechnical consultant.

Notwithstanding the services provided by the geotechnical consultant, it is the sole responsibility of the operator to provide adequate equipment and methods to accomplish the earthwork in strict accordance with applicable grading guidelines, latest adopted codes or agency ordinances, geotechnical report(s), and approved grading plans. Sufficient watering apparatus and compaction equipment should be provided by the operator with due consideration for the fill material, rate of placement, and climatic conditions. If, in the opinion of the geotechnical consultant, unsatisfactory conditions such as questionable weather, excessive oversized rock or deleterious material, insufficient support equipment, etc., are resulting in a quality of work that is not acceptable, the consultant will inform the operator, and the operator is expected to rectify the conditions, and if necessary, stop work until conditions are satisfactory.

During construction, the operator shall properly grade all surfaces to maintain good drainage and prevent ponding of water. The operator shall take remedial measures to control surface water and to prevent erosion of graded areas until such time as permanent drainage and erosion control measures have been installed.

SITE PREPARATION

All major vegetation, including brush, trees, thick grasses, organic debris, and other deleterious material, should be removed and disposed of off-site. These removals must be concluded prior to placing fill. In-place existing fill, soil, alluvium, colluvium, or rock materials, as evaluated by the geotechnical consultant as being unsuitable, should be removed prior to any fill placement. Depending upon the soil conditions, these materials may be reused as compacted fills. Any materials incorporated as part of the compacted fills should be approved by the geotechnical consultant.

Any underground structures such as cesspools, cisterns, mining shafts, tunnels, septic tanks, wells, pipelines, or other structures not located prior to grading, are to be removed or treated in a manner recommended by the geotechnical consultant. Soft, dry, spongy,

highly fractured, or otherwise unsuitable ground, extending to such a depth that surface processing cannot adequately improve the condition, should be overexcavated down to firm ground and approved by the geotechnical consultant before compaction and filling operations continue. Overexcavated and processed soils, which have been properly mixed and moisture conditioned, should be re-compacted to the minimum relative compaction as specified in these guidelines.

Existing ground, which is determined to be satisfactory for support of the fills, should be scarified (ripped) to a minimum depth of 6 to 8 inches, or as directed by the geotechnical consultant. After the scarified ground is brought to optimum moisture content, or greater and mixed, the materials should be compacted as specified herein. If the scarified zone is greater than 6 to 8 inches in depth, it may be necessary to remove the excess and place the material in lifts restricted to about 6 to 8 inches in compacted thickness.

Existing ground which is not satisfactory to support compacted fill should be overexcavated as required in the geotechnical report, or by the on-site geotechnical consultant. Scarification, disc harrowing, or other acceptable forms of mixing should continue until the soils are broken down and free of large lumps or clods, until the working surface is reasonably uniform and free from ruts, hollows, hummocks, mounds, or other uneven features, which would inhibit compaction as described previously.

Where fills are to be placed on ground with slopes steeper than 5:1 (horizontal to vertical [h:v]), the ground should be stepped or benched. The lowest bench, which will act as a key, should be a minimum of 15 feet wide and should be at least 2 feet deep into firm material, and approved by the geotechnical consultant. In fill-over-cut slope conditions, the recommended minimum width of the lowest bench or key is also 15 feet, with the key founded on firm material, as designated by the geotechnical consultant. As a general rule, unless specifically recommended otherwise by the geotechnical consultant, the minimum width of fill keys should be equal to ½ the height of the slope.

Standard benching is generally 4 feet (minimum) vertically, exposing firm, acceptable material. Benching may be used to remove unsuitable materials, although it is understood that the vertical height of the bench may exceed 4 feet. Pre-stripping may be considered for unsuitable materials in excess of 4 feet in thickness.

All areas to receive fill, including processed areas, removal areas, and the toes of fill benches, should be observed and approved by the geotechnical consultant prior to placement of fill. Fills may then be properly placed and compacted until design grades (elevations) are attained.

COMPACTED FILLS

Any earth materials imported or excavated on the property may be utilized in the fill provided that each material has been evaluated to be suitable by the geotechnical consultant. These materials should be free of roots, tree branches, other organic matter,

or other deleterious materials. All unsuitable materials should be removed from the fill as directed by the geotechnical consultant. Soils of poor gradation, undesirable expansion potential, or substandard strength characteristics may be designated by the consultant as unsuitable and may require blending with other soils to serve as a satisfactory fill material.

Fill materials derived from benching operations should be dispersed throughout the fill area and blended with other approved material. Benching operations should not result in the benched material being placed only within a single equipment width away from the fill/bedrock contact.

Oversized materials defined as rock, or other irreducible materials, with a maximum dimension greater than 12 inches, should not be buried or placed in fills unless the location of materials and disposal methods are specifically approved by the geotechnical consultant. Oversized material should be taken offsite, or placed in accordance with recommendations of the geotechnical consultant in areas designated as suitable for rock disposal. GSI anticipates that soils to be utilized as fill material for the subject project may contain some rock. Appropriately, the need for rock disposal may be necessary during grading operations on the site. From a geotechnical standpoint, the depth of any rocks, rock fills, or rock blankets, should be a sufficient distance from finish grade. This depth is generally the same as any overexcavation due to cut-fill transitions in hard rock areas, and generally facilitates the excavation of structural footings and substructures. Should deeper excavations be proposed (i.e., deepened footings, utility trenching, swimming pools, spas, etc.), the client may consider increasing the hold-down depth of any rocky fills to be placed, as appropriate. In addition, some agencies/jurisdictions mandate a specific hold-down depth for oversize materials placed in fills. The hold-down depth, and potential to encounter oversize rock, both within fills, and occurring in cut or natural areas, would need to be disclosed to all interested/affected parties. Once approved by the governing agency, the hold-down depth for oversized rock (i.e., greater than 12 inches) in fills on this project is provided as 10 feet, unless specified differently in the text of this report. The governing agency may require that these materials need to be deeper, crushed, or reduced to less than 12 inches in maximum dimension, at their discretion.

To facilitate future trenching, rock (or oversized material), should not be placed within the hold-down depth feet from finish grade, the range of foundation excavations, future utilities, or underground construction unless specifically approved by the governing agency, the geotechnical consultant, and/or the client's representative.

If import material is required for grading, representative samples of the materials to be utilized as compacted fill should be analyzed in the laboratory by the geotechnical consultant to evaluate it's physical properties and suitability for use onsite. Such testing should be performed three (3) days prior to importation. If any material other than that previously tested is encountered during grading, an appropriate analysis of this material should be conducted by the geotechnical consultant as soon as possible.

Approved fill material should be placed in areas prepared to receive fill in near horizontal layers, that when compacted, should not exceed about 6 to 8 inches in thickness. The

geotechnical consultant may approve thick lifts if testing indicates the grading procedures are such that adequate compaction is being achieved with lifts of greater thickness. Each layer should be spread evenly and blended to attain uniformity of material and moisture suitable for compaction.

Fill layers at a moisture content less than optimum should be watered and mixed, and wet fill layers should be aerated by scarification, or should be blended with drier material. Moisture conditioning, blending, and mixing of the fill layer should continue until the fill materials have a uniform moisture content at, or above, optimum moisture.

After each layer has been evenly spread, moisture conditioned, and mixed, it should be uniformly compacted to a minimum of 90 percent of the maximum density as evaluated by ASTM test designation D 1557, or as otherwise recommended by the geotechnical consultant. Compaction equipment should be adequately sized and should be specifically designed for soil compaction, or of proven reliability to efficiently achieve the specified degree of compaction.

Where tests indicate that the density of any layer of fill, or portion thereof, is below the required relative compaction, or improper moisture is in evidence, the particular layer or portion shall be re-worked until the required density and/or moisture content has been attained. No additional fill shall be placed in an area until the last placed lift of fill has been tested and found to meet the density and moisture requirements, and is approved by the geotechnical consultant.

In general, per the 1997 UBC and/or latest adopted version of the California Building Code (CBC), fill slopes should be designed and constructed at a gradient of 2:1 (h:v), or flatter. Compaction of slopes should be accomplished by over-building a minimum of 3 feet horizontally, and subsequently trimming back to the design slope configuration. Testing shall be performed as the fill is elevated to evaluate compaction as the fill core is being developed. Special efforts may be necessary to attain the specified compaction in the fill slope zone. Final slope shaping should be performed by trimming and removing loose materials with appropriate equipment. A final evaluation of fill slope compaction should be based on observation and/or testing of the finished slope face. Where compacted fill slopes are designed steeper than 2:1 (h:v), prior approval from the governing agency, specific material types, a higher minimum relative compaction, special reinforcement, and special grading procedures will be recommended.

If an alternative to over-building and cutting back the compacted fill slopes is selected, then special effort should be made to achieve the required compaction in the outer 10 feet of each lift of fill by undertaking the following:

1. An extra piece of equipment consisting of a heavy, short-shanked sheepsfoot should be used to roll (horizontal) parallel to the slopes continuously as fill is placed. The sheepsfoot roller should also be used to roll perpendicular to the slopes, and extend out over the slope to provide adequate compaction to the face of the slope.

2. Loose fill should not be spilled out over the face of the slope as each lift is compacted. Any loose fill spilled over a previously completed slope face should be trimmed off or be subject to re-rolling.

3. Field compaction tests will be made in the outer (horizontal) ±2 to ±8 feet of the slope at appropriate vertical intervals, subsequent to compaction operations.

