Otay Hills Construction Aggregate and Inert Debris Engineered Fill Operation Project

Appendix B

Reclamation Plan

for the

Public Review
Draft Environmental Impact Report

PDS2004-3300-04-004 (MUP);
PDS2004-3310-04-001 (RP);
PDS2010-3813-10-002 (SPA);
Log No. 04-190-04

June 2020

Prepared for:

County of San Diego
Planning & Development Services
5510 Overland Avenue, Suite 310
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RECLAMATION PLAN

For the

Otay Hills Project

PDS2004-3310-04-001

Submitted to:

SAN DIEGO COUNTY
PLANNING & DEVELOPMENT SERVICES
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November 2019

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SUPERIOR READY MIX CONCRETE
ESCONDIDO, CALIFORNIA

OTAY HILLS RECLAMATION PLAN PDS2004-3310-04-001

1.0 Introduction

Under the California Surface Mining and Reclamation Act of 1975 (SMARA) (Public Resources Code Section 2719 *et seq.*), all extractive operations are required to have a Reclamation Plan approved by the Lead Agency. A reclamation plan defines the activities to be carried out when extraction has been completed at a particular site. The extracted land must be returned to a useful, approved alternative purpose. Lead agencies are certified by the State Board of Mining and Geology after the adoption of ordinances that embody the requirements of SMARA. Through the adoption of Ordinance 87.701 and as further clarified in Section 6556 of the County Zoning Ordinance, San Diego County has been recognized as Lead Agency for the implementation of SMARA.

The project is a proposal to establish a mineral resource recovery operation and associated activities to create much needed construction aggregates and materials to serve the economy of San Diego County for an approximate 87+-year period. During and after mineral resource recovery operations, the open pit will serve as a receiver site for inert debris such as concrete, asphalt, rock, and soil. The project is located within a 410-acre ownership with a plant site and extractive operations proposed on 105 acres of the site. The balance of the 410-acre ownership would be placed in biological open space prior to aggregate recovery activities. Approximately 85.4-million tons of mineral resource would be extracted from the site and over 31 million cubic yards of inert debris would be received over a 115+-year period.

Anticipated operations at the site would include the following activities:

- Phased Recovery of Rock Resources
- Materials processing
- Concrete Batch Plant
- Cement Treated Base Plant
- Asphalt Batch Plant
- Recycle of Asphalt and Concrete Products
- Inert Debris Engineered Fill Operation (IDEFO)

The bulk of the processing activities would take place on an approximate 16.1-acre pad located at the northern portion of the proposed site. Some crushing and screening may occur in the pit area. Hours of operation for processing activities would primarily be from 5:00 AM to 10:00 PM, with operations outside those hours as needed for public health, safety and welfare concerns. This may include Caltrans projects that must occur outside of normal business hours to avoid peak traffic flows. Maintenance of equipment and export of material would occur 24 hours per day. Following completion of resource recovery operations, the site would be reclaimed to a beneficial land use consistent with the underlying land use regulations.

Extraction and reclamation will be conducted in phases. Ongoing backfilling of the site during the open pit extraction phase of the project will allow reclamation to progress concurrently with the extraction operation. Mineral resource recovery operations will be conducted through the use of drilling and blasting to fracture rocks, followed by extraction with conventional earthmoving equipment. The extracted materials will be loaded into a remote crusher and conveyor system for movement to the processing plant. In some areas, off-highway haul trucks may be used to move extracted rock to the processing plant area. The total anticipated production of the extraction operations is estimated to be 85.4 million tons (~39 million cubic yards). Annual production amounts are anticipated to be between 0.6 – 1.6 million tons of aggregate.

Due to the long-term nature of the extraction activities on the project site, ongoing extraction and reclamation will occur consecutively. As final slopes are graded, these areas will be reclaimed in accordance with reclamation objectives. Reclamation of the site includes the creation of nearly level pads that will consist of a total of up to 85 acres in size and an open space easement along the eastern portion of the site. Potential end land uses must be consistent with the East Otay Mesa Specific Plan which governs land use on the project site. A Specific Plan Amendment is proposed for the site and will change the designation of residential lands, within the extraction footprint, to an industrial designation that is consistent with surrounding lands. A likely use that is compatible with this underlying plan and zoning designation for the site includes mixed industrial development.

The Reclamation Plan is comprised of four sections.

Section 1.0, the **Introduction**, summarizes the purpose and content of the report.

Section 2.0, **Environmental Setting**, provides a description of the existing human and natural environment.

Section 3.0, the **Extraction Plan**, describes proposed mineral extraction methods and schedules.

Section 4.0, the **Reclamation Plan**, outlines the measures that will be implemented by the project to return the extracted land to an alternative useful purpose. It prescribes verifiable standards that will be used to determine the adequacy of the reclamation measures, including monitoring objectives and schedules.

This Reclamation Plan is submitted in accordance with the requirements of the State of California Surface Mining and Reclamation Act of 1975 (SMARA), Public Resources Code §2770 *et seq*, as amended and County Ordinance 87.701. SMARA was enacted by the California Legislature to [1] address the need for a continuing supply of mineral resources, and to [2] prevent or minimize the negative impacts of surface mining to public health, property and the environment.

To meet the first objective, SMARA established consistent state-wide prohibitions against local government actions intended to constrain or eliminate extraction activity. It required that all counties adopt ordinances to protect the interests of extraction operations and the needs of future residents for access to mineral resources.

To meet the second objective, SMARA requires that all extractive operations "reclaim" or rehabilitate affected lands to a usable condition upon termination of extraction activities. To guarantee reclamation, it also requires that all extractive operations provide financial assurances (e.g., performance bonds) to the lead agency to ensure that these reclamation activities will indeed be carried out upon the completion of extraction activities.

2.0 Environmental Setting

2.1 Project Location

The Otay Hills property is located in portions of Sections 29 and 32, Township 18 South, Range 1 East, San Diego County, California (see Figure 2.1-1). The site is located at the eastern extension of Otay Mesa on the southwestern flank of the San Ysidro Mountains. The site is 2.5 miles northeast of the Otay Mesa Border Crossing and 8.5 miles east of the Interstate 805/905 interchange. The extractive operations area consists of 105 acres and it includes portions of 8 irregularly shaped parcels. The entire 410-acre ownership also includes portions of 2 parcels that are not a part of the extractive operations area.

Access to the site is gained from Interstate 805 by turning east on to Interstate 905/Otay Mesa Road. Follow Otay Mesa Road for approximately 4 miles to the intersection with Otay Mesa Road and Highway 905, where the highway turns to the south. Turning left (north), Otay Mesa Road then turns east again and continues approximately 1.5 miles where it intersects with and terminates at Alta Road. Turning north for approximately one quarter mile, Alta Road intersects with Calzada De La Fuente, which would be used to access the site.

2.2 Legal Description

The Otay Hills properties are described by the San Diego County Assessor's Office as Parcel Numbers:

648-050-13 & 14
648-080-13, 14, & 25
648-040-39, 40, 55

2.3 Land Use and Zoning

The project site is currently found in an undisturbed condition, with the exception of a few dirt roads which transect the site. Due to the project's location near the International Border, the site is frequented by the U.S. Border Patrol which patrols the site in an effort to secure the United States against unlawful entry. The project site is 2.5 miles northeast of the Otay Mesa border crossing. The San Ysidro Mountains lie to the east of the site. Land uses surrounding the project site include the Richard J. Donovan correctional facility and George Bailey Detention facility to the north. A

power plant and some recently-developed industrial pads are located to the west. Areas to the immediate south consist of undeveloped lands and industrial portions of Tijuana, Mexico. Areas to the east and north are undeveloped, vacant land. A 120-foot San Diego Gas and Electric (SDG&E) easement including power lines runs diagonally through the project site. There are four SDG&E 230kV utility towers within close proximity (less than 100 feet outside) of the eastern boundary of the proposed quarry footprint. A SDG&E 20-foot gas pipeline easement runs along the western and southern boundary of the project area. To the north and the east of the project site lie County MSCP designated Planned Preserve areas. The project site itself lies within MSCP designated Major and Minor Amendment areas. The project site supports sensitive vegetation communities, including mule fat scrub, native grassland, Diegan coastal sage scrub, southern mixed chaparral, and non-native grassland. The provided biological analysis describes the habitat on-site. No known hazards or fault zones exist on-site.

The County of San Diego General Plan, and the East Otay Mesa Business Park Specific Plan, govern allowable land uses on the site. The site is entirely within the East Otay Mesa Business Park Specific Plan (within the area formerly known as Subarea 2). The primary land use goal of the Specific Plan is to promote the development of the area into a comprehensive industrial and business district (See Figure 2.3-1). Heavy and Mixed Industrial uses, along with a small area designated District Commercial is planned for the eastern portion of the Specific Plan. A proposed landfill, established by a voter initiative in 2010, would lie southeast of the project site and outside the Specific Plan. The far eastern portion of the Specific Plan, including a large portion of the project site, is designated Rural Residential, which allows low density residential development (1 du/20 acres) due to the occurrence of steep slopes and sensitive biological resources. Development in the residential designated areas may only proceed following detailed environmental review, approval of a resource conservation plan (as required by the Specific Plan), and site plan review. Areas designated as Rural Residential would require a Major Amendment to the Multiple Species Conservation Program (MSCP).

The Specific Plan provides land use regulations, which are zoning equivalents, for each of the land use categories. These regulations identify allowable land uses and development standards. Uses within Mixed Industrial allow a wide range of commercial and industrial use, while uses within Rural Residential are limited in scope. Extractive uses are permitted only in the Rural Residential and Mixed Industrial designations (within the area formerly known as Subarea 2), if a Major Use Permit (MUP) is obtained and the use conforms with the Specific Plan. The MUP and reclamation plan will meet the requirements for the necessary site plan review as well as the requirements established by the Specific Plan for an extractive use permit application.

As noted, the project site is located within two separate land use districts. It is the preference of Planning & Development Services that the East Otay Mesa Business Park Specific Plan be amended to designate the quarry footprint as Mixed Industrial. It would also be necessary to eliminate the Mixed Industrial designation from areas of the site that will not be affected by extractive operations and to designate those areas as Conservation/Limited Use. The Specific Plan Amendment will also designate the remaining Rural Residential areas of the site as Conservation/Limited Use.

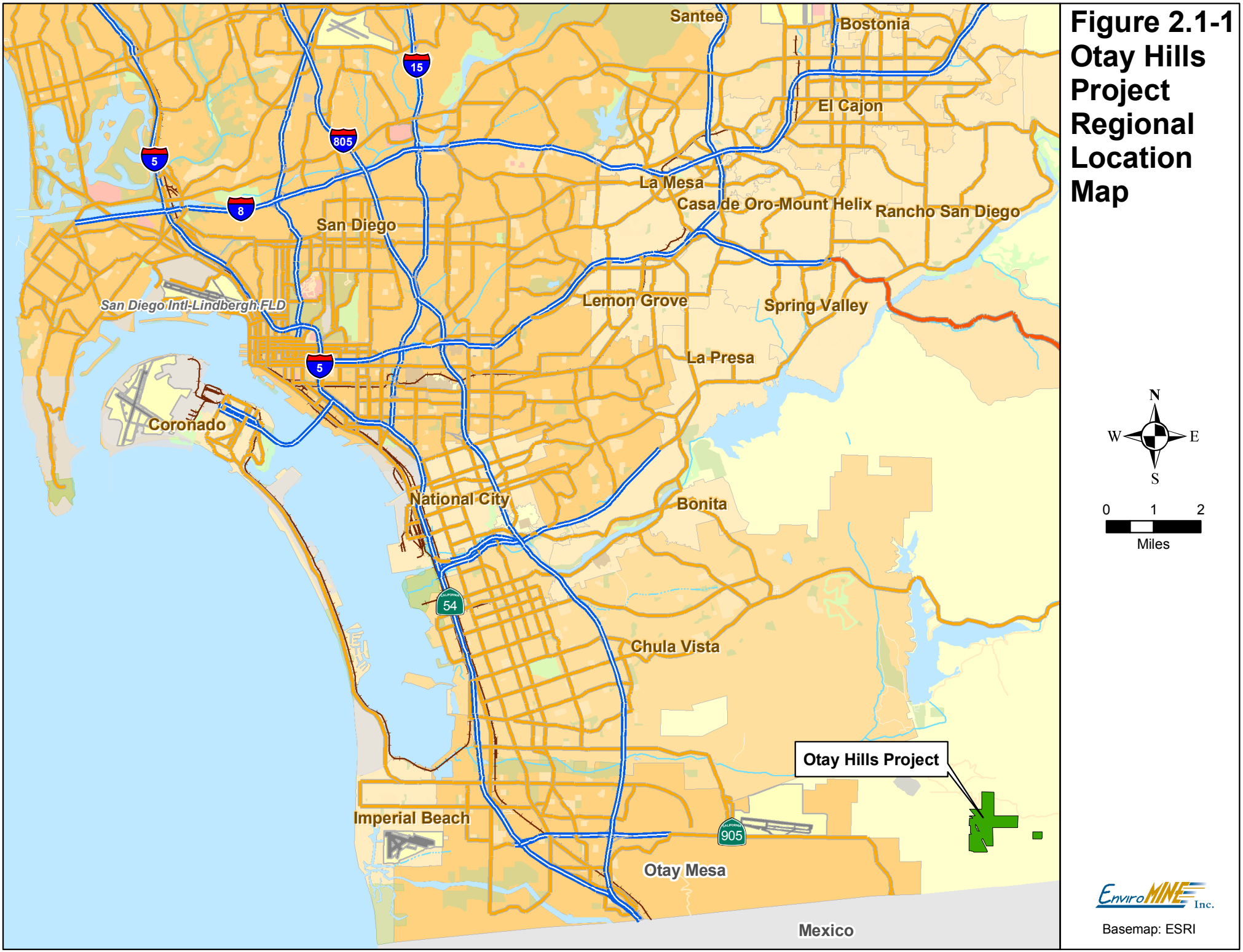
Figure 2.1-1
Otay Hills Project Regional Location Map
Santee
Bostonia
El Cajon
La Mesa
Casa de Oro-Mount Helix
Rancho San Diego
San Diego
San Diego Intl-Lindbergh FLD
Lemon Grove
Spring Valley
La Presa
Coronado
National City
Bonita
Chula Vista
Otay Hills Project
Imperial Beach
Otay Mesa
Mexico
15
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EnviroMINE Inc.
Basemap: ESRI

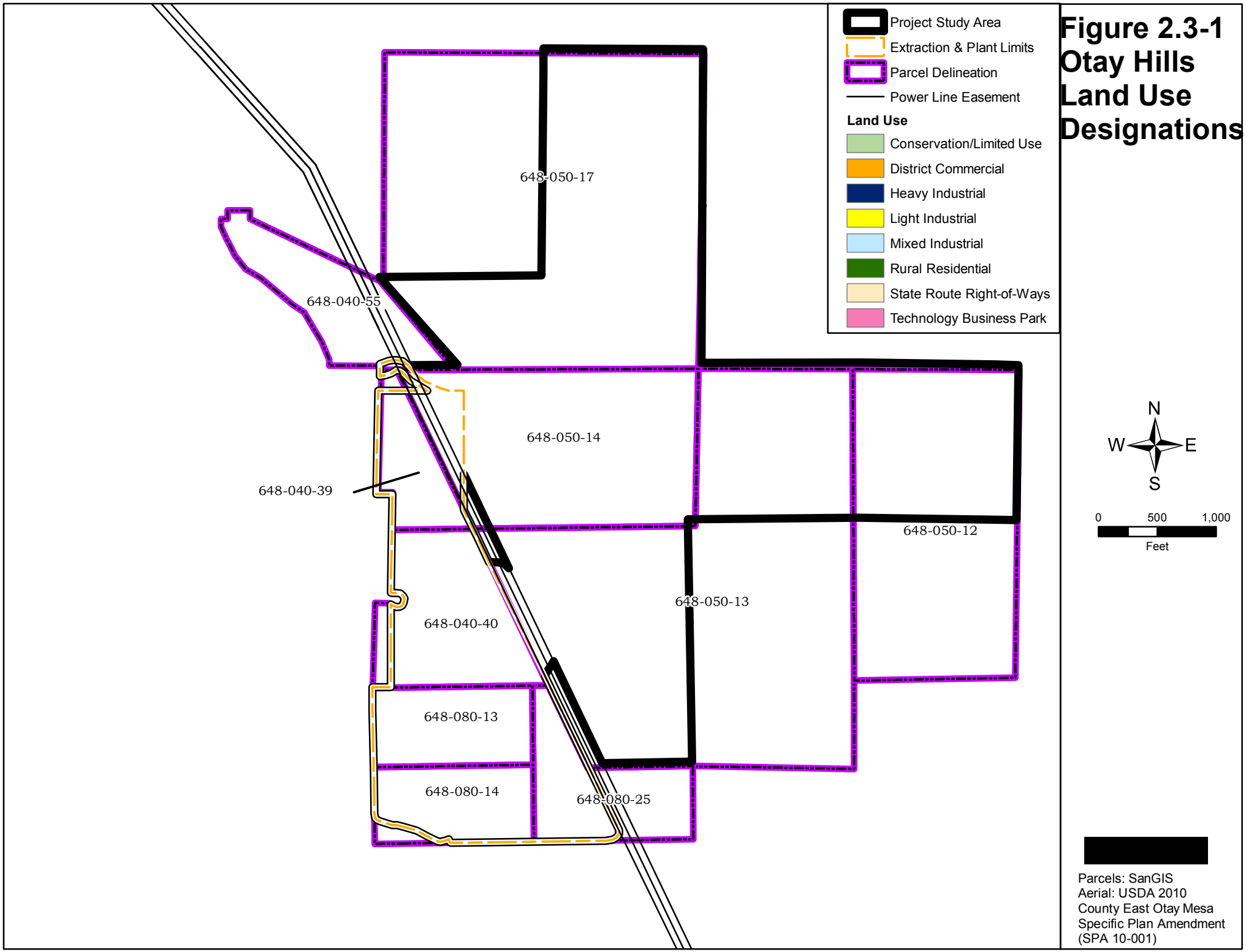


Figure 2.3-1 Otay Hills Land Use Designations

An application for a Specific Plan Amendment has been submitted to address the land use concerns associated with long-term use of the project site following the end of mining operations. The Specific Plan Amendment would change the designation of approximately 33 acres of Mixed Industrial land to Conservation/Limited Use. These lands are found to the north and east of the proposed quarry site. In addition, approximately 78 acres of land currently designated Rural Residential would be designated as Mixed Industrial (see Figure 2.3-2). Also, the SPA would change the designation of 189 acres of Rural Residential to Conservation/Limited Use. Table 2-1 shows the currently proposed change in land use designation when compared to the current plan totals:

Table 2-1
Change in Zoning District Acreages

Zone	Existing Plan (Acres)	Total Plan (Acres)	Net Change (Acres)
Mixed Industrial	670	715	+45
Rural Residential	314	47	-267
Conservation/Limited Use	242	464	+222

The Specific Plan Amendment is proposed to establish a long-term land use policy for the area planned for extractive operations, IDEFO, and subsequent industrial use. Through adoption of the proposed SPA, and approval of the MUP/RP, the property owner will have the land use entitlement to operate a rock quarry for the production of construction aggregate and associated processing activities and for operation of an IDEFO. In addition to the regulations adopted with the Specific Plan, operation of the rock quarry will be required to follow the requirements of the San Diego County Grading Ordinance (Chapter 87.700 et seq.), the California Surface Mining and Reclamation Act (SMARA) (Division 2, Chapter 9, Section 2710 et seq.), and the California Integrated Waste Management Board's regulations relating to the operation of an IDEFO (Title 14, Natural Resources--Division 7, Chapter 3).

2.4 Environmental Review

The project lies within the Rural Residential District and Mixed Industrial District of the East Otay Mesa Business Park Specific Plan. On July 27, 1994 an EIR for the East Otay Mesa Business Park Specific Plan was certified. In accordance with the California Environmental Quality Act (CEQA) Guidelines Section 15164(e) for Projects with Previously Approved Environmental Documents, an Environmental Review Update Checklist Form document was prepared by the County of San Diego. In this initial analysis, it was determined that the project has the potential to cause significant adverse impacts on the environment that were not anticipated in the previously certified EIR. Therefore, in order to analyze these potential effects, it is necessary to prepare a Subsequent Environmental Impact Report to satisfy requirements of the California Environmental Quality Act (CEQA).

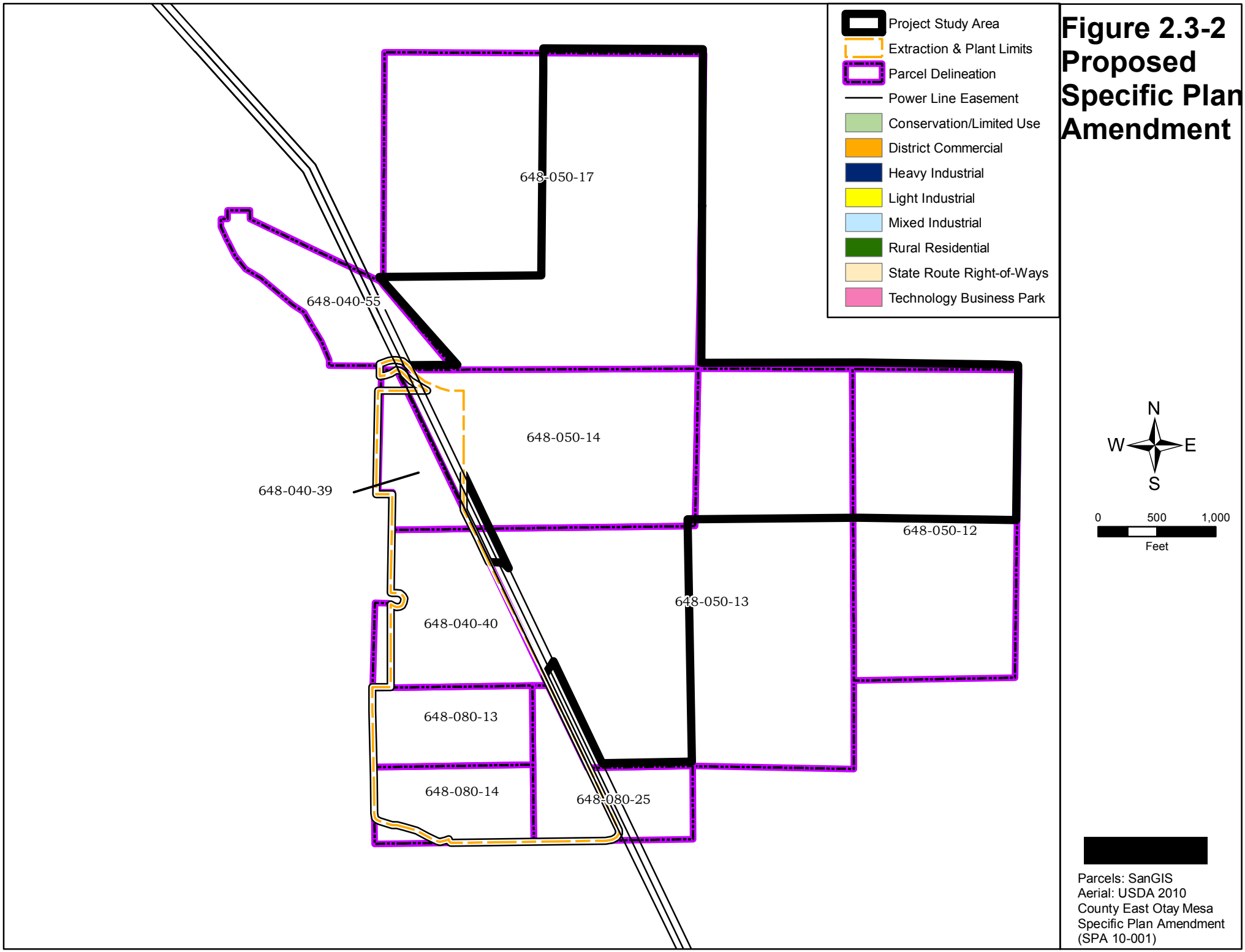


Figure 2.3-2 Proposed Specific Plan Amendment

The project site lies within a portion of the County's MSCP lands that will require a Major Amendment through the United States Fish and Wildlife Service (USFWS). A Major Amendment to the MSCP must be processed with the U.S. Fish and Wildlife Service (USFWS) which necessitates the preparation of a joint CEQA/NEPA document.

2.5 Geology

The project site is located in the western portion of the Peninsular Ranges batholith. The Peninsular Ranges batholith extends from the Santa Ana Mountains southward through San Diego County, into Baja California. Rock types within the batholith are generally pre-batholithic, volcanic and metavolcanic rocks in the western portion; to metasedimentary rocks in the eastern portion (see Figure 2.5-1).

The property is underlain by Jurassic-aged Santiago Peak Volcanics, which is proposed to be the primary source of aggregates, and alluvial deposits. The Santiago Peak Formation is mostly volcanic and ranges in composition from basalt to rhyolite but is predominantly dacite and andesite. The succession also includes a wide variety of breccia, agglomerate, volcanic conglomerate, fine-grained tuff and tuff breccia. Highly silicified rock, probably tuff, and a variety of dark, dense, fine-grained hornfels occur locally.

The metavolcanic rocks onsite belong to a group called ignimbrites, which formed from superheated volcanic ash and steam. Typically, these rocks are very hard; however, local faulting and subsequent jointing and fracturing have reduced their massivity. The Tertiary-aged Otay Formation is exposed along the western flank of the site. Here, this nonmarine sedimentary formation overlies the Santiago Peak Formation as a narrow wedge, which grows in depth as it extends to the west. This formation is composed of light-gray and light-brown, moderately well-sorted, poorly indurated, massive sandstone and claystone. The sandstone is locally cemented but generally it is weakly cemented. The claystone is waxy and composed almost exclusively of bentonite. The exposed part of the Otay Formation has been correlated with the Miocene-Pliocene Las Glorias Member of the Rosarito Beach Formation in Baja California (Kennedy, 1973). The topographic expression developed on these beds is rolling and subdued.

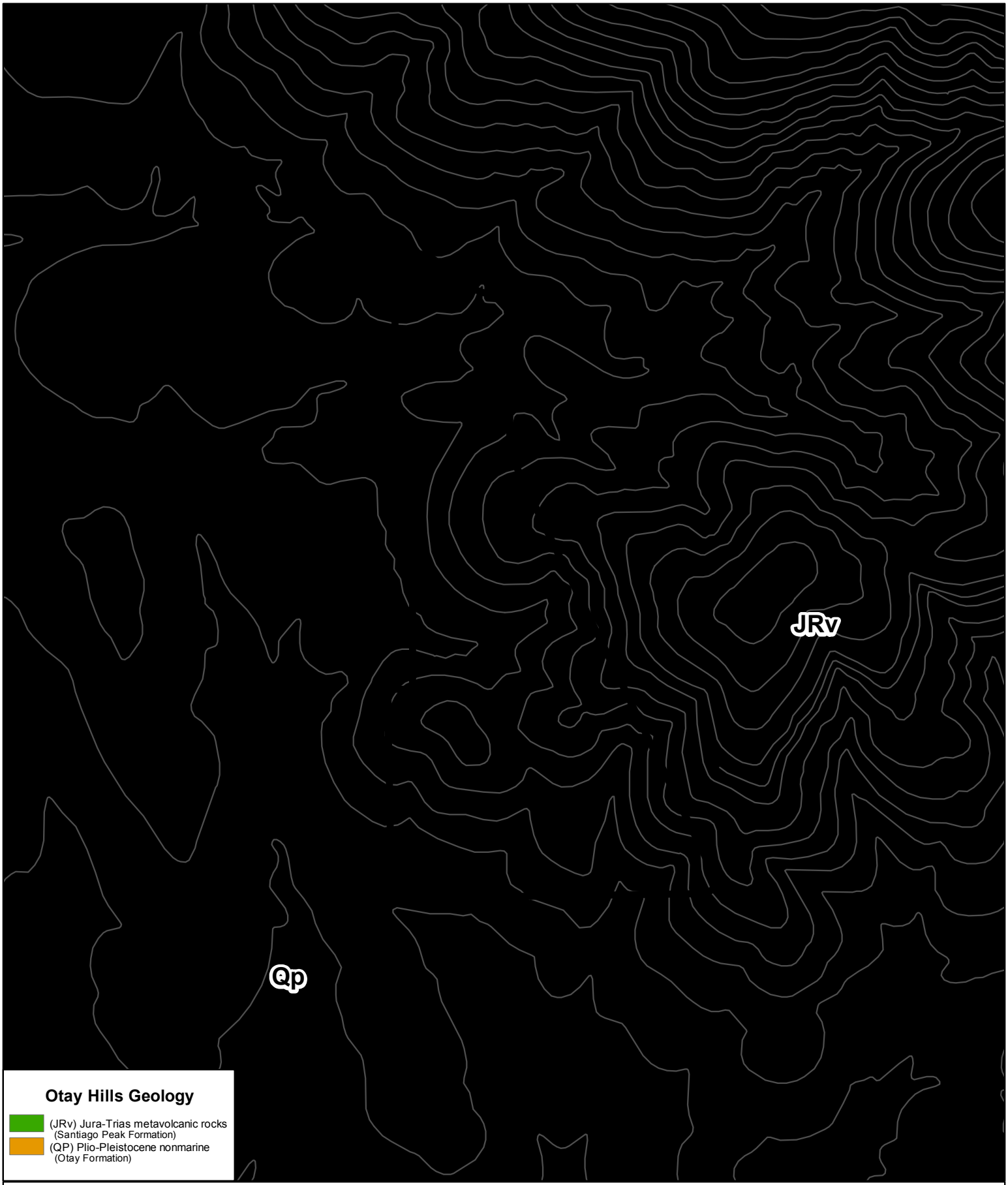


Figure 2.5-1
Otay Hills Project Geology

2.6 Surface and Ground Water

The project site is located within the 470 square mile Tijuana Hydrologic Unit, which is drained by the Cottonwood and Campo creeks. Although these creeks are not in the project vicinity they are tributaries to the Tijuana River that lies approximately two miles south of the site. The site itself has an overall slope from east to west with a portion of the runoff collecting in an ephemeral stream that runs through the northern portion of the site and the remainder of the runoff flows through the southern portion of the site. The stream descends from the San Ysidro Mountain Range, which lies to the northeast of the site, and drains into the Tijuana River within the boundaries of Mexico. A Drainage Report has been completed for the project (Appendix D).

Due to the fairly steep topography on the site and lack of significant rainfall, it is unlikely that surface water has a large impact on groundwater in the area. Surface water that flows off the site may enter the Tijuana River and possibly end up in the Lower Tijuana River Valley alluvial aquifer. According to the 1997 San Diego County Groundwater Report, the Lower Tijuana River Valley aquifer has a total surface area of 5.6 square miles, total storage capacity of 80,000 acre-feet, a maximum depth of 80 feet, and a water quality of 500-3000 mg/l TDS. Although the Tijuana River Valley aquifer collects surface water from the Tijuana Hydrologic Unit, the aquifer is approximately 8 miles west of the proposed 105-acre site.

Furthermore, due to the industrial nature of the proposed project, both a Stormwater Pollution Prevention Plan (SWPPP) and a General Industrial Storm Water Permit will be required for the implementation of the project. These Permits will ensure compliance with all regulations relating to stormwater runoff enforced by the San Diego Regional Water Quality Control Board and the County of San Diego.

2.7 Soils

The 105-acre site is located along the southwestern shoulder of the San Ysidro Mountain Range. Soils in the area consist primarily of metavolcanic rock with a silt loam characteristic. The silt loam is slowly permeable in the subsoil and has 2.5 to 3 inches of water available in the 18 to 23 inches of effective rooting depth. Erosion hazard is modest by wind and slight by water. The soils are generally used for limited range and for watershed and wildlife habitat.

The U. S. Department of Agriculture Soil Conservation Service, San Diego County Soil Survey (Bowman, 1973) places the Otay Hills site within the San Miguel-Exchequer rocky silt loam soil association (SnG) (see Figure 2.7-1). Also, areas of the Huerhuero loam series (HrD) occur on a small area on the western portion of the site. Typically, the San Miguel-Exchequer soil association is composed of about 50 percent San Miguel silt loam and 40 percent Exchequer silt loam. It occurs on uplands, at elevations of 400 to 3,300 feet MSL. Rock outcrops cover about 10 percent of the surface. The San Miguel soil has a surface layer of silt loam about 8 inches thick and is underlain by clay subsoil. This soil type is slowly permeable in the subsoil and has 2.5 to 3 inches of water available in the 18 to 23 inches of effective rooting depth. The Exchequer soil has a surface layer of silt loam about 10 inches and is underlain by hard metabasic rock. Exchequer silt loam is moderately permeable and has 1 to 2 inches of water available in the 8 to 17 inches of effective rooting depth. For both soils fertility is very

low, drainage is good, runoff is medium to rapid, and the erosion hazard is moderate to very high.

A small portion of the proposed site is made up of the Huerhuero series. The Huerhuero loam with 9 to 15 percent slopes is usually strongly sloped and has an effective rooting depth of 20 to 40 inches. The available water holding capacity is 3.5 to 5.5 inches. Runoff is medium, and the erosion hazard is moderate. The soil is typically used for tomatoes, flowers, range, and housing developments.

2.8 Climate

The Otay Mesa area is characterized by a climate of long dry summers and short wet winters, characteristic of a Mediterranean climate. Annual average daily temperature range from a low of 49° F. to an average high of 80° F, with periodic highs in the 90s. Rainfall is largely controlled by the strength and position of the semi-permanent high-pressure center over the Pacific Ocean. Limited rainfall occurs in winter when this high pressure center is weakest and farthest south. The fringes of mid-latitude storms occasionally move through the area. However, summers are often completely dry, with an average of 10.3 inches of rain falling each year from November to early April at Lower Otay Reservoir, the nearest climate station to the project area.

2.9 Biological Resources

The site is located at the western edge of the foothills for the San Ysidro Mountains. Although a number of dirt roads transect the site, the biological resources are relatively undisturbed. A number of biological surveys have been conducted for the property. These surveys have identified the presence of sensitive biological species and habitats of high concern to state and federal resource agencies. The biological resources found on the project site are mapped on Figure 2.9-1.