4. After completion of the slope, the slope face should be shaped with a small tractor and then re-rolled with a sheepsfoot to achieve compaction to near the slope face. Subsequent to testing to evaluate compaction, the slopes should be grid-rolled to achieve compaction to the slope face. Final testing should be used to evaluate compaction after grid rolling.

5. Where testing indicates less than adequate compaction, the operator will be responsible to rip, water, mix, and recompact the slope material as necessary to achieve compaction. Additional testing should be performed to evaluate compaction.

SUBDRAIN INSTALLATION

Subdrains should be installed in approved ground in accordance with the approximate alignment and details indicated by the geotechnical consultant. Subdrain locations or materials should not be changed or modified without approval of the geotechnical consultant. The geotechnical consultant may recommend and direct changes in subdrain line, grade, and drain material in the field, pending exposed conditions. The location of constructed subdrains, especially the outlets, should be recorded/surveyed by the project civil engineer. Drainage at the subdrain outlets should be provided by the project civil engineer.

EXCAVATIONS

Excavations and cut slopes should be examined during grading by the geotechnical consultant. If directed by the geotechnical consultant, further excavations or overexcavation and refilling of cut areas should be performed, and/or remedial grading of cut slopes should be performed. When fill-over-cut slopes are to be graded, unless otherwise approved, the cut portion of the slope should be observed by the geotechnical consultant prior to placement of materials for construction of the fill portion of the slope. The geotechnical consultant should observe all cut slopes, and should be notified by the operator when excavation of cut slopes commence.

If, during the course of grading, unforeseen adverse or potentially adverse geologic conditions are encountered, the geotechnical consultant should investigate, evaluate, and make appropriate recommendations for mitigation of these conditions. The need for cut

slope buttressing or stabilizing should be based on in-grading evaluation by the geotechnical consultant, whether anticipated or not.

Unless otherwise specified in geotechnical and geological report(s), no cut slopes should be excavated higher or steeper than that allowed by the ordinances of controlling governmental agencies. Additionally, short-term stability of temporary cut slopes is the operator's responsibility.

Erosion control and drainage devices should be designed by the project civil engineer and should be constructed in compliance with the ordinances of the controlling governmental agencies, and/or in accordance with the recommendations of the geotechnical consultant.

COMPLETION

Observation, testing, and consultation by the geotechnical consultant should be conducted during the grading operations in order to state an opinion that all cut and fill areas are graded in accordance with the approved project specifications. After completion of grading, and after the geotechnical consultant has finished observations of the work, final reports should be submitted, and may be subject to review by the controlling governmental agencies. No further excavation or filling should be undertaken without prior notification of the geotechnical consultant or approved plans.

All finished cut and fill slopes should be protected from erosion and/or be planted in accordance with the project specifications and/or as recommended by a landscape architect. Such protection and/or planning should be undertaken as soon as practical after completion of grading.

JOB SAFETY

General

At GSI, getting the job done safely is of primary concern. The following is the company's safety considerations for use by all employees on multi-employer construction sites. On-ground personnel are at highest risk of injury, and possible fatality, on grading and construction projects. GSI recognizes that construction activities will vary on each site, and that site safety is the prime responsibility of the operator; however, everyone must be safety conscious and responsible at all times. To achieve our goal of avoiding accidents, cooperation between the client, the operator, and GSI personnel must be maintained.

In an effort to minimize risks associated with geotechnical testing and observation, the following precautions are to be implemented for the safety of field personnel on grading and construction projects:

Safety Meetings: GSI field personnel are directed to attend operator's regularly scheduled and documented safety meetings.

Safety Vests: Safety vests are provided for, and are to be worn by GSI personnel, at all times, when they are working in the field.

Safety Flags: Two safety flags are provided to GSI field technicians; one is to be affixed to the vehicle when on site, the other is to be placed atop the spoil pile on all test pits.

Flashing Lights: All vehicles stationary in the grading area shall use rotating or flashing amber beacons, or strobe lights, on the vehicle during all field testing. While operating a vehicle in the grading area, the emergency flasher on the vehicle shall be activated.

In the event that the operator's representative observes any of our personnel not following the above, we request that it be brought to the attention of our office.

Test Pits Location, Orientation, and Clearance

The technician is responsible for selecting test pit locations. A primary concern should be the technician's safety. Efforts will be made to coordinate locations with the grading operator's authorized representative, and to select locations following or behind the established traffic pattern, preferably outside of current traffic. The operator's authorized representative (supervisor, grade checker, dump man, operator, etc.) should direct excavation of the pit and safety during the test period. Of paramount concern should be the soil technician's safety, and obtaining enough tests to represent the fill.

Test pits should be excavated so that the spoil pile is placed away from oncoming traffic, whenever possible. The technician's vehicle is to be placed next to the test pit, opposite the spoil pile. This necessitates the fill be maintained in a driveable condition. Alternatively, the operator may wish to park a piece of equipment in front of the test holes, particularly in small fill areas or those with limited access.

A zone of non-encroachment should be established for all test pits. No grading equipment should enter this zone during the testing procedure. The zone should extend approximately 50 feet outward from the center of the test pit. This zone is established for safety and to avoid excessive ground vibration, which typically decreases test results.

When taking slope tests, the technician should park the vehicle directly above or below the test location. If this is not possible, a prominent flag should be placed at the top of the slope. The operator's representative should effectively keep all equipment at a safe operational distance (e.g., 50 feet) away from the slope during this testing.

The technician is directed to withdraw from the active portion of the fill as soon as possible following testing. The technician's vehicle should be parked at the perimeter of the fill in a highly visible location, well away from the equipment traffic pattern. The operator should inform our personnel of all changes to haul roads, cut and fill areas or other factors that may affect site access and site safety.

In the event that the technician's safety is jeopardized or compromised as a result of the operator's failure to comply with any of the above, the technician is required, by company policy, to immediately withdraw and notify his/her supervisor. The grading operator's representative will be contacted in an effort to affect a solution. However, in the interim, no further testing will be performed until the situation is rectified. Any fill placed can be considered unacceptable and subject to reprocessing, recompaction, or removal.

In the event that the soil technician does not comply with the above or other established safety guidelines, we request that the operator bring this to the technician's attention and notify this office. Effective communication and coordination between the operator's representative and the soil technician is strongly encouraged in order to implement the above safety plan.

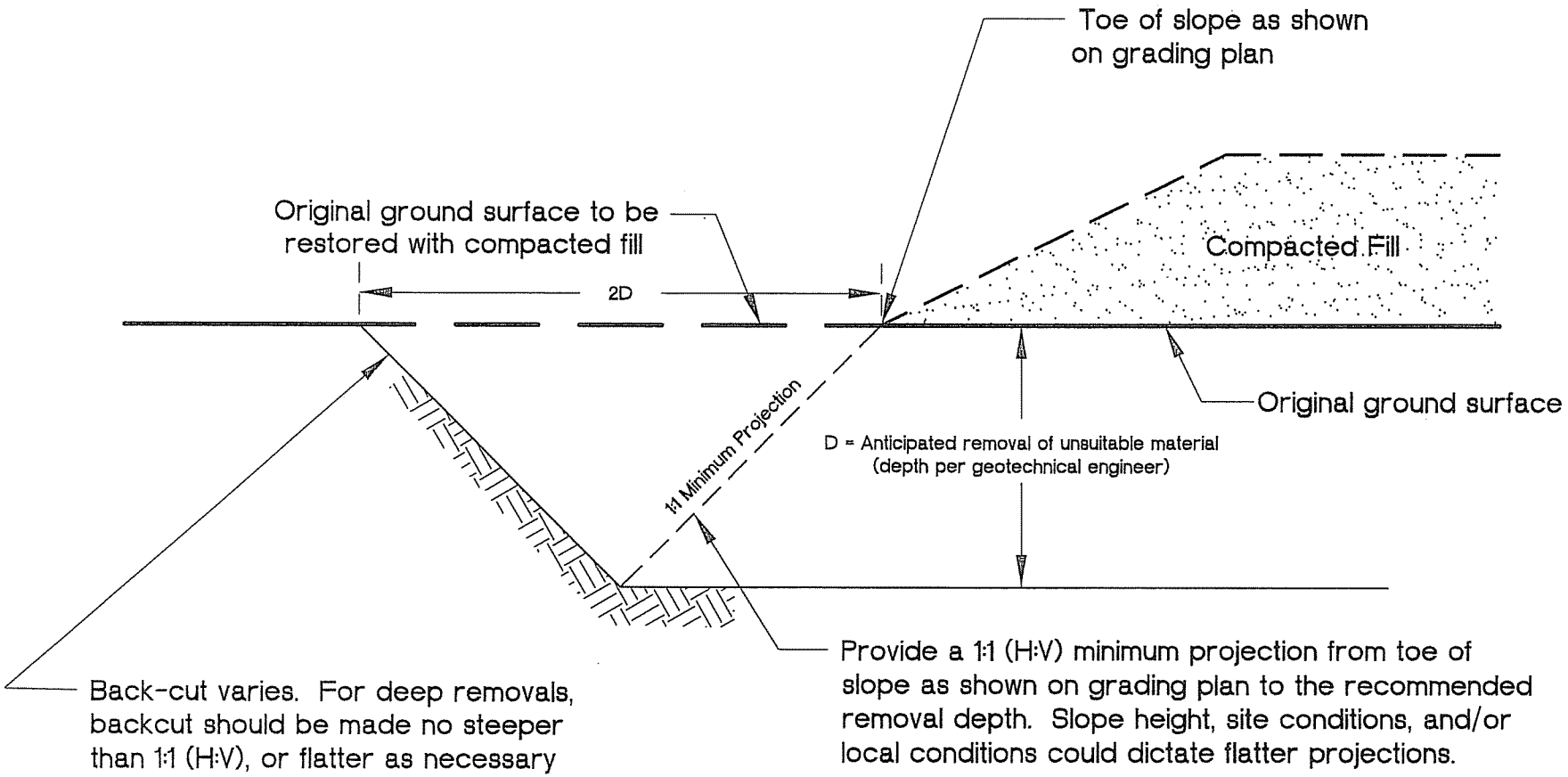
Trench and Vertical Excavation

It is the operator's responsibility to provide safe access into trenches where compaction testing is needed. Our personnel are directed not to enter any excavation or vertical cut which: 1) is 5 feet or deeper unless shored or laid back; 2) displays any evidence of instability, has any loose rock or other debris which could fall into the trench; or 3) displays any other evidence of any unsafe conditions regardless of depth.

All trench excavations or vertical cuts in excess of 5 feet deep, which any person enters, should be shored or laid back. Trench access should be provided in accordance with Cal/OSHA and/or state and local standards. Our personnel are directed not to enter any trench by being lowered or "riding down" on the equipment.

If the operator fails to provide safe access to trenches for compaction testing, our company policy requires that the soil technician withdraw and notify his/her supervisor. The operator's representative will be contacted in an effort to affect a solution. All backfill not tested due to safety concerns or other reasons could be subject to reprocessing and/or removal.

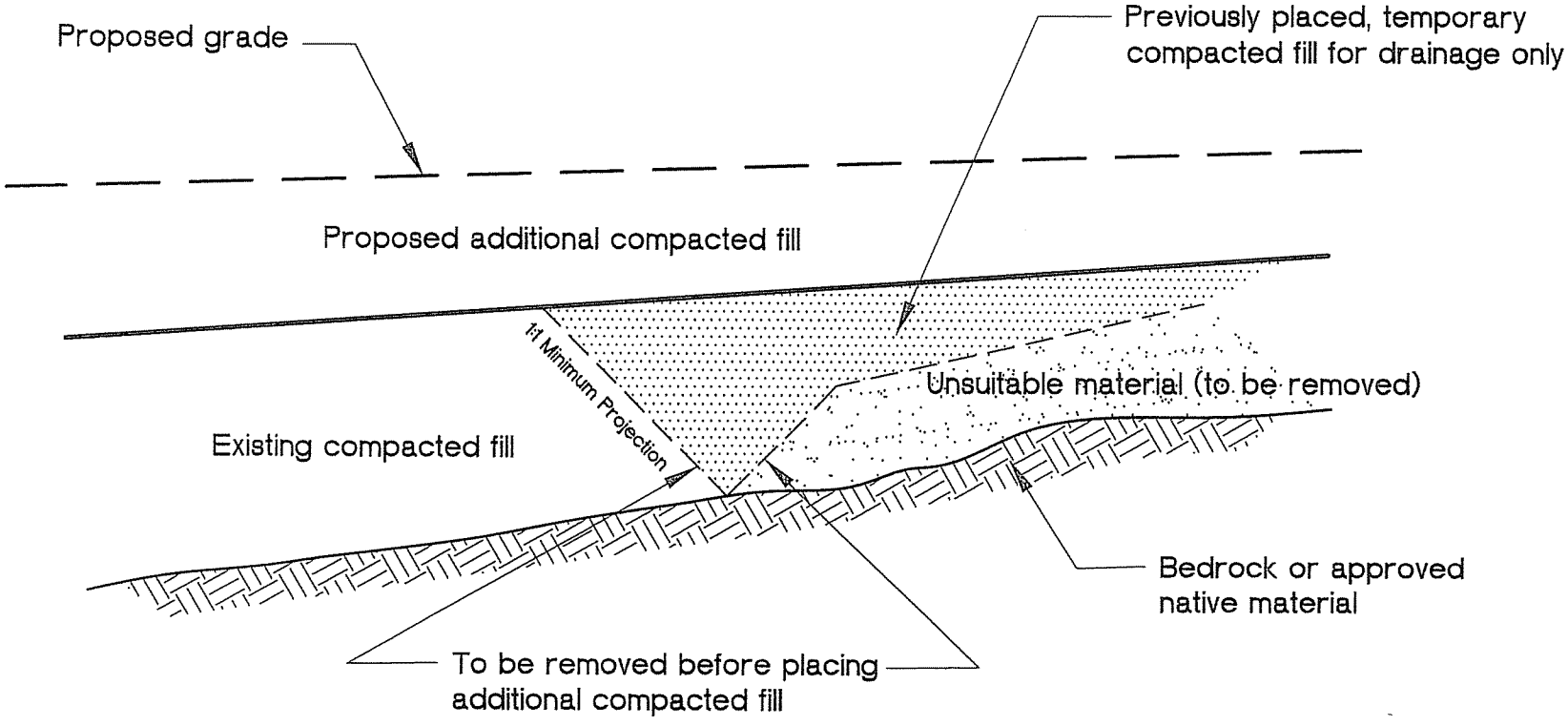
If GSI personnel become aware of anyone working beneath an unsafe trench wall or vertical excavation, we have a legal obligation to put the operator and owner/client on notice to immediately correct the situation. If corrective steps are not taken, GSI then has an obligation to notify Cal/OSHA and/or the proper controlling authorities.



GeoSoils, Inc.

FILL SLOPE TOEING OUT ON FLAT ALLUVIATED CANYON DETAIL

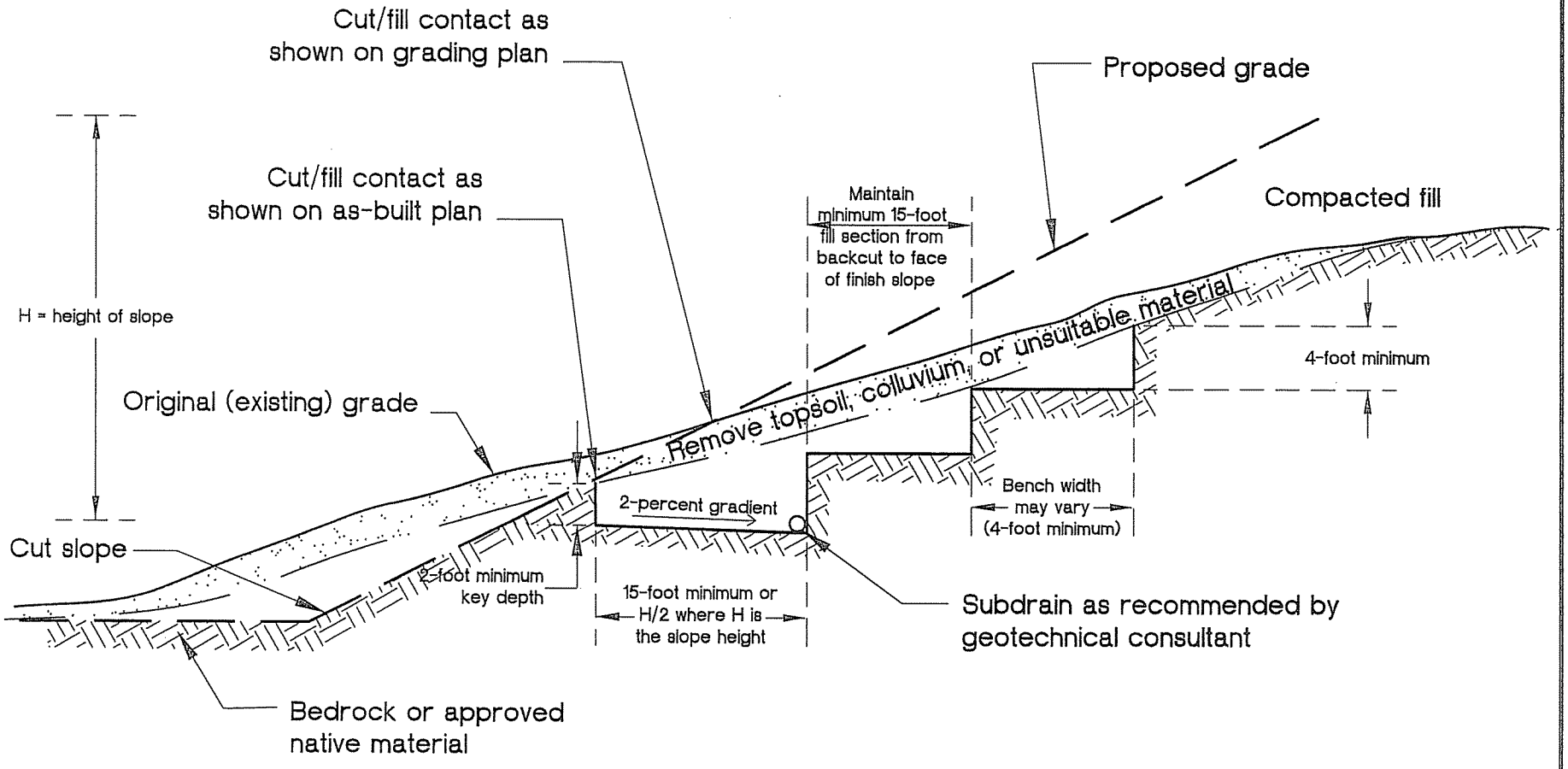
Plate G-3



GeoSoils, Inc.