Biological surveys identified seven sensitive vegetation communities on the proposed site. These communities are mule fat scrub, cismontane alkali marsh, native grassland, Diegan coastal sage scrub (including disturbed), chamise chaparral, southern mixed chaparral, and non-native grassland. Of these habitats, Diegan coastal sage scrub is dominant on the project site. Typical species found within DCSS habitat include California sagebrush, lemonadeberry, California buckwheat, and laurel sumac. The biological habitats are in a recovery phase from a fire that swept through the majority of the site in the late 1990s. There are also some areas of disturbed habitat due to existing dirt roads that are used by off-road vehicles.

Within the seven vegetation communities identified on the site, a number of sensitive species were identified and mapped. One federallylisted threatened and statelisted endangered plant species, Otay tarplant was observed on the proposed site. Also, the variegated dudleya, San Diego goldenstar, San Diego barrel cactus, San Diego marshelder, Tecate cypress, San Diego needlegrass, western dichondra, southwestern spiny rush, San Diego viguiera, and ashy spike-moss species exist in the project area and are considered Species of Special Concern. These eleven species are listed as sensitive plant species by the County's Biological Mitigation Ordinance (BMO).

Biological Surveys also identified the presence of certain sensitive animal species in the

area. Sensitive animal species include, but are not limited to, the federally endangered Quino Checkerspot Butterfly and the federally threatened coastal California gnatcatcher. Other sensitive species include the San Diego horned lizard, California rufous-crowned sparrow, and the mountain lion. Although some of these species were not actually sighted, their presence was identified.

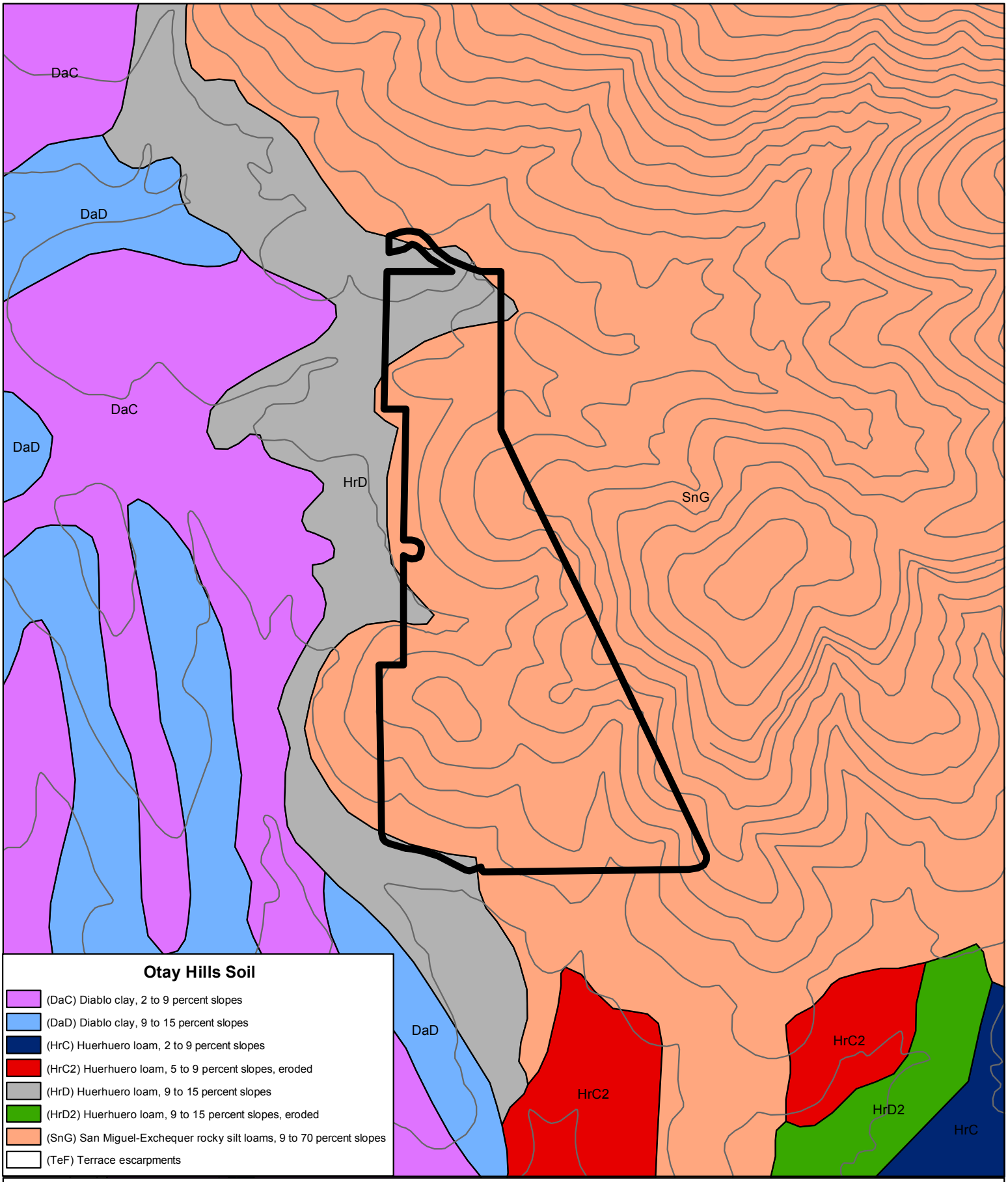


Figure 2.7-1
Otay Hills Topsoil Resources

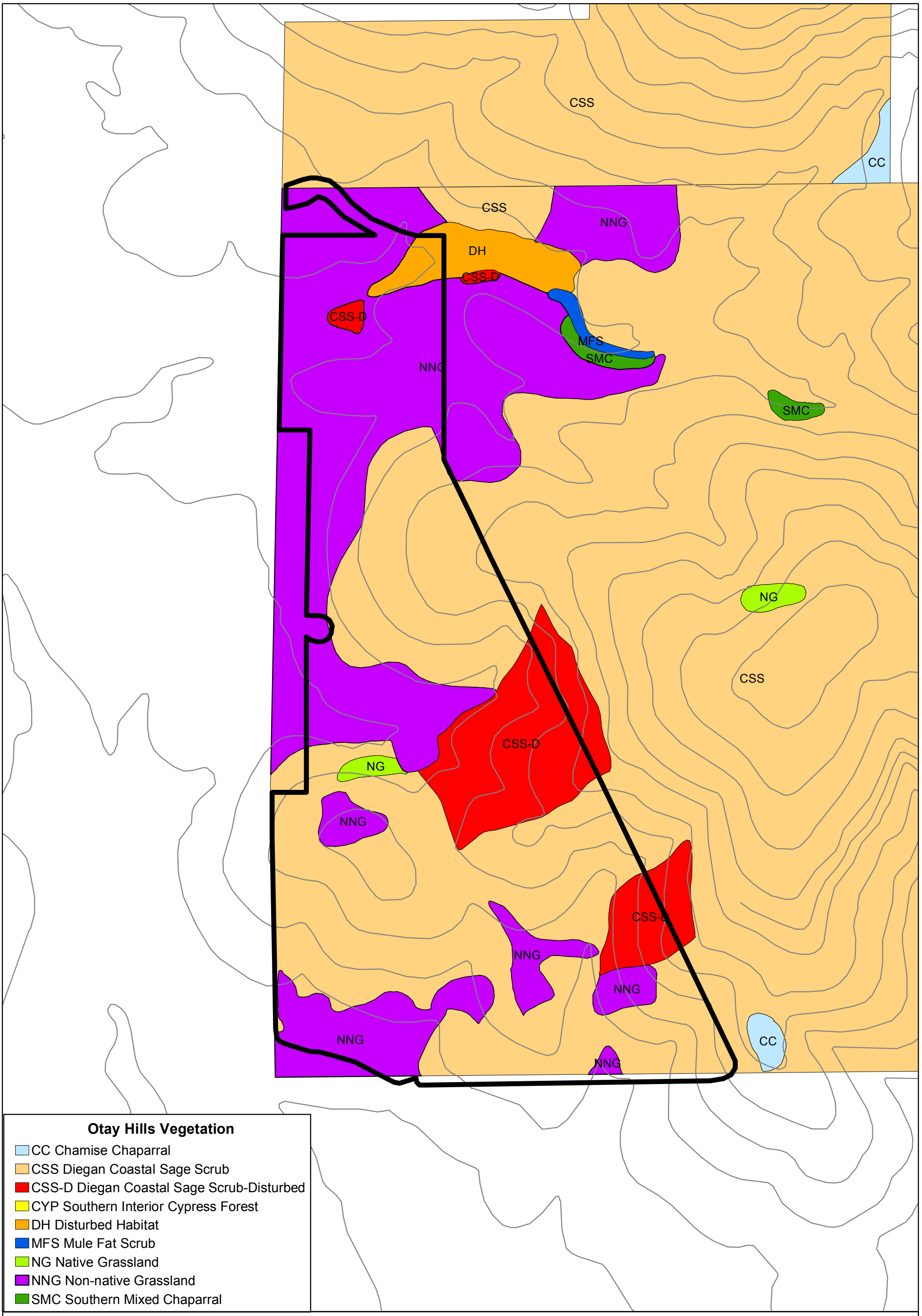


Figure 2.9-1
Otay Hills Biological Resources

3.0 Extraction Plan

3.1 Owner/Operator/Agent

Applicant

Name: Superior Ready Mix
Address: 1508 W. Mission Avenue
Escondido, California 92029
Telephone (760) 745-0556

Name of Mineral Property

Otay Hills

Property Owner

Name: Superior Ready Mix Concrete, LP
Address: 1508 W. Mission Road
Escondido, California 92029
Telephone (760) 745-0556

Name: KYDDL & RDLFG FT NO 1 LLC
Address: 5440 Morehouse Dr. #4000
San Diego, CA 92121

Name: Otay Hills LLC
Address: 1508 West Mission Rd.
Escondido, CA 92029

Name: D & D Landholdings
Address: 5440 Morehouse Dr. #4000
San Diego, CA 92121

Name: Rancho Vista Del Mar
Address: 5440 Morehouse Dr. #4000
San Diego, CA 92121

Name: International Industrial Park, Inc.
Address: 5440 Morehouse Dr. #4000
San Diego, CA 92121

Owners of Mineral Rights within Proposed Extraction Area

Name: Superior Ready Mix
Address: 1508 W. Mission Avenue
Escondido, California 92029
Telephone (760) 745-0556

Name: Otay Hills LLC
Address: 1508 West Mission Rd.
Escondido, CA 92025

Name: D & D Landholdings
Address: 5440 Morehouse Dr. #4000
San Diego, CA 92121

Operator

Name: Superior Ready Mix Concrete, LP
Address: 1508 W. Mission Avenue
Escondido, California 92029
Telephone (760) 745-0556

Agent

Name: Warren R. Coalson
Address: EnviroMINE, Inc.
3511 Camino Del Rio South Suite 403
San Diego, CA 92108
Telephone (619) 284-8515

3.2 Operational Characteristics

The project is planned to be a hard rock extraction operation, which extracts rock for construction aggregate purposes. The site will be extracted in three phases over an approximate 87+-year period (see Plot Plan included with the attached Reclamation Plan drawings). A fourth phase will involve reclamation. A building permit will be obtained for the construction of structures on site where applicable. Materials will be extracted using blasting to fracture and loosen the hard rock resources, followed by extraction and processing to size and sort the materials. Quarrying of rock resources will occur in phases and will eventually extend to all areas of the 105-acre site.

Processing activities are expected to include crushing and screening of extracted resources, materials washing, and stockpiling of processed aggregates. Other associated activities will include concrete and asphalt batching, an Inert Debris Engineered Fill Operation (IDEFO), and recycling of concrete and asphalt products. Processing activities will generally take place in the northern portion of the site, however, the primary processing (which includes the use of the jaw crusher) may be extended to the extraction areas using conveyor belts. A front-end-loader would be used to load off- highway- haul trucks for transport of fractured rock to the primary processing plant. The primary plant will consist of a jaw crusher, a screen, and cone crusher. The secondary plant will consist of 2-4 rock crushers, 5-7 screens and a wash plant to clean certain types of material to meet end–product specifications. Materials washing will require construction of a pond to recycle and store water. Finished aggregate will be stockpiled and/or stored in overhead loading bins. The stockpiles would be approximately 35 feet high. The aggregate will then be loaded onto trucks either with a front-end loader or by gates on the bottom of overhead loading bins. All processed materials will be exported from the site using over-the-road trucks.

Trucking will leave the site over a shared access road. This access road is expected to remain following completion of extractive operations.

3.3 Extraction Waste

Domestic refuse will be collected in approved trash bins and hauled to the nearest approved landfill for disposal. Equipment will be maintained on site and all used oils, fuels and solvents collected in accordance with the Department of Toxic Substances Control regulations and picked up by an approved hauler for recycling. Due to the high demand for all types of aggregates that will be produced at the site, no waste materials are anticipated.

3.4 Operational Water

A water truck will water the roads periodically throughout the day for dust suppression purposes. Other water requirements include surface watering of out-going loads and water used for materials washing at the secondary processing plant. Project operations will obtain water from the Otay Water District. However, if water accumulates in the open pit, the operations would utilize these sources so long as they met water quality standards for the intended use (e.g., concrete mixing). There is an existing well at the northern end of the site (outside of the proposed excavation footprint). Use of this well is not expected due to its low production rate. Additional details on this well can be found in the project's Limited Groundwater Investigation Report (AECOM, 1/13/12). Four other onsite wells have been abandoned and grouted. The exact locations of these wells are hard to determine based on the sketches provided by the driller (AECOM, 1/13/12).

3.5 Erosion and Storm Water Control

The operator will complete, and maintain onsite, an Industrial Storm Water Pollution Prevention Plan (SWPPP). Written records of all storm water related compliance activities are kept with the SWPPP for a minimum of five years. Best Management Practices (BMP's) are shown on the Plot Plan and Reclamation Plan maps.

A Drainage Report has been completed for the project (Appendix D). The hydrologic analyses demonstrate that the 100-year surface runoff from the site will be decreased at two of the three outflow locations. At the third location, a detention basin can be installed near the outflow to mitigate for the 100-year flow increase. One reason for the decrease is that the proposed project essentially will not increase the impervious area. In addition, the project will create large, level pads, which increase the time of concentration and, hence, decrease surface runoff.

3.6 Blasting

Based on anticipated production levels of 0.6 to 1.6 million tons per year, blasting will occur approximately once each week. Blasting activities will be conducted in strict compliance with pertinent Federal, State, and County requirements.

3.7 Mineral Commodity

Construction Aggregates

3.8 Operations Data

Starting Date of Operations

October 1, 2020

Estimated Life of Operation

Until depletion, operations expected to last until 2135 or longer dependent upon market demand. The anticipated end date is January 1, 2135.

Status of Operation:

Proposal

Estimated Annual Production

Less than 250,000 cu. yds./yr.	_____
250,000 - 1,250,000 cu. yds./yr.	X
Over 1,250,000 cu. yds./yr.	_____

Total Anticipated Production

Approximately 85.4 million tons.

3.9 Extraction Phasing

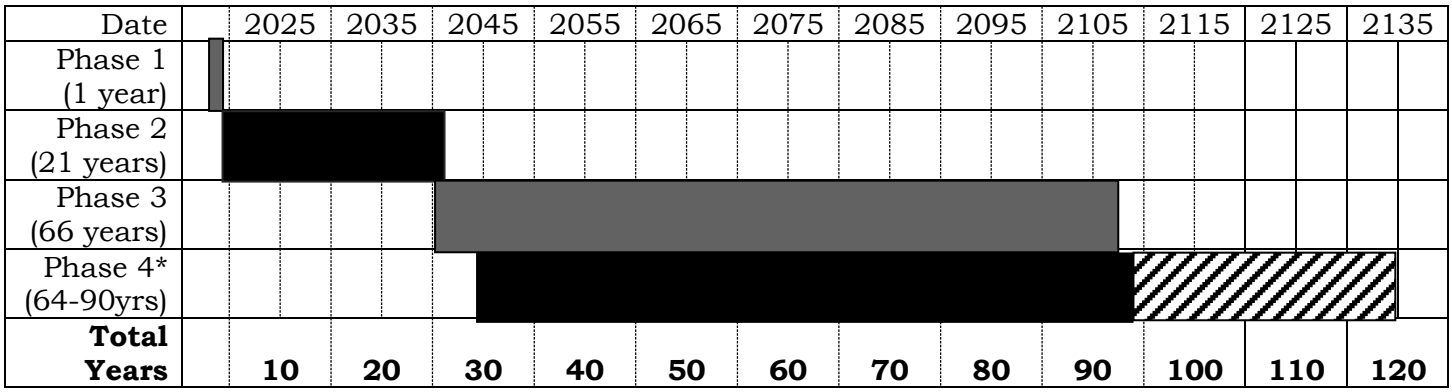
The proposed mineral resource recovery project would consist of site preparation for the processing plant equipment and a phased extraction and backfilling operation. Ongoing backfilling of the site during the open pit extraction phase of the project will allow reclamation to progress concurrently with the extraction operation. Assuming a start date of 2020, Table 3-1 provides a timeline for the project phases. The timing for these phases may change in the future depending upon project and land use needs, so that the phase order may change and more than one phase may be in use at any one time. The project timeline includes the following phases of development:

- Phase 1: Site Preparation
- Phase 2: Extraction to Natural Grade Elevation
- Phase 3: Open Pit Extraction
- Phase 4: Inert Debris Engineered Fill Operation (Landfill)

The variables used to prepare the Project Timeline include assumptions that could change over time. That is particularly true for Phase 4, where the amount of inert debris that will be available to fill the proposed landfill is dependent upon variables that will change: (1) regional economy, which affects the rate of construction; (2) level

of recycling; and (3) competition from other inert landfill sites.

Table 3-1
Project Timeline



* The actual pace of backfilling will depend on available space in the pit and market demand.

The phases would include:

3.9.1 Phase 1 – Site Preparation

Phase 1 involves site preparation activities prior to mining including initial grading to establish access routes, extending water and power service to the site, and grading pad areas for the processing plant location. Site preparation operations are located in the northern portion of the site (see Sheet 2 of the Plot Plan). Phase 1 grading will consist of minor cutting of the landform to create a relatively flat working surface for the processing plant. Construction of the processing plant, concrete batch plant, asphalt plant, cement treated base plant, and site office will also be commenced. This initial phase will include approximately 14.8 acres on the project site, plus associated activities required to construct the access road. Ultimately, the processing area will also extend into the northern portion of Phase 2 and consist of approximately 16.1 acres. Activities in Phase 1 are expected to continue for about one year.

3.9.2 Phase 2 – Extraction to Natural Grade Elevation

Phase 2 will involve commencement of extractive operations within the extraction footprint. This phase is divided into three sub phases, with Phase 2a occurring in the north and ending with Phase 2c in the south (See Sheet 3 of the Plot Plan). Phase 2 will consist of cutting the landform to the natural grade elevation that exists along the western perimeter of the site. The natural grade elevation of the mesa (west of the site) ranges between 580 and 650 feet AMSL.

During Phase 2a, aggregate resource will be recovered immediately adjacent to the Phase 1 area and over an approximate 17.1-acre area of the site. Extractive operations in Phase 2a are expected to remove 4.2 million tons and will continue for approximately 4.5 years (+/- 1 year) depending on the demand for aggregate resources. As aggregate resources are depleted from Phase 2a, extraction operations will transition into Phase 2b.

Phase 2b operations will include extraction of material from a 24.2-acre area and is expected to continue for approximately 5.5 years (+/- 1 year) depending on the demand for aggregate resources. This phase is expected to remove 4.7 million tons of material.

Phase 2c operations will begin as extraction operations are completed within Phase 2b. Phase 2c will consist of extracting approximately 10.5 million tons of material from the remainder of the extraction footprint (approximately 45.4 acres). This phase is expected to continue for approximately 11 years depending on the demand for aggregate resources.

As operations progress in Phase 2, slope areas within Phase 1 and Phase 2 will be seeded with a non-invasive erosion control mix. Prior to seeding, topsoil that is removed ahead of extractive operations will be reapplied to slope areas where conditions allow. A portion of the slopes that are seeded along the eastern perimeter of the pit will be used as a biological buffer adjacent to sensitive environmental habitats proposed to be set aside by the project to the east of the proposed extractive operations. A native seed mix will be used for these areas.

3.9.3 Phase 3 – Open Pit Extraction

As Phase 2 is completed, mine operations will continue to Phase 3. Like Phase 2, Phase 3 is divided into sub phases. Phases 3a through 3d will also progress in a north to south direction (See Sheet 4 of the Plot Plan). Extraction operations that will occur during Phases 3b through 3d will extend to a maximum depth of approximately 525 feet from the existing grade (or approximately 700 feet from top of eastern cut slope). As part of the reclamation process, the site will be utilized as an IDEFO. Backfilling is expected to continue throughout the Phase 3 operations, on a phase-by-phase basis.

The Phase 3a operations will involve additional extraction of material from an 8.5-acre area that will extend below the finished grade to form a sub-grade depression. Phase 3a extraction operations will extend below the Phase 2a area and will have a maximum depth of approximately 285 feet from the existing grade (or approximately 415 feet from top of eastern cut slope). This phase is expected to remove approximately 2.9-million tons and will continue for approximately 3 years (+/- 1 year), depending on the demand for aggregate resources. As extraction operations advance in Phase 3a and space becomes available, backfilling of the Phase 3a sub-grade depression will commence. Inert fill material will be used to backfill the depression.

Phase 3b operations will consist of extracting 12.2-million tons of material from a 22.1-acre area, over approximately 12 years (+/- 1 year) depending on the demand for aggregate resources.

It is anticipated that Phase 3c will extract 18.3 million tons of material from a 22.1-acre area, over approximately 18 years (+/- 1 year) depending on the demand for aggregate resources. Phase 3d operations are expected to extract 32.6-million tons from a 33.7-acre area, over approximately 33 years (+/- 1 year) depending on the demand for aggregate resources.

3.9.4 Phase 4 – Inert Debris Engineered Fill Operation (Landfill)

As extraction operations advance in Phase 3, the pit will be backfilled with inert fill material (fill dirt) on a phase-by-phase basis (See Reclamation Plan maps). Phase 4a will consist of backfilling a portion of the Phase 3a pit area. It is anticipated that this will require approximately 2.1-million cubic yards of imported fill material and will take approximately 5 years to complete. Phase 4b will involve backfilling the remainder of Phase 3a and portions of Phases 3b, 3c, and 3d. This will be followed by Phase 4c, which will backfill the remainder of Phase 3b and continue to backfill portions of Phases 3c and 3d. Phases 4d and 4e operations will include backfilling the remainder of Phases 3c and 3d. Table 3-2 provides a summary of the individual extraction and backfilling phases that will occur during the project.

Table 3-2
Extraction/Backfilling Summary for Phases 1 through 4

Phase	Extraction Volume (tons)	Surface Area (acres)	Years to Complete Extraction	Phase	Fill Volume (cy)	Years to Complete Backfill
1	None	14.8	0	1	None	0
2a	4,195,840	17.1	4.5	2a	None	0
2b	4,747,600	24.2	5.5	2b	None	0
2c	10,511,600	45.4	11	2c	None	0
3a	2,937,000	8.5	3	4a	2,123,500	5
3b	12,152,800	22.1	12	4b	3,852,300	8
3c	18,255,000	22.1	18	4c	8,027,000	17
3d	32,607,960	32.6	33	4d	9,146,000	19
				4e	7,465,700	15
Total	85,407,800	101.5*	87		30,614,500	64

*Total surface area calculated based on the sum of the Phase 1 and 2 footprint. Phase 3 is below grade beneath the Phase 2 surface footprint and therefore was not included in the calculation.

The assumptions used above include an average annual production of 1 million tons. The rate of backfill is estimated at 500,000 cubic yards per year. This backfill rate was determined by studying backfill rates at other sites in San Diego County. A cross-sectional overview of the extraction and backfilling phases is provided on the attached reclamation plan.

There are a limited number of landfills that accept fill materials in San Diego County. Inert fill material is produced from a variety of sources, but typically is a by-product of sub-grade excavations for parking garages or development that results in export of naturally occurring soil. In addition, clean demolition materials from redevelopment projects need to be placed in an inert fill materials site.

Where inert landfills are unavailable in the local community, these fill materials must be disposed of in local sanitary landfills or hauled to locations where fill receiver sites are available. Aggregate production sites hold the greatest potential for accepting a relatively large quantity of fill materials. There are a number of mining operations throughout southern California that utilize inert fill material to backfill and compact the mining void in order to reclaim the site to useable land. Depending on the rate at

which fill material is imported to the site, it is anticipated that Phase 4 activities will continue for approximately 64 years throughout the extraction operation. The actual pace of backfilling will depend on available space in the pit, as well as market demand, and could continue for up to 26 years beyond extraction operations.

3.10 Traffic

There will be relatively minor traffic associated with reclamation activities at the site. The majority of reclamation will occur during the extractive phasing. Traffic associated with reclamation will consist of 5 to 10 personal vehicles that are used by equipment operators to access the site. Other traffic will include a limited number of trips to and from the site for removing plant equipment and by a seeding contractor that will be used to revegetate the reclamation areas. It is not anticipated that any trucks will be used to haul material to and from the site for reclamation.

During Phase 1, all truck trips will be related to the construction of the site office and plant equipment. There will be no trips related to mining or landfilling activities during Phase 1. It is anticipated that less than 50 average daily trips would be experienced during this time. During Phase 2, truck trips will be limited to trips required for the extraction operation and materials imports for the onsite processing facilities. There will be no trips related to landfilling activities during Phase 2. Operations would produce approximately 0.6 to 1.6 million tons of aggregate annually. This level of activity will result in approximately 232 outbound truck trips on an average day, related to the extraction operation. The total number of trips, including materials imports and trips related to the recycle operation, will be approximately 314 trips. An additional 78 truck trips will result from imported material and landfilling operations that will occur during Phases 3 and 4. Therefore, approximately 392 average daily truck trips should be expected when both extraction and Inert Debris Engineered Fill operations are occurring (Phases 3 and 4). A detailed traffic impact study has been prepared for the project (Darnell & Associates, Inc., October 14, 2011).

Primary access to the site would be from Calzada De La Fuente, a dedicated access road that connects the northern end of the site with Alta Road. The access road connects with Alta Road approximately one half mile north of the intersection with Otay Mesa Road. A number of potential truck routes are possible. Potential access routes are listed as follows:

- Trucks leaving the site would follow Alta Road to Otay Mesa Road. Trucks would turn right (west) onto Otay Mesa Road to the intersection with Highway 905. Truck traffic would then disperse for deliveries on the Otay Mesa or extend to other areas in the region via State Route 125 or Interstate Highways 805 and 5.

Trucks leaving the site would follow Alta Road to Otay Mesa Road. Trucks would turn right (west) onto Otay Mesa Road to the intersection with Sanyo Avenue. Turning south on Sanyo Avenue to the intersection with Airway Road and then turning west. Airway Road extends across Otay Mesa to the intersection with Cactus Road. Traffic would then turn north on Cactus Road to the intersection with Otay Mesa Road and then turning west to connect with Interstates 805 and/or 5.

3.11 Utility Towers

SDG&E utility towers (230 kV) will be approached during Phase 2 of the project. These towers are located along the eastern perimeter of the extraction footprint. To protect these towers, the project has been designed so that disturbance will remain at a 50-foot setback from the towers. The prepared Plot Plan and Reclamation Plan illustrate this intention. Other, smaller utility towers are located within the vicinity of Phase 1. The location of plant equipment has been designed to avoid these towers and associated overhead power lines as much as possible.

4.0 Reclamation Plan

The Reclamation Plan describes phased reclamation of extraction areas and sets forth standards to assure adequacy of the plan measures. Sheets 2 through 4 of the Reclamation Plan (maps) identify reclamation phases for the site. Sheet 5 of the Reclamation Plan shows the proposed reclaimed landform that will be developed upon resource depletion and backfilling.

The goals of this Reclamation Plan are to:

1. Maximize the recovery of aggregate resources in a safe and efficient manner.
2. Return extracted areas to a useful purpose following depletion of mineral resources.
3. Mitigate, by design, potential environmental impacts on the land that might otherwise be created by extraction.

Due to the long term nature of the extraction activities on the project site, ongoing extraction and reclamation will occur consecutively. As extraction of the site is completed, these areas will be reclaimed in accordance with the reclamation objectives outlined herein. Although reclamation will occur in each phase as recovery operations are concluded, these activities will be similar on all areas of the site. Final reclamation will occur when all recovery operations have been completed. These activities will include final grading to establish the final land form and application of topsoil resources and revegetation wherever appropriate to achieve the goals of the plan.

Reclamation of slope areas will involve replacement of topsoil in some areas. Salvaged topsoil will be stockpiled for use with revegetation. Where conditions allow, topsoil will be reapplied to slope areas and benches. However, due to steep final slopes and hard rock exposures, revegetation may not be practical in some areas.

If pad areas will not be used for other activities, these areas will be treated with appropriate erosion control measures to stabilize the site against accelerated erosion and sedimentation. The site will be managed in this manner until an appropriate land use is identified for this site.

Portions of the slopes will be prepared for seeding as a biological buffer adjacent to sensitive biological habitats proposed to be set aside by the project to the east of the

proposed extractive operations. Revegetation of this buffer area will require topsoil replacement and revegetation in accordance with the Revegetation Plan.

4.1 Reclamation Phasing

Reclamation phasing will be consistent with proposed extraction phasing with the exception of Phase 1. The processing plant is located in Phase 1 and will not be reclaimed until resource depletion for the site.

Reclamation will commence with Phase 2, as final slope areas within Phase 1 and Phase 2 will be graded and seeded with a non-invasive erosion control mix. Prior to seeding, topsoil that is removed ahead of extractive operations will be reapplied to slope areas where conditions allow. A portion of the slopes that are seeded along the eastern perimeter of the pit will be used as a biological buffer adjacent to sensitive environmental habitats proposed to be set aside by the project to the east of the proposed extractive operations. A native seed mix will be used for these areas.

As extraction operations advance in Phase 3, the pit will be backfilled with inert fill material (fill dirt) on a phase-by-phase basis. Phase 4a will consist of backfilling a portion of the Phase 3a pit area. It is anticipated that this will require approximately 2.6-million cubic yards of imported fill material and will take approximately 6 years to complete. Phase 4b will involve backfilling the remainder of Phase 3a and portions of Phases 3b, 3c, and 3d. This will be followed by Phase 4c, which will backfill the remainder of Phase 3b and continue to backfill portions of Phases 3c and 3d. Phases 4d and 4e operations will include backfilling the remainder of Phases 3c and 3d.

Throughout the phased mine plan, fill material that is used for backfilling will be compacted to form pad areas. All fill material will be inspected upon arrival to insure that contaminated soils or garbage are not present. All backfilling operations would be supervised by a geotechnical engineer to insure that the fill materials are adequately compacted to satisfy the needs of the post mining land use (see attached design recommendations, Geotechnics, Inc., July 2, 2010).

Phase 4 will also involve the development of nearly level pads and slope areas suitable for development consistent with the underlying land use regulations. A portion of the eastern slope area will be set aside for a biological open space area adjacent to sensitive biological habitats that are being proposed to be set aside by the project.

When final slopes are established in individual areas, the land surface will be reclaimed. This will include revegetation areas as outlined in the revegetation plan (see Appendix B and Sheet 7 of the Reclamation Plan) and, where rock outcroppings are present, rock staining.

Extraction on the site is expected to continue for an approximinate 87+-year period, or until all mineral resources have been depleted. Depending on the rate at which fill material is imported to the site, it is anticipated that Phase 4 activities will continue for approximately 64 years throughout the extraction operation. Phase 4 operations are anticipated to continue for up to 26 years beyond extraction operations (for a total project duration of 115+ years). As backfill areas achieve finish grade, the surface will be seeded as prescribed in the revegetation plan (see Appendix B and Sheet 7 of the Reclamation

Plan).

Any roads that are not necessary for post extraction development will be removed and revegetated in accordance with the revegetation plan.

4.2 Post-Extraction Land Use

The County of San Diego General Plan, and the East Otay Mesa Business Park Specific Plan, govern allowable land uses on the site. The site is made up of the Mixed Industrial-S88 district and the Rural Residential-S88 district. A relatively small portion of the study area is within a Landfill Initiative area of the County's General Plan.

Reclamation of the extraction site is designed to conform to the planning goals described in the East Otay Mesa Business Park Specific Plan. The parcels are currently designated Mixed Industrial and Rural Residential. Uses within Mixed Industrial allow a wide range of commercial and industrial use, while uses within Rural Residential are limited in scope.

The Otay Hills project includes an application for a Specific Plan Amendment to address the land use concerns associated with long-term use of the project site following the end of mining operations. The Specific Plan Amendment would change the designation of approximately 36.3 acres of Mixed Industrial land to Conservation/Limited Use. These lands are found to the north and east of the proposed quarry site. In addition, approximately 81.1 acres of land currently designated Rural Residential would be designated as Mixed Industrial. Also, the SPA would change the designation of 188.6 acres of Rural Residential to Conservation/Limited Use.

As mining operations are occurring, the site will be backfilled and reclaimed to pad areas. Post-mining land uses on these pads will be consistent with the underlying land use designation. The Reclamation Plan will therefore include all necessary steps to prepare the project site for uses permitted by the Mixed Industrial land use designation.

Completion of the extraction plan as set forth herein, would result in the creation of nearly level pad areas that would total up to 85 acres in size. Future development of the site following resource depletion would likely be limited to the pads, as other areas of the site would be devoted to slope lands.

4.3 Post-Extraction Drainage and Erosion Control

Through the process of extraction, the landform will be modified. This will result in up to approximately 17 acres of slopes and 85 acres of nearly level pad. In the undisturbed condition, site drainage is directed to three minor water courses. Currently, in the northern and central portions of the site, drainage leaves the site to the west in a well defined water course and storm drain system constructed by an adjacent project. On the southern portion of the site, surface waters drain to the south. The final land form will generally maintain the existing off-site runoff directions of flow. On site drainage control will utilize ditches and berms to control and direct

runoff into a sediment detention basin near the northerly outflow location. All drainage control measures are defined and delineated on the Reclamation Plan drawings and will be described in the Industrial Stormwater Pollution Prevention Plan (SWPPP) that is required for the project. Revegetation of all affected lands is designed to result in a self-sustaining vegetative cover that will stabilize the site against erosion and sedimentation. When combined with active drainage control measures, site reclamation will render the site suitable for future land uses.

All reclamation activities will be conducted in a manner designed to protect onsite and downstream beneficial uses of water in accordance with the Porter-Cologne Water Quality Control Act and the Federal Clean Water Act.