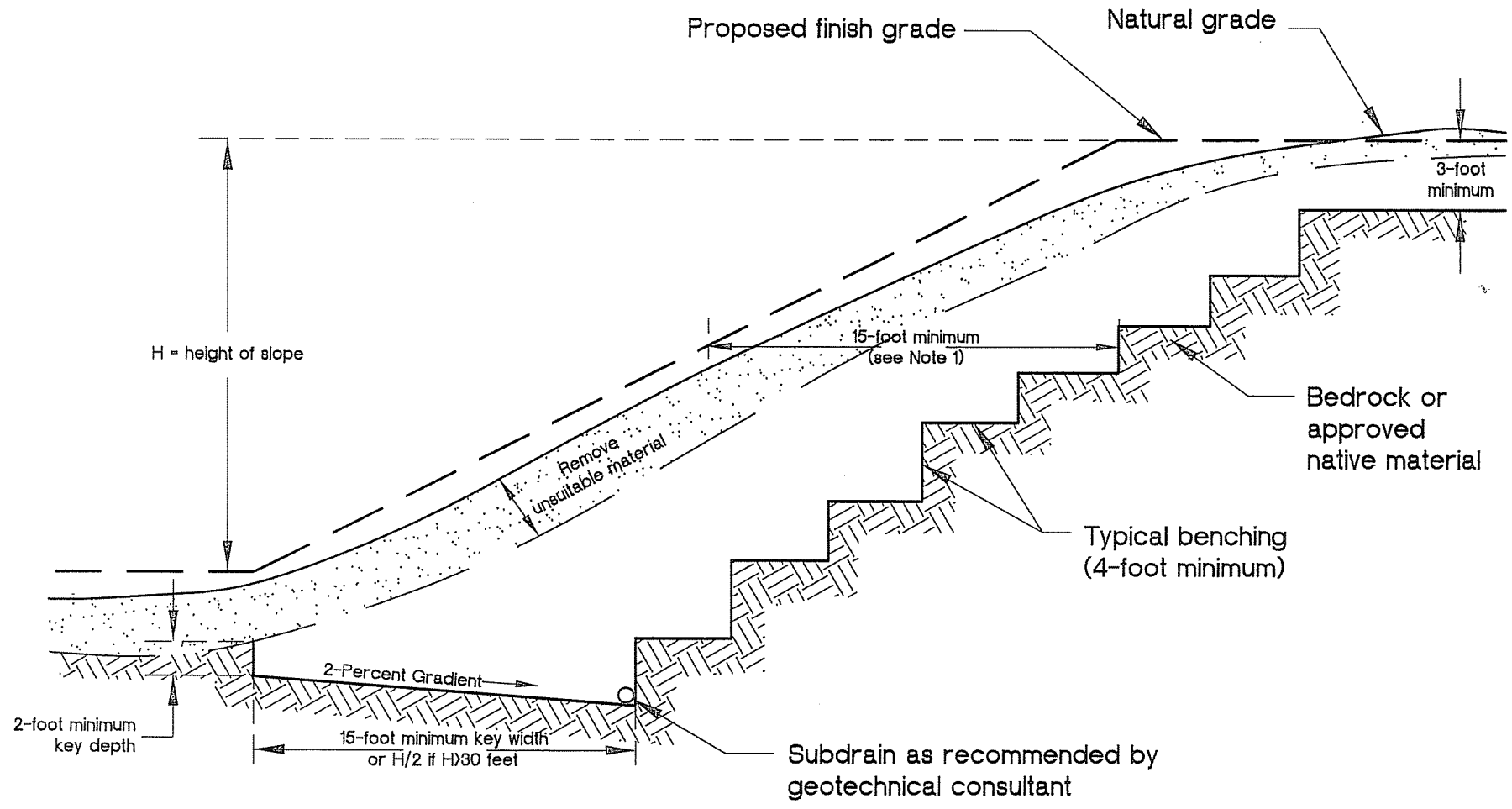
REMOVAL ADJACENT TO EXISTING FILL ADJOINING CANYON FILL DETAIL

Plate G-4



NOTE: The cut portion of the slope should be excavated and evaluated by the geotechnical consultant prior to construction of the fill portion.

GeoSoils Inc.	FILL OVER CUT DETAIL	Plate G-8

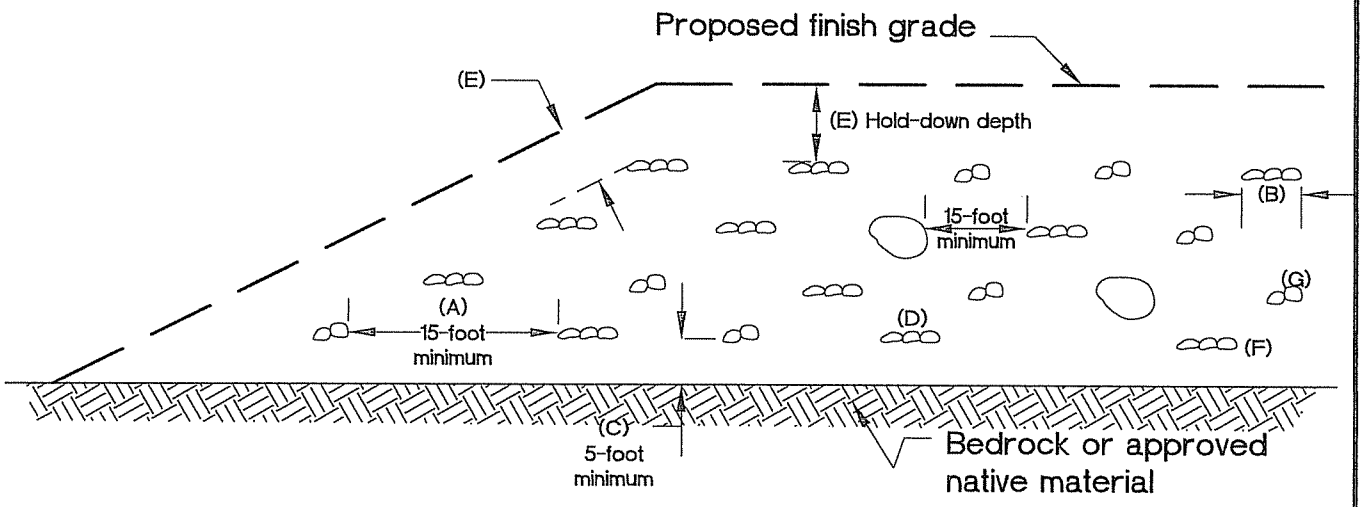


NOTES:

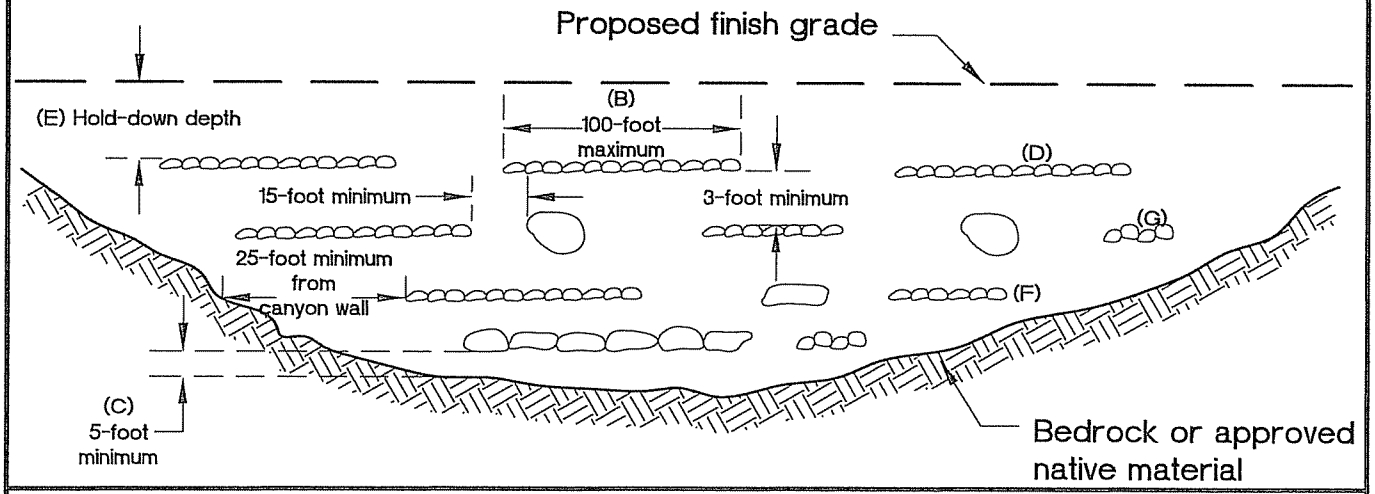
1. 15-foot minimum to be maintained from proposed finish slope face to backcut.
2. The need and disposition of drains will be evaluated by the geotechnical consultant based on field conditions.
3. Pad overexcavation and recompaction should be performed if evaluated to be necessary by the geotechnical consultant.