4.4 Post-Extraction Slopes and Slope Treatment

Final slope steepness will vary based on soils condition and the Slope Stability Analysis. A Slope Stability Analysis, prepared by Christian Wheeler Engineering, is attached to this plan (Appendix E). No slopes in excess of a 1:1 (net) ratio will remain onsite after termination of reclamation activities.

Rock staining will be used on final slopes as necessary to insure visual integration of the unweathered rock surfaces. Rock will be stained with Permeon, an artificial desert varnish made of Iron and Manganese Salts. Permeon is highly resistant to weather and the elements found in Permeon are not considered to be toxic. The Permeon rock stain will be applied by a trained applicator in order to obtain proper coloration. The stain will provide an immediate benefit by changing the color of the rock from a lighter colored exposure to a darker, less obvious, color that mimics weathered rock surfaces.

4.5 Top Soil Management

A general description of the soil on the project site is discussed in Section 2.7 Soils. In order to improve the effectiveness of revegetation, native topsoil will be utilized where appropriate. This will ensure that seeding and natural revegetation reproduces the prevailing distribution of species. The primary practice will be to strip topsoil for direct placement on reclaimed sites. Where direct placement is not possible, topsoil is to be stripped and stockpiled for later reuse with revegetation (see Figure 4.5-1 for topsoil stockpile locations). Topsoil salvage will be conducted in a manner that is consistent with SMARA Section 3711. This will include maintaining topsoil and suitable growth media in separate stockpiles. These stockpiles will be clearly identified, with signage or by other means, to distinguish them from mine waste or other stockpiled materials. Also, relocation or disturbance of salvaged topsoil will be kept to a minimum and will be protected from erosion. Additional details on topsoil management can be found in the attached Revegetation Plan (Appendix C).

Due to the variable geologic conditions encountered on the site, it is estimated that an average of 6 inches of topsoil will be reapplied to slope and benches/buffer areas for revegetation purposes. Topsoil will not be reapplied to slope areas where substantial rock faces would prohibit vegetative establishment.

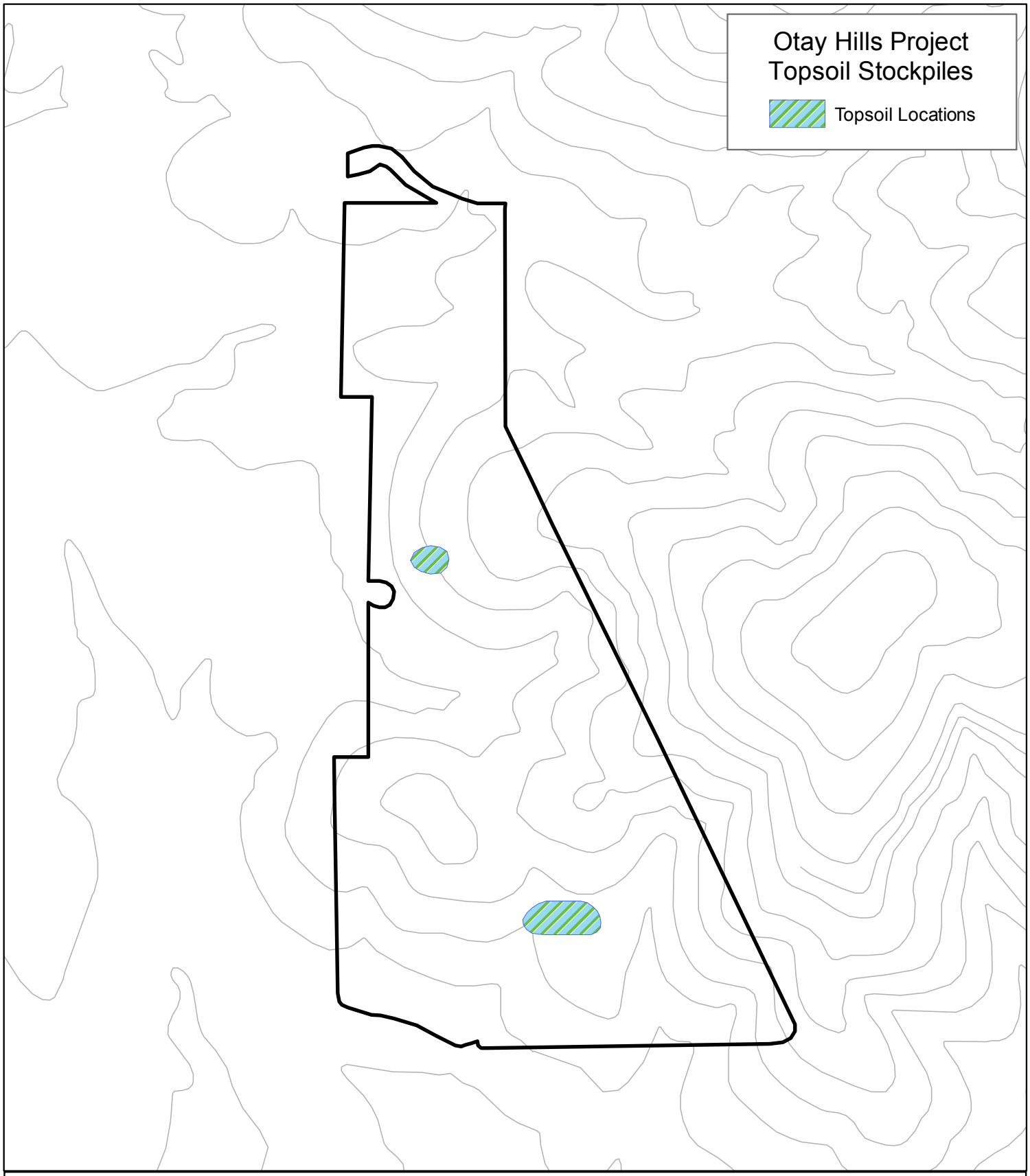


Figure 4.5-1
Topsoil Stockpile Locations

4.6 Post-Extraction Revegetation

Two separate seed mixtures will be utilized for the A) nearly level pads and B) slopes and benches. These seed mixes are designed to meet the variety of physical characteristics that will be present on the post extraction land form. The revegetation plan sets forth planting and verifiable monitoring standards to assure vegetative success. The Revegetation Plan is included as Appendix C.

In consideration of the relatively undeveloped conditions experienced in the project vicinity, and high visual exposure to immediately surrounding areas, slope revegetation is designed to visually integrate these areas with surrounding lands. Slope and bench areas are to be revegetated with species that will yield a visual signature similar to that found on surrounding lands. This will include areas of brush cover with intervening areas of rock outcroppings. See Sheet 7 of the Reclamation Plan for the anticipated location of revegetation treatments.

Areas of nearly level pads will be revegetated with an erosion control seed mix. The purpose of this design is to stabilize the site during the period following resource depletion and before a second land use is established on the site. Where a second land use occupies the site consecutive to extractive operations, revegetation with the erosion control planting may not be necessary.

Areas of nearly level pads will be revegetated by drill seeding with a rangeland drill. Slope and bench areas will be reseeded by means of hydroseeding or other approved methods. Hydroseeding is the hydraulic application of a homogeneous slurry mixture consisting of water, seed mix, cellulose fiber and a binding agent such as “M” Binder. Fertilizer can be added if the soil analysis shows the need for addition of amendments.

Hydroseeding application shall be performed only at times when winds are relatively calm. Seeding should be completed immediately prior to or during the early part of the rainy season. A practical guide would have seeding occur between October 15 and November 15, of a given year.

The extraction site will be managed to prevent the spread of noxious weeds. The site will be monitored periodically (at least annually for five years) by means of visual observation to identify the potential for uncontrolled weed propagation. Should weed control be necessary (e.g., weeds observed on ten percent of 100 square yards), cultural methods will be implemented to eliminate the spread of these species. Cultural methods will include mechanical or chemical weed abatement. Chemical weed abatement will be used in areas where mechanical methods are ineffective. However, no fertilization is proposed in the Revegetation Plan and as such, increased weed levels are not expected.

4.7 Post-Extraction Surface Conditions and Roads

The principal entrance road will remain for access at the discretion of the land owner. Other roads will be eliminated, or where they serve the post extraction land use, retained. Those to be eliminated will also be scarified to a depth necessary to promote water infiltration, topsoiled, and revegetated with an appropriate seed mix (where found to be appropriate).

A final step will involve the removal of equipment and refuse. All structures, mobile equipment, processing equipment, and spare parts which will not remain in continuous use will be removed from the site. This will require demolition/removal of all structures that are not beneficial for the post-extractive land use. Processing areas, pads, and spare parts storage areas will be retained as pads available for an allowable post-extractive industrial use. These areas may also be scarified and revegetated.

Prior to determining final slope ratios, a geotechnical engineer shall perform a Slope Stability Analysis. No areas of the site will remain with rock faces in excess of an overall 1:1 net slope ratio. Should slopes in excess of 1:1 be recommended for the final landform, certification by a geotechnical engineer will be required.

If, following cessation of extractive operations, residual stockpiles are present, these materials will be removed or leveled and compacted on site.

4.8 Removal of Buildings, Equipment and Structures

Equipment used on site will include the processing plant, hot-mix asphalt plant, concrete plant, cement-treated base plant, spare parts, and heavy earth moving equipment. Structures associated with the aggregate plant may include an office trailer and a small-scale house located near the plants. When operation of the site has terminated, all structures, equipment, and refuse will be removed from the site. However, should certain structures be required for the approved end-land use, they will be retained on-site. Which structures are to be retained, if any, will be determined based on need with the proposed land-use.

4.9 Post-Extraction Public Safety

No refuse or dangerous material will remain onsite. Access onto the property will be blocked by a locked front gate and secondary locked gates on the incoming road. Where appropriate, the site will be protected from intruder access by fencing and warning signs posted to deny unlawful access. Fencing shall be consistent with the East Otay Mesa Specific Plan Site Planning Standards. The Site Planning Standards require fences that are constructed of “any durable material” and that do not exceed a height of 6 feet above grade.

4.10 Effect of Reclamation on Future Recovery of Mineral Resources.

The extraction plan has been designed to recover all of the economically obtainable mineral resources known to occur on the project site. Through the process of extraction, mineral resources will be removed to a level most suitable for alternative development. At this time, it is assumed that the extraction plan is an estimate of the economic recovery range limits of the resource. However, as new technology is made available, or as economic conditions change, further extraction of resources may become viable. This condition will be evaluated prior to close of extractive operations on the site.

4.11 Reclamation Monitoring and Maintenance

Reclamation efforts will be monitored pursuant to SMARA requirements and according to the approved Reclamation Plan. Otay Hills is required, under SMARA (Public Resources Code §2207), to submit an annual status report on forms provided by the

Department of Conservation and directs the lead agency to conduct an inspection of the operations within six months of receipt of the required Annual Report.

4.12 Financial Assurances

In addition to annual monitoring, all SMARA regulated sites are required to provide financial assurances that reclamation of the site will be conducted in accordance with the approved Reclamation Plan. The financial assurance may be in the form of surety bonds, irrevocable letter of credit, trust funds, or other forms of financial assurances approved by the Lead Agency. The financial assurance is reviewed annually by the operator and lead agency to determine if operations or reclamation during the past year and planned operations during the upcoming year would require adjustments to the amount of the estimate.

4.13 Statement of Responsibility

Otay Hills accepts responsibility for reclamation of the Otay Hills extractive operation as set forth in this Reclamation Plan.

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Jacob Brouwer, President

5.0 References

California Department of Conservation, Division of Mine Reclamation
1975 California Surface Mining and Reclamation Act (SMARA). California Public Resources Code §2719 et. seq.

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2015 East Otay Mesa Business Park Specific Plan
Planning and Development Services.

1995 Zoning Ordinance.

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Compliance with Reclamation Standards

Purpose

The Surface Mining and Reclamation Act requires that all newly approved Reclamation Plans incorporate verifiable standards to assure adequate completion of Reclamation Plan objectives. The verifiable standards were adopted by the State Board of Mining and Geology as regulations to implement these requirements. These regulations are known as the "Reclamation Standards" (PRC Article 9, Sections 3700 *et seq.*). The following discussion addresses compliance with these standards as outlined in the Otay Hills Reclamation Plan.

Financial Assurances (§3702)

The project will be subject to a required financial assurance to ensure reclamation is performed in accordance with the reclamation plan. Financial assurances are reviewed annually by the San Diego County Department of Planning and Land Use and adjusted as necessary. Financial assurances must be in place prior to commencement of operations.

Wildlife Habitat (§3703)

Due to the presence of sensitive wildlife habitat of high concern to state and federal resource agencies, as identified in section 2.9, mitigation measures will be necessary. Mitigation shall be proposed in accordance with the provisions of the California Endangered Species Act, County of San Diego Biological Mitigation Ordinance, Fish and Game Code section 2050 et seq., and the federal Endangered Species Act of 1973. As stated in sections 3.9.2 and 3.9.3, an open space easement will be established as a biological buffer along the eastern perimeter of the site. It should be expected that land used for mitigation purposes will exhibit similar conditions to those currently found at the site.

Backfilling, Regrading, Slope Stability, and Recontouring (§3704)

The reclamation plan calls for mineral extraction and subsequent backfilling to form pad areas that total approximately 85 acres with about 17 acres of slopes. Portions of the site may also be over-excavated and backfilled to achieve the most appropriate contour for post-extraction development. All fill and cut slopes within or near the borders of the extraction areas shall have a minimum slope stability factor of safety that is suitable for the proposed end use and conform with the surrounding topography. All reclaimed fill slopes or permanent piles shall not exceed a 2:1 ratio, while reclaimed cut slopes shall not exceed a 1:1 ratio. Where conditions allow, topsoil will be reapplied to some slope areas. All backfilled materials will be placed and compacted with equipment used for extraction operations on the site. No regulated materials will be used for backfill. Although structural development is not proposed at this time, any future development would be required to meet Uniform Building Code (UBC) standards for foundations. Settlement of backfilled material is described in the Supplemental Slope Stability Analyses and Reclamation Fill Settlement, prepared by Christian Wheeler Engineering, which is attached to this plan (Appendix E).

Revegetation (§3705)

It is the objective of the Revegetation Plan to provide vegetative cover for final slopes and where needed to control erosion on areas that are not planned for development. The Revegetation Plan also helps to stabilize pad areas against erosion and sedimentation. Revegetation will be carried out with species capable of providing vegetative cover in order to stabilize the newly formed slopes against the effects of long-term erosion, and to visually integrate the slopes with surrounding natural vegetation. Native plant species shall be used for revegetation. Mixed Industrial uses would be acceptable end uses on the proposed site. The Revegetation Plan sets forth planting and maintenance practices, as well as verifiable monitoring standards to assure vegetative success. Examples of maintenance practices and verifiable monitoring standards include, but are not limited to, managing noxious weeds, planting during appropriate seasons, soil ripping or disking, fertilization, and fencing of revegetated areas wherever necessary. However, due to steep final slopes and hard rock exposures, revegetation may not be practical in on all slope areas.

Drainage, Diversion Structures, Waterways, and Erosion Control (§3706)

The quality of water, recharge potential, and storage capacity of groundwater aquifers is not expected to be diminished as a result of reclamation of this extraction operation. Due to the fairly steep topography that currently exists on and adjacent to the proposed site, it is unlikely that surface water has a substantial impact on groundwater storage and replenishment in the area. Therefore, creation of level pads on the site may increase the time of concentration on the site and improve recharge potential. Although the proposed site contains only an ephemeral stream, erosion control methods are designed to handle runoff from not less than a 20 year/1 hour intensity storm event. Controlled erosion and sedimentation should be expected during all phases of operation in compliance with the mandatory Stormwater Pollution Prevention Plan (SWPPP). No perennial stream diversions will be required.

Prime Agricultural Land Reclamation (§3707)

Not applicable.

Other Agricultural Land (§3708)

Not applicable.

Building, Structure and Equipment Removal (§3709)

With exception to those structures that will be retained for future use, no structures or permanent equipment will remain on the site upon completion of reclamation activities. Future uses will be required to comply with the site's landuse allowances. All waste shall be disposed of by a licensed waste hauler.

Stream Protection, Including Surface and Groundwater (§3710)

The proposed project will include stormwater protection measures to eliminate the potential for on-site erosions and sedimentation of offsite lands. These measures will

be compliant with appropriate sections of the Federal Clean Water Act, Porter-Cologne Act, San Diego County anti-siltation ordinances, and the California Regional Water Quality Control Board. The revegetation practices outlined in the revegetation plan are elements of the stormwater protection measures. The revegetation plan identifies measures to establish a self-regenerating vegetative complex that is designed to control erosion and sedimentation. In addition to these plan measures, the Lead Agency will conduct annual inspections to insure implementation of these water quality protection measures.

Topsoil Salvage, Maintenance and Redistribution (§3711)

The majority of soils on the site are represented by the San Miguel soil series as well as a small area of the Huerhuero series on the western portion of the site. The San Miguel soil generally has a surface layer of only 8 inches thick and 10 percent of its surface includes rock outcroppings. As a result, only limited quantities are available for topsoil recovery. However, wherever possible native soils should be salvaged and used for revegetation. Wherever possible, topsoil materials will be removed immediately ahead of extractive operations and placed directly onto reclamation sites. This precludes the need to stockpile topsoil materials and provides root stock from native vegetation that will benefit revegetation efforts. As necessary, however, topsoil will be stockpiled where final reclamation sites are not available for revegetation. The location of topsoil stockpiles is shown on Figure 4.5-1.

Tailing and Extraction Waste Management (§3712)

Proposed operations on the site include the extraction and processing of large quantities of native rock. This will result in mechanical weathering of the hard rock into fine particle sized sediments. The Stormwater Pollution Prevention Plan must identify measures to insure that off-site transport of accumulated sediments does not occur. Any loose materials remaining following resource depletion will be used for backfilling purposes or removed from the site. Conformance with California State Water Resources Control Board mine waste disposal regulations for any remaining waste will be required.

Closure of Surface Openings (§3713)

The pit will be backfilled as an Inert Debris Engineered Fill Operation (IDEFO). A description of this operation is provided in Sections 3.9 and 4.1.

Public Safety

Post-extraction public health and safety will be protected in accordance with County standards for undeveloped land. No trespassing signs will be posted at the property lines and at all entry points to the site.

Appendix A
Plot Plan & Reclamation Plan Drawings

OTAY HILLS QUARRY

MINERAL RESOURCE RECOVERY

GRADING NOTES

1. THE ENGINEER OF WORK WILL NOT ENFORCE SAFETY MEASURES OR REGULATIONS. THE OWNER SHALL DESIGN, CONSTRUCT AND MAINTAIN ALL SAFETY DEVICES, AND SHALL BE SOLELY RESPONSIBLE FOR CONFORMING TO ALL LOCAL, STATE AND FEDERAL SAFETY AND HEALTH STANDARDS, LAWS AND REGULATIONS.

2. APPROVAL OF THESE PLANS DOES NOT CONSTITUTE APPROVAL OF VERTICAL OR HORIZONTAL ALIGNMENT OF ANY PRIVATE ROAD SHOWN HEREON FOR COUNTY ROAD PURPOSES.

3. A CONSTRUCTION, EXCAVATION OR ENCROACHMENT PERMIT FROM THE DIRECTOR OF PUBLIC WORKS WILL BE REQUIRED FOR ANY WORK IN THE COUNTY RIGHT-OF-WAY.

4. THE CONTRACTOR SHALL VERIFY THE EXISTENCE AND LOCATION OF ALL UTILITIES BEFORE COMMENCING WORK. NOTICE OF THE PROPOSED WORK SHALL BE GIVEN TO THE FOLLOWING AGENCIES.

SAN DIEGO GAS & ELECTRIC	1-800-227-2600
PACIFIC BELL	1-800-227-2600
CABLE TELEVISION	1-800-227-2600
OTAY WATER DISTRICT	1-800-227-2600

5. PROTECTION OF EXISTING UTILITIES:

   THE OWNER IS REQUIRED TO TAKE PRECAUTIONARY MEASURES TO PROTECT THE UTILITY LINES SHOWN AND ANY OTHER LINES NOT OF RECORD OR NOT SHOWN ON THESE PLANS. ANY PAVEMENT OR OTHER EXISTING SURFACE IMPROVEMENTS DAMAGED BY THE OWNER SHALL BE REPLACED AS REQUIRED BY THE COUNTY OF SAN DIEGO ENGINEERING DEPARTMENT. EXISTING UTILITIES SHOWN HEREON ARE PLOTTED FROM RECORD DATA AND MAY NOT NECESSARILY BE WHERE SHOWN. IT IS THE OWNER'S RESPONSIBILTY TO DETERMINE LOCATION PRIOR TO CONSTRUCTION.

6. BRUSH REMOVAL:

   BRUSH SHALL BE REMOVED ONLY WITHIN THE AREA TO BE GRADED.

   FINISH GRADING:

   CUT AND FILL SLOPES SHALL BE TRIMMED TO THE FINISH GRADE TO PRODUCE A GENERALLY UNIFORM SURFACE OR CROSS SECTION. THE FINAL SLOPES OF EXCAVATIONS OR EMBANKMENTS SHALL BE SHAPED AND TRIMMED AS DIRECTED BY THE ENGINEER OF WORK AND LEFT IN A NEAT AND ORDERLY CONDITION. ALL STONES, ROOTS, OR OTHER WASTE EXPOSED ON EXCAVATION OR EMBANKMENT SLOPES SHALL BE REMOVED AND DISPOSED OF.

7. GENERAL UTILITY NOTES

   EXPLORATORY EXCAVATION REQUIRED:

   OWNER WILL MAKE EXPLORATORY EXCAVATIONS AND LOCATE EXISTING UNDERGROUND FACILITIES SUFFICIENTLY AHEAD OF EXCAVATION TO PREVENT DAMAGE TO SAID UTILITES.

   ALL EXISTING UTILITIES WITHIN THE SITE, AND THOSE ADJACENT TO THE SITE WHICH ARE AFFECTED BY THE WORK PROPOSED TO BE DONE ARE SHOWN ON THIS PLAN. THE UTILITY COMPANIES HAVE REVIEWED THESE PLANS AND ARE SATISFIED WITH THE ARRANGEMENTS MADE BY THE PERMITEE TO PROTECT OR RELOCATE THE UTILITIES.

8. IT SHALL BE THE OWNER'S RESPONSIBILTY TO BACKFILL ALL WELLS, SEPTIC TANKS, AND CISTERNS FOUND ON SITE.

9. EXISTING UTILITIES OR STRUCTURES ARE SHOWN ACCORDING TO THE RECORDS OF THE FOLLOWING COMPANIES AND HAVE BEEN EXAMINED TO VERIFY THAT THEY OWN NO UTILITIES OR STRUCTURES WHICH WILL BE AFFECTED BY THE PROPOSED GRADING.

10. 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.

11. ALL OPERATIONS CONDUCTED ON THE PREMISES, INCLUDING THE WARMING UP, REPAIR, ARRIVAL, DEPARTURE OR RUNNING OF TRUCKS, EARTHMOVING EQUIPMENT, CONSTRUCTION EQUIPMENT AND ANY OTHER ASSOCIATED GRADING EQUIPMENT SHALL BE ACCORDING TO THE PERIOD SPECIFIED IN THE MAJOR USE PERMIT.

12. NOTWITHSTANDING THE MINIMUM STANDARDS SET FORTH IN THE GRADING ORDINANCE AND NOTWITHSTANDING THE APPROVAL OF THESE RECLAMATION PLANS, THE PERMITTEE IS RESPONSIBLE FOR THE PREVENTION OF DAMAGE TO THE 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 FORM THE GRADING DESCRIBED ON THIS PLAN. THE COUNTY WILL HOLD THE PERMITTEE RESPONSIBLE FOR CORRECTION OF NON-DEDICATED IMPROVEMENTS WHICH DAMAGE ADJACENT PROPERTY.

13. SLOPE RATIOS:

    CUT - 0.5:1 (MAXIMUM) FOR SLOPES APPROVED BY SOILS ENGINEER

    FILL - 2:1 (MAXIMUM) FOR ALL SLOPES

14. IF ANY ARCHAEOLOGICAL RESOURCES ARE DISCOVERED ON THE SITE DURING GRADING OPERATIONS, SUCH OPERATIONS WILL CEASE IMMEDIATELY AND THE PERMITTEE WILL NOTIFY THE DIRECTOR OF PUBLIC WORKS OF THE DISCOVERY. GRADING OPERATIONS WILL NOT RECOMMENCE UNTIL THE PERMITTEE HAS RECEIVED WRITTEN AUTHORITY FROM THE DIRECTOR OF PUBLIC WORKS TO DO SO.

15. ALL GRADING DETAILS WILL BE IN ACCORDANCE WITH THE COUNTY OF SAN DIEGO GRADING ORDINANCE AND STANDARD DRAWINGS DS-10, DS-11 AND SAN DIEGO REGIONAL STANDARD DRAWINGS.

16. COMPACTION TESTING AND A COMPACTION REPORT IS REQUIRED FOR ALL FINISH PADS THAT ARE OVER 12" IN DEPTH.

17. FINISHED GRADING SHALL BE CERTIFIED BY A REGISTERED CIVIL GEOTECHNICAL ENGINEER AND INSPECTED BY THE COUNTY ENGINEER FOR DRAINAGE CLEARANCE. (APPROVAL OF ROUGH GRADING DOES NOT CERTIFY FINISH GRADING BECAUSE OF POTENTIAL SURFACE DRAINAGE PROBLEMS THAT MAY BE CREATED BY LANDSCAPING ACCOMPLISHED AFTER ROUGH GRADING CERTIFICATION.)

PROJECT PHASING

THE PROPOSED MINERAL RESOURCE RECOVERY PROJECT WOULD CONSIST OF SITE PREPARATION FOR THE PROCESSING PLANT EQUIPMENT AND A PHASED EXTRACTION AND BACKFILLING OPERATION. ONGOING BACKFILLING OF THE SITE DURING THE OPEN PIT EXTRACTION PHASE OF THE PROJECT WILL ALLOW RECLAMATION TO PROGRESS CONCURRENTLY WITH THE EXTRACTION OPERATION.

PHASE 1 – SITE PREPARATION

PHASE 1 INVOLVES SITE PREPARATION ACTIVITIES PRIOR TO MINING INCLUDING INITIAL GRADING TO ESTABLISH ACCESS ROUTES, EXTENDING WATER AND POWER SERVICE TO THE SITE, AND GRADING PAD AREAS FOR THE PROCESSING PLANT LOCATION. CONSTRUCTION OF THE PROCESSING PLANTS AND SITE OFFICE WILL ALSO BE COMMENCED.

PHASE 2 – EXTRACTION TO NATURAL GRADE ELEVATION

PHASE 2 WILL INVOLVE COMMENCEMENT OF EXTRACTIVE OPERATIONS WITHIN THE EXTRACTION FOOTPRINT. THIS PHASE IS DIVIDED INTO THREE SUB PHASES, WITH PHASE 2A OCCURRING IN THE NORTH AND ENDING WITH PHASE 2C IN THE SOUTH. PHASE 2 WILL CONSIST OF CUTTING THE LANDFORM TO THE NATURAL GRADE ELEVATION THAT EXISTS ALONG THE WESTERN PERIMETER OF THE SITE. THE NATURAL GRADE ELEVATION OF THE MESA (WEST OF THE SITE) RANGES BETWEEN 580 AND 630 FEET AMSL.

DURING PHASE 2, EXTRACTIVE OPERATIONS ARE EXPECTED TO REMOVE 21.1 MILLION TONS AND WILL CONTINUE FOR APPROXIMATELY 22 YEARS DEPENDING ON THE DEMAND FOR AGGREGATE RESOURCES.

PHASE 3 – OPEN PIT EXTRACTION

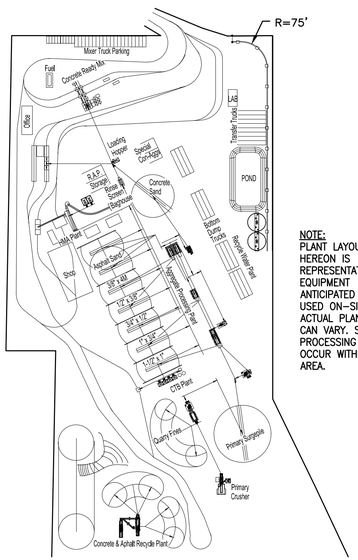
LIKE PHASE 2, PHASE 3 IS DIVIDED INTO SUB PHASES. PHASES 3A THROUGH 3D WILL ALSO PROGRESS IN A NORTH TO SOUTH DIRECTION. EXTRACTION OPERATIONS THAT WILL OCCUR DURING PHASES 3B THROUGH 3D WILL EXTEND TO A MAXIMUM DEPTH OF APPROXIMATELY 525 FEET FROM THE EXISTING GRADE. AS PART OF THE RECLAMATION PROCESS, THE SITE WILL BE UTILIZED AS AN INERT DEBRIS ENGINEERED FILL OPERATION (IDEFO). BACKFILLING IS EXPECTED TO CONTINUE THROUGHOUT THE PHASE 3 OPERATIONS, ON A PHASE-BY-PHASE BASIS.

THE PHASE 3 OPERATIONS ARE EXPECTED TO REMOVE APPROXIMATELY 68.0 MILLION TONS AND WILL CONTINUE FOR APPROXIMATELY 68 YEARS, DEPENDING ON THE DEMAND FOR AGGREGATE RESOURCES.

PHASE 4 (RECLAMATION) –
INERT DEBRIS ENGINEERED FILL OPERATION (LANDFILL)

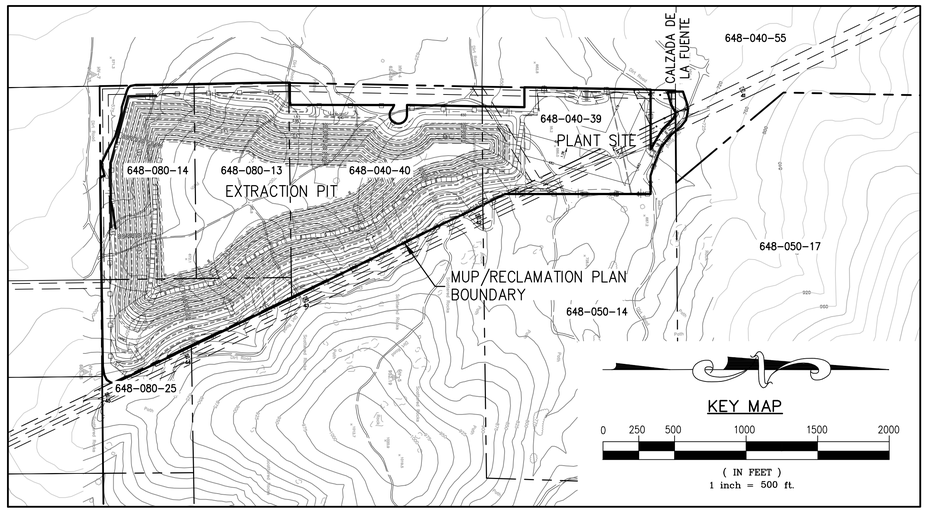
AS EXTRACTION OPERATIONS ADVANCE IN PHASE 3, THE PIT WILL BE BACKFILLED WITH INERT FILL MATERIAL (FILL DIRT) ON A PHASE-BY-PHASE BASIS. IT IS ANTICIPATED THAT THIS WILL REQUIRE APPROXIMATELY 32.0 MILLION CUBIC YARDS OF IMPORTED FILL MATERIAL AND WILL TAKE APPROXIMATELY 67 YEARS TO COMPLETE.

SHEET INDEX



PLANT SITE DETAIL
1"=200'

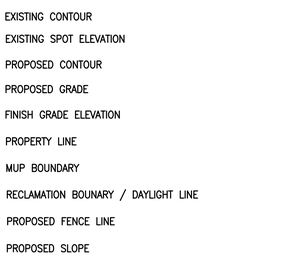
NOTE:
PLANT LAYOUT SHOWN HEREON IS REPRESENTATIVE OF EQUIPMENT ANTICIPATED TO BE USED ON-SITE. THE ACTUAL PLANT LAYOUT CAN VARY. SOME PROCESSING WILL OCCUR WITHIN PIT AREA.