GeoSoils, Inc.	SKIN FILL OF NATURAL GROUND DETAIL	Plate G-10

VIEW NORMAL TO SLOPE FACE



VIEW PARALLEL TO SLOPE FACE



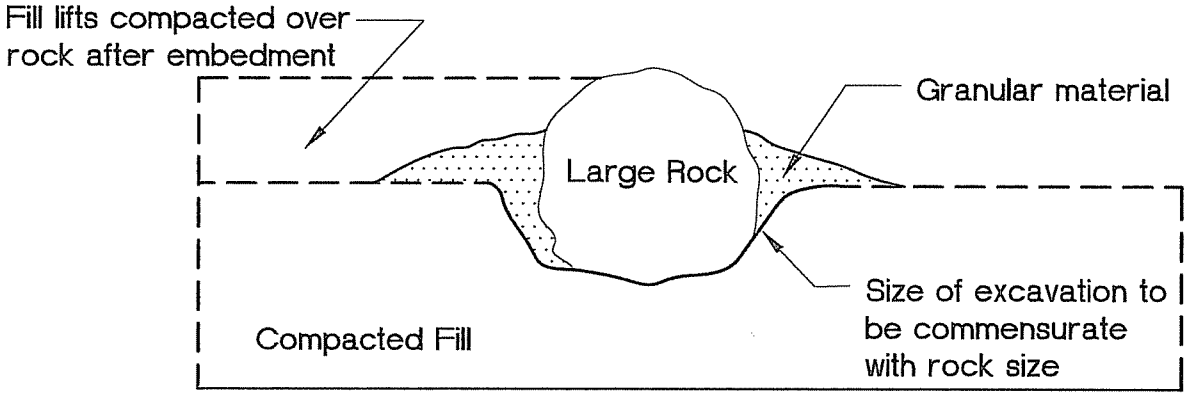
NOTES:

A. One equipment width or a minimum of 15 feet between rows (or windrows).
B. Height and width may vary depending on rock size and type of equipment. Length of windrow shall be no greater than 100 feet.
C. If approved by the geotechnical consultant, windrows may be placed direclty on competent material or bedrock, provided adequate space is available for compaction.
D. Orientation of windrows may vary but should be as recommended by the geotechnical engineer and/or engineering geologist. Staggering of windrows is not necessary unless recommended.
E. Clear area for utility trenches, foundations, and swimming pools: Hold-down depth as specified in text of report, subject to governing agency approval.
F. All fill over and around rock windrow shall be compacted to at leas ompaction or as recommended.
G. After fill between windrows is placed and compacted, with the lift of fill covering windrow, windrow should be proof rolled with a D-9 dozer or equivalent.

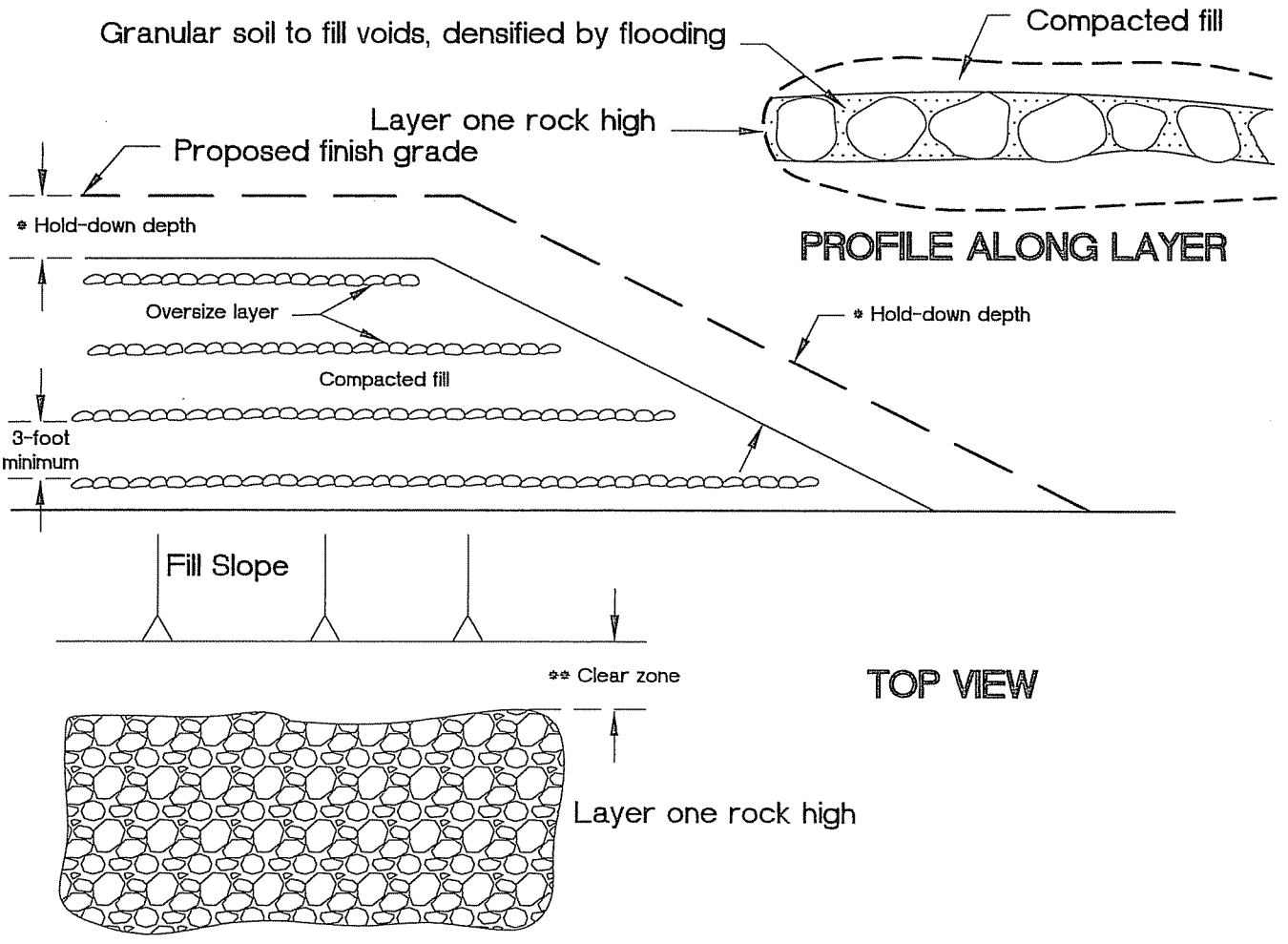
VIEWS ARE DIAGRAMMATIC ONLY AND MAY BE SUPERSEDED BY REPORT RECOMMENDATIONS OR CODE ROCK SHOULD NOT TOUCH AND VOIDS SHOULD BE COMPLETELY FILLED

GeoSoils, Inc.	OVERSIZE ROCK DISPOSAL DETAIL	Plate G-13

ROCK DISPOSAL PITS



ROCK DISPOSAL LAYERS



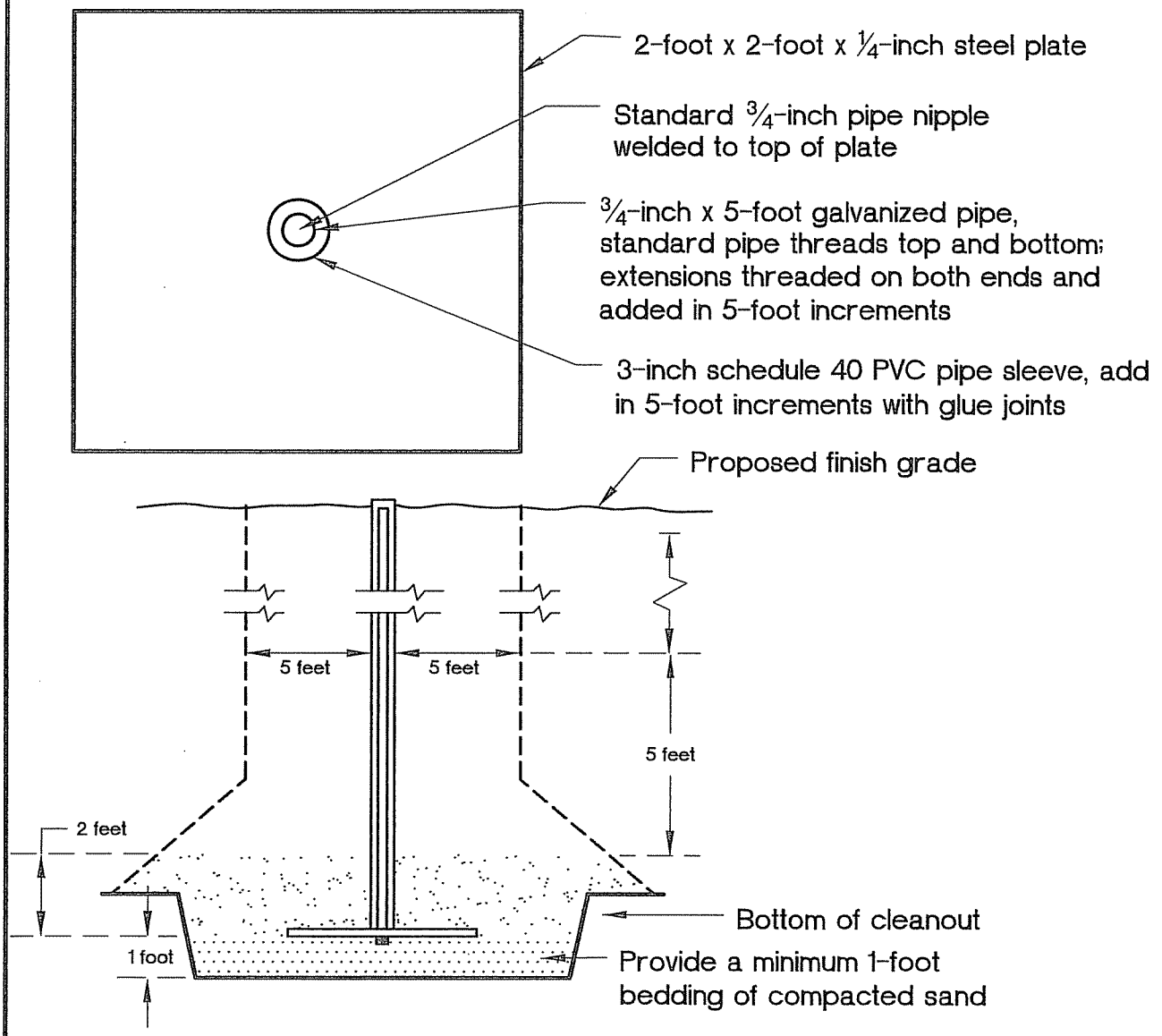
* Hold-down depth or below lowest utility as specified in text of report, subject to governing agency approval.