SAN DIEGO GAS & ELECTRIC PERMISSION TO GRADE AND CONSTRUCT IMPROVEMENTS

PERMISSION IS HEREBY GRANTED TO SUPERIOR READY MIX (PERMITTEE), TO GRADE AND CONSTRUCT IMPROVEMENTS AS SHOWN ON THESE PLANS WITHIN SAN DIEGO GAS & ELECTRIC COMPANY'S EASEMENT(S) SUBJECT TO THE FOLLOWING CONDITIONS:

1. SUBMITTALS:
   1.1. PERMITTEE AGREES TO SUPPLY SDG&E WITH 'AS BUILT' GRADING, IMPROVEMENT AND PROFILE PLANS TO SDG&E SPECIFICATIONS, IF REQUESTED.
   1.2. PERMITTEE AGREES TO SUBMIT FOR REVIEW AND APPROVAL A BLASTING PLAN PRIOR TO BLASTING, IF BLASTING IS REQUIRED.
2. PRE-CONSTRUCTION MEETINGS: SDG&E'S LAND MANAGEMENT REPRESENTATIVE (LMR) MUST BE INVITED WITH AT LEAST THREE (3) WORKING DAYS PRIOR NOTICE.
3. GRADING:
   3.1. AT LEAST TWENTY-FOUR (24) HOURS NOTICE MUST BE GIVEN TO SDG&E'S LMR BEFORE START OF WORK.
   3.2. FIELD CHANGES TO PLANS WITHIN SAID EASEMENT SHALL BE APPROVED IN WRITING BY SDG&E LMR.
   3.3. PERMITTEE IS RESPONSIBLE TO CALL DIG ALERT AT 811 FOR ALL UNDERGROUND MARK-OUT LOCATIONS.
   3.4. CLEARANCE OF (35) FEET MINIMUM BETWEEN THE SDG&E ELECTRIC TRANSMISSION WIRES AND THE NATURAL GROUND SHALL BE MAINTAINED ON ANY GIVEN DAY, NOTING LINE SAGS VARY DEPENDING ON AMBIENT TEMPERATURE AND LINE CURRENT. ALL REQUIREMENTS, INCLUDING BUT NOT LIMITED TO OSHA, CAL-OSHA, ANSI, NIOSH, AND NEC FOR CLEARANCES WHEN WORKING AROUND ENERGIZED ELECTRICAL FACILITIES MUST BE MAINTAINED.
   3.5. NO GRADING SHALL BE ALLOWED WITHIN TEN (10) FEET OF A SINGLE WOOD POLE STRUCTURE OR ANCHOR, WITHIN FIFTEEN (15) FEET OF MULTI-WOOD POLES, WITHIN TWENTY (20) FEET OF STEEL LATTICE TOWERS OR WITHIN THIRTY (30) FEET OF STEEL POLES.
   3.6. SDG&E RESERVES THE RIGHT TO INSPECT AND PERFORM QUALITY CONTROL WORK DURING CONSTRUCTION.
4. SPECIAL CONDITIONS:
   4.1. SDG&E ACCESS ROAD LOCATED AT SOUTHERN END OF SITE AND CURRENTLY SHOWN TRAVERSING THE PIT AREA TO BE RELOCATED TO THE LOCATION SHOWN ON THE GRADING PLAN PRIOR TO GRADING OR EXCAVATION IN THE SOUTHERN AREA OF THE PIT. ONCE THE SDG&E ACCESS ROAD IS RELOCATED PERMITTEE WILL PROVIDE LEGAL DESCRIPTION AND PLAT TO SDG&E OF THE NEW LOCATION AND THE EXISTING ROAD LOCATION. SAID LEGAL DESCRIPTIONS TO BE USED IN AN AMENDMENT TO THE ACCESS ROAD EASEMENT, FILED SEPTEMBER 10, 1985 AS DOCUMENT 85-352966, THAT WILL BE SIGNED BY PERMITTEE AND SDG&E TO FORMALLY DOCUMENT THE NEW LOCATION OF THAT PORTION OF THE ACCESS ROAD.
   4.2. IF IN THE OPINION OF SDG&E, THERE HAS BEEN AN EXCESS ACCUMULATION OF CONTAMINANTS ON THE INSULATORS ON THE TRANSMISSION TOWERS ADJACENT TO THE QUARRY AND RELATED TO THE OPERATIONS OF THE QUARRY, PERMITTEE HEREBY AGREES TO REIMBURSE SDG&E FOR ITS REASONABLE DIRECT COSTS TO WASH THE INSULATORS ON SDG&E TRANSMISSION TOWERS Z284003, Z284004, Z284005 AND Z284006.
5. EROSION CONTROL:
   5.1. ALL DISTURBED AND CREATED SLOPES, WITHIN THE SDG&E TRANSMISSION EASEMENT, SHALL BE HYDRO-SEEDED OR PLANTED BY PERMITTEE WITH AN SDG&E APPROVED MIX.
   5.2. ALL DRAINAGE SHALL BE DESIGNED TO PREVENT EROSION OF SDG&E EASEMENT AND ACCESS ROADS.
6. STORAGE: THIS PERMISSION TO GRADE LETTER DOES NOT PERMIT STORAGE OF EQUIPMENT, MATERIALS, DIRT OR DEBRIS ON THE EASEMENT OR SDG&E FEE OWNED PROPERTY.
7. ACCESS:
   7.1. ACCESS TO ALL SDG&E FACILITIES SHALL BE MAINTAINED AT ALL TIMES. ALL COSTS ASSOCIATED WITH RESTORATION OF ACCESS AND ALL ASSOCIATED DAMAGES SHALL BE BORNE BY PERMITTEE.
   7.2. ALL GATES SHALL PROVIDE FOR SDG&E ACCESS BY PADLOCK, LOCK-BOX OR KEYED BYPASS BOTH DURING AND UPON COMPLETION OF CONSTRUCTION. LOCATION AND CONSTRUCTION OF GATES TO BE APPROVED BY SDG&E LMR.
8. OUTSTANDING AGREEMENTS: PERMITTEE AGREES TO PAY FOR, SIGN AND/OR HAVE SIGNED ALL CONSENT AGREEMENTS, CONSENT TO USE LAND AGREEMENTS AND/OR JOINT USE AGREEMENTS BETWEEN SDG&E AND OWNER OR PUBLIC AGENCIES WHO ENCROACH UPON THE SDG&E EASEMENTS. SAID AGREEMENTS WILL BE SUBJECT TO THE REVOCABILITY CLAUSE AS STATED IN THE CALIFORNIA PUBLIC UTILITIES COMMISSION GENERAL ORDER 69-C AS SHOWN ON WEB SITE: HTTP://WWW.CPUC.CA.GOV/PUBLISHED/GRAPHICS/645.PDF.
9. INDEMNIFICATION:
   9.1. PERMITTEE AGREES TO ASSUME ALL RISK OF LOSS, DAMAGE TO PROPERTY AND/OR INJURY AND/OR DEATH TO PERSONS, AND TO INDEMNIFY AND HOLD SDG&E HARMLESS FROM ANY AND ALL LIABILITY IN ANY WAY ARISING FROM THE PROPOSED GRADING OR CONSTRUCTION OF IMPROVEMENTS.
   9.1. SDG&E SHALL NOT BE RESPONSIBLE IN ANY MANNER FOR ANY MAINTENANCE OR REPAIR OF THE PROPOSED GRADING OR IMPROVEMENTS. THIS INCLUDES, BUT IS NOT LIMITED TO, DRAINAGE AND/OR EROSION PROBLEMS OR DAMAGE CAUSED TO IMPROVEMENTS THAT WERE NOT CONSTRUCTED TO TAKE THE WEIGHT OR ACTIVITIES OF VEHICLES AND EQUIPMENT OWNED BY OR WORKING ON BEHALF OF SDG&E.
10. TERMS AND CONDITIONS: THE TERMS AND CONDITIONS OF THIS APPROVAL SHALL BENEFIT AND BIND PERMITTEE ITS SUCCESSORS, ASSIGNS, AGENTS OR CONTRACTORS.
11. CONTACT: SDG&E LAND SERVICES, 619-696-2000.
    SDG&ELANDSERVICES@SEMPRAUTILITIES.COM



VICINITY MAP
NO SCALE

LEGEND	SYMBOL
EXISTING CONTOUR	925
EXISTING SPOT ELEVATION	x 1012.7
PROPOSED CONTOUR	685
PROPOSED GRADE	1.0%
FINISH GRADE ELEVATION	FG 673.0
PROPERTY LINE	
MUP BOUNDARY	
RECLAMATION BOUNARY / DAYLIGHT LINE	
PROPOSED FENCE LINE	
PROPOSED SLOPE	
DIRECTION OF DRAINAGE (EARTHEN SWALE)	
PROPOSED RIPRAP	

LEGAL DESCRIPTION

THE REAL PROPERTY CONSISTS OF PARCELS WITHIN THE FOLLOWING AREAS WITHIN TOWNSHIP 18 SOUTH, RANGE 1 EAST, SAN BERNARDINO MERIDIAN:

- A PORTION OF THE NORTHEAST QUARTER OF SECTION 30
- A PORTION OF THE NORTHWEST QUARTER OF SECTION 29 AND THE NORTHEAST QUARTER OF SECTION 30
- A PORTION OF THE NORTHWEST QUARTER OF THE SOUTHWEST QUARTER OF SECTION 29
- A PORTION OF THE SOUTHWEST QUARTER AND THE SOUTHEAST QUARTER OF THE SOUTHWEST QUARTER OF SECTION 29
- A PORTION OF THE EAST ONE HALF OF THE NORTHEAST QUARTER OF SECTION 30 AND A PORTION OF THE NORTHWEST QUARTER OF SECTION 29
- THE WEST ONE HALF OF THE SOUTHEAST QUARTER OF SECTION 29, A PORTION OF THE SOUTHWEST QUARTER OF SECTION 29, TOGETHER WITH THE NORTH ONE HALF OF THE NORTHWEST QUARTER OF THE NORTHEAST QUARTER OF SECTION 32 AND A PORTION OF THE NORTH ONE HALF OF THE NORTHEAST QUARTER OF THE NORTHWEST QUARTER OF SECTION 32
- THE NORTHWEST QUARTER OF THE NORTHWEST QUARTER OF SECTION 32
- A PORTION OF THE NORTHEAST QUARTER OF THE NORTHWEST QUARTER OF SECTION 32

PROJECT DESCRIPTION

THE PROJECT PROPOSES A MINERAL RESOURCE RECOVERY OPERATION AND ASSOCIATED ACTIVITIES TO CREATE CONSTRUCTION AGGREGATES AND MATERIALS. DURING AND AFTER MINERAL RESOURCE RECOVERY OPERATIONS, THE OPEN PIT WILL SERVE AS A RECEIVER SITE FOR INERT DEBRIS SUCH AS CONCRETE, ASPHALT, ROCK, AND SOIL. THE PLOT PLAN ALLOWS OVER 89.2 MILLION TONS OF EXCAVATION. MINERAL RESOURCE RECOVERY OPERATIONS WILL BE THROUGH THE USE OF DRILLING AND BLASTING TO FRACTURE ROCKS, WHICH WILL THEN BE CRUSHED AND SORTED. CONCRETE AND AND ASPHALT BATCH PLANTS, AND CEMENT TREATED BASE AND RECYCLED CTB PLANTS WILL BE LOCATED ON-SITE. SITE ACCESS WILL BE FROM ALTA ROAD.

WORK TO BE DONE

THE IMPROVEMENTS CONSIST OF THE FOLLOWING WORK TO BE DONE IN ACCORDANCE WITH THESE PLANS , THE STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION (2003 EDITION), THE REGIONAL SUPPLEMENT AMENDMENTS (2003 EDITION), THE SAN DIEGO AREA REGIONAL STANDARD DRAWINGS (DATED JULY 2000).

OWNERS

OTAY HILLS, LLC
1508 MISSION ROAD
ESCONDIDO, CA 92029
(760) 745-0556

RANCHO VISTA DEL MAR,
D&D LANDHOLDINGS AND
KYDDLF & RDLFG FT NO 1 LLC, C/O NATIONAL ENTERPRISES
5440 MOREHOUSE DRIVE, SUITE 4000
SAN DIEGO, CA 92121

PERMITTEE

SUPERIOR READY MIX CONCRETE
1508 W. MISSION ROAD
ESCONDIDO, CA. 92029
(760) 745-0556

ASSESSOR'S PARCEL NUMBERS

648-050-13, & 14
648-080-13, 14, & 25
648-040-39, 40, 55

DISCRETIONARY REVIEW APPROVAL

THIS PLAN IS PROVIDED TO ALLOW FOR FULL AND ADEQUATE DISCRETIONARY REVIEW OF A PROPOSED DEVELOPMENT PROJECT. THE PROPERTY OWNER ACKNOWLEDGES THAT ACCEPTANCE OR APPROVAL OF THIS PLAN DOES NOT CONSTITUTE AN APPROVAL TO PERFORM ANY GRADING SHOWN HEREON, AND AGREES TO OBTAIN VALID GRADING PERMISSIONS BEFORE COMMENCING SUCH ACTIVITY.

DECLARATION OF RESPONSIBLE CHARGE

I HEREBY DECLARE THAT I AM THE ENGINEER OF WORK FOR THIS PROJECT, THAT I HAVE EXERCISED RESPONSIBLE CHARGE OVER THE DESIGN OF THE PROJECT AS DEFINED IN SECTION 6703 OF THE BUSINESS AND PROFESSIONS CODE, AND THAT THE DESIGN IS CONSISTENT WITH CURRENT STANDARDS.

I UNDERSTAND THAT THE CHECK OF PROJECT DRAWINGS AND SPECIFICATIONS BY THE COUNTY OF SAN DIEGO IS CONFINED TO A REVIEW ONLY AND DOES NOT RELIEVE ME, AS ENGINEER OF WORK, OF MY RESPONSIBILITIES FOR PROJECT DESIGN.

WAYNE W. CHANG
CHANG CONSULTANTS
P.O. BOX 9496
RANCHO SANTA FE, CA 92067
PHONE: (858) 692-0760

BY: _____ DATE:

WAYNE W. CHANG, R.C.E. 46548

SAN DIEGO GAS & ELECTRIC COMPANY

APPROVED BY:_____DATE:_____

LAND MANAGEMENT REP

COUNTY APPROVED CHANGES

No.	Description	Approved by	Date
	ORIGINAL		5-5-13

PERMITS

HABITAT LOSS PERMIT NO. _____
N.O.I. NO._____
SPECIFIC PLAN AMENDMENT _____
SPECIAL USE PERMIT NO. _____
GRADING PERMIT NO. _____
TENTATIVE MAP NO. _____

BENCHMARK

DESCRIPTION: COUNTY STATION 0051 007 01

LOCATION: SECTION 32, TOWNSHIP 18 SOUTH, RANGE 1 EAST, SBM
N 1785438.171, E 6363168.576, NAD 83

RECORD FROM: COUNTY OF SAN DIEGO CONTROL POINT INVENTORY

ELEVATION: 733.46 FEET DATUM: NGVD

PRIVATE CONTRACT

SHEET 1 | COUNTY OF SAN DIEGO DEPARTMENT OF PUBLIC WORKS | 6 SHEETS

PLOT PLAN FOR:
OTAY HILLS
COVER SHEET

CALIFORNIA COORDINATE INDEX: 146-1797

Approved
COUNTY ENGINEER
BY: _____
Date

Engineer of work
WAYNE W. CHANG R.C.E. 46548

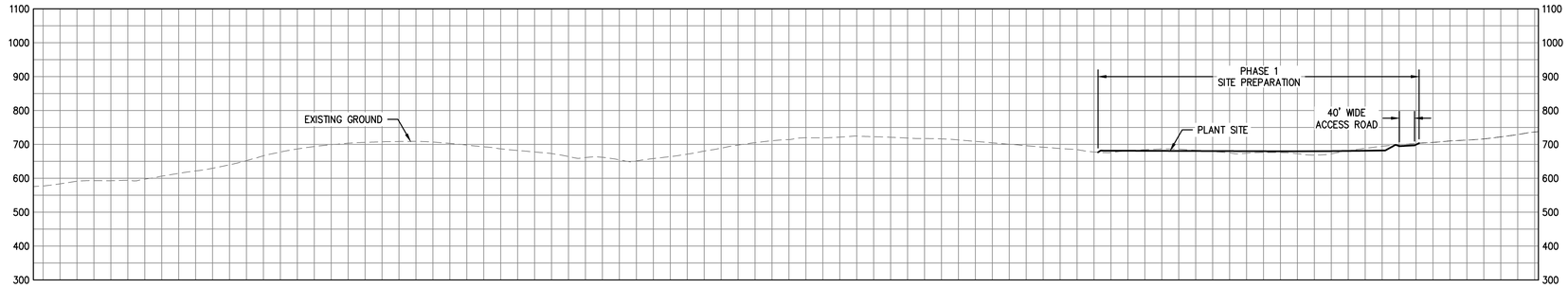
Grading Permit No. _____

FOR REVIEW ONLY

ENGINEER'S NAME: CHANG CONSULTANTS
PHONE NO. (858) 692-0760

FILE NO.

10/16/2019



SECTION: A–A

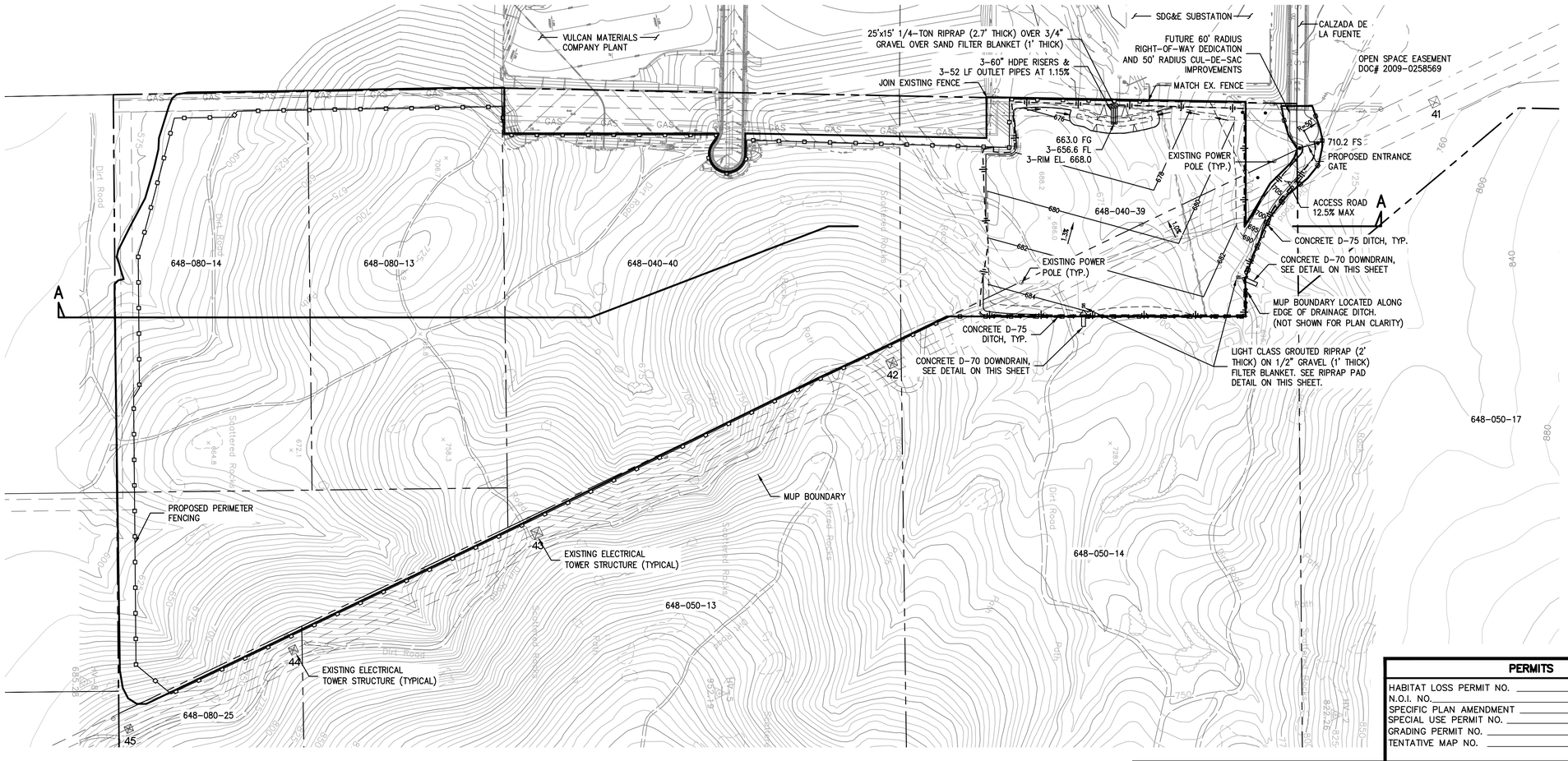
SCALE: HORIZ. 1"=200' VERT. – 1"=200'

NOTE:

SEE SHEET 5 FOR EASEMENTS AND BOUNDARY INFORMATION

EARTHWORK QUANTITIES:

84,800 CY CUT (186,560 TONS)
84,800 CY FILL (186,560 TONS)

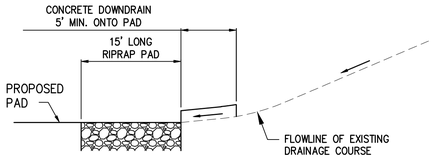


PLAN: PHASE 1 SITE PREPARATION

SCALE: 1"=200'

SCALE: 1" = 200'

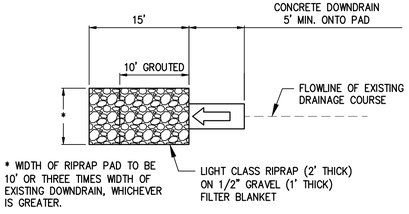
0 100 200 400



CONCRETE DOWNDRAIN DETAIL

NOT TO SCALE

NOTE: CONCRETE DOWNDRAINS AND RIPRAP PADS ARE NOTE NEEDED WHERE NATIVE ROCK IS PRESENT AND WILL RESIST EROSION.



* WIDTH OF RIPRAP PAD TO BE 10' OR THREE TIMES WIDTH OF EXISTING DOWNDRAIN, WHICHEVER IS GREATER.

RIPRAP PAD DETAIL

NOT TO SCALE

COUNTY APPROVED CHANGES

No.	Description	Approved by	Date
	ORIGINAL		5-5-13

PERMITS

HABITAT LOSS PERMIT NO. _____
N.O.I. NO. _____
SPECIFIC PLAN AMENDMENT _____
SPECIAL USE PERMIT NO. _____
GRADING PERMIT NO. _____
TENTATIVE MAP NO. _____

BENCHMARK

DESCRIPTION: COUNTY STATION 0051 007 01

LOCATION: SECTION 32, TOWNSHIP 18 SOUTH, RANGE 1 EAST, SBM
N 1785438.171, E 6363168.576, NAD 83

RECORD FROM: COUNTY OF SAN DIEGO CONTROL POINT INVENTORY

ELEVATION: 733.46 FEET DATUM: NGVD

PRIVATE CONTRACT

SHEET 2 | COUNTY OF SAN DIEGO DEPARTMENT OF PUBLIC WORKS | 6 SHEETS

PLOT PLAN FOR:

OTAY HILLS

PHASE 1 SITE PREPARATION

CALIFORNIA COORDINATE INDEX: 146-1797

Approved
COUNTY ENGINEER
BY: _____
Date

Engineer of work
WAYNE W. CHANG R.C.E. 46548

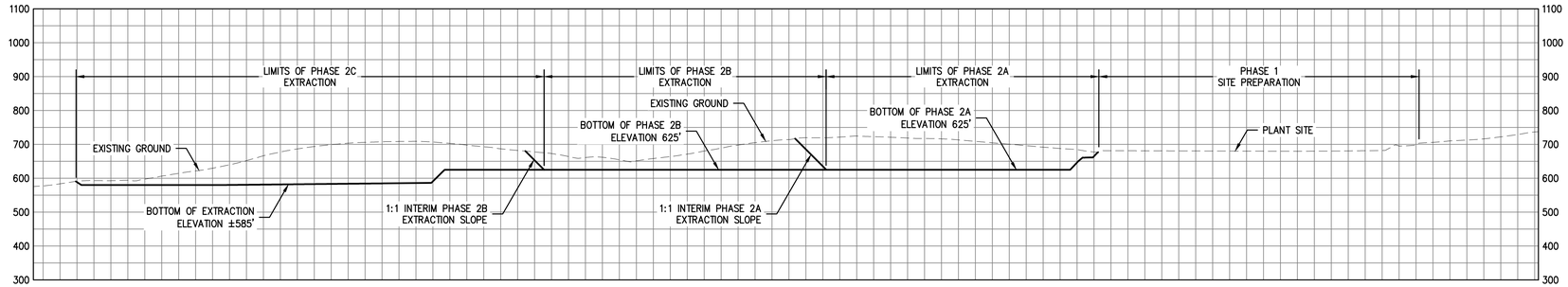
Grading Permit No. _____

FOR REVIEW ONLY

ENGINEER'S NAME: CHANG CONSULTANTS
PHONE NO. (858) 692-0760

FILE NO.

10/13/2019



SECTION: A–A

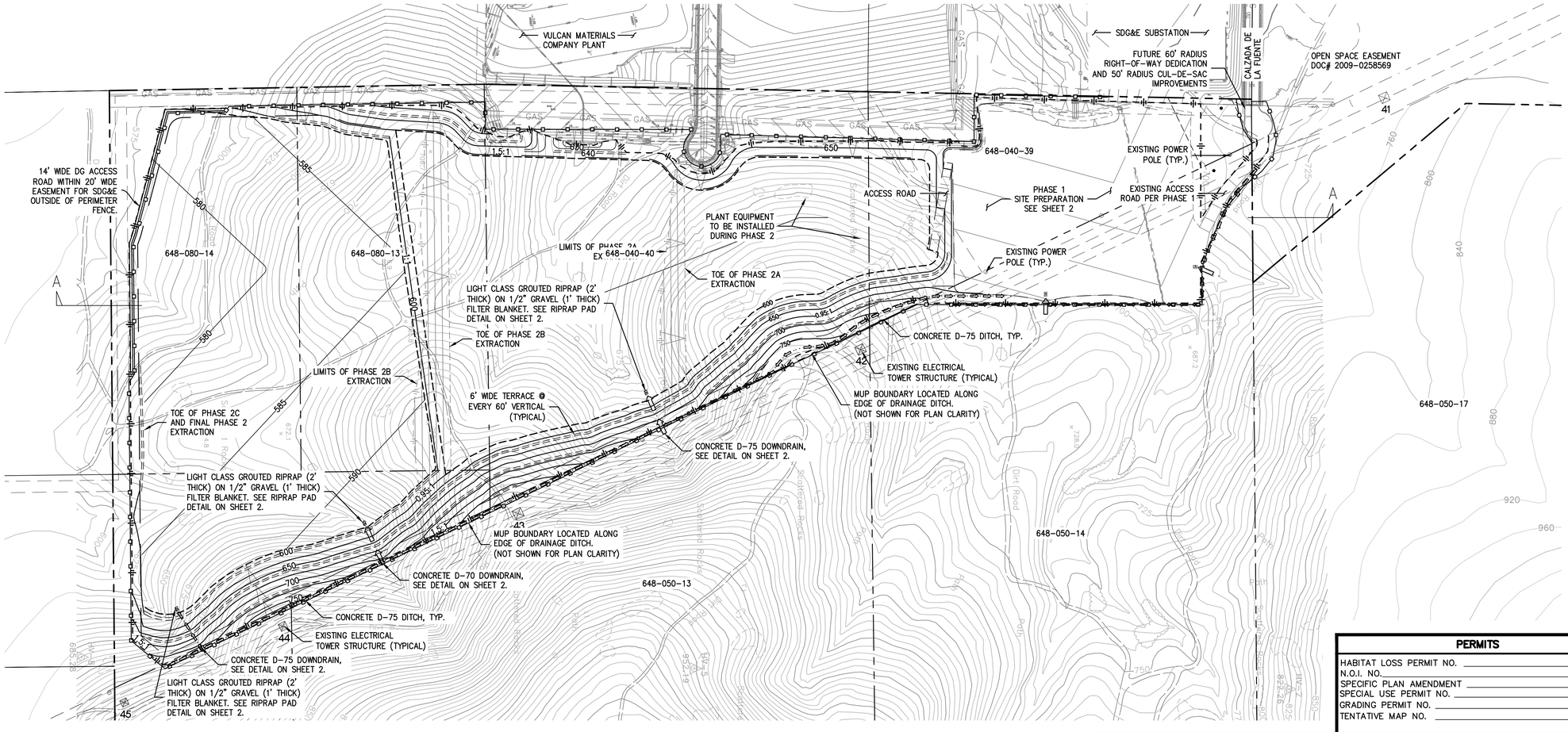
SCALE: HORIZ. 1"=200' VERT. – 1"=200'

NOTE:

SEE SHEET 5 FOR EASEMENTS AND BOUNDARY INFORMATION

EXTRACTION QUANTITIES:

PHASE 2A 1,907,200 CY EXTRACTION (4,195,840 TONS)
PHASE 2B 2,158,000 CY EXTRACTION (4,747,600 TONS)
PHASE 2C 4,778,00 CY EXTRACTION (10,511,600 TONS)



PLAN: PHASE 2 (2A, 2B, & 2C) EXTRACTION

SCALE: 1"=200'

SCALE: 1" = 200'

0 100 200 400

COUNTY APPROVED CHANGES			
No.	Description	Approved by	Date
	ORIGINAL		5-5-13

PERMITS

HABITAT LOSS PERMIT NO. _____
N.O.I. NO. _____
SPECIFIC PLAN AMENDMENT _____
SPECIAL USE PERMIT NO. _____
GRADING PERMIT NO. _____
TENTATIVE MAP NO. _____

BENCHMARK

DESCRIPTION: COUNTY STATION 0051 007 01
LOCATION: SECTION 32, TOWNSHIP 18 SOUTH, RANGE 1 EAST, SBM
N 1785438.171, E 6363168.576, NAD 83
RECORD FROM: COUNTY OF SAN DIEGO CONTROL POINT INVENTORY
ELEVATION: 733.46 FEET DATUM: NGVD

PRIVATE CONTRACT

SHEET 3 | COUNTY OF SAN DIEGO DEPARTMENT OF PUBLIC WORKS | 6 SHEETS

PLOT PLAN FOR:

OTAY HILLS

PHASE 2 (2A, 2B, & 2C) EXTRACTION

CALIFORNIA COORDINATE INDEX: 146–1797

Approved COUNTY ENGINEER
BY: _____ Date

Engineer of work
WAYNE W. CHANG R.C.E. 46548

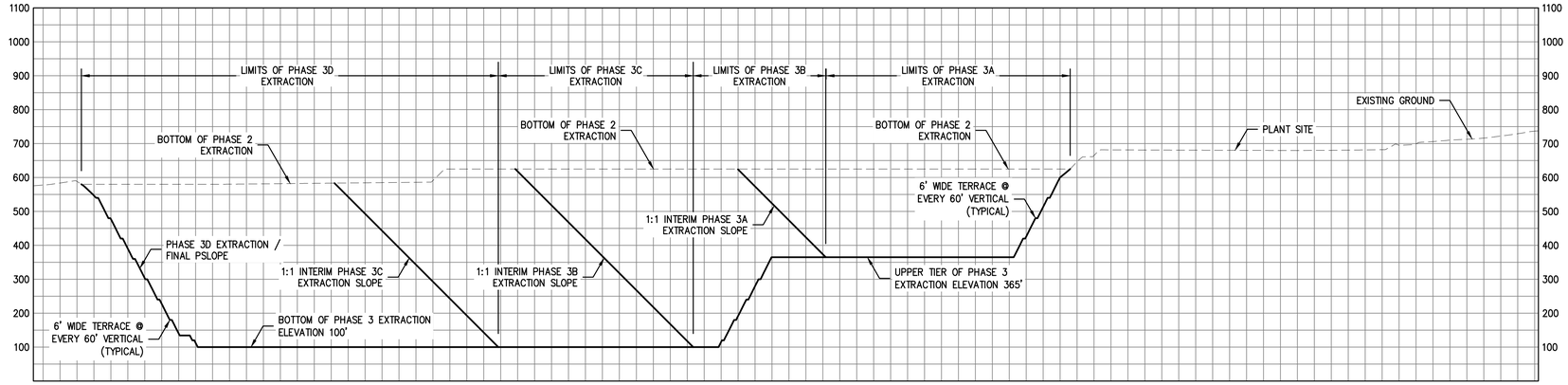
Grading Permit No. _____

FOR REVIEW ONLY

ENGINEER'S NAME: CHANG CONSULTANTS
PHONE NO. (858) 692-0760

FILE NO.