** Clear zone for utility trenches, foundations, and swimming pools, as specified in text of report.

VIEWS ARE DIAGRAMMATIC ONLY AND MAY BE SUPERSEDED BY REPORT RECOMMENDATIONS OR CODE

ROCK SHOULD NOT TOUCH AND VOIDS SHOULD BE COMPLETELY FILLED IN

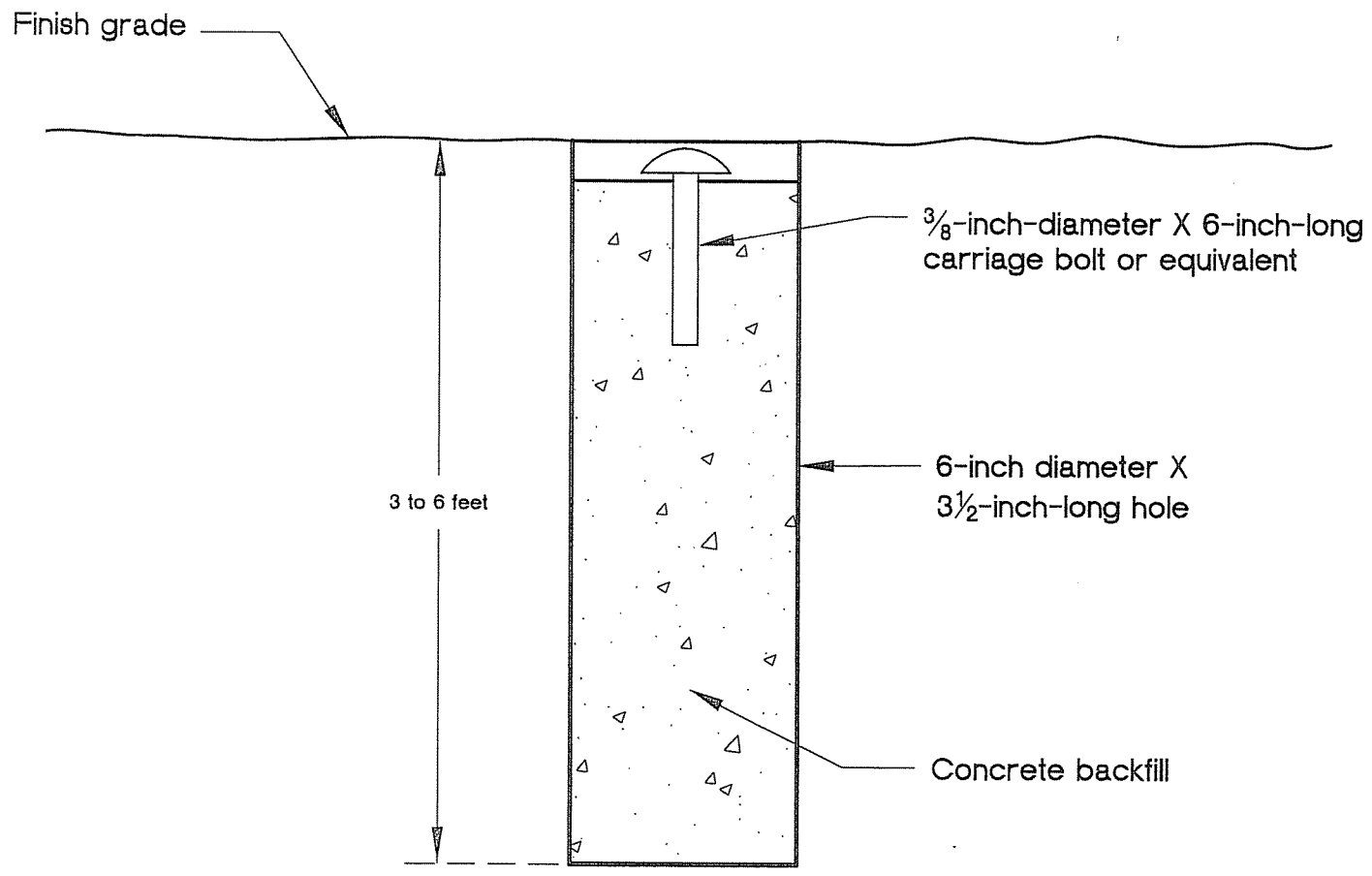
GeoSoils, Inc.	ROCK DISPOSAL DETAIL	Plate G-14



NOTES:

1. Locations of settlement plates should be clearly marked and readily visible (red flagged) to equipment operators.
2. Contractor should maintain clearance of a 5-foot radius of plate base and withiin 5 feet (vertical) for heavy equipment. Fill within clearance area should be hand compacted to project specifications or compacted by alternative approved method by the geotechnical consultant (in writing, prior to construction).
3. After 5 feet (vertical) of fill is in place, contractor should maintain a 5-foot radius equipment clearance from riser.
4. Place and mechanically hand compact initial 2 feet of fill prior to establishing the initial reading.
5. In the event of damage to the settlement plate or extension resulting from equipment operating within the specified clearance area, contractor should immediately notify the geotechnical consultant and should be responsible for restoring the settlement plates to working order.
6. An alternate design and method of installation may be provided at the discretion of the geotechnical consultant.

GeoSoils, Inc.	SETTLEMENT PLATE AND RISER DETAIL	Plate G-18

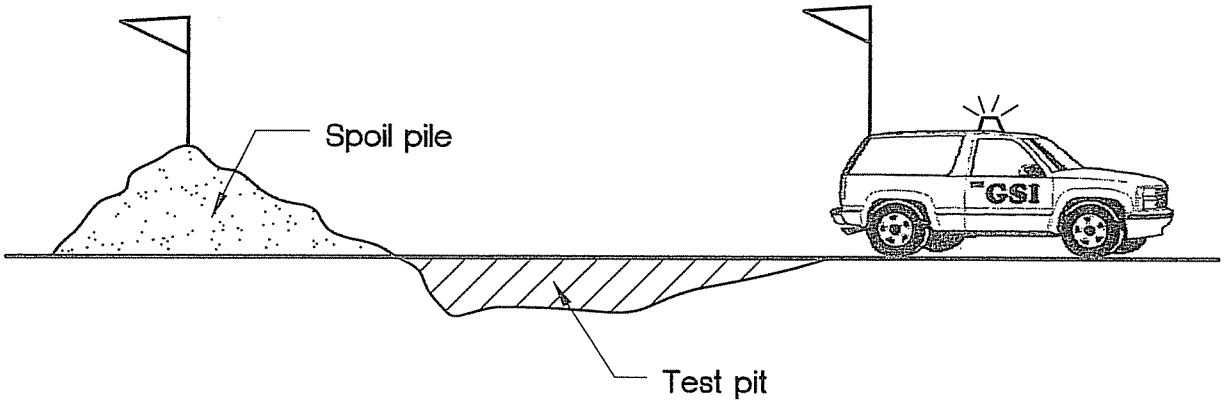


GeoSoils, Inc.