10/16/2019



SECTION: A–A

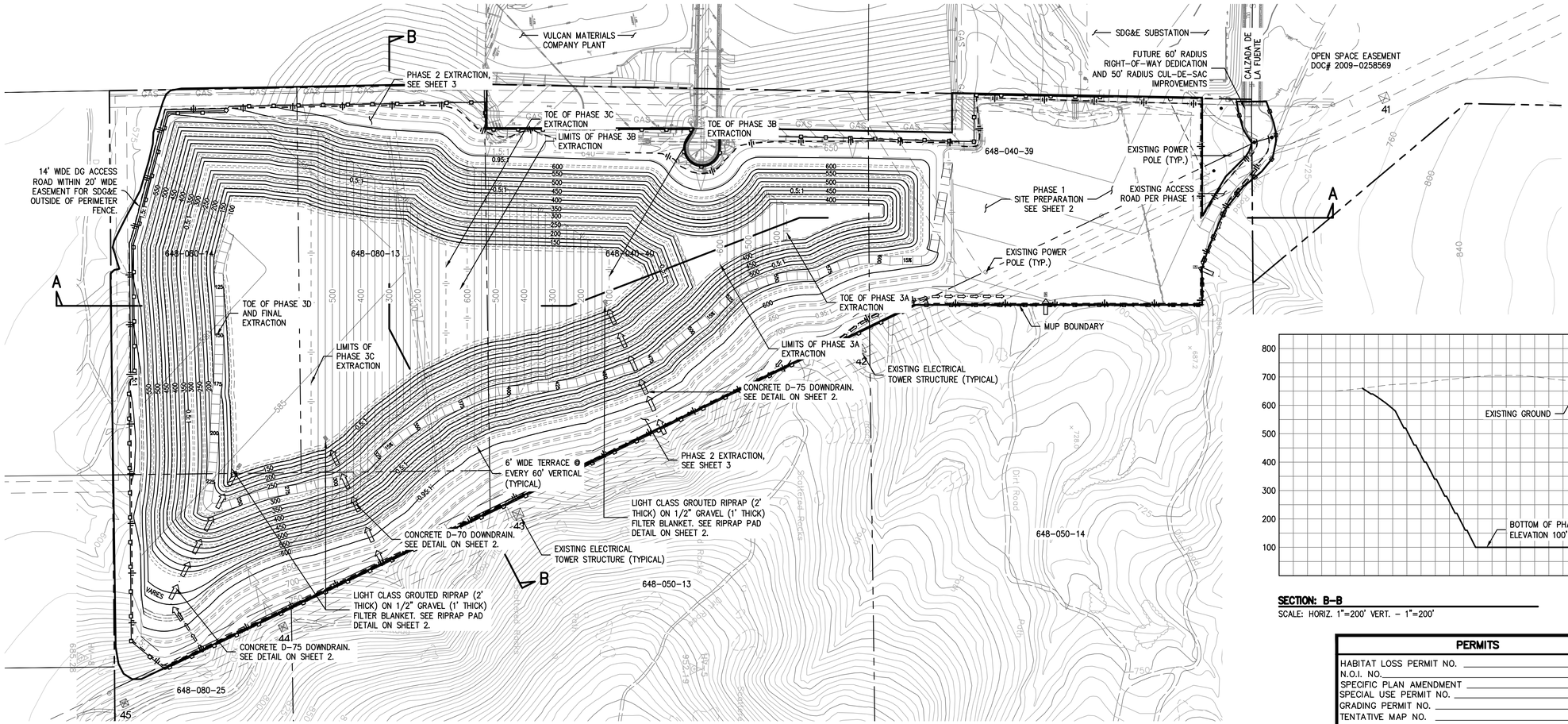
SCALE: HORIZ. 1"=200' VERT. – 1"=200'

NOTE:

SEE SHEET 5 FOR EASEMENTS AND BOUNDARY INFORMATION

EXTRACTION QUANTITIES:

PHASE 3A 1,335,000 CY EXTRACTION (2,937,000 TONS)
PHASE 3B 5,524,000 CY EXTRACTION (12,152,800 TONS)
PHASE 3C 8,298,000 CY EXTRACTION (18,255,00 TONS)
PHASE 3D 14,821,800 CY EXTRACTION (32,607,960 TONS)



PLAN: PHASE 3 (3A, 3B, 3C, & 3D) EXTRACTION

SCALE: 1"=200'

SCALE: 1" = 200'

0 100 200 400

SECTION: B–B

SCALE: HORIZ. 1"=200' VERT. – 1"=200'

PERMITS

HABITAT LOSS PERMIT NO. _____
N.O.I. NO. _____
SPECIFIC PLAN AMENDMENT _____
SPECIAL USE PERMIT NO. _____
GRADING PERMIT NO. _____
TENTATIVE MAP NO. _____

PRIVATE CONTRACT

SHEET	COUNTY OF SAN DIEGO DEPARTMENT OF PUBLIC WORKS	6 SHEETS
4		

PLOT PLAN FOR:

OTAY HILLS

PLAN: PHASE 3 (3A, 3B, 3C, & 3D) EXTRACTION

CALIFORNIA COORDINATE INDEX: 146–1797

COUNTY APPROVED CHANGES

No.	Description	Approved by	Date
	ORIGINAL		5-5-13

BENCHMARK

DESCRIPTION: COUNTY STATION 0051 007 01

LOCATION: SECTION 32, TOWNSHIP 18 SOUTH, RANGE 1 EAST, SBM

N 1785438.171, E 6363168.576, NAD 83

RECORD FROM: COUNTY OF SAN DIEGO CONTROL POINT INVENTORY

ELEVATION: 733.46 FEET DATUM: NGVD

Approved
COUNTY ENGINEER
BY:
Date

Engineer of work
WAYNE W. CHANG R.C.E. 46548

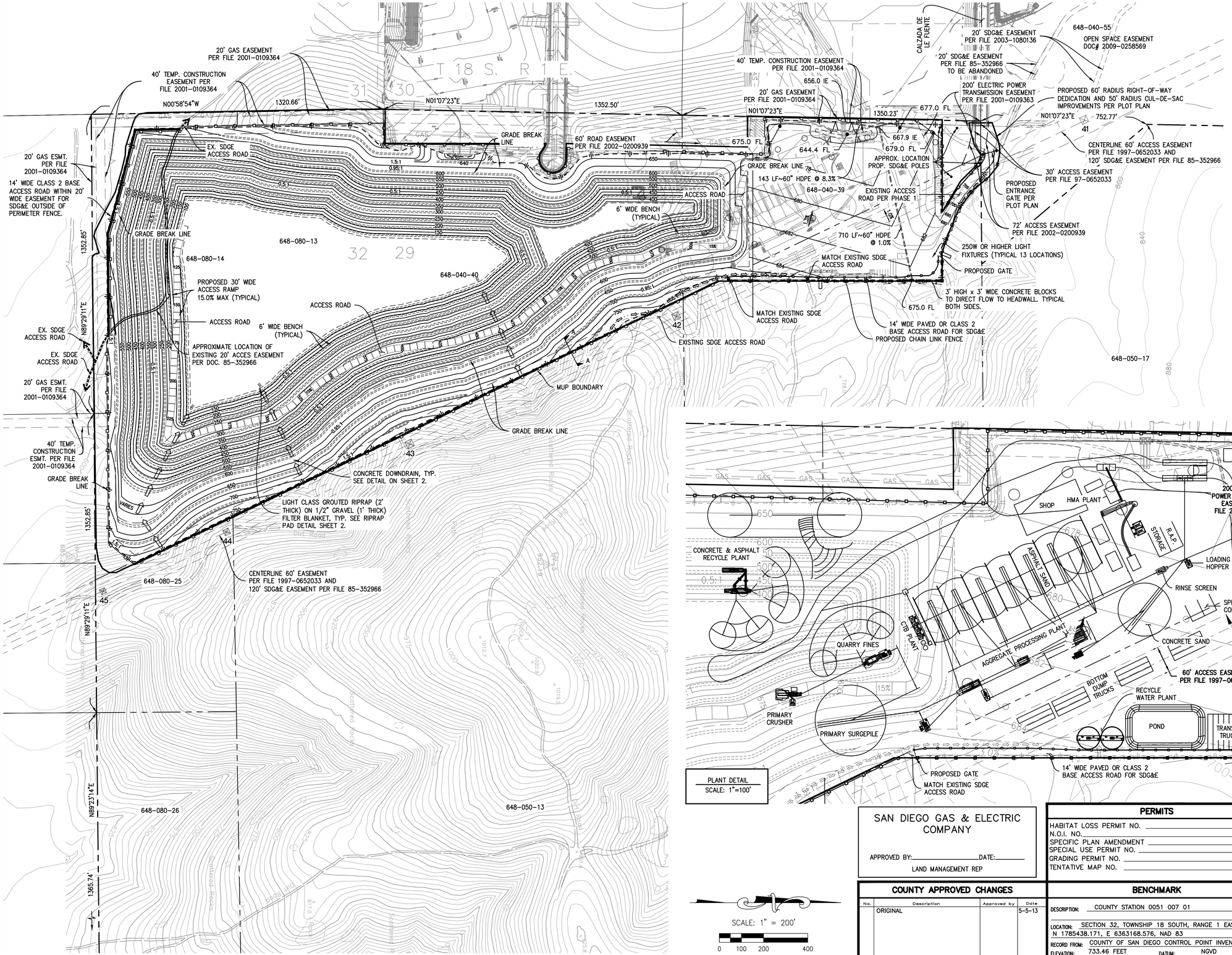
Grading Permit No. _____

FILE NO.

10/16/2019

FOR REVIEW ONLY

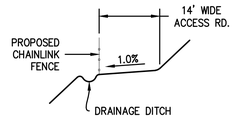
ENGINEER'S NAME: CHANG CONSULTANTS
PHONE NO. (858) 692-0760



A.L.T.A. NOTE:
DECEMBER 2001 A.L.T.A. SURVEY PERFORMED BY ALTA CONSULTANTS WAS USED FOR THE BOUNDARY AND EASEMENTS.

5-FOOT CONTOUR TOPOGRAPHIC MAPPING PREPARED BY TOWILL, INC., DATED APRIL 12, 2000. BENCHMARK AND CONTROL POINTS FOR 5-FOOT TOPOGRAPHIC MAPPING WERE PROVIDED BY BDS ENGINEERING, INC. 40-FOOT CONTOUR TOPOGRAPIC MAPPING FROM THE COUNTY OF SAN DIEGO.

THE DRAINAGE FACILITIES AND FLOW PATTERNS WITHIN THE PLANT SITE AND ABOVE THE FINAL RECLAMATION ELEVATIONS WITHIN THE PIT (SEE RECLAMATION PLAN SHEET 5 FOR FINAL RECLAMATION ELEVATIONS) REPRESENT THE FINAL DRAINAGE CONDITION. THE DRAINAGE FACILITIES AND FLOW PATTERNS BELOW THE FINAL RECLAMATION ELEVATIONS IN THE PIT REPRESENT AN INTERIM DRAINAGE CONDITION. SLOPE ROUNDING AND DRAINAGE DITCHES SHALL BE INSTALLED AT THE TOP OF EACH CUT SLOPE TO PREVENT PONDING ABOVE THE CUT SLOPES. MINE OPERATOR SHALL SLOPE DRAINAGE TERRACES NOT FOUNDED ON ROCK AT 1 PERCENT MINIMUM TO PREVENT PONDING. DOWN DRAINS SHALL BE ADDED TO SLOPING TERRACES AS NEEDED TO PREVENT EROSION OF SLOPE FACE.



SECTION A-A
NOT TO SCALE

PLANT DETAIL
SCALE: 1"=100'

SCALE: 1" = 200'
0 100 200 400

SAN DIEGO GAS & ELECTRIC COMPANY

APPROVED BY:_____ DATE:_____
LAND MANAGEMENT REP

COUNTY APPROVED CHANGES

No.	Description	Approved by	Date
	ORIGINAL		5-5-13

PERMITS

HABITAT LOSS PERMIT NO. _____
N.O.I. NO. _____
SPECIFIC PLAN AMENDMENT _____
SPECIAL USE PERMIT NO. _____
GRADING PERMIT NO. _____
TENTATIVE MAP NO. _____

BENCHMARK

DESCRIPTION: COUNTY STATION 0051 007 01

LOCATION: SECTION 32, TOWNSHIP 18 SOUTH, RANGE 1 EAST, SBM
N 1785438.171, E 6363168.576, NAD 83

RECORD FROM: COUNTY OF SAN DIEGO CONTROL POINT INVENTORY

ELEVATION: 733.46 FEET DATUM: NGVD

PRIVATE CONTRACT

SHEET 5	COUNTY OF SAN DIEGO DEPARTMENT OF PUBLIC WORKS	6 SHEETS

PLOT PLAN FOR:

OTAY HILLS

FINAL EXTRACTION AND EASEMENTS

CALIFORNIA COORDINATE INDEX: 146-1797

Approved
COUNTY ENGINEER
BY: _____
Date

Engineer of work
WAYNE W. CHANG R.C.E. 46548

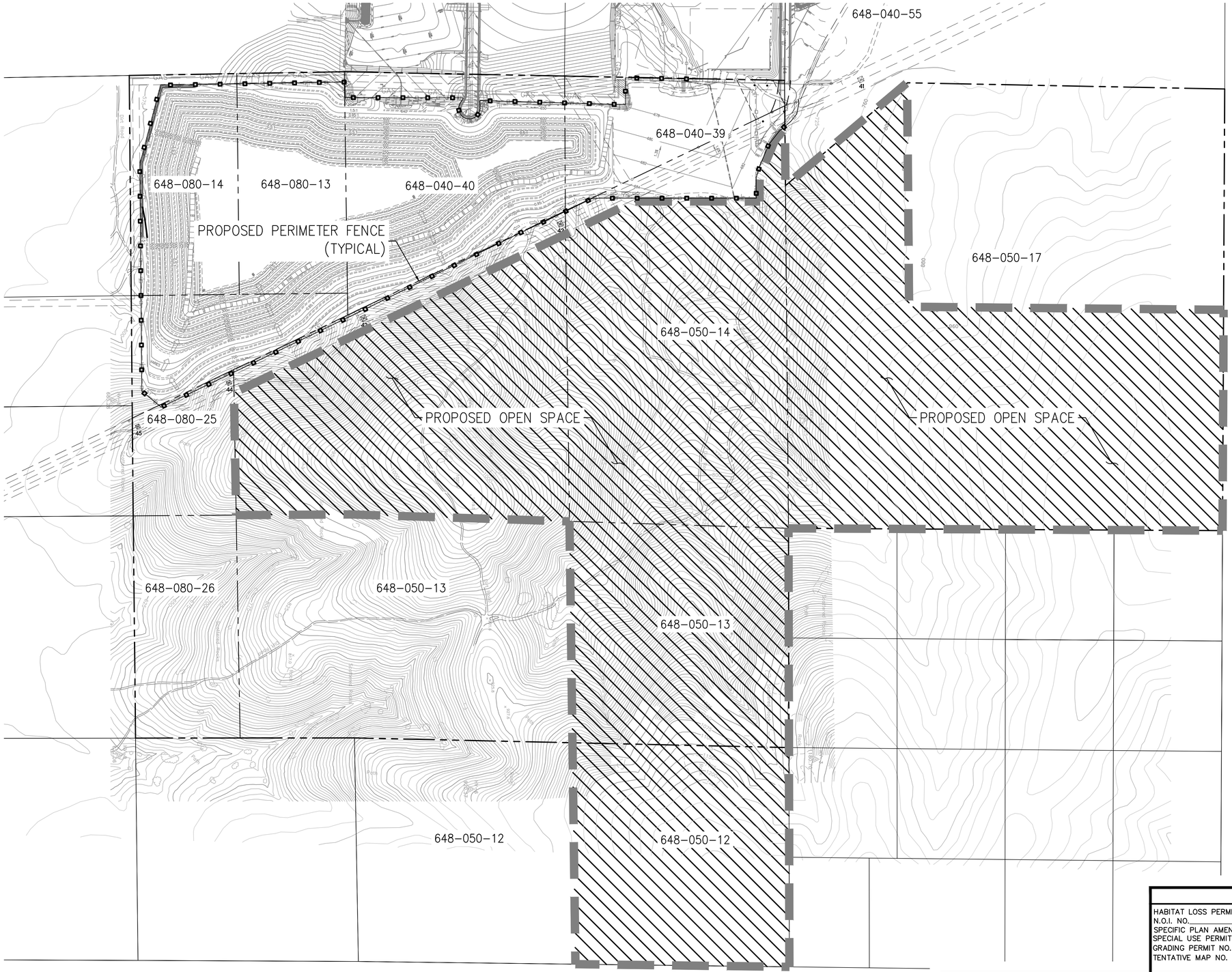
Grading Permit No. _____

FOR REVIEW ONLY

ENGINEER'S NAME: CHANG CONSULTANTS
PHONE NO. (858) 692-0760

FILE NO.

10/16/2019



SCALE: 1" = 300'

0 150 300 600

FOR REVIEW ONLY

COUNTY APPROVED CHANGES			
No.	Description	Approved by	Date
	ORIGINAL		5-5-13

BENCHMARK

DESCRIPTION: COUNTY STATION 0051 007 01

LOCATION: SECTION 32, TOWNSHIP 18 SOUTH, RANGE 1 EAST, SBM
N 1785438.171, E 6363168.576, NAD 83

RECORD FROM: COUNTY OF SAN DIEGO CONTROL POINT INVENTORY

ELEVATION: 733.46 FEET DATUM: NGVD

PERMITS

HABITAT LOSS PERMIT NO. _____
N.O.I. NO. _____
SPECIFIC PLAN AMENDMENT _____
SPECIAL USE PERMIT NO. _____
GRADING PERMIT NO. _____
TENTATIVE MAP NO. _____

PRIVATE CONTRACT

SHEET 6 | COUNTY OF SAN DIEGO DEPARTMENT OF PUBLIC WORKS | 6 SHEETS

PLOT PLAN FOR:

OTAY HILLS

OPEN SPACE MAP

CALIFORNIA COORDINATE INDEX: 146-1797

Approved
COUNTY ENGINEER
BY: _____ Date

Engineer of work
WAYNE W. CHANG R.C.E. 46548

Grading Permit No. _____

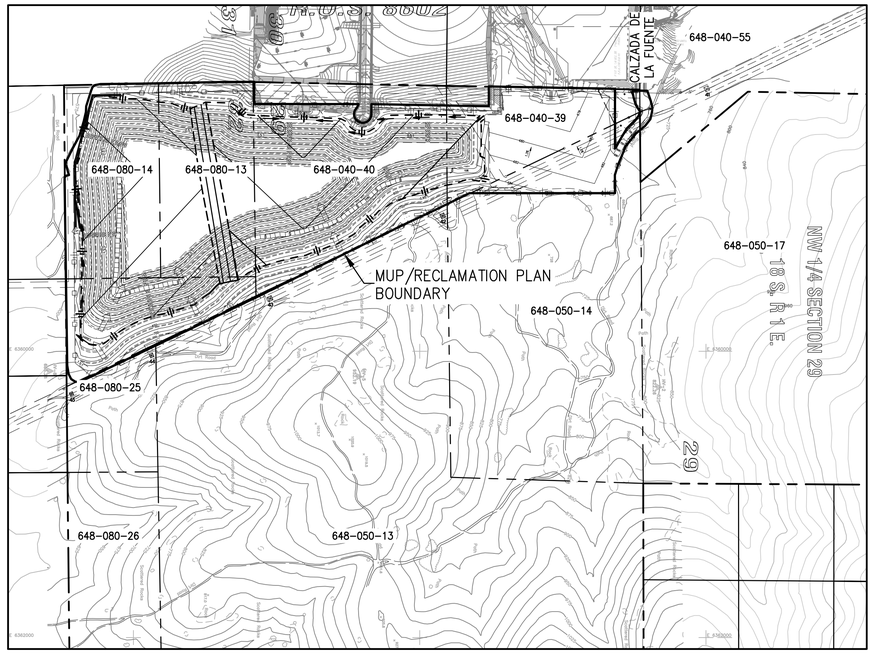
ENGINEER'S NAME: CHANG CONSULTANTS
PHONE NO. (858) 692-0760

FILE NO.

10/16/2019

OTAY HILLS QUARRY

MINERAL RESOURCE RECOVERY



GRADING NOTES

1. THE ENGINEER OF WORK WILL NOT ENFORCE SAFETY MEASURES OR REGULATIONS. THE OWNER SHALL DESIGN, CONSTRUCT AND MAINTAIN ALL SAFETY DEVICES, AND SHALL BE SOLELY RESPONSIBLE FOR CONFORMING TO ALL LOCAL, STATE AND FEDERAL SAFETY AND HEALTH STANDARDS, LAWS AND REGULATIONS.
2. APPROVAL OF THESE PLANS DOES NOT CONSTITUTE APPROVAL OF VERTICAL OR HORIZONTAL ALIGNMENT OF ANY PRIVATE ROAD SHOWN HEREON FOR COUNTY ROAD PURPOSES.
3. A CONSTRUCTION, EXCAVATION OR ENCROACHMENT PERMIT FROM THE DIRECTOR OF PUBLIC WORKS WILL BE REQUIRED FOR ANY WORK IN THE COUNTY RIGHT-OF-WAY.
4. THE CONTRACTOR SHALL VERIFY THE EXISTENCE AND LOCATION OF ALL UTILITIES BEFORE COMMENCING WORK. NOTICE OF THE PROPOSED WORK SHALL BE GIVEN TO THE FOLLOWING AGENCIES.

SAN DIEGO GAS & ELECTRIC	1-800-227-2600
PACIFIC BELL	1-800-227-2600
CABLE TELEVISION	1-800-227-2600
OTAY WATER DISTRICT	1-800-227-2600

5. PROTECTION OF EXISTING UTILITIES:

   THE OWNER IS REQUIRED TO TAKE PRECAUTIONARY MEASURES TO PROTECT THE UTILITY LINES SHOWN AND ANY OTHER LINES NOT OF RECORD OR NOT SHOWN ON THESE PLANS. ANY PAVEMENT OR OTHER EXISTING SURFACE IMPROVEMENTS DAMAGED BY THE OWNER SHALL BE REPLACED AS REQUIRED BY THE COUNTY OF SAN DIEGO ENGINEERING DEPARTMENT. EXISTING UTILITIES SHOWN HEREON ARE PLOTTED FROM RECORD DATA AND MAY NOT NECESSARILY BE WHERE SHOWN. IT IS THE OWNER'S RESPONSIBILITY TO DETERMINE LOCATION PRIOR TO CONSTRUCTION.
6. BRUSH REMOVAL:

   BRUSH SHALL BE REMOVED ONLY WITHIN THE AREA TO BE GRADED.

   FINISH GRADING:

   CUT AND FILL SLOPES SHALL BE TRIMMED TO THE FINISH GRADE TO PRODUCE A GENERALLY UNIFORM SURFACE OR CROSS SECTION. THE FINAL SLOPES OF EXCAVATIONS OR EMBANKMENTS SHALL BE SHAPED AND TRIMMED AS DIRECTED BY THE ENGINEER OF WORK AND LEFT IN A NEAT AND ORDERLY CONDITION. ALL STONES, ROOTS, OR OTHER WASTE EXPOSED ON EXCAVATION OR EMBANKMENT SLOPES SHALL BE REMOVED AND DISPOSED OF.
7. GENERAL UTILITY NOTES

   EXPLORATORY EXCAVATION REQUIRED:

   OWNER WILL MAKE EXPLORATORY EXCAVATIONS AND LOCATE EXISTING UNDERGROUND FACILITIES SUFFICIENTLY AHEAD OF EXCAVATION TO PREVENT DAMAGE TO SAID UTILITES.

   ALL EXISTING UTILITIES WITHIN THE SITE, AND THOSE ADJACENT TO THE SITE WHICH ARE AFFECTED BY THE WORK PROPOSED TO BE DONE ARE SHOWN ON THIS PLAN. THE UTILITY COMPANIES HAVE REVIEWED THESE PLANS AND ARE SATISFIED WITH THE ARRANGEMENTS MADE BY THE PERMITEE TO PROTECT OR RELOCATE THE UTILITIES.
8. IT SHALL BE THE OWNER'S RESPONSIBILTY TO BACKFILL ALL WELLS, SEPTIC TANKS, AND CISTERNS FOUND ON SITE.
9. EXISTING UTILITIES OR STRUCTURES ARE SHOWN ACCORDING TO THE RECORDS OF THE FOLLOWING COMPANIES AND HAVE BEEN EXAMINED TO VERIFY THAT THEY OWN NO UTILITIES OR STRUCTURES WHICH WILL BE AFFECTED BY THE PROPOSED GRADING.
10. 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.
11. ALL OPERATIONS CONDUCTED ON THE PREMISES, INCLUDING THE WARMING UP, REPAIR, ARRIVAL, DEPARTURE OR RUNNING OF TRUCKS, EARTHMOVING EQUIPMENT, CONSTRUCTION EQUIPMENT AND ANY OTHER ASSOCIATED GRADING EQUIPMENT SHALL BE ACCORDING TO THE PERIOD SPECIFIED IN THE MAJOR USE PERMIT.
12. NOTWITHSTANDING THE MINIMUM STANDARDS SET FORTH IN THE GRADING ORDINANCE AND NOTWITHSTANDING THE APPROVAL OF THESE RECLAMATION PLANS, THE PERMITTEE IS RESPONSIBLE FOR THE PREVENTION OF DAMAGE TO THE 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 FORM THE GRADING DESCRIBED ON THIS PLAN. THE COUNTY WILL HOLD THE PERMITTEE RESPONSIBLE FOR CORRECTION OF NON-DEDICATED IMPROVEMENTS WHICH DAMAGE ADJACENT PROPERTY.
13. SLOPE RATIOS:

    CUT - 0.5:1 (MAXIMUM) FOR SLOPES APPROVED BY SOILS ENGINEER

    FILL - 2:1 (MAXIMUM) FOR ALL SLOPES
14. IF ANY ARCHAEOLOGICAL RESOURCES ARE DISCOVERED ON THE SITE DURING GRADING OPERATIONS, SUCH OPERATIONS WILL CEASE IMMEDIATELY AND THE PERMITTEE WILL NOTIFY THE DIRECTOR OF PUBLIC WORKS OF THE DISCOVERY. GRADING OPERATIONS WILL NOT RECOMMENCE UNTIL THE PERMITTEE HAS RECEIVED WRITTEN AUTHORITY FROM THE DIRECTOR OF PUBLIC WORKS TO DO SO.
15. ALL GRADING DETAILS WILL BE IN ACCORDANCE WITH THE COUNTY OF SAN DIEGO GRADING ORDINANCE AND STANDARD DRAWINGS DS-10, DS-11 AND SAN DIEGO REGIONAL STANDARD DRAWINGS.
16. COMPACTION TESTING AND A COMPACTION REPORT IS REQUIRED FOR ALL FINISH PADS THAT ARE OVER 12" IN DEPTH.
17. FINISHED GRADING SHALL BE CERTIFIED BY A REGISTERED CIVIL GEOTECHNICAL ENGINEER AND INSPECTED BY THE COUNTY ENGINEER FOR DRAINAGE CLEARANCE. (APPROVAL OF ROUGH GRADING DOES NOT CERTIFY FINISH GRADING BECAUSE OF POTENTIAL SURFACE DRAINAGE PROBLEMS THAT MAY BE CREATED BY LANDSCAPING ACCOMPLISHED AFTER ROUGH GRADING CERTIFICATION.)

SITE RECLAMATION NOTES:

1. SOIL EROSION CONTROL: REMOVAL OF NATIVE VEGETATION WILL BE LIMITED TO AREAS WHERE EXTRACTIVE OPERATIONS ARE TO BE ACTIVELY CARRIED ON. STOCK PILES WILL BE MANAGED SO AS TO MINIMIZE WIND AND WATER EROSION.
2. WATER QUALITY AND WATERSHED CONTROL: TEMPORARY PILOT CHANNELS OR OTHER SUCH DIVERSIONS SHALL BE RESTORED IN THE FINAL RECLAMATION WHEREVER PRACTICABLE. ALL OPERATIONS SHALL BE CONDUCTED IN COMPLIANCE WITH U.S. ENVIRONMENTAL PROTECTION AGENCY, REGIONAL WATER QUALITY CONTROL BOARD, STATE FISH AND GAME, AND THE COUNTY OF SAN DIEGO REGULATIONS AND REQUIREMENTS.
3. FLOOD CONTROL: FLOOD CONTROL MEASURES SHALL BE MADE IN COMPLIANCE WITH THE REQUIREMENTS OF THE COUNTY OF SAN DIEGO, STATE RECLAMATION BOARD, U.S. ARMY CORPS OF ENGINEERS, AND THE STATE DEPARTMENT OF FISH AND GAME.
4. PROTECTION OF FISH AND WILDLIFE HABITAT: ALL REASONABLE MEASURES SHALL BE TAKEN TO PROTECT THE HABITAT OF FISH AND WILDLIFE.
5. DISPOSAL OF MINE WASTE ROCK AND OVERBURDEN: WASTE ROCK WILL BE SOLD OR USED ON-SITE AS RIPRAP. SAND AND GRAVEL WILL BE SOLD IMMEDIATELY AFTER EXCAVATION. AFTER TERMINATION OF OPERATIONS, ALL EQUIPMENT WILL BE REMOVED FROM THIS SITE AND NO PERMANENT PILES OR DUMPS OF WASTE MATERIAL WILL REMAIN.
6. SOIL SALVAGE: ON-SITE SUBSOIL AND SILT WILL BE BLENDED WITH SOILS AND WILL BE USED FOR REVEGETATING THE FACE OF EXPOSED FINAL CUT SLOPES AND OTHER DISTURBED AREAS, EXCEPT ROCK FACES. A SOILS SURVEY MAY BE REQUIRED IN THE FUTURE PRIOR TO ISSUANCE OF ANY BUILDING PERMITS.
7. FINAL SLOPE GRADIENT: CUT AND FILL SLOPES SHALL HAVE RATIOS IN ACCORDANCE WITH GRADING NOTE 15 UNLESS OTHERWISE APPROVED AND SHALL BE TRIMMED TO THE FINISH GRADE TO PRODUCE A SMOOTH AND UNIFORM SHALL BE SHAPED AND TRIMMED AND LEFT IN A NEAT AND ORDERLY CONDITION. TEMPORARY VERTICAL CUTS IN INCREMENTS OF 100 FEET SHALL BE PERMITTED UNTIL THE END OF THE WORKING WEEK AT WHICH TIME THE VERTICAL CUT MUST BE BACKFILLED.
8. BACKFILLING AND GRADING: GRADING SHALL CONSIST OF THE CONSTRUCTION OF ALL CUTS AND FILLS AS SHOWN. WELLS, SEPTIC TANKS, AND CISTERNS FOUND ON THE SITE SHALL BE BACKFILLED, ALONG WITH NECESSARY BACKFILLING OF TEMPORARY VERTICAL CUTS AT THE END OF THE WORKING WEEK.
9. EROSION AND DRAINAGE: GRADING AND REVEGETATION SHALL BE DESIGNED TO BOTH PREVENT EXCESSIVE EROSION AND TO CONVEY SURFACE RUNOFF TO NATURAL DRAINAGE COURSES.
10. RESOILING: NO RESOILING IS ANTICIPATED EXCEPT TOPSOIL.
11. REVEGETATION: REVEGETATION BY NATURAL SOURCES.
12. THE PREMISES TO BE GRADED, AND ALL OPERATIONS ON SAID PREMISES SHALL BE CONDUCTED SO THAT THERE IS NO PONDING OR ACCUMULATION OF SURFACE WATER THAT COULD CONSTITUTE A HEALTH AND/OR SAFETY HAZARD TO PERSONS OR PROPERTY, AND SO THERE IS NO PONDING OR ACCUMULATION OF SURFACE WATERS WHICH, IN THE OPINION OF A COUNTY HEALTH OFFICER, WOULD OR COULD PROVIDE A PLACE FOR THE DEVELOPMENT OF HARBORAGE OF INSECTS OR PESTS THAT COULD CAUSE ANNOYANCE OR CONSTITUTE A NUISANCE TO PERSONS OR PROPERTY IN THE VICINITY OF SUCH PREMISES.
13. COUNTY ENGINEER APPROVAL OF THESE PLANS DOES NOT CONSTITUTE APPROVAL OF ANY WAIVER OF THE TWO FEET (2') OF EXPANSIVE SOIL COVER REQUIRED BY SECTION 87.403 AND THREE FEET (3') OF EXPANSIVE SOIL COVER REQUIRED BY SECTION 87.410 OF THE SAN DIEGO COUNTY GRADING ORDINANCE. ANY SUCH WAIVER MUST BE OBTAINED FROM THE DIRECTOR OF BUILDING INSPECTION.
14. NOTWITHSTANDING THE MINIMUM STANDARDS SET FORTH IN THE GRADING ORDINANCE AND NOT WITHSTANDING THE APPROVAL OF THESE GRADING PLANS, THE PERMITTEE IS RESPONSIBLE FOR THE PREVENTION OF DAMAGE TO THE ADJACENT PROPERTY. NO PERSON SHALL EXCAVATE ON LAND SO CLOSE TO THE PROPERTY LINE AS TO ENDANGER ANY ADJOINING PUBLIC STREET, SIDEWALK, ALLEY 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.
15. ALL LANDSCAPING AND FENCING SHALL BE ADEQUATELY MAINTAINED AT ALL TIMES.

PROJECT PHASING

THE PROPOSED MINERAL RESOURCE RECOVERY PROJECT WOULD CONSIST OF SITE PREPARATION FOR THE PROCESSING PLANT EQUIPMENT AND A PHASED EXTRACTION AND BACKFILLING OPERATION. ONGOING BACKFILLING OF THE SITE DURING THE OPEN PIT EXTRACTION PHASE OF THE PROJECT WILL ALLOW RECLAMATION TO PROGRESS CONCURRENTLY WITH THE EXTRACTION OPERATION.

PHASE 1 – SITE PREPARATION

PHASE 1 INVOLVES SITE PREPARATION ACTIVITIES PRIOR TO MINING INCLUDING INITIAL GRADING TO ESTABLISH ACCESS ROUTES, EXTENDING WATER AND POWER SERVICE TO THE SITE, AND GRADING PAD AREAS FOR THE PROCESSING PLANT LOCATION. CONSTRUCTION OF THE PROCESSING PLANTS AND SITE OFFICE WILL ALSO BE COMMENCED.

PHASE 2 – EXTRACTION TO NATURAL GRADE ELEVATION

PHASE 2 WILL INVOLVE COMMENCEMENT OF EXTRACTIVE OPERATIONS WITHIN THE EXTRACTION FOOTPRINT. THIS PHASE IS DIVIDED INTO THREE SUB PHASES, WITH PHASE 2A OCCURRING IN THE NORTH AND ENDING WITH PHASE 2C IN THE SOUTH. PHASE 2 WILL CONSIST OF CUTTING THE LANDFORM TO THE NATURAL GRADE ELEVATION THAT EXISTS ALONG THE WESTERN PERIMETER OF THE SITE. THE NATURAL GRADE ELEVATION OF THE MESA (WEST OF THE SITE) RANGES BETWEEN 580 AND 630 FEET AMSL.

DURING PHASE 2, EXTRACTIVE OPERATIONS ARE EXPECTED TO REMOVE 21.1 MILLION TONS AND WILL CONTINUE FOR APPROXIMATELY 22 YEARS DEPENDING ON THE DEMAND FOR AGGREGATE RESOURCES.

PHASE 3 – OPEN PIT EXTRACTION

LIKE PHASE 2, PHASE 3 IS DIVIDED INTO SUB PHASES. PHASES 3A THROUGH 3D WILL ALSO PROGRESS IN A NORTH TO SOUTH DIRECTION. EXTRACTION OPERATIONS THAT WILL OCCUR DURING PHASES 3B THROUGH 3D WILL EXTEND TO A MAXIMUM DEPTH OF APPROXIMATELY 525 FEET FROM THE EXISTING GRADE. AS PART OF THE RECLAMATION PROCESS, THE SITE WILL BE UTILIZED AS AN INERT DEBRIS ENGINEERED FILL OPERATION (IDEFO). BACKFILLING IS EXPECTED TO CONTINUE THROUGHOUT THE PHASE 3 OPERATIONS, ON A PHASE-BY-PHASE BASIS.

THE PHASE 3 OPERATIONS ARE EXPECTED TO REMOVE APPROXIMATELY 68.0 MILLION TONS AND WILL CONTINUE FOR APPROXIMATELY 68 YEARS, DEPENDING ON THE DEMAND FOR AGGREGATE RESOURCES.

PHASE 4 (RECLAMATION) –
INERT DEBRIS ENGINEERED FILL OPERATION (LANDFILL)

AS EXTRACTION OPERATIONS ADVANCE IN PHASE 3, THE PIT WILL BE BACKFILLED WITH INERT FILL MATERIAL (FILL DIRT) ON A PHASE-BY-PHASE BASIS. IT IS ANTICIPATED THAT THIS WILL REQUIRE APPROXIMATELY 32.0 MILLION CUBIC YARDS OF IMPORTED FILL MATERIAL AND WILL TAKE APPROXIMATELY 67 YEARS TO COMPLETE.

KEY MAP

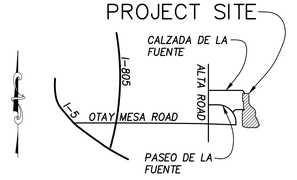
SCALE

0 250 500 1000 1500 2000

(IN FEET)
1 inch = 500 ft.

VICINITY MAP

NO SCALE



SHEET INDEX

LEGAL DESCRIPTION

THE REAL PROPERTY CONSISTS OF PARCELS WITHIN THE FOLLOWING AREAS WITHIN TOWNSHIP 18 SOUTH, RANGE 1 EAST, SAN BERNARDINO MERIDIAN:

- A PORTION OF THE NORTHEAST QUARTER OF SECTION 30
- A PORTION OF THE NORTHWEST QUARTER OF SECTION 29 AND THE NORTHEAST QUARTER OF SECTION 30
- A PORTION OF THE NORTHWEST QUARTER OF THE SOUTHWEST QUARTER OF SECTION 29
- A PORTION OF THE SOUTHWEST QUARTER AND THE SOUTHEAST QUARTER OF THE SOUTHWEST QUARTER OF SECTION 29
- A PORTION OF THE EAST ONE HALF OF THE NORTHEAST QUARTER OF SECTION 30 AND A PORTION OF THE NORTHWEST QUARTER OF SECTION 29
- THE WEST ONE HALF OF THE SOUTHEAST QUARTER OF SECTION 29, A PORTION OF THE SOUTHWEST QUARTER OF SECTION 29, TOGETHER WITH THE NORTH ONE HALF OF THE NORTHWEST QUARTER OF THE NORTHEAST QUARTER OF SECTION 32 AND A PORTION OF THE NORTH ONE HALF OF THE NORTHEAST QUARTER OF THE NORTHWEST QUARTER OF SECTION 32
- THE NORTHWEST QUARTER OF THE NORTHWEST QUARTER OF SECTION 32
- A PORTION OF THE NORTHEAST QUARTER OF THE NORTHWEST QUARTER OF SECTION 32

PROJECT DESCRIPTION

THE PROJECT PROPOSES A MINERAL RESOURCE RECOVERY OPERATION AND ASSOCIATED ACTIVITIES TO CREATE CONSTRUCTION AGGREGATES AND MATERIALS. DURING AND AFTER MINERAL RESOURCE RECOVERY OPERATIONS, THE OPEN PIT WILL SERVE AS A RECEIVER SITE FOR INERT DEBRIS SUCH AS CONCRETE, ASPHALT, ROCK, AND SOIL. THE PLOT PLAN ALLOWS OVER 89.2 MILLION TONS OF EXCAVATION. MINERAL RESOURCE RECOVERY OPERATIONS WILL BE THROUGH THE USE OF DRILLING AND BLASTING TO FRACTURE ROCKS, WHICH WILL THEN BE CRUSHED AND SORTED. CONCRETE AND AND ASPHALT BATCH PLANTS, AND CEMENT TREATED BASE AND RECYCLED CTB PLANTS WILL BE LOCATED ON-SITE. SITE ACCESS WILL BE FROM ALTA ROAD.

WORK TO BE DONE

THE IMPROVEMENTS CONSIST OF THE FOLLOWING WORK TO BE DONE IN ACCORDANCE WITH THESE PLANS , THE STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION (2003 EDITION), THE REGIONAL SUPPLEMENT AMENDMENTS (2003 EDITION), THE SAN DIEGO AREA REGIONAL STANDARD DRAWINGS (DATED JULY 2000).

OWNERS

OTAY HILLS, LLC
1508 MISSION ROAD
ESCONDIDO, CA 92029
(760) 745-0556

RANCHO VISTA DEL MAR,
D&D LANDHOLDINGS AND
KYDDLF & RDLFG FT NO 1 LLC, C/O NATIONAL ENTERPRISES
5440 MOREHOUSE DRIVE, SUITE 4000
SAN DIEGO, CA 92121

PERMITTEE

SUPERIOR READY MIX CONCRETE
1508 W. MISSION ROAD
ESCONDIDO, CA. 92029
(760) 745-0556

ASSESSOR'S PARCEL NUMBERS

648-050-13, & 14
648-080-13, 14, & 25
648-040-39, 40, 55

DECLARATION OF RESPONSIBLE CHARGE

I HEREBY DECLARE THAT I AM THE ENGINEER OF WORK FOR THIS PROJECT, THAT I HAVE EXERCISED RESPONSIBLE CHARGE OVER THE DESIGN OF THE PROJECT AS DEFINED IN SECTION 6703 OF THE BUSINESS AND PROFESSIONS CODE, AND THAT THE DESIGN IS CONSISTENT WITH CURRENT STANDARDS.

I UNDERSTAND THAT THE CHECK OF PROJECT DRAWINGS AND SPECIFICATIONS BY THE COUNTY OF SAN DIEGO IS CONFINED TO A REVIEW ONLY AND DOES NOT RELIEVE ME, AS ENGINEER OF WORK, OF MY RESPONSIBILITIES FOR PROJECT DESIGN.

WAYNE W. CHANG
CHANG CONSULTANTS
P.O. BOX 9496
RANCHO SANTA FE, CA 92067
PHONE: (858) 692-0760

BY: DATE:
WAYNE W. CHANG, R.C.E. 46548

LEGEND

	SYMBOL
EXISTING CONTOUR	~925~
EXISTING SPOT ELEVATION	x 1012.7
PROPOSED CONTOUR	—685—
PROPOSED GRADE	1.0%
FINISH GRADE ELEVATION	FG 673.0
MUP BOUNDARY	
PROPOSED SLOPE	
DIRECTION OF DRAINAGE (EARTHEN SWALE)	
PROPOSED RIPRAP	

FOR REVIEW ONLY

PERMITS	
HABITAT LOSS PERMIT NO.	
N.O.I. NO.	
SPECIFIC PLAN AMENDMENT	
SPECIAL USE PERMIT NO.	
GRADING PERMIT NO.	
TENTATIVE MAP NO.	

PRIVATE CONTRACT

SHEET		
1	COUNTY OF SAN DIEGO DEPARTMENT OF PUBLIC WORKS	7 SHEETS

RECLAMATION PLAN FOR:

OTAY HILLS

COVER SHEET

CALIFORNIA COORDINATE INDEX: 146-1797

COUNTY APPROVED CHANGES

No.	Description	Approved by	Date
	ORIGINAL		5-5-13

BENCHMARK

DESCRIPTION: COUNTY STATION 0051 007 01

LOCATION: SECTION 32, TOWNSHIP 18 SOUTH, RANGE 1 EAST, SBM
N 1785438.171, E 6363168.576, NAD 83

RECORD FROM: COUNTY OF SAN DIEGO CONTROL POINT INVENTORY

ELEVATION: 733.46 FEET DATUM: NGVD

Approved
COUNTY ENGINEER
BY:
Date

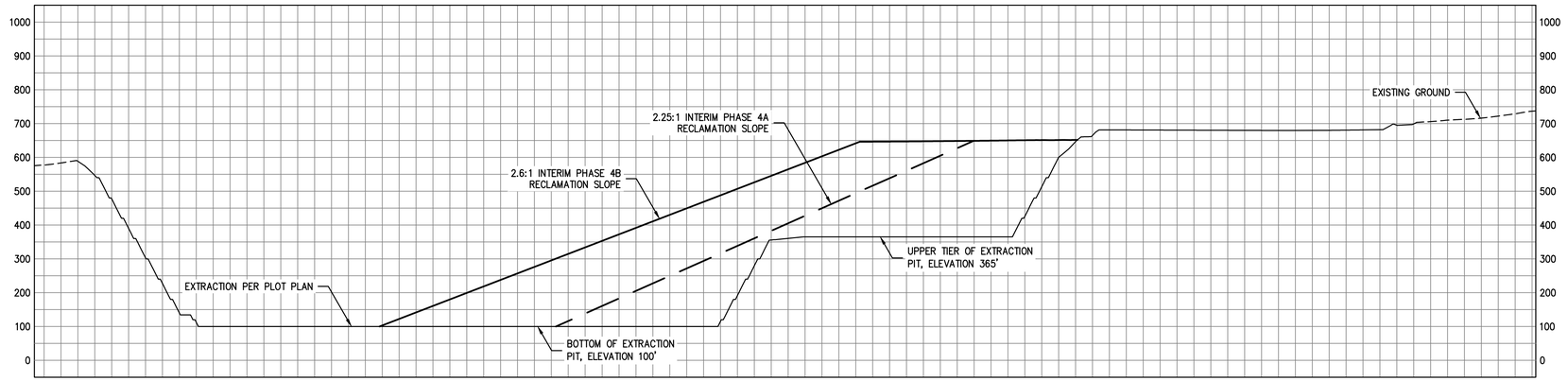
Engineer of work
WAYNE W. CHANG R.C.E. 46548

Grading Permit No.

ENGINEER'S NAME: CHANG CONSULTANTS
PHONE NO. (858) 692-0760

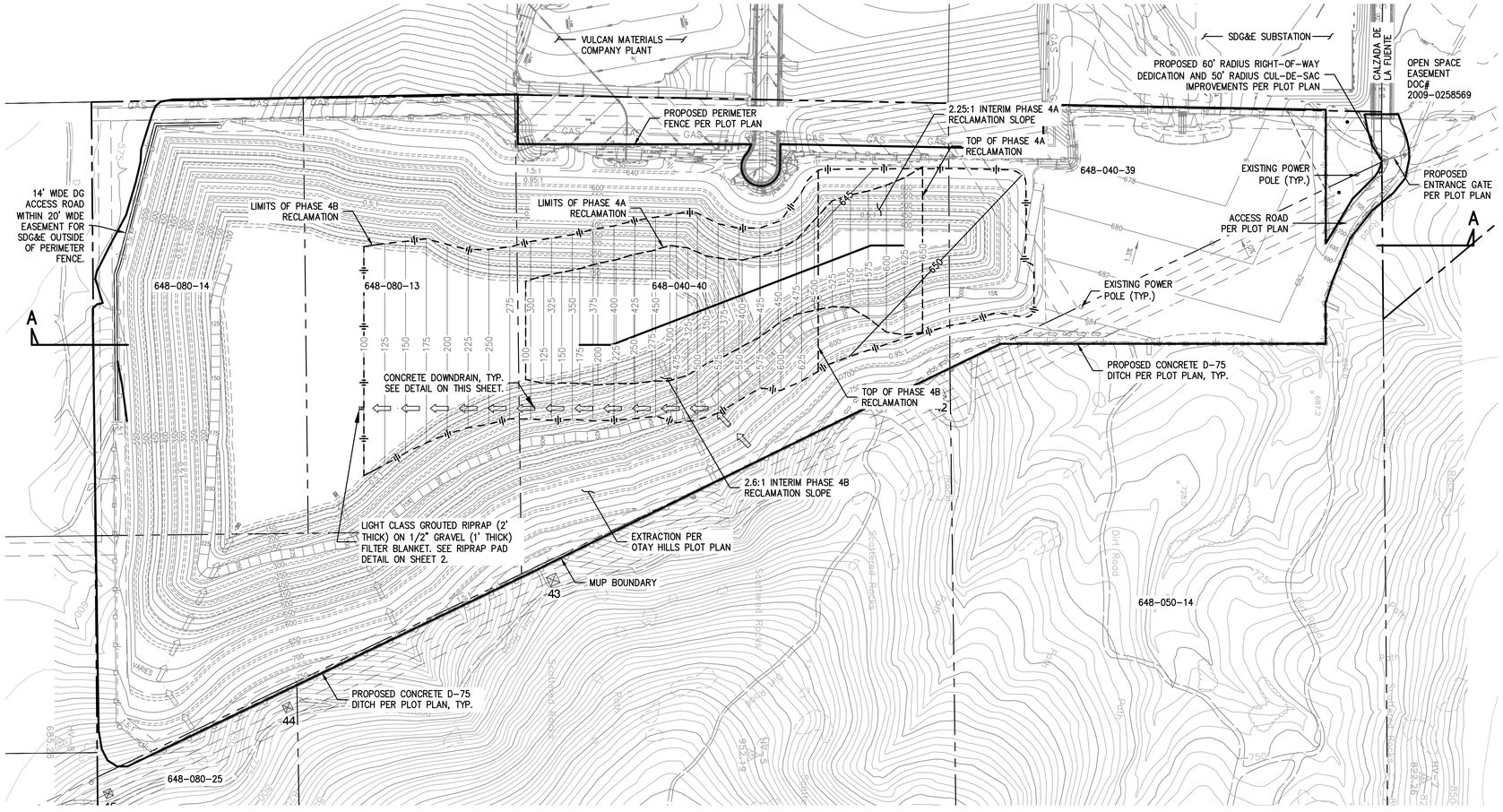
FILE NO.

10/29/2018



SECTION: A–A

SCALE: HORIZ. 1"=200' VERT. – 1"=200'



PLAN: PHASE 4 (4A & 4B) RECLAMATION

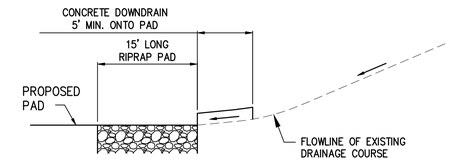
SCALE: 1"=200'

SCALE: 1" = 200'

0 100 200 400

PLAN OF OPERATION NOTES

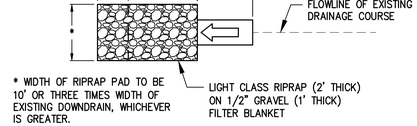
1. ACCESS TO THE SITE IS FROM CALZADA DE LA FUENTE, WHICH IS LOCATED APPROXIMATELY 2,600 FEET WEST OF THE SITE. AN EAST–WEST ACCESS ROAD OVER PROPERTY OWNED BY D&D LANDHOLDINGS WILL SERVE THE SITE FROM CALZADA DE LA FUENTE.
2. THE PROPERTY IS CURRENTLY UNDISTURBED, WITH THE EXCEPTION OF SDG&E UTILITY POLES AND TOWERS AND A FEW TRAILS.
3. OVERHEAD UTILITY LINES CROSS THE WESTERLY PORTION OF THE SITE IN A GENERALLY NORTH–SOUTH DIRECTION. THE ON–SITE EASEMENTS ARE SHOWN ON THIS PLAN.
4. THERE ARE NO MINING WASTES ASSOCIATED WITH THIS PROJECT.
5. NO TOPSOIL STRIPPING HAS OCCURRED.
6. THE MAXIMUM CUT HEIGHT WILL BE 715 FEET. THE SLOPES ARE DESIGNED WITH THREE RANGES WHERE THE SLOPE RATIOS DIFFER. THE FIRST RANGE IS DEFINED AS THE TOP 20' VERTICAL FEET OF CUT, WHICH IS DESIGNED AT 1.5:1. THE SECOND RANGE IS DESIGNED WITH A SLOPE RATIO OF 0.95:1 WITH 6' BENCHES AT 60' VERTICAL INTERVALS. THE SECOND RANGE WILL OCCUR UNTIL THE ELEVATION IS AT OR BELOW THE FINAL RECLAMATION PAD ELEVATION. THE THIRD, AND FINAL RANGE, IS DESIGNED WITH A 0.5:1 SLOPE WITH 6' BENCHES AT 60' VERTICAL INTERVALS DOWN TO ELEVATION 100, THE BOTTOM OF THE EXTRACTION PIT.
7. SURFACE DRAINAGE FLOWS GENERALLY TOWARDS THE WEST AND SOUTH ON THE SITE. DRAINAGE IS CONTROLLED PER THE REQUIREMENTS OF THE STORMWATER POLLUTION PREVENTION PLAN.
8. WATER FOR ON–SITE OPERATIONS WILL BE PROVIDED BY THE OTAY WATER DISTRICT. GROUNDWATER RESOURCES MAY BE DEVELOPED FOR FUTURE USE.
9. NO PROCESSING CHEMICALS ARE PROPOSED. FUEL, OIL, SOLVENTS, ETC. TO BE USED ON–SITE WILL BE APPROPRIATELY HANDLED, STORED, AND DISPOSED.
10. A CONTRACTOR WILL CONDUCT BLASTING OPERATIONS ON A WEEKLY BASIS.
11. THERE ARE NO STREET IMPROVEMENTS ON THE QUARRY SITE.
12. THERE ARE NO LAND RIGHTS–OF–WAY DEDICATIONS FOR CONTINUING OPERATIONS.



CONCRETE DOWNDRAIN DETAIL

NOT TO SCALE

NOTE: CONCRETE DOWNDRAINS AND RIPRAP PADS ARE NOTE NEEDED WHERE NATIVE ROCK IS PRESENT AND WILL RESIST EROSION.



* WIDTH OF RIPRAP PAD TO BE 10' OR THREE TIMES WIDTH OF EXISTING DOWNDRAIN, WHICHEVER IS GREATER.

RIPRAP PAD DETAIL

NOT TO SCALE

NOTE:

SEE SHEET 5 FOR EASEMENTS AND BOUNDARY INFORMATION

EARTHWORK QUANTITIES:

PHASE 4A 2,123,500 CY FILL
PHASE 4B 3,852,300 CY FILL

FOR REVIEW ONLY

COUNTY APPROVED CHANGES

No.	Description	Approved by	Date
	ORIGINAL		5-5-13

BENCHMARK

DESCRIPTION: COUNTY STATION 0051 007 01

LOCATION: SECTION 32, TOWNSHIP 18 SOUTH, RANGE 1 EAST, SBM

N 1785438.171, E 6363168.576, NAD 83

RECORD FROM: COUNTY OF SAN DIEGO CONTROL POINT INVENTORY

ELEVATION: 733.46 FEET DATUM: NGVD

PERMITS

HABITAT LOSS PERMIT NO.
N.O.I. NO.
SPECIFIC PLAN AMENDMENT
SPECIAL USE PERMIT NO.
GRADING PERMIT NO.
TENTATIVE MAP NO.

PRIVATE CONTRACT

SHEET 2 | COUNTY OF SAN DIEGO DEPARTMENT OF PUBLIC WORKS | 7 SHEETS

RECLAMATION PLAN FOR:

OTAY HILLS

PHASE 4 (4A & 4B) RECLAMATION

CALIFORNIA COORDINATE INDEX: 146–1797

Approved COUNTY ENGINEER
BY:
Date

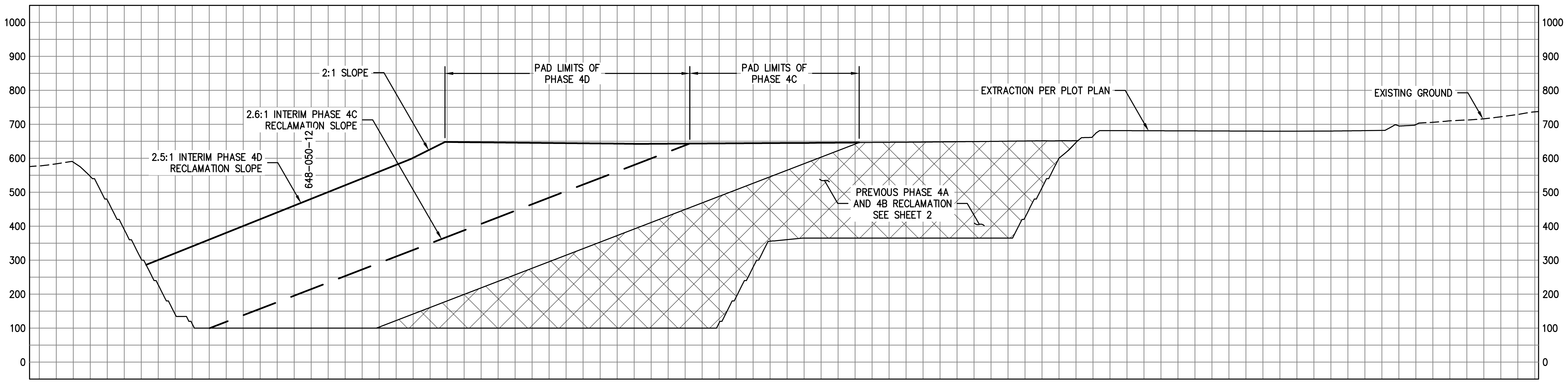
Engineer of work
WAYNE W. CHANG R.C.E. 46548

Grading Permit No.

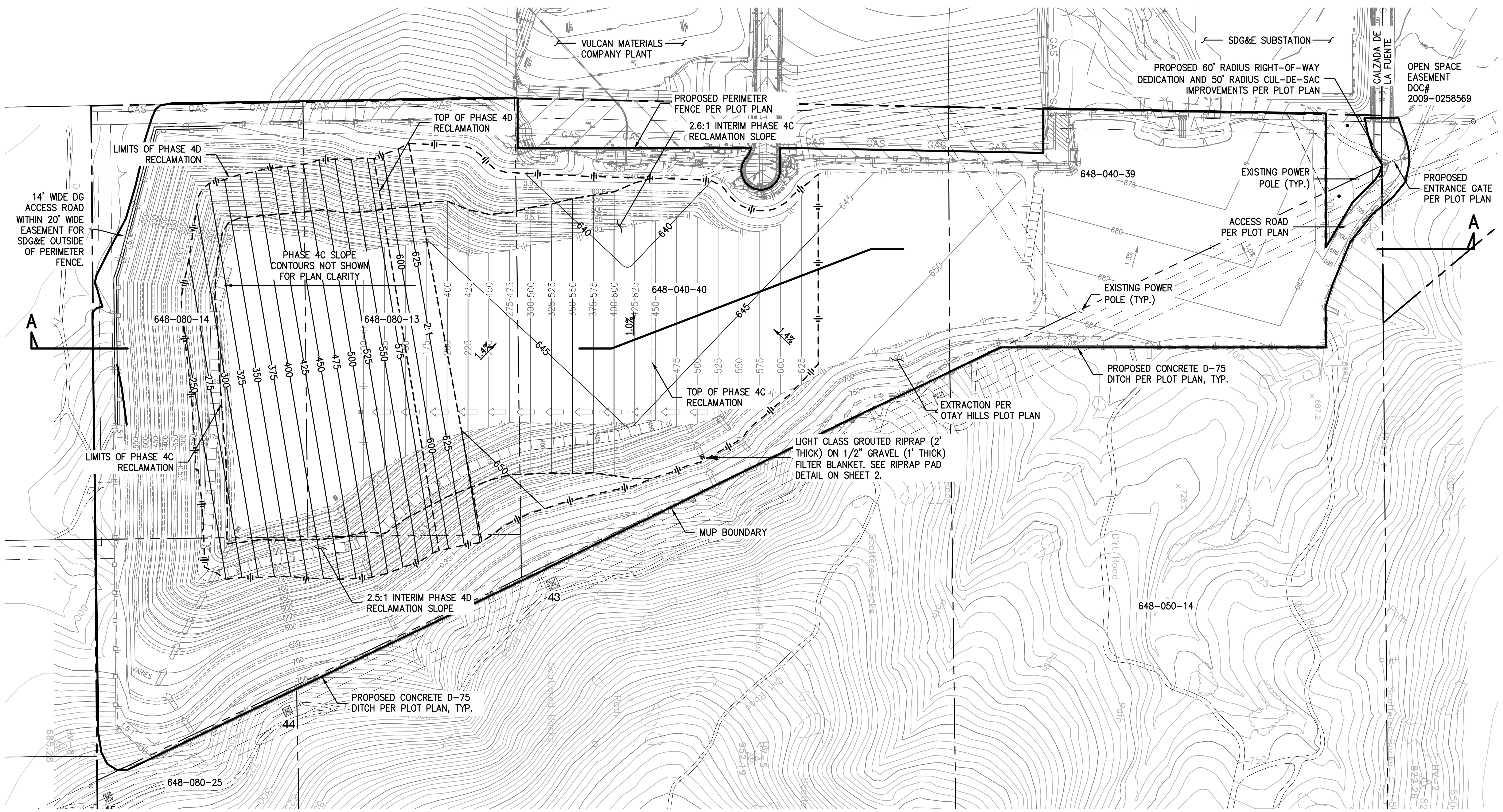
ENGINEER'S NAME: CHANG CONSULTANTS
PHONE NO. (858) 692-0760

FILE NO.

10/29/2018



SECTION: A-A
SCALE: HORIZ. 1"=200' VERT. - 1"=200'



PLAN: PHASE 4 (4C & 4D) RECLAMATION
SCALE: 1"=200'

SCALE: 1" = 200'
0 100 200 400

NOTE:

SEE SHEET 5 FOR EASEMENTS AND BOUNDARY INFORMATION

EARTHWORK QUANTITIES:

PHASE 4C 8,027,000 CY FILL
PHASE 4D 9,146,000 CY FILL

FOR REVIEW ONLY

PERMITS

HABITAT LOSS PERMIT NO. ______
N.O.I. NO. ______
SPECIFIC PLAN AMENDMENT ______
SPECIAL USE PERMIT NO. ______
GRADING PERMIT NO. ______
TENTATIVE MAP NO. ______

COUNTY APPROVED CHANGES

No.	Description	Approved by	Date
	ORIGINAL		5-5-13

BENCHMARK

DESCRIPTION: COUNTY STATION 0051 007 01
LOCATION: SECTION 32, TOWNSHIP 18 SOUTH, RANGE 1 EAST, SBM N 1785438.171, E 6363168.576, NAD 83
RECORD FROM: COUNTY OF SAN DIEGO CONTROL POINT INVENTORY
ELEVATION: 733.46 FEET DATUM: NGVD

PRIVATE CONTRACT

SHEET 3 — COUNTY OF SAN DIEGO DEPARTMENT OF PUBLIC WORKS — 7 SHEETS

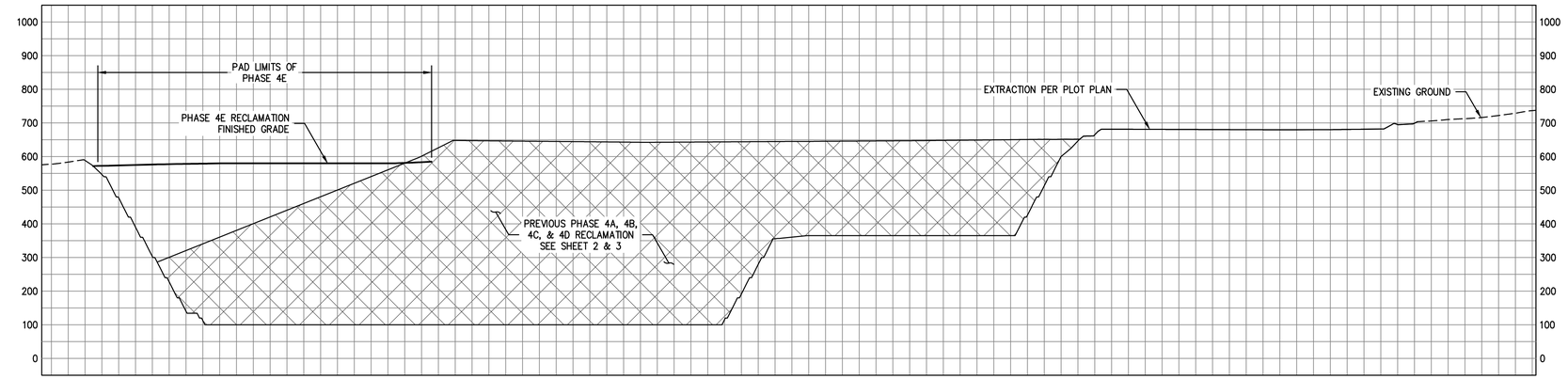
RECLAMATION PLAN FOR:
OTAY HILLS
PHASE 4 (4C & 4D) RECLAMATION
CALIFORNIA COORDINATE INDEX: 146-1797

Approved COUNTY ENGINEER BY: ______ Date
Engineer of work WAYNE W. CHANG R.C.E. 46548
Grading Permit No.

ENGINEER'S NAME: CHANG CONSULTANTS
PHONE NO. (858) 692-0760

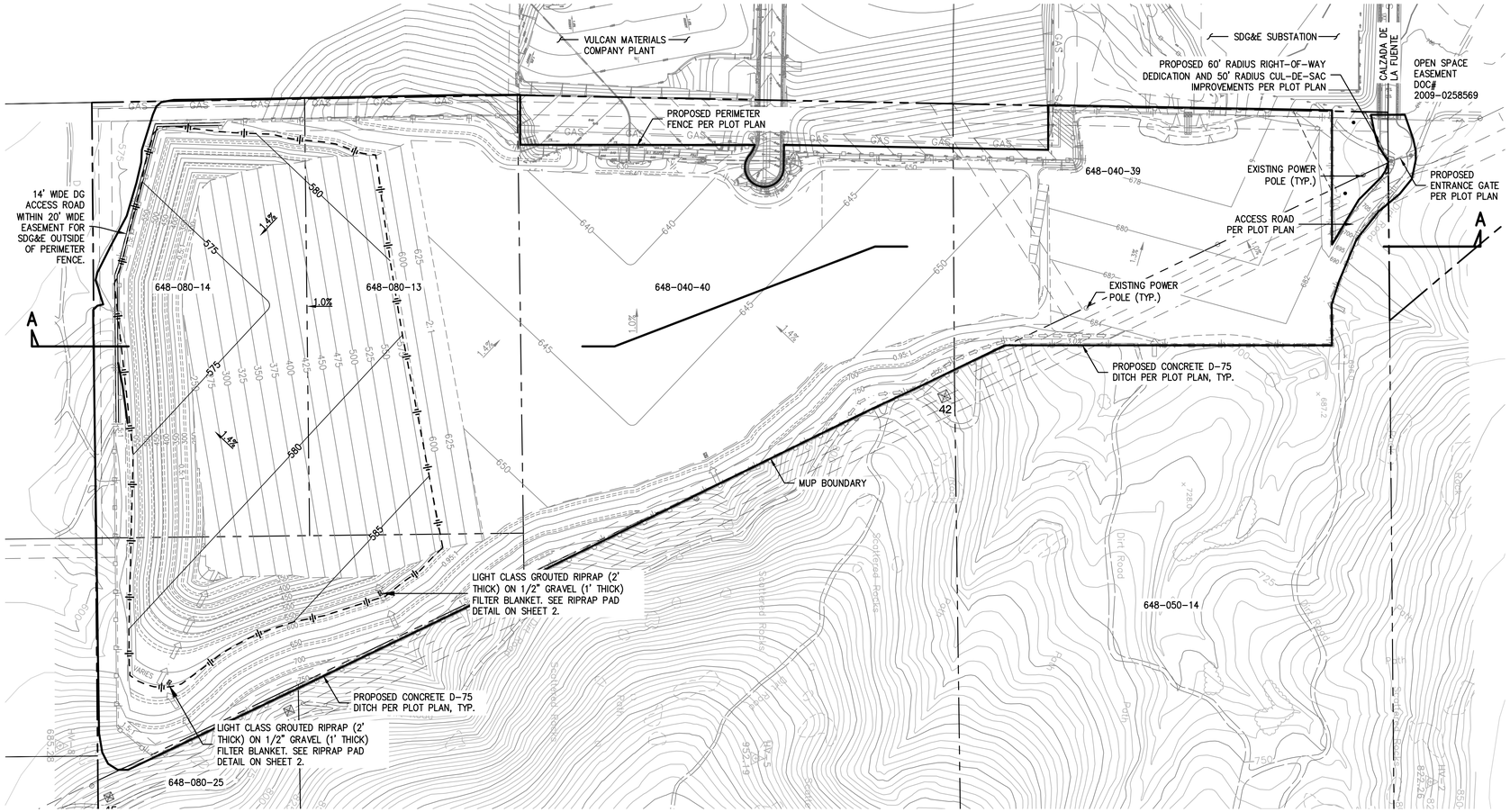
FILE NO.

10/29/2018



SECTION: A–A

SCALE: HORIZ. 1"=200' VERT. – 1"=200'



PLAN: PHASE 4 (4E) RECLAMATION

SCALE: 1"=200'

SCALE: 1" = 200'

0 100 200 400

NOTE:

SEE SHEET 5 FOR EASEMENTS AND BOUNDARY INFORMATION

EARTHWORK QUANTITIES:

PHASE 4E 7,465,700 CY FILL

COUNTY APPROVED CHANGES

No.	Description	Approved by	Date
	ORIGINAL		5-5-13

PERMITS

HABITAT LOSS PERMIT NO. _____
N.O.I. NO. _____
SPECIFIC PLAN AMENDMENT _____
SPECIAL USE PERMIT NO. _____
GRADING PERMIT NO. _____
TENTATIVE MAP NO. _____

BENCHMARK

DESCRIPTION: COUNTY STATION 0051 007 01

LOCATION: SECTION 32, TOWNSHIP 18 SOUTH, RANGE 1 EAST, SBM
N 1785438.171, E 6363168.576, NAD 83

RECORD FROM: COUNTY OF SAN DIEGO CONTROL POINT INVENTORY

ELEVATION: 733.46 FEET DATUM: NGVD

PRIVATE CONTRACT

SHEET 4 | COUNTY OF SAN DIEGO DEPARTMENT OF PUBLIC WORKS | 7 SHEETS

RECLAMATION PLAN FOR:

OTAY HILLS

PHASE 4 (4E) RECLAMATION

CALIFORNIA COORDINATE INDEX: 146–1797

Approved
COUNTY ENGINEER
BY: _____ Date

Engineer of work
WAYNE W. CHANG R.C.E. 46548

Grading Permit No. _____

FOR REVIEW ONLY

ENGINEER'S NAME: CHANG CONSULTANTS
PHONE NO. (858) 692-0760

FILE NO.

10/29/2018

A.L.T.A. NOTE:
DECEMBER 2001 A.L.T.A. SURVEY PERFORMED BY ALTA CONSULTANTS WAS USED FOR THE BOUNDARY AND EASEMENTS.

5-FOOT CONTOUR TOPOGRAPHIC MAPPING PREPARED BY TOWILL, INC., DATED APRIL 12, 2000. BENCHMARK AND CONTROL POINTS FOR 5-FOOT TOPOGRAPHIC MAPPING WERE PROVIDED BY BDS ENGINEERING, INC. 40-FOOT CONTOUR TOPOGRAPIC MAPPING FROM THE COUNTY OF SAN DIEGO.

FOR REVIEW ONLY

T 18 S. R 1 E.