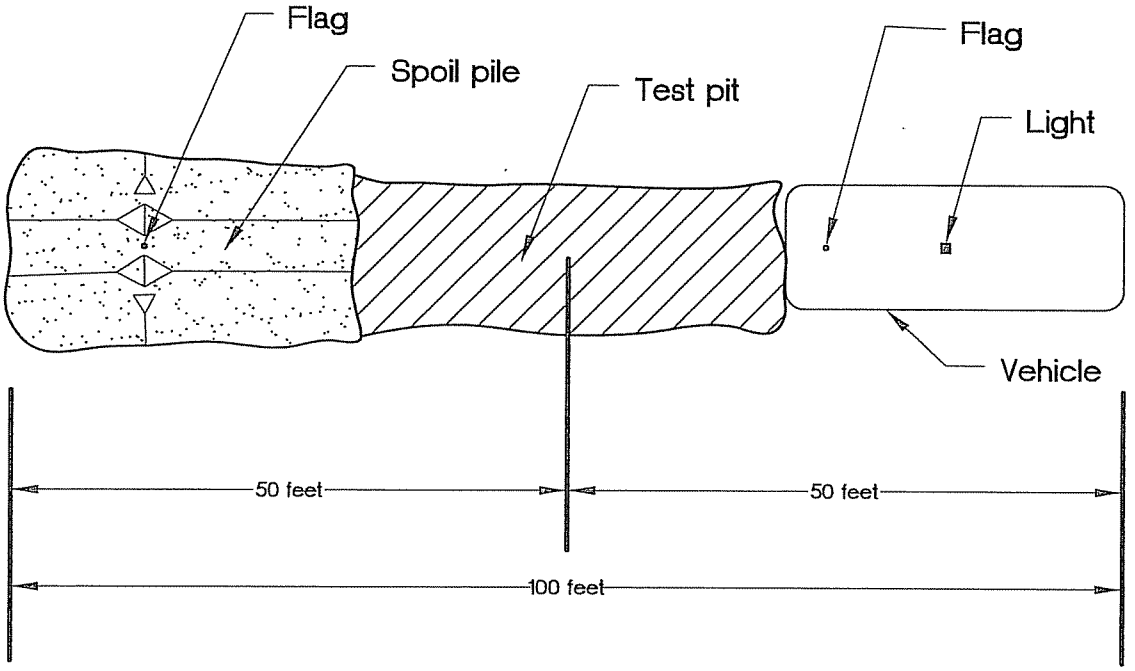
TYPICAL SURFACE SETTLEMENT MONUMENT

Plate G-19

SIDE VIEW



TOP VIEW



GeoSoils, Inc.	TEST PIT SAFETY DIAGRAM	Plate G-20

GSI LEGEND

- **Qal** — QUATERNARY ALLUVIUM
- **Kgr** — CRETACEOUS GRANITIC ROCK, CIRCLED WHERE BURIED
- **B-7 TD=54'** — APPROXIMATE LOCATION OF EXPLORATOERY BORINGS, DEPTH IN FEET (ALLIED, 2007)
- **B-5a TD=46 1/2'** — APPROXIMATE LOCATION OF EXPLORATORY BORINGS, DEPTH IN FEET (GSI, 2009)
- **TP-8 TD=23'** — APPROXIMATE LOCATION OF TEST PIT EXCAVATION, DEPTH IN FEET (GSI, 2009)
- **E — E'** — APPROXIMATE LOCATION OF GEOLOGIC CROSS-SECTION

GRAPHIC SCALE
100 0 50 100 200
1" = 100'

ALL LOCATIONS ARE APPROXIMATE

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GeoSoils, Inc.
RIVERSIDE CO.
ORANGE CO.
SAN DIEGO CO.

BORING, TEST PIT, AND CROSS SECTION LOCATION MAP

Plate 1

W.O. 5855-A1-SC | DATE: 9/11 | SCALE: 1" = 100'

SITE DESIGN ASSOCIATES, INC.
1016 BROADWAY SUITE "A"
EL CAJON, CALIFORNIA 92021
(619) 442-8467

DWG: 1725 GradingMUP.dwg

EAST COUNTY SAND MINE

OVERALL EXTRACTION PLAN

ENGINEER OF WORK:

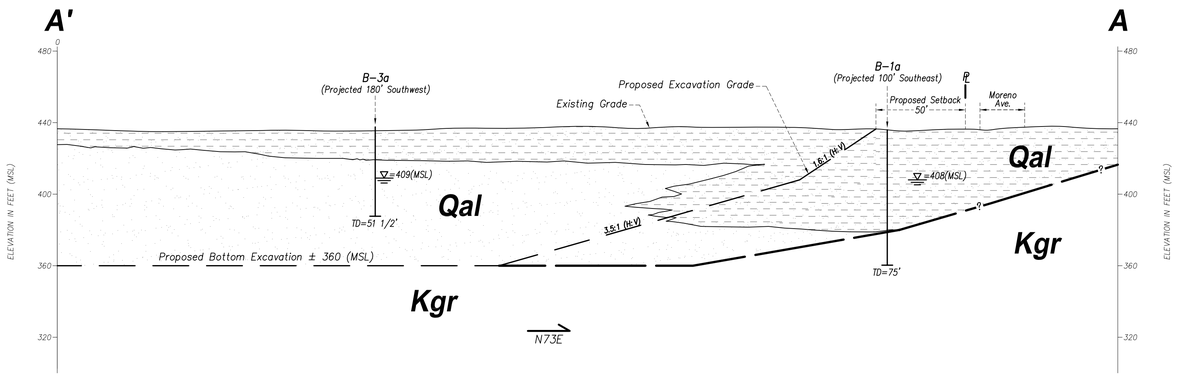
KENNETH J. DISCENZA, R.C.E. 29930 DATE

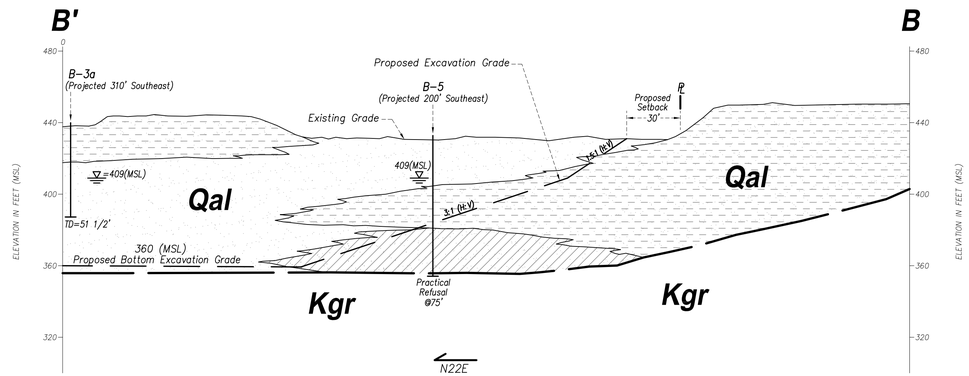
EXPIRATION DATE: 06/30/13

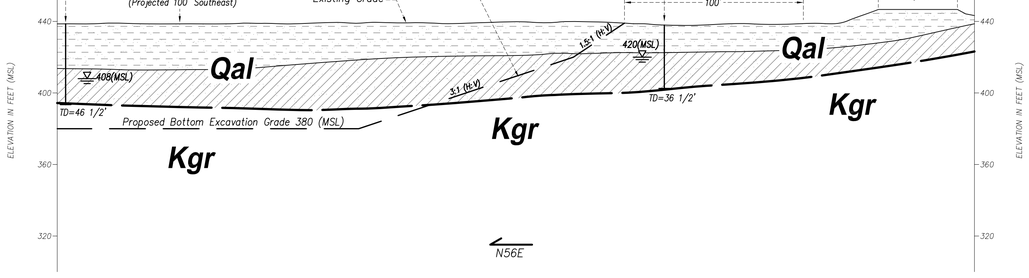
REGISTERED PROFESSIONAL ENGINEER KENNETH J. DISCENZA No. 29930 EXPIRES 6-30-13 CIVIL STATE OF CALIFORNIA

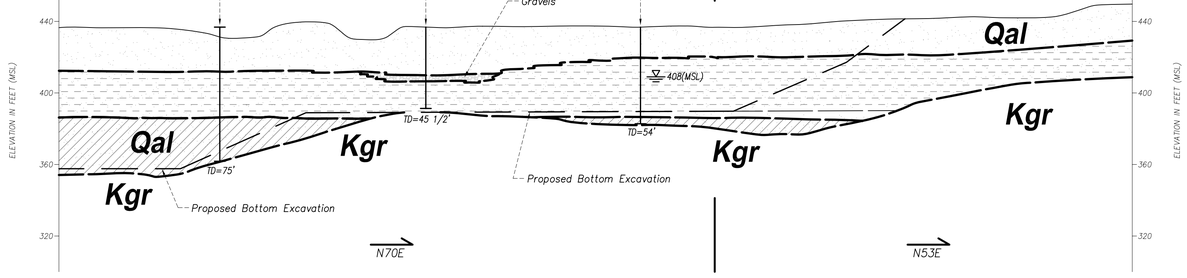
No.	Date	Revision
1	6/1/11	FIRST ITERATION OF COUNTY COMMENTS
2	8/12/11	REVISED GRADING, ADDED APN 375-100-20

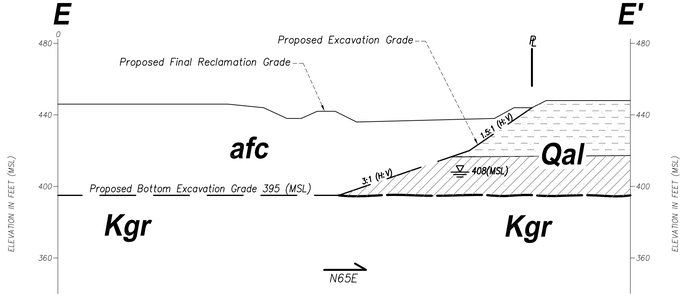
SCALE:
JOB NO.: J-1725
DATE: 7/12/11
SHEET 4 OF 16











NOTE: CROSS-SECTION DRAFTED FROM FINAL RECLAMATION PLAN BY SDA (2009 [REVISION DATED AUGUST 12, 2011]) SHEET 6

LEGEND

- afc — ARTIFICIAL FILL, COMPACTED AT COMPLETION OF RECLAMATION
- Qal — QUATERNARY ALLUVIUM
- Kgr — CRETACEOUS GRANITIC ROCK
- — APPROXIMATE LOCATION OF GEOLOGIC CONTACT
- ▽ — APPROXIMATE LOCATION OF PERCHED WATER TABLE
- — LITHOLOGY – SAND
- — LITHOLOGY – SILTY SAND/SANDY SILT
- — LITHOLOGY – CLAYEY SANDS/SAND-CLAY MIXTURES

ALL LOCATIONS ARE APPROXIMATE

This document or efile is not a part of the Construction Documents and should not be relied upon as being an accurate depiction of design.

GeoSoils, Inc.

RIVERSIDE CO.
ORANGE CO.
SAN DIEGO CO.

GEOLOGIC CROSS SECTIONS A-A', B-B', C-C', D-D', E-E'

Plate 2

W.O. 5855-A1-SC	DATE: 9/11	SCALE: 1" = 40'

APPENDIX B

SUMMARY OF BIOLOGICAL IMPACTS AND MITIGATION

5.0 SUMMARY OF PROJECT IMPACTS AND MITIGATION

5.1. SPECIAL STATUS SPECIES

Significant direct, permanent impacts to vireo, yellow warbler, tree-nesting raptors, and potential raptor foraging habitat are anticipated from implementation of the proposed project.