20' GAS EASEMENT PER FILE 2001-0109364
40' TEMP. CONSTRUCTION EASEMENT PER FILE 2001-0109364
N00°58'54"W 1320.66'
N01°07'23"E 1352.50'
PROPOSED PERIMETER FENCE PER PLOT PLAN
60' ROAD EASEMENT PER FILE 2002-0200939
VULCAN MATERIALS COMPANY PLANT
SDG&E SUBSTATION
CALZADA DE LE FUENTE
20' SDG&E EASEMENT PER FILE 2003-1080136
20' SDG&E EASEMENT PER FILE 85-352966 TO BE ABANDONED
40' TEMP. CONSTRUCTION EASEMENT PER FILE 2001-0109364
20' GAS EASEMENT PER FILE 2001-0109364
200' ELECTRIC POWER TRANSMISSION EASEMENT PER FILE 2001-0109363
N01°07'23"E 1350.23'
648-040-55
OPEN SPACE EASEMENT DOC# 2009-0258569
PROPOSED 60' RADIUS RIGHT-OF-WAY DEDICATION AND 50' RADIUS CUL-DE-SAC IMPROVEMENTS PER PLOT PLAN
N01°07'23"E 752.77'
CENTERLINE 60' ACCESS EASEMENT PER FILE 1997-0652033 AND 120' SDG&E EASEMENT PER FILE 85-352
30' ACCESS EASEMENT PER FILE 97-0652033
PROPOSED ENTRANCE GATE PER PLOT PLAN
72' ACCESS EASEMENT PER FILE 2002-0200939
APPROX. LOCATION PROP. SDG&E POLES
648-040-39
20' GAS ESMT. PER FILE 2001-0109364
14' WIDE DG ACCESS ROAD WITHIN 20' WIDE EASEMENT FOR SDG&E OUTSIDE OF PERIMETER FENCE.
1352.85'
N89°29'11"E
648-080-14
648-080-13
648-040-40
MUP BOUNDARY
LIGHT CLASS GROUTED RIPRAP (2' THICK) ON 1/2" GRAVEL (1' THICK) FILTER BLANKET. SEE RIPRAP PAD DETAIL ON SHEET 2.
PROPOSED CONCRETE D-75 DITCH PER PLOT PLAN, TYP.
20' GAS ESMT. PER FILE 2001-0109364
40' TEMP. CONSTRUCTION ESMT. PER FILE 2001-0109364
LIGHT CLASS GROUTED RIPRAP (2' THICK) ON 1/2" GRAVEL (1' THICK) FILTER BLANKET. SEE RIPRAP PAD DETAIL ON SHEET 2.
CENTERLINE 60' EASEMENT PER FILE 1997-0652033 AND 120' SDG&E EASEMENT PER FILE 85-352966
LIGHT CLASS GROUTED RIPRAP (2' THICK) ON 1/2" GRAVEL (1' THICK) FILTER BLANKET. SEE RIPRAP PAD DETAIL ON SHEET 2.
648-080-25
N89°29'11"E
1352.85'
N89°23'14"E
1365.74'
648-080-26
648-050-13
648-050-14
648-050-17
1347.09'
N89°52'54"E
SCALE: 1" = 200'
0 100 200 400

COUNTY APPROVED CHANGES			
No.	Description	Approved by	Date
	ORIGINAL		5-5-13

BENCHMARK

DESCRIPTION: COUNTY STATION 0051 007 01
LOCATION: SECTION 32, TOWNSHIP 18 SOUTH, RANGE 1 EAST, SBM
N 1785438.171, E 6363168.576, NAD 83
RECORD FROM: COUNTY OF SAN DIEGO CONTROL POINT INVENTORY
ELEVATION: 733.46 FEET DATUM: NGVD

PERMITS

HABITAT LOSS PERMIT NO. _____
N.O.I. NO. _____
SPECIFIC PLAN AMENDMENT _____
SPECIAL USE PERMIT NO. _____
GRADING PERMIT NO. _____
TENTATIVE MAP NO. _____

PRIVATE CONTRACT

SHEET 5 | COUNTY OF SAN DIEGO DEPARTMENT OF PUBLIC WORKS | 7 SHEETS

RECLAMATION PLAN FOR:

OTAY HILLS

RECLAMATION PLAN AND EASEMENTS

CALIFORNIA COORDINATE INDEX: 146-1797

Approved COUNTY ENGINEER
BY: _____ Date

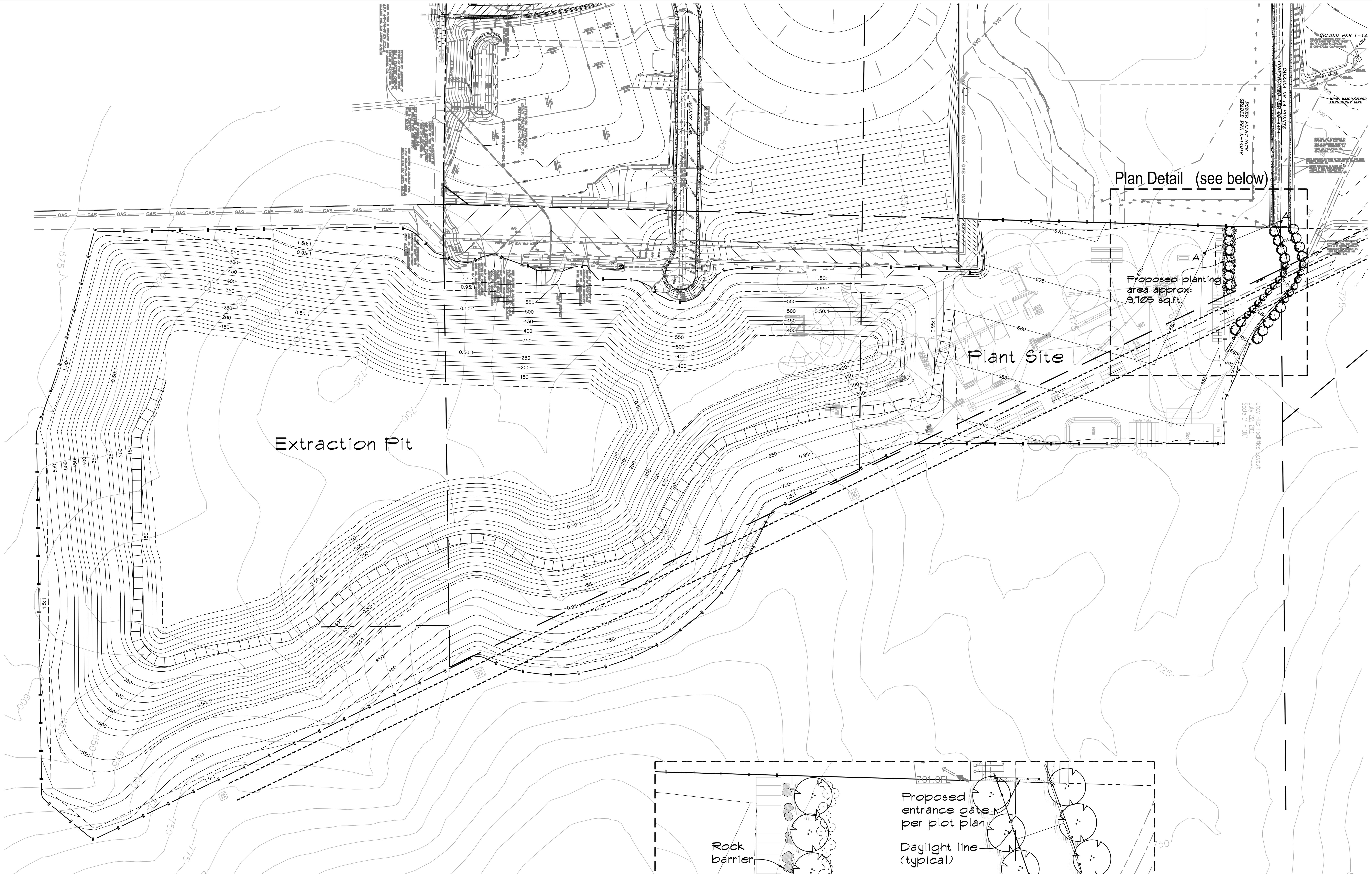
Engineer of work
WAYNE W. CHANG R.C.E. 46548

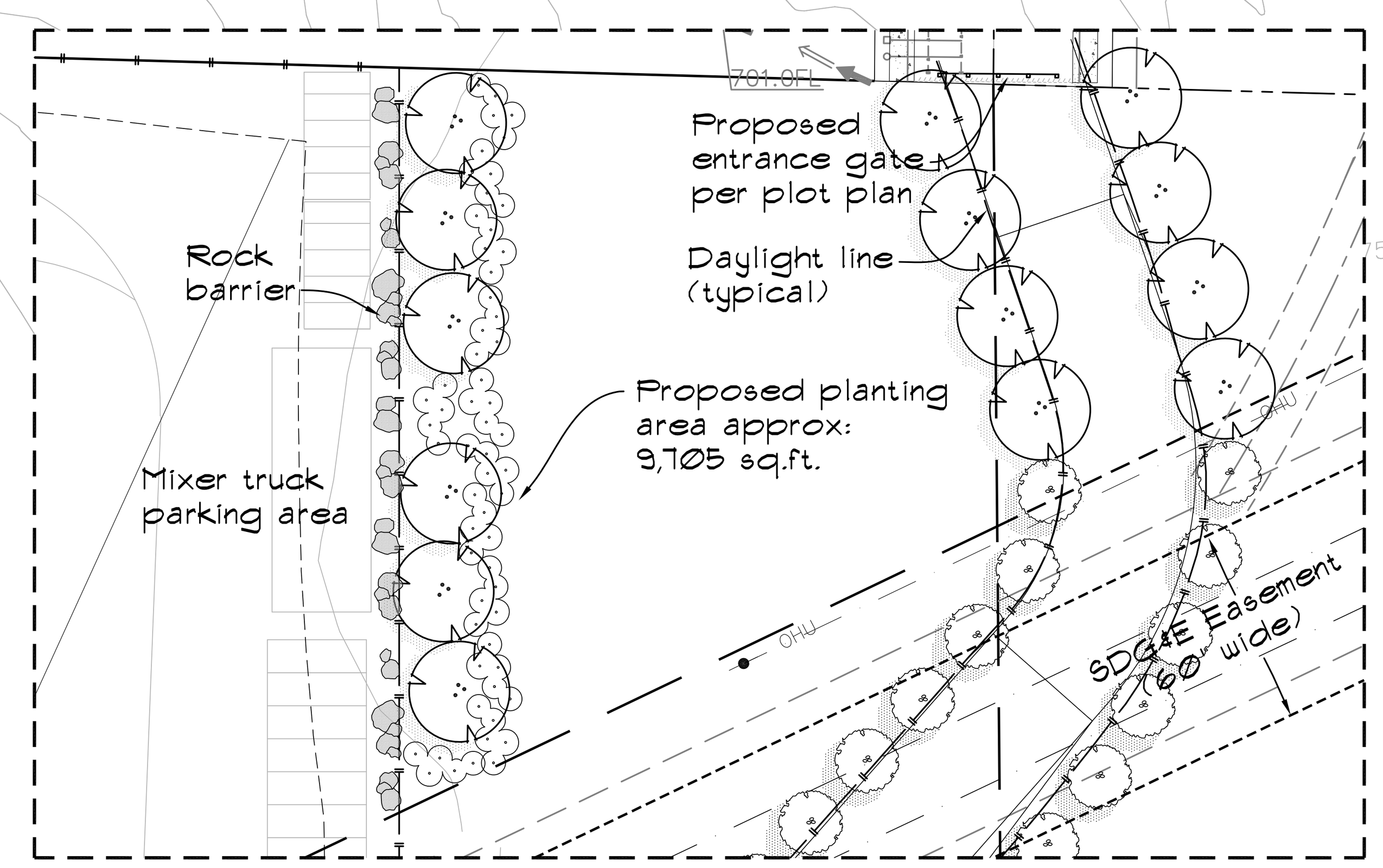
Grading Permit No. _____

ENGINEER'S NAME: CHANG CONSULTANTS
PHONE NO. (858) 692-0760

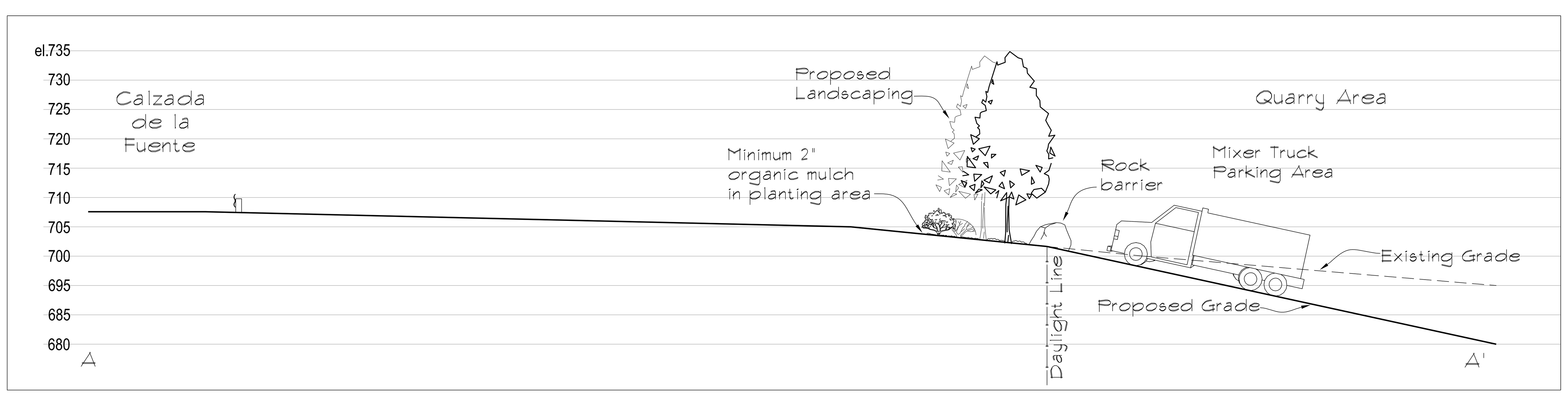
FILE NO.

10/29/2018





Plan Detail Scale: 1"=50'



Section A-A' Scale: 1"=16'

CONCEPT

Screening trees and shrubs shall be used at the edge of the property to screen quarry activities where they are potentially visible from Calzada de la Fuente.

This plan assumes the lots south of the power plant will be developed with heavy industrial uses (by others) that will visually screen quarry activities from views along Alta Road.

CONCEPTUAL PLANT LIST

(21) Screening Canopy Trees (min. 24" Box) such as:

Lophostemon confertus (Brisbane Box)
30-45 ft. tall and 25 ft. wide. Evergreen.
(WOCULS rating Mod.)

Geijiera parvifolia (Australian Willow)
25-30 ft. tall and 20 ft. wide. Evergreen.
(WOCULS rating Mod.)

Quercus agrifolia (Coast Live Oak)
30' ft. tall and 40 ft. wide. Evergreen
(WOCULS rating Low.)

(15) SDG&E-Approved Screening Trees (min. 24" Box) such as:

Arbutus unedo (Strawberry Tree)
20 ft. tall and 20 ft. wide. Evergreen.
(WOCULS rating Low.)

(60) Evergreen Shrubs (5 gallon) such as:

Rhus integrifolia (Lemonade Berry)
5-10 ft. tall and 10 ft. wide. Evergreen.
(WOCULS rating Low.)

Heteromeles arbutifolia (Toyon)
15 ft. tall and wide. Evergreen. White flowers, red berries.
(WOCULS rating Low.)

Ceanothus griseus horizontalis 'Yankee Point' (Yankee Point California Lilac)
2-3 ft. tall, 8-10 ft. wide. Glossy green foliage, blue flowers.
(WOCULS rating Low.)

NOTES

All landscape and irrigation shall conform to the standards of the San Diego County Water Conservation in Landscaping Ordinance and Design Manual and all other landscape-related regional standards.

All plants shall be selected for drought tolerance and shall be non-invasive and fire-wise.

All landscaped areas shall be efficiently irrigated adequately for the establishment and maintenance of all plant material and per the requirements of the County's Water Conservation in Landscaping Ordinance.

The landscape concept plan shall determine the feasibility of a temporary irrigation system using construction water meter connections at nearby fire hydrants versus permanent, below-ground, centrally controlled automatic irrigation systems.

The landscape concept plan shall determine the feasibility of a recycled water irrigation system.

Irrigation shall be equipped with rain sensors to automatically shut off the system during periods of high rainfall.

The irrigation system shall be designed to prevent standing water and any condition such as runoff, overspray, and low-head drainage where irrigation water flows or sprays onto areas not intended for irrigation.

Irrigation plans shall be prepared by a licensed landscape architect, civil engineer, forester, or architect licensed in the State of California. Irrigation systems shall be installed by a California licensed landscape contractor.

Plants shall be arranged to reduce the spread of fire: Provide space between tree or tree group canopies and separation between shrubs and tree canopies so as not to create a fire ladder.

Trees shall be installed as minimum 24" box-sized plants. Shrubs shall be installed as minimum 5-gallon-sized plants.

All planting areas shall be covered with two (2) inches of organic mulch.

A barrier between the planting area and the parking area shall be created using large rocks of substantial size (weighing 200 to 400 pounds) as to act as wheel stops and protect vegetation from vehicular bumper overhang.

Position rocks in clusters of one to five and vary space between the rocks and the clusters. Bury one-third of the rock for stability, anchoring, and a more natural look.

Maximum Applied Water Allowance:
MAWA = 176,620.70 gallons
= 236.12 cubic feet annually.

NORTH

0 100 200 400
SCALE: 1:200

HELIX
Environmental Planning

7578 El Cajon Blvd., Suite 200
La Mesa, CA 91942-6476
CA Lic. 2657
(619) 462-1515
Fax (619) 462-0552

SHEET TITLE

PLAN LAYOUT, SECTION, AND NOTES

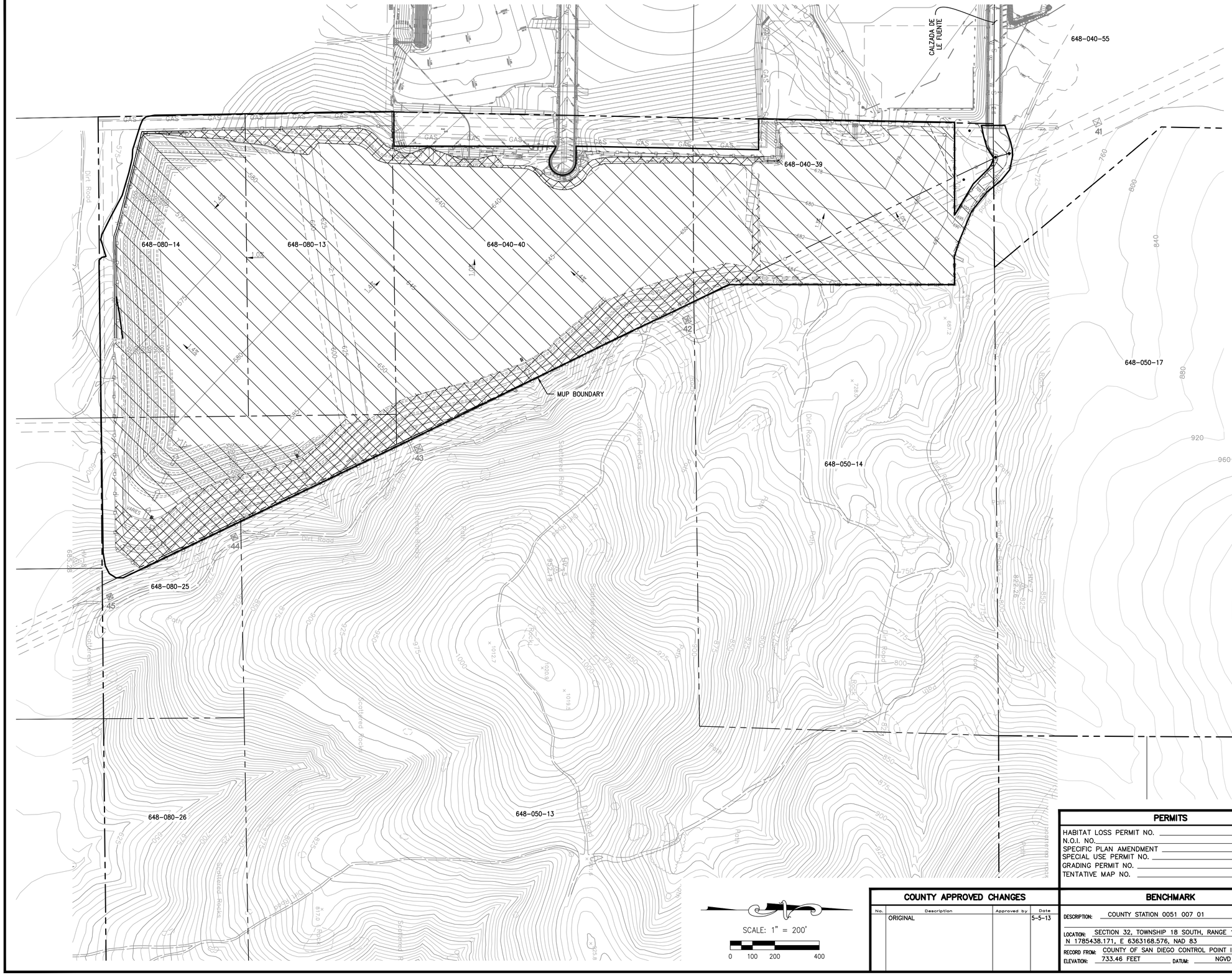
PROJECT TITLE

OTAY HILLS QUARRY
PRELIMINARY LANDSCAPE PLAN
OTAY MESA, CA

LICENSE STAMP

LICENSED LANDSCAPE ARCHITECT
R. BRADLEY LEWIS No. 2657
SIGNATURE
2-28-15
RENEWAL DATE
DATE
STATE OF CALIFORNIA

PROJECT NUMBER:	SRM-12
DRAWING DATE:	05-14-14
PRINT DATE:	05-14-14
DRAWN BY:	KM
CHECKED BY:	BL
SHEET NUMBER:	SHEET 6 OF 7



THE HYDROSEED MIXTURE SHALL CONSIST OF THE FOLLOWING MATERIALS:

2,000 LBS/ACRE CELLULOSE FIBER
140 LBS/ACRE "M" BINDER (GLUING AGENT)
200 LBS/ACRE MILOGRANITE (FERTILIZER IF REQUIRED)
SEED MIX AS LISTED

SEED MIXES

SCIENTIFIC NAME (SEEDS ONLY)	LBS/ACRE	SEED MIX A	SEED MIX B
VULPIA MICROSTACHYS	8	X	X
*ARTEMISIAC ALIFORNICA**	4	X	X
*BACCHARIS SAROTHROIDES**	2		
*ERIOGONUM FASCICULATUM**	8	X	X
ESCHSCHOLZIA CALIFORNICA	8	X	
*HETEROMELES ARBUTIFOLIA**	2		X
*LOTUS SCOPARIUS**	4	X	X
*LUPINUS ALBIFRONS**	6	X	X
*MALOSMA LAURINA**	1		X
*MIMULUS AURANTIACUS**	2	X	X
*RHAMNUS CROCEA**	4		X
*SALVIA APIANA**	2		X
*XYLOCOCCUS BICOLOR**	1		X

AREA OF SEED MIX "A" = LEVEL OR SLIGHT-GRADIENT SLOPES (i.e.,PADS THAT ARE NOT SUBJECT TO IMMEDIATE USE), TOPSOIL PILES, INTERIM SLOPES; APPLIED BY RANGELAND DRILL AND/OR HYDROSEEDING.

AREA OF SEED MIX "B" = CUT SLOPES; APPLIED BY HYDROSEEDING

* = PERENNIAL SPECIES

LEGEND — SYMBOL

SEE MIX "A"

SEE MIX "B"

NOTE:

SEE RECLAMATION PLAN REPORT NARRATIVE FOR PHASING

SCALE: 1" = 200'

0 100 200 400

FOR REVIEW ONLY

COUNTY APPROVED CHANGES

No.	Description	Approved by	Date
	ORIGINAL		5-5-13

BENCHMARK

DESCRIPTION: COUNTY STATION 0051 007 01

LOCATION: SECTION 32, TOWNSHIP 18 SOUTH, RANGE 1 EAST, SBM
N 1785438.171, E 6363168.576, NAD 83

RECORD FROM: COUNTY OF SAN DIEGO CONTROL POINT INVENTORY

ELEVATION: 733.46 FEET DATUM: NGVD

PERMITS

HABITAT LOSS PERMIT NO. _____
N.O.I. NO. _____
SPECIFIC PLAN AMENDMENT _____
SPECIAL USE PERMIT NO. _____
GRADING PERMIT NO. _____
TENTATIVE MAP NO. _____

PRIVATE CONTRACT

SHEET 7 | COUNTY OF SAN DIEGO DEPARTMENT OF PUBLIC WORKS | 7 SHEETS

RECLAMATION PLAN FOR:

OTAY HILLS

REVEGETATION PLAN

CALIFORNIA COORDINATE INDEX: 146-1797

Approved COUNTY ENGINEER
BY: _____ Date

Engineer of work
WAYNE W. CHANG R.C.E. 46548

Grading Permit No. _____

ENGINEER'S NAME: CHANG CONSULTANTS
PHONE NO. (858) 692-0760

FILE NO.

10/29/2018

Appendix B
Biological Resources Report

Revegetation Plan

Superior Ready Mix, LP
Otay Hills Project

1.0 Introduction

This Revegetation Plan was prepared to comply with the Reclamation Standards identified in the Public Resources Code, Article 9, Section 3705. The purpose of the plan is to identify the following:

- Goals of the revegetation program,
- Important site characteristics which would influence revegetation,
- Cultural methods,
- Seed mixes,
- Success criteria, and
- Monitoring objectives.

As mining operations are occurring, the site will be backfilled and developed for industrial uses. Nearly level pad areas will be created that would total up to 85 acres in size. Cut slopes will total up to 17 acres, forming the eastern perimeter of the site. Stabilization of slope areas is the primary focus of this revegetation plan. Although impacts to sensitive biological habitat will be mitigated through purchase of off site habitat in accordance with the MSCP, native species will be used for revegetation of the post extraction landform. Slope areas will be seeded with species which will be effective in controlling erosion and will benefit natural biological conditions. Slope revegetation will be established as a buffer and transition between the reclaimed site and natural habitat areas to the east.

2.0 Physical Features Important to Revegetation

2.1 Soils

The project site is underlain by a predominance of resistant rocks of the Santiago Peak Formation, with a small area on the western portion of the site extending onto the sedimentary Otay Formation. The majority of the site consists primarily of San Miguel-Exchequer rocky silt loams. This soil association includes approximately 50% San Miguel silt loam, 40% Exchequer silt loam, and 10% rock outcrop. Native topsoil found in small areas on the western portion of the site consists of Huerhuero loam.

The San Miguel-Exchequer association are upwards of 23 inches in depth with an “A” horizon of approximately 8 inches. These soils exhibit medium to strong acidity, have low fertility, slow permeability, runoff is medium to rapid, and the erosion hazard is moderate to high. This soil is used for watershed and wildlife habitat and for limited range.

The Exchequer soils are shallow soils formed from hard metabasic rock. The typical soil profile is approximately 10 inches in depth over hard metabasic rock. The fertility is low, permeability is moderate, runoff is rapid to very rapid, and the erosion hazard is high. This soil is used for wildlife habitat and watershed.

The Huerhuero soil series is relatively deep (up to 40 inches) with the "A" horizon occupying the top 12 inches. The upper portion of the soil is acidic with the lower portion of the soil profile experiencing moderate alkalinity. The fertility is low to medium, permeability is very slow, runoff is slow to medium, and the erosion hazard is slight. The Huerhuero soils are used for range and irrigated crops. Where undisturbed, these soils are usually occupied by a variety of early successional species, including non-native grasslands.

2.2 Climatic Considerations

The project site lies within a semi-arid Mediterranean climate zone characterized by warm summers and mild winter temperatures, rainfall occurs mainly from November through mid-April. Average annual precipitation is about 15 inches; however precipitation can range widely from year to year. Under this xeric climatic regime, the winter months (November - January) are generally most productive for planting purposes.

2.3 Vegetation

Natural vegetative communities represented on the project site include Chamise Chaparral and Diegan Coastal Sage Scrub (DCSS) habitats. Species found in these vegetative complexes are drought tolerant and are capable of withstanding periods of extended drought. Of the habitats represented on the site, DCSS is known to harbor a number of sensitive species that are either listed for protection or pending classification. Superior is providing mitigation for disturbance to DCSS habitat through purchase of equally valuable habitat in an off site location, and through on site preservation of habitat areas that are not slated for disturbance.

3.0 Revegetation Objectives

The objective of the revegetation plan is to provide vegetative cover for final slopes controlling erosion and stabilizing slopes, using plant materials capable of self-regeneration without continued dependence on irrigation, soil amendments or fertilizer. Revegetation will be sufficient to stabilize the surface against the effects of long-term erosion and is designed to meet the post extractive land use objectives of the site. Two seed mixes composed of native species will be used to revegetate the site. These seed mixes are designed to meet the variety of physical characteristics that will be present on the post extraction land form. The revegetation plan sets forth planting, temporary irrigation, and verifiable monitoring standards to assure vegetative success.

3.1 Soil Preparation

Sufficient native topsoil will be salvaged for use with revegetation of slope areas and slope benches. Because graded pad areas are planned for future industrial use, these areas will not be revegetated to natural habitat. As a result, topsoil replacement will not occur on these areas.

Final slope areas will be established throughout the extractive process as the upper elevations are reduced within the working areas. As final slopes become available, topsoil will be removed from future working areas for direct placement as slope areas are created. Direct placement of salvaged topsoil provides the greatest revegetation benefit by preserving and utilizing the micro organisms found in the topsoil and also improves revegetation success by taking advantage of viable plant root stock and seeds found within the native topsoil. Direct placement also eliminates the need to stockpile topsoil materials for long periods of time.

Direct placement of salvaged topsoil will not always be possible, however. During the latter phases of operations, topsoil recovery will need to take place ahead of disturbance in the final phase. This material will need to be salvaged and stockpiled until all resources have been recovered and final slopes are established. At this time, topsoil that has been salvaged and stockpiled for revegetation will be placed on final slopes.

Topsoil will be salvaged from the Phase 2 area (see Sheet 3 of the Plot Plan) and placed on final slopes and benches that are created within Phase 2. Therefore, wherever possible, topsoil will be stripped from the Phase 2 area to be directly placed on final slope areas as they area available for reclamation. As necessary, however, topsoil will be stockpiled where final reclamation sites are not available for revegetation.

Topsoil piles will be segregated from stockpiles of waste fines or other materials. All topsoil stockpiles will be graded and erosion control ditches placed around the piles. The topsoil piles will then be labeled "Reclamation Material – Do Not Disturb" to insure that accidental disturbance of the stockpiles does not occur. In addition the topsoil stockpiles will be seeded with an erosion control seed mixture that will benefit revegetation efforts and stabilize the surface of the piles. The seed mixture will consist of Seed Mix "A" as described in Section 3.2 "Seeding."

As identified, during the process of mineral extraction, final slopes will be graded. This will include the creation of a roughened surface with small benches carved into the 1:1 cut slopes. This method of slope development will provide slope breaks to reduce erosion and allow moisture retention for vegetative development.

Prior to seeding, topsoil will be analyzed to determine the presence of elements essential for plant growth. If the soils analysis shows that fertility levels or soil constituents are inadequate to successfully implement the revegetation program, fertilizer or other soil amendments may be incorporated into the soil through direct broadcasting, hydroseeding, and/or a rangeland drill.

3.2 Seeding

Slope and bench areas will be reseeded by means of hydroseeding. Hydroseeding is the hydraulic application of a homogeneous slurry mixture consisting of water, seed mix, cellulose fiber and a binding agent such as "M" Binder. Fertilizer can be added if the soil analysis shows the need for addition of amendments. Hydroseeding application shall be performed only at times when winds are relatively calm.

Application rates shown on seed mixes list reflect a minimum to maximum amount of each seed species that will be used in the hydromulch slurry.

The hydroseed mixture shall consist of the following materials:

2,000	lbs/acre cellulose fiber
140	lbs/acre "M" Binder (gluing agent)
200	lbs/acre Milogranite (fertilizer if required)
	Seed mix as listed

The hydroseeding of slopes and bench areas will apply Seed Mix "B" as described in the table "Seed Mixes" below.

Graded pad areas will be drill seeded by use of a rangeland drill. Drill seeding is limited to slopes of 3:1 or flatter and areas that are not extremely rocky. Graded pad areas will be seeded with Seed Mix "A" as described in the table "Seed Mixes" below.

Seed Mixes

Scientific Name (seeds only)	Lbs./Acre	SEED MIX A	B
Vulpia microstachys	8	X	X
*Artemisia californica**	4	X	X
*Baccharis sarothroides**	2		
*Eriogonum fasciculatum**	8	X	X
Eschscholzia californica	8	X	
*Heteromeles arbutifolia**	2		X
*Lotus scoparius**	4	X	X
*Lupinus albifrons**	6	X	X
*Malosma laurina**	1		X
*Mimulus aurantiacus**	2	X	X
*Rhamnus crocea**	4		X
*Salvia apiana**	2		X
*Xylococcus bicolor**	1		X

Area of Seed Mix "A" = Level or slight-gradient slopes (i.e., pads that are not subject to immediate use), topsoil piles, interim slopes; applied by rangeland drill and/or hydroseeding.

Area of Seed Mix "B" = Cut Slopes; applied by hydroseeding.

* = Perennial species

Reference: S&S Seeds, Carpinteria, CA
Jepson Manual: Higher Plants of California. 1993

The proposed seed stock will be collected where available within a one-mile radius of the project site.

The anticipated areas of use for the seed mixtures listed above are shown on Sheet 7 of the Reclamation Plan drawings.

3.3 Interim Seeding

Slope areas that are not yet available for revegetation will be graded and seeded for interim erosion control. Interim seeding will consist of the Seed Mix "A" (as listed above). Additional areas where this seed mixture would be used are primarily areas of nearly level pads, or in instances where topsoil would be salvaged and stockpiled.

3.4 Timing

All hydroseeding should be performed and completed between November 15 and January 15. All efforts shall be made to plant during this time period since beneficial temperatures and anticipated rainfall will aid in germination, establishment and growth of seeds.

3.5 Industrial Pad Revegetation

It may be necessary to provide temporary erosion control for industrial pads in the event that development on these pads is not expected to start within a one year time frame following resource depletion. Areas to be developed for industrial, commercial, or residential use shall be revegetated for the interim period with the seed mix identified for "Area A."

3.6 Ripping of Soil

Where project operations result in compaction of the soil, ripping of the soil will be used in areas to be revegetated to eliminate compaction and to establish a suitable root zone in preparation for planting.

3.7 Reclamation of Roads

Prior to closure, all access roads and haul roads to be reclaimed will be stripped of any remaining roadbase materials and revegetated.

3.8 Maintenance

Maintenance of the revegetation areas shall consist of weed eradication to limit and control invasive noxious weeds and for repair of erosion damage. Primary weed species which should be addressed in weed control efforts would include Tamarisk (*Tamarix spp.*),Peruvian pepper (*Schinus molle*), Russian thistle (*Salsola iberica*), Castor Bean (*Ricinus communis*), Horehound (*Marrubium vulgare*), and Tree tobacco (*Nicotiana glauca*).