To avoid potential significant impacts to vireo, avoidance and/or minimization measures during the breeding season for (March 15 to September 15) will be implemented. No brushing, clearing, grading, and/or noise-generating activities would be allowed within occupied vireo habitat during the breeding season. Furthermore, no noise-, dust-, and/or vibration-generating activities would be allowed within areas adjacent to occupied vireo habitat during the breeding season, unless an appropriate barrier such as berms were established and maintained to ensure continued normal nest chronology as demonstrated through biological monitoring.

To mitigate for the loss of occupied vireo habitat onsite, creation and/or restoration of potential vireo habitat (i.e., southern willow scrub, mule fat scrub) is proposed onsite prior to the majority of direct impacts to occupied vireo habitat to minimize the temporal loss of occupied vireo habitat. In addition, a net increase in suitable vireo habitat is proposed onsite.

To avoid potential significant impacts to yellow warbler or any other nesting migratory birds that may potentially nest onsite, no brushing, clearing, and/or grading would be allowed within sensitive habitat during the breeding season of migratory birds to ensure compliance with the MBTA. The breeding season for migratory birds is defined in the County Guidelines as occurring between February 15 and August 31.

To mitigate for the loss of the functional raptor foraging habitat onsite, restoration of in-kind or better quality functional raptor foraging habitat onsite is proposed. The project proposes to mitigate for the loss of this habitat onsite along the slopes of the realigned sections of Slaughterhouse Creek and San Vicente Creek and within the widened unnamed drainage that flows into San Vicente Creek. These areas will be revegetated with low-growing native upland vegetation.

To avoid potential significant indirect impacts to wetland habitat that support sensitive species including vireo from the alteration of Slaughterhouse Creek, the project proposes to maintain adequate hydrology within the existing creek channels that support vireo-occupied habitat until the proposed onsite riparian habitat is successfully restored and occupied by vireo.

To avoid potential significant impacts to tree-nesting raptors protected under the California Fish and Wildlife Code, no construction activities within and adjacent to raptor breeding habitat would be allowed between January 15 and July 15 (typical raptor breeding season).

Implementation of the above avoidance and mitigation measures would reduce any potential significant impacts to special status species protected under County regulations, federal and state ESA, MBTA, and/or CDFW, to less than significant.

5.2. RIPARIAN HABITAT OR SENSITIVE NATURAL COMMUNITY

Significant direct, permanent impacts anticipated from the proposed project include: the loss of southern willow scrub (occupied and unoccupied vireo habitat), mule fat scrub (occupied and unoccupied vireo habitat), disturbed riparian scrub, disturbed wetland, and non-native grassland.

Significant impacts to sensitive habitats (all wetland habitats and non-native grassland) total 6.18 acres. Impacts to southern willow scrub are divided into two types: those to habitat considered occupied by least Bell's vireo, and those to unoccupied habitat. Occupied vireo habitat consists of the southern willow scrub polygon where the vireo was detected during one visit (see the Special-status Species section above for details). Occupied habitat has a higher mitigation ratio than unoccupied because of its importance to least Bell's vireo. The ratio of 2.5:1 for occupied (disturbed) southern willow scrub was applied in consultation with the County to account for vireo occupation, and the 2:1 ratio for all other (disturbed) wetlands is in compliance with the ratios required by the BMO.

Table 8. Summary of Habitat/Vegetation Communities, Impacts, Mitigation Acreages

Vegetation Community	Existing On-site (acres)	On-site Impacts (acres)	Off-site Impacts (acres)	Total Impacts (acres)	Mitigation Ratio	Mitigation Required (acres)
Southern Willow Scrub, disturbed (vireo occupied)	0.25	0.23	0.00	0.23	2.5:1	0.58
Southern Willow Scrub, disturbed (not occupied)	0.34	0.33	0.00	0.33	2:1	0.66
Mule-fat Scrub	0.96	0.64	0.06	0.70	2:1	1.40
Disturbed Riparian Scrub	1.01	0.93	0.00	0.93	2:1	1.86
Southern Coast Live Oak Riparian Forest	0.27	0.00	0.00	0.00	2:1	0.00
Disturbed Wetland	0.02	0.02	0.00	0.02	2:1	0.04
Non-vegetated Channel	0.03	0.00	0.00	0.00	2:1	0.00
Wetland Habitat Subtotal:	*2.88*	*2.15*	*0.06*	*2.21*		*4.54*
Non-native Grassland	4.15	3.95	0.02	3.97	0.5:1	1.98
Non-native Vegetation	2.01	1.61	0.00	1.61	-	0.00
Disturbed Land	2.82	2.17	0.00	2.17	-	0.00
Developed Land	19.19	17.57	0.09	17.66	-	0.00
Upland Habitat Subtotal:	*28.17*	*25.30*	*0.11*	*25.41*		*1.99*
TOTAL	**31.05**	**27.45**	**0.17**	**27.62**		**6.52**

Impacts to ACOE and/or CDFW jurisdictional resources (i.e., southern willow scrub, mule fat scrub, disturbed riparian scrub, and disturbed wetland) would require mitigation as determined by the regulatory agencies through the permitting process. Although the required mitigation would be determined by the regulatory agencies, the project proposes onsite mitigation at ratios in compliance with the County MSCP Subarea Plan and BMO. It is anticipated that the proposed mitigation including the application of County BMO habitat mitigation ratios would reduce the significant direct impacts to natural community impacts to a level below significant under CEQA.

5.3. WILDLIFE MOVEMENT AND NURSERY SITES

Significant direct impacts to the local wildlife corridor onsite are anticipated from implementation of the proposed project.

To maintain wildlife movement through the site, the project has been designed to provide an interim connection for local wildlife movement during construction that includes portions of the existing creeks and realigned low flow creeks. In addition, the final reclamation phase of the project would include the realignment of Slaughterhouse Creek and San Vicente Creek to provide the realigned local wildlife corridor onsite.

To avoid and/or minimize the potential for the project to increase noise levels in the wildlife corridor to levels likely to affect the behavior of the sensitive animals, an appropriate barrier would be placed between the source of the increased noise level and the wildlife corridor, where applicable.

Implementation of the above avoidance and mitigation measures would reduce any potential significant impacts to the local wildlife corridor onsite, to less than significant.

5.4. LOCAL POLICIES, ORDINANCES, ADOPTED PLANS

Significant, direct impacts to the local wildlife corridor as defined by the BMO are anticipated from implementation of the proposed project.

To maintain wildlife movement through the site, the project has been designed to provide an interim connection for local wildlife movement during construction that includes portions of the existing creeks and realigned low flow creeks. In addition, the final reclamation phase of the project would include the realignment of Slaughterhouse Creek and San Vicente Creek to provide the realigned local wildlife corridor onsite.
Significant, direct impacts to nesting migratory birds protected under the MBTA are anticipated if project related construction activities are proposed during the migratory bird breeding season (February 15 and August 31).

To avoid potential significant impacts to nesting migratory birds that may potentially nest onsite, no brushing, clearing, and/or grading would be allowed within sensitive habitat during the breeding season of migratory birds. If the project is unable to avoid the breeding season, it is recommended that a pre-construction nesting bird survey be conducted to determine if nesting migratory birds are present within habitat proposed for brushing, clearing or grading. Negative results of the breeding bird survey typically may be used to waive the avoidance of the breeding season restriction. If the results are positive, then the proposed impact area where the nesting bird is located must be avoided

during the breeding season or buffered at a reasonable distance to ensure continued normal nest chronology as demonstrated through biological monitoring to ensure compliance with the MBTA. Implementation of the above avoidance and mitigation measures would reduce any potential significant impacts to the local wildlife corridor as defined by the BMO and migratory bird species protected under the MBTA.

A summary of all of the applicable proposed project mitigation measures is provided in Table 9.

Table 9. Summary of Mitigation Measures

Proposed Mitigation	**Level of Significance after Mitigation**	**County Biology Guideline Number(s)***
Avoidance of vireo breeding season within occupied vireo habitat	Less than significant	5.1.A; 5.1.B; 5.1.I;
Avoidance of nesting migratory bird, and tree-nesting raptor breeding season or conduct pre-construction breeding bird survey to determine applicable measures.	Less than significant	5.1.C; 9.1.K
Avoidance of noise-, vibration-, or dust-generating activities adjacent to vireo occupied habitat during the breeding season unless an appropriate barrier such as berms are incorporated.	Less than significant	5.1.A
Onsite creation/restoration of vireo occupied habitat	Less than significant	5.1.A; 5.1.B;
Maintenance of onsite hydrology that supports onsite wetland habitat occupied by special status species	Less than significant	5.1.H
Onsite restoration of potential raptor foraging habitat	Less than significant	5.1.F
Onsite creation /restoration of wetland habitat	Less than significant	6.1.A; 6.1.B
The interim connection for local wildlife movement during construction includes portions of the existing creeks and realigned low flow creeks. The final reclamation phase of the project would include the realignment of Slaughterhouse Creek and San Vicente Creek to provide local wildlife corridor movement onsite.	Less than significant	8.1.B, 8.1.E
Placement of an appropriate barrier along the wildlife corridor to reduce the noise levels within the corridor, where applicable.	Less than significant	8.1.D

* As required in the County Biology Guidelines Report Format and Content Requirements page 23