The site will be monitored periodically (at least annually for five years) by means of visual observation to identify the potential for uncontrolled weed propagation. Should weed control be necessary (e.g., weeds observed on ten percent of 100 square yards), cultural methods will be implemented to eliminate the spread of these species. However, no fertilization is proposed in the Revegetation Plan and as such, increased weed levels are not expected.

All slopes shall be repaired due to erosion if necessary. Where surface erosion produces rills or gullies in excess of one foot in depth, the surface will be repaired and the source of runoff water will be rerouted to enter the established drainage control system for the site.

3.9 Test Plots

It is recommended that test plot areas be conducted as extraction progresses to determine the most appropriate seeding procedures to be followed in order to insure successful implementation of the revegetation plan. The lead agency may waive any requirement to conduct test plots when the success of the proposed revegetation plan can be documented from experience with similar species and conditions or by relying on competent professional advice based on experience with the species to be hydroseeded.

Success of these revegetated areas shall be judged based upon the effectiveness of the vegetation for the approved end use and by comparing the quantified measures of vegetative cover, density and species richness of the reclaimed mined-lands similar to that of the surrounding area. Comparisons will be made by a qualified individual and recommendations for revegetation shall be developed.

Should performance standards not be met after two years, remedial measures will be taken. These measures may include soil amendments, irrigation, and/or other plant species.

3.10 Rock Staining

Upon implementation of the final landform of the project, cut slopes may include rock outcroppings and exposed bedrock. Should rock outcroppings and exposed bedrock visually consist of hues that are lighter in chromatic scale, it may be necessary to stain the exposed rock a darker color to reduce the amount of visual contrast with the surrounding area. Where this situation occurs, these areas will not be revegetated and rock staining will be applied.

4.0 Revegetation Phasing

Due to the long term nature of the extraction operations, ongoing extraction and reclamation/revegetation will occur simultaneously. As planned final slope contours and final grade elevations are reached, the slopes shall be revegetated as they become available to assure rapid vegetative establishment, slope stability, and reduce erosion.

According to the reclamation plan, the project will involve four phases. The rate of extraction is subject to market demand, thus the amount of time required to complete each extraction phase has been approximated.

Phase 1 involves initial site grading for development of the processing plant and associated activities (see Sheet 2 of the Plot Plan). The pad area, in Phase 1, will consist of 14.8 acres. No reclamation will occur in Phase 1 until the processing plant is removed and mining is complete. There will be a relatively small slope area along the southern extent of Phase 1. Activities in Phase 1 are expected to continue for about one year.

Phase 2 will involve commencement of extractive operations within the extraction footprint. Phase 2 will consist of cutting the landform to the natural grade elevation that exists along the western perimeter of the site (see Sheet 3 of the Plot Plan). The natural grade elevation of the mesa (west of the site) ranges between 580 and 650 feet AMSL. As operations progress in Phase 2, slope areas within Phase 1 and Phase 2 will be seeded with a non-invasive erosion control mix. Prior to seeding, topsoil that is removed ahead of extractive operations will be reapplied to slope areas where conditions allow. This phase is expected to continue for approximately 21 years depending on the demand for aggregate resources.

As aggregate resources are depleted from Phase 2, extraction operations will transition into Phase 3. Like Phase 2, Phase 3 will also progress in a north to south direction (See Sheet 4 of the Plot Plan). Extraction operations that will occur during Phase 3 will extend to a maximum depth of approximately 525 feet from the existing grade. This phase is expected to continue for approximately 66 years depending on the demand for aggregate resources.

As extraction operations advance in Phase 3, the pit will be backfilled with inert fill material during Phase 4 (See Reclamation Plan maps). The open pit will serve as a receiver site for inert debris such as concrete, asphalt, rock, and soil. Depending on the rate at which fill material is imported to the site, it is anticipated that Phase 4 activities will continue for approximately 64 years throughout the extraction operation. The actual pace of backfilling will depend on available space in the pit, as well as market demand, and could continue for up to 26 years beyond extraction operations. Reclamation of the site includes the creation of nearly level pads.

5.0 Monitoring

5.1 Performance Standards for Vegetation

Following seeding and before release of financial assurance the revegetated slopes must meet performance criteria. The most meaningful performance criteria for erosion control and visual mitigation are based on vegetative cover and species-richness. In the case of screening trees, cover (in terms of canopy width) and density are the most useful performance criteria.

Baseline data will be obtained from areas immediately adjacent to the site when success monitoring is performed for reclaimed areas. Also, the performance standards that are listed below may be reevaluated, at a later time, in terms of this baseline data. Therefore, it is possible that minor adjustments will be made to the performance standards that are proposed herein. Plant density shall be consistent with surrounding areas.

Revegetated areas will be monitored once per year during July by a County approved Biologist. Monitoring records will compare the actual plant success rates with the success criteria. The following minimum standards must be achieved:

Seed Mix "A"

Species richness	7 native perennial species per 10 x 10 meter plot
Cover	40% of area covered outside of bedrock zones per 10 x 10 meter plot
Density	1 - 2 native perennial stems per square meter plot

Seed Mix "B"

Species richness	3 native perennial species per 10 x 10 meter plot
Cover	70% of area covered per 10 x 10 meter plot
Density	No target density on erosion control seeding areas

(1) Prior to reclamation, test plots will be established (using the different soil compositions that are anticipated) to determine optimal seeding mixtures, seeding methods, seeding rates, mulch types and application procedures to be used to ensure species success and diversity. Success criteria may be adjusted based on the results of the test plot program.

5.2 Installation Monitoring

To insure that the revegetation plan is followed all implementation activities shall be monitored by a County-approved Biologist. Records shall be kept of soil preparation, including the addition of amendments as determined to be necessary, and hydroseeding. Hydroseeding will further be detailed to identify the date of application and the location where various seed mixes are applied. This will require the preparation of a map to show the location of the revegetation sites and date of seed application.

5.3 Vegetation Monitoring

Monitoring must be performed to document revegetation success. Following seeding operations and prior to requesting the release of financial assurances, individual revegetation sites will be monitored for a minimum of five years (or until performance criteria has been met). County staff will arrange a time to meet the applicant on site after planting for each individual phase is complete. Based on staff approval of the installation, the official five-year monitoring period will begin. Monitoring will be performed to document that the revegetation areas achieve the success standards for vegetative cover. Sample sizes must be sufficient to produce at least an 80% confidence level. When the revegetated areas meet success criteria for two consecutive years without human intervention, no further monitoring will be required and the operator will apply for release of financial assurances.

Appendix D
Drainage Report

CEQA-LEVEL
HYDROLOGY REPORT
FOR THE
OTAY HILLS QUARRY

(Log No. 93-19-006J, P04-004, RP04-001)

February 19, 2015

Wayne W. Chang, MS, PE 46548

ChangConsultants
Civil Engineering ◦ Hydrology ◦ Hydraulics ◦ Sedimentation

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Rancho Santa Fe, CA 92067
(858) 692-0760

FOR REVIEW ONLY

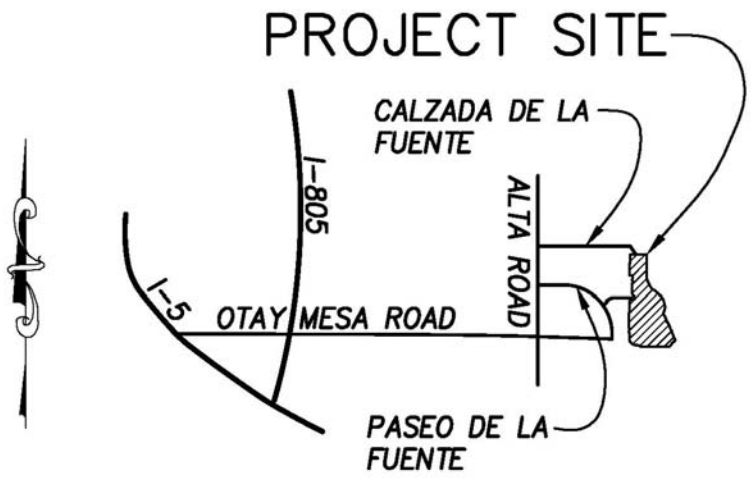
TABLE OF CONTENTS

APPENDIX

MAP POCKET

INTRODUCTION

The Otay Hills Quarry is a proposed mineral resource recovery project located beyond the westerly terminus of Otay Mesa Road in southern San Diego County (see Vicinity Map). A plot plan and reclamation plan have been prepared for the proposed recovery activities by Chang Consultants. This CEQA-level drainage report analyzes the existing and proposed (ultimate) condition hydrology at the site. The existing condition reflects the site prior to the proposed project initiation. Recent grading and improvements have been performed and constructed immediately west of the site. These grading and improvements are included on the existing and proposed condition work maps in this report. During the extraction phases of the project, borrow areas will be created that act as retention basins. There will not be an increase in off-site runoff or associated impacts during extraction and backfill due to the retention. Therefore, the interim extraction and backfill phases are not analyzed. The proposed condition reflects the ultimate, post-reclamation condition.



VICINITY MAP
NO SCALE

HYDROLOGIC ANALYSES

Hydrologic analyses were performed to determine the 100-year existing and ultimate condition flow rates associated with the footprint of the resource recovery area. The existing and ultimate conditions are shown on the work maps at the back of this report. The County of San Diego's 2003 *Hydrology Manual* rational method procedure was used for the analyses. The rational method input parameters are summarized as follows:

- Precipitation: The 100-year, 6- and 24-hour precipitation values from the *Hydrology Manual* are 3.4 and 8.0 inches, respectively.

- Drainage areas: Surface runoff patterns from the site are generally towards the west and south. There are several locations where surface runoff exits the site. The overall drainage area has been grouped into three major drainage basins, or outflow areas, for the existing

and ultimate conditions (Basins 100, 200, and 300 for the existing conditions and Basins 10, 20, and 30 for the ultimate conditions). Existing Basin 100 generally corresponds to ultimate Basin 10, etc. The reclamation and plot plan were developed such that the project would generally maintain the existing off-site runoff directions.

The existing condition drainage basins were delineated using 5-foot contour topographic mapping prepared for the project as well as USGS data for off-site areas. The ultimate condition drainage basins were based on the project plans and the existing topographic mapping. A field visit was performed to verify the drainage basin delineations. The Rational Method Work Maps (see map pocket) contain the drainage basin boundaries as well as flow paths and rational method node numbers.

- Hydrologic soil groups: The hydrologic soil groups were determined from the Soil Conservation Service's *Soil Survey* for San Diego County. The soil group in the study area is entirely "D".

- Runoff coefficients: The runoff coefficients were selected based on the land use and Soil Group "D". The existing condition study area consists of relatively steep, entirely undeveloped hillsides. Since the project involves mineral recovery, the proposed condition land use will also be essentially undeveloped. According to Table 3 from the *Hydrology Manual,* undeveloped land under Soil Group "D" has a runoff coefficient of 0.35.

- Flow lengths and elevations: The flow lengths and elevations were obtained from the Rational Method Work Maps.

The 100-year rational method results are included in Appendix A. The analyses were performed for the existing and ultimate conditions using the CivilDesign Rational Method Hydrology Program, which is based on the County of San Diego criteria. There are five primary discharge locations from the site under existing conditions. These are labeled A through E on the Existing Condition Rational Method Work Map. Two are near the northwest corner, the third is approximately midway along the westerly boundary, and the final two are along the southerly boundary. Under existing conditions, the northwest-most discharge location, A, enters a natural watercourse that flows away from the site in a southwest direction. The additional two westerly discharge locations, B and C, enter a storm drain system constructed by the adjacent project. The storm drain ultimately conveys the runoff in a southwesterly direction away from the site. The southerly two overland discharge locations, D and E, enter natural drainage courses that confluence a short distance south of the site.

Under proposed conditions, the project runoff will continue to exit the site at discharge locations A, C, D, and E. Flow will not exit the site at discharge location B. The 100-year existing and proposed condition 100-year flow rate at each of the discharge locations from the site are summarized in Table 1.

Table 1 shows that the project will not increase the 100-year flow rate from discharge locations B through E. On the other hand, the flow rate from discharge location A will increase slightly. A detention analysis was performed to determine the required detention volume to attenuate the 100-year flow rate from 574 to 559 cfs. The County of San Diego's rational method to hydrograph routine was used to convert the 100-year peak flow rate results to a hydrograph. The results are included in Appendix B and show that a storage volume of at least 0.6 acre-feet is required. A basin is shown on the work map with this volume.

Discharge Location	Existing Condition			Proposed Condition		
	Tributary Area, ac	100-Year Flow, cfs	100-Year Velocity, fps	Tributary Area, ac	100-Year Flow, cfs	100-Year Velocity, fps
A	368.65	559	14.2	375.08	574	12.3
B	13.79	28	2.4	---	---	---
C	46.98	94	3.4	50.46	87	4.8
D	25.60	58	2.2	29.07	57	4.3
E	38.27	80	3.5	38.68	65	9.4

Table 1. Summary 100-Year Rational Method Results

HYDRAULIC ANALYSES

The flow velocities are provided in Table 1 from the rational method results. Under existing conditions, the flow velocities at each discharge location were determined using one of two methods. First, where the rational method routine tributary to the discharge location models an initial area (discharge locations B through E), the flow velocity was approximated by dividing the initial subarea flow distance by the total travel time. Second, where the rational method routine tributary to the discharge location models improved channel travel (discharge location A), the flow velocity was obtained from the improved channel results from the rational method output.

Under proposed conditions, normal depth analyses were performed to more accurately approximate the flow velocity at each of the four site discharge locations. The normal depth analyses were based on the proposed condition 100-year flow rates and the drainage conveyance at each discharge location. The analyses were performed using the FlowMaster program and the results are included after this report text. The results show that the flow velocities at discharge locations C and D are below the erosive threshold of 5 to 6 feet per second. Therefore, energy dissipation is not required at these locations. On the other hand, the flow velocities at discharge locations A and E are erosive. Discharge location A will consist of three 54-inch HDPE pipes. Riprap shall be installed at the pipe outlets in accordance with the County of San Diego's September 2014, *Hydraulic Design Manual* and *San Diego Regional Standard Drawing* D-40. For the outlet velocity of 12.3 feet per second, the rock size is required to be ½-ton with a 2.7 foot thickness over 1-inch gravel with a 1 foot thickness. Discharge Location E will consist of a drainage ditch per D-75. For the outlet velocity of 9.4 feet per second, the rock size is required to be No. 2 backing with a 1 foot thickness over ¼-inch gravel with a 1-foot thickness.

CONCLUSION

The CEQA-level hydrologic analyses show that the project will decrease the 100-year surface runoff at four of the five outflow locations (discharge locations B through E). At discharge location A, a detention basin can be installed near the outflow to mitigate for the 100-year flow increase. Based on this, the project will not adversely impact the off-site drainage conditions. Additional drainage design details will be included in the final drainage report for the project.

The northerly-most proposed pad has a tributary area exceeding 200 acres. The pad will convey the storm runoff through the site in accordance with the State Mining and Reclamation Act requirements. The mine operator shall ensure that the pad will not be adversely impacted by runoff from the watershed. Since the runoff will flow through the site within the pad and the project will not increase the runoff exiting the site, the pad will not adversely impact flow from the watershed.

DECLARATION OF RESPONSIBLE CHARGE

I hereby declare that I am the civil engineer of work for this project, that I have exercised responsible charge over the design of the project as defined in Section 6703 of the Business and Professions Code, and that the design is consistent with current design.

I understand that the check of project drawings and specifications by the County of San Diego is confined to a review only and does not relieve me, as engineer of work, of my responsibilities for project design.

FOR REVIEW ONLY

Wayne W. Chang Date
RCE 46548
Exp. June 30, 2015

Worksheet for Discharge Location A - 191.3 cfs per pipe (3 pipes total)

Project Description

Friction Method	Manning Formula
Solve For	Full Flow Diameter

Input Data

Roughness Coefficient	0.013	
Channel Slope	0.01000	ft/ft
Normal Depth	4.45	ft
Diameter	4.45	ft
Discharge	191.30	ft³/s

Results

Diameter	4.45	ft
Normal Depth	4.45	ft
Flow Area	15.58	ft²
Wetted Perimeter	13.99	ft
Hydraulic Radius	1.11	ft
Top Width	0.00	ft
Critical Depth	3.97	ft
Percent Full	100.0	%
Critical Slope	0.00888	ft/ft
Velocity	12.28	ft/s
Velocity Head	2.34	ft
Specific Energy	6.80	ft
Froude Number	0.00	
Maximum Discharge	205.76	ft³/s
Discharge Full	191.28	ft³/s
Slope Full	0.01000	ft/ft
Flow Type	SubCritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%

Worksheet for Discharge Location C

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.030	
Channel Slope	0.01000	ft/ft
Left Side Slope	5.00	ft/ft (H:V)
Right Side Slope	5.00	ft/ft (H:V)
Discharge	87.00	ft^3/s

Results

Normal Depth	1.91	ft
Flow Area	18.32	ft^2
Wetted Perimeter	19.52	ft
Hydraulic Radius	0.94	ft
Top Width	19.14	ft
Critical Depth	1.80	ft
Critical Slope	0.01395	ft/ft
Velocity	4.75	ft/s
Velocity Head	0.35	ft
Specific Energy	2.26	ft
Froude Number	0.86	
Flow Type	Subcritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	1.91	ft
Critical Depth	1.80	ft
Channel Slope	0.01000	ft/ft
Critical Slope	0.01395	ft/ft

Worksheet for Discharge Location D

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.030	
Channel Slope	0.01000	ft/ft
Left Side Slope	5.00	ft/ft (H:V)
Right Side Slope	5.00	ft/ft (H:V)
Discharge	57.00	ft^3/s

Results

Normal Depth	1.63	ft
Flow Area	13.34	ft^2
Wetted Perimeter	16.66	ft
Hydraulic Radius	0.80	ft
Top Width	16.33	ft
Critical Depth	1.52	ft
Critical Slope	0.01476	ft/ft
Velocity	4.27	ft/s
Velocity Head	0.28	ft
Specific Energy	1.92	ft
Froude Number	0.83	
Flow Type	Subcritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	1.63	ft
Critical Depth	1.52	ft
Channel Slope	0.01000	ft/ft
Critical Slope	0.01476	ft/ft

Worksheet for Discharge Location E - D-75 Ditch

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.016	
Channel Slope	0.01000	ft/ft
Constructed Depth	3.00	ft
Constructed Top Width	5.00	ft
Discharge	65.00	ft^3/s

Results

Normal Depth	2.34	ft
Flow Area	6.89	ft^2
Wetted Perimeter	6.73	ft
Hydraulic Radius	1.02	ft
Top Width	4.42	ft
Critical Depth	2.70	ft
Critical Slope	0.00564	ft/ft
Velocity	9.43	ft/s
Velocity Head	1.38	ft
Specific Energy	3.72	ft
Froude Number	1.33	
Flow Type	Supercritical	

GVF Input Data

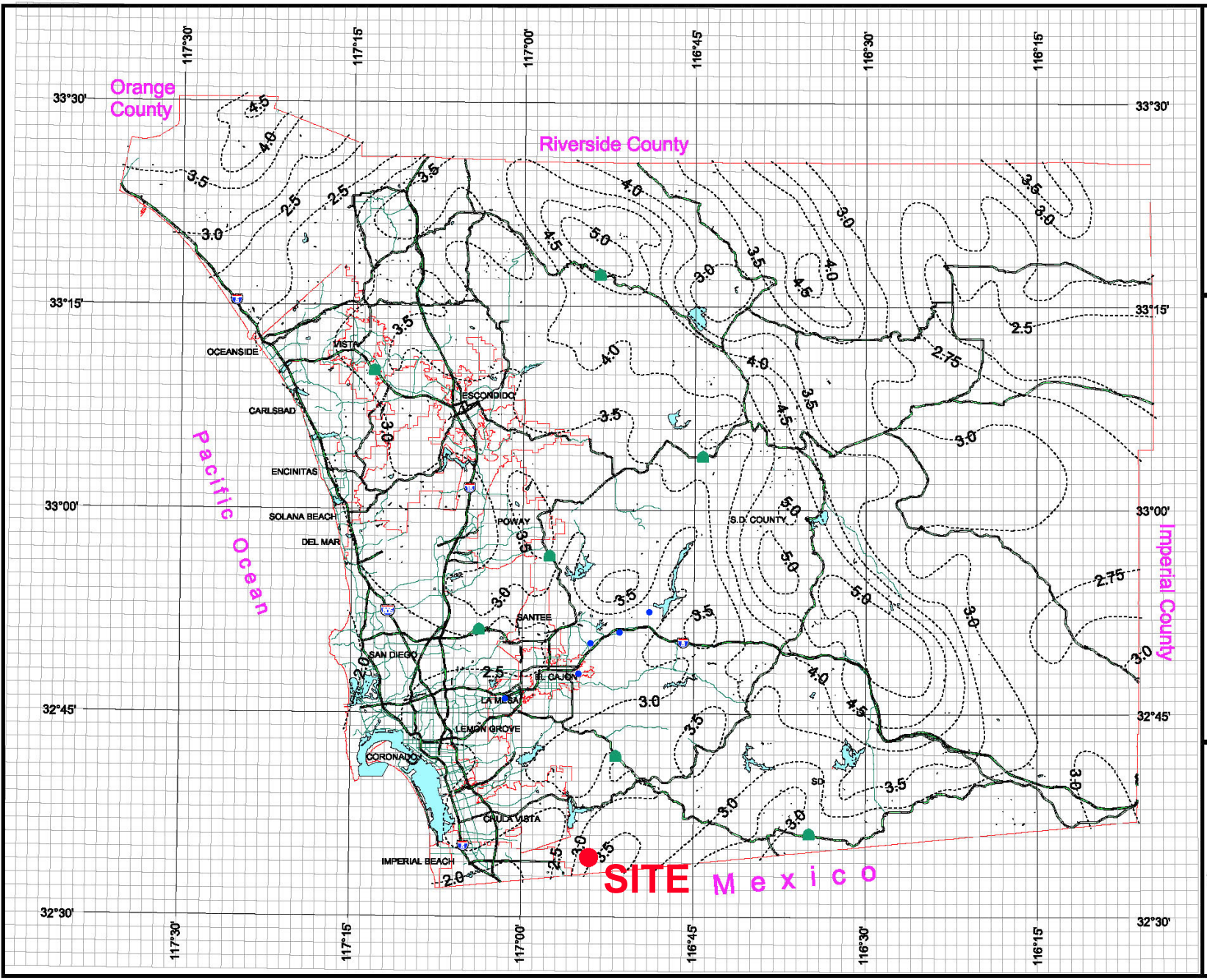
Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	2.34	ft
Critical Depth	2.70	ft
Channel Slope	0.01000	ft/ft
Critical Slope	0.00564	ft/ft

APPENDIX A

100-YEAR RATIONAL METHOD ANALYSES



County of San Diego Hydrology Manual

Rainfall Isopluvials

100 Year Rainfall Event - 6 Hours

Isopluvial (inches)

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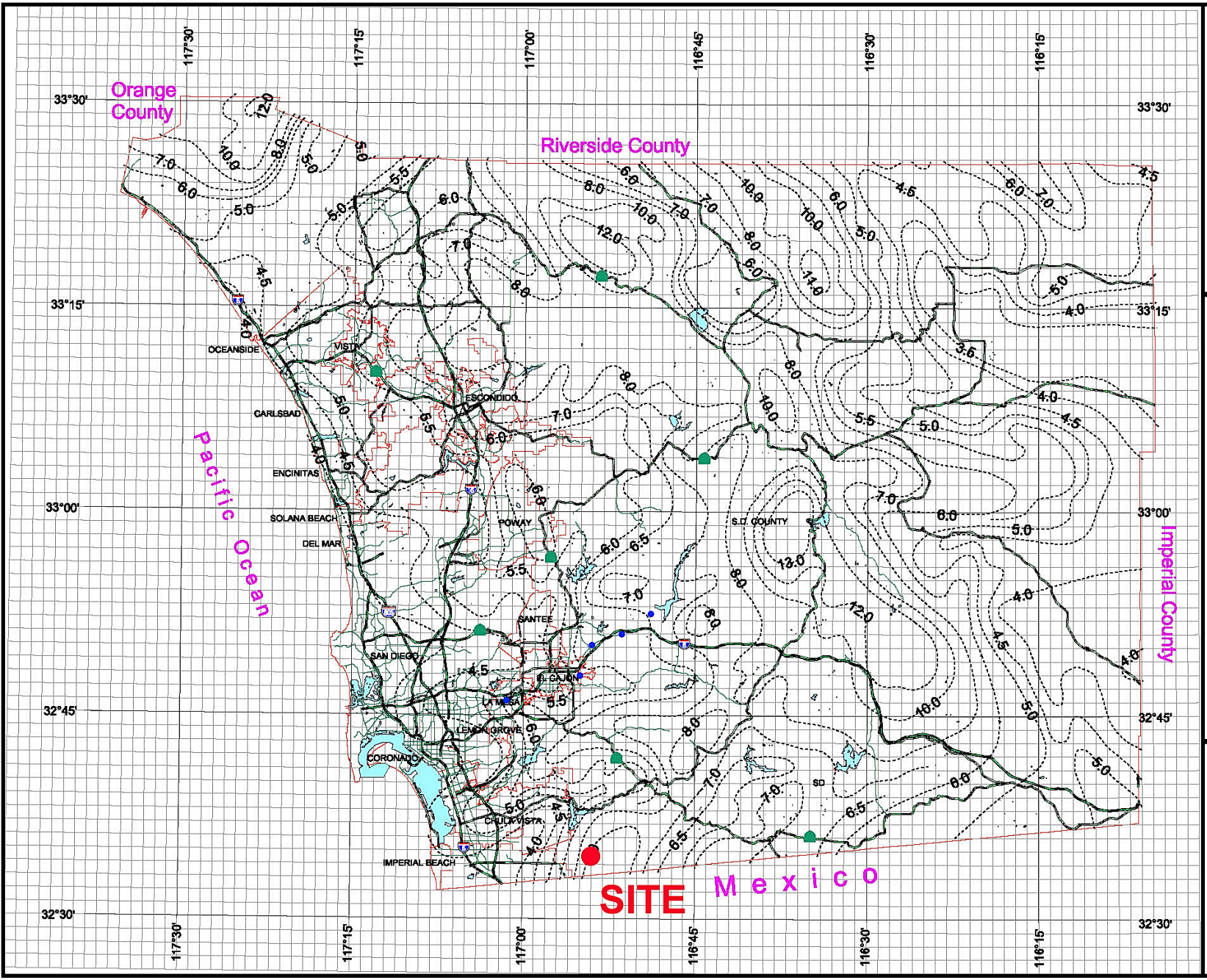
County of San Diego Hydrology Manual

Rainfall Isopluvials

100 Year Rainfall Event - 24 Hours

Isopluvial (inches)



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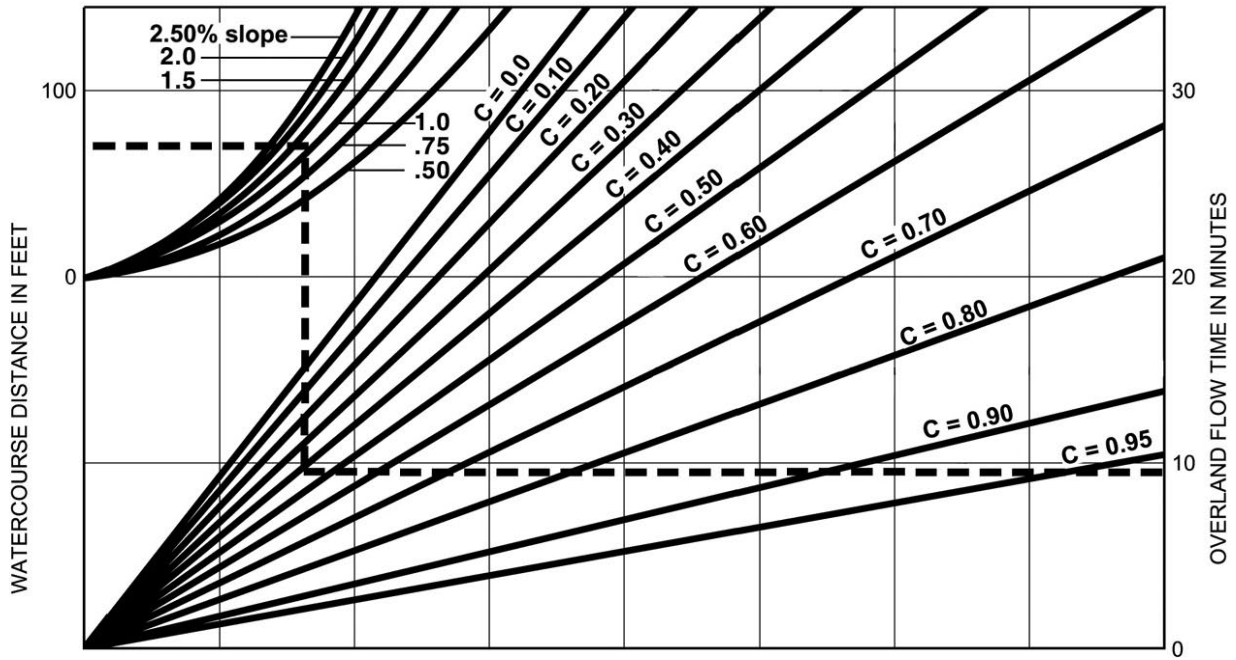


EXAMPLE:

Given: Watercourse Distance (D) = 70 Feet
Slope (s) = 1.3%
Runoff Coefficient (C) = 0.41
Overland Flow Time (T) = 9.5 Minutes

$$T = \frac{1.8\,(1.1-C)\sqrt{D}}{\sqrt[3]{s}}$$

SOURCE: Airport Drainage, Federal Aviation Administration, 1965

FIGURE 3-3

Rational Formula - Overland Time of Flow Nomograph

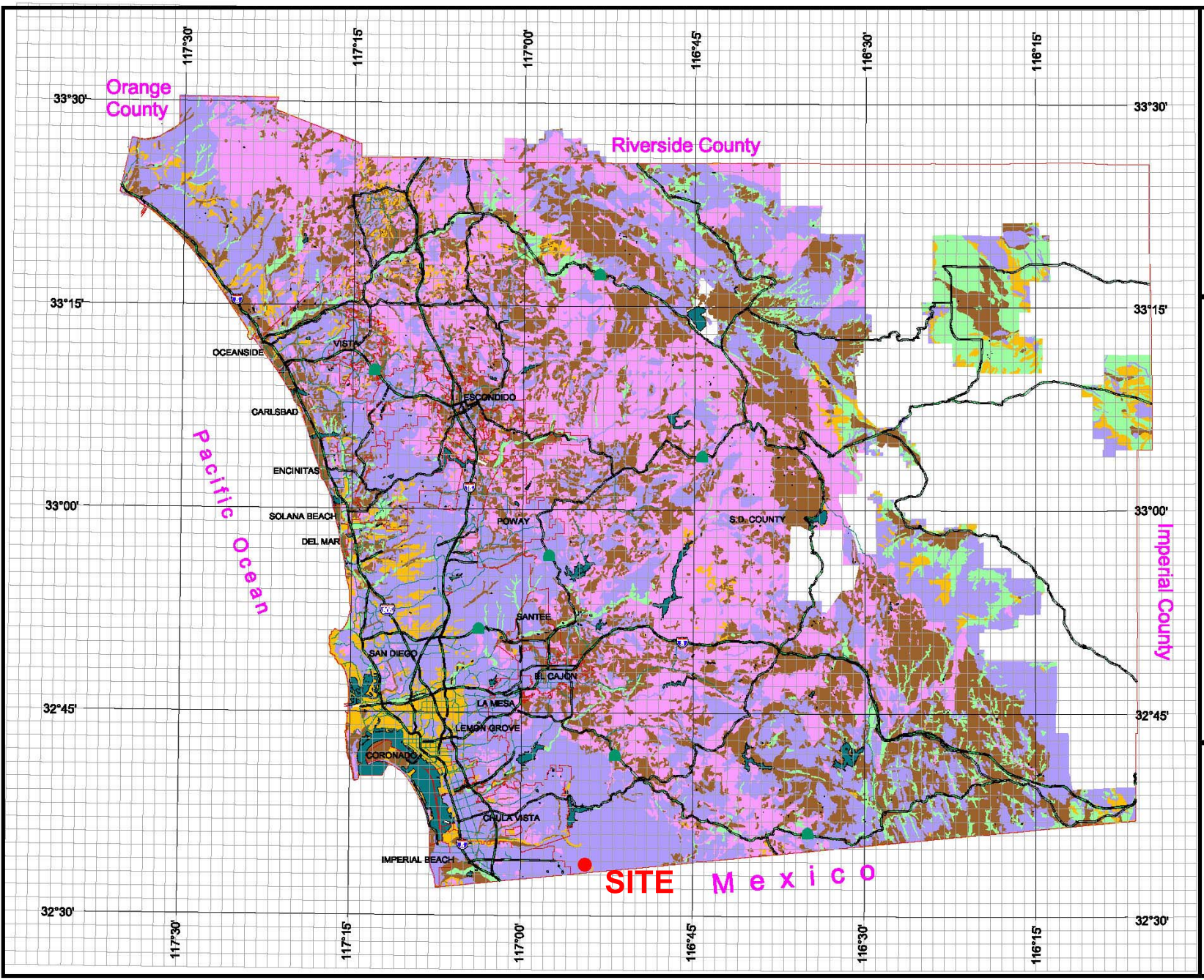
Table 3-1
RUNOFF COEFFICIENTS FOR URBAN AREAS

Land Use		Runoff Coefficient "C"				
			Soil Type			
NRCS Elements	County Elements	% IMPER.	A	B	C	D
Undisturbed Natural Terrain (Natural)	Permanent Open Space	0*	0.20	0.25	0.30	0.35
Low Density Residential (LDR)	Residential, 1.0 DU/A or less	10	0.27	0.32	0.36	0.41
Low Density Residential (LDR)	Residential, 2.0 DU/A or less	20	0.34	0.38	0.42	0.46
Low Density Residential (LDR)	Residential, 2.9 DU/A or less	25	0.38	0.41	0.45	0.49
Medium Density Residential (MDR)	Residential, 4.3 DU/A or less	30	0.41	0.45	0.48	0.52
Medium Density Residential (MDR)	Residential, 7.3 DU/A or less	40	0.48	0.51	0.54	0.57
Medium Density Residential (MDR)	Residential, 10.9 DU/A or less	45	0.52	0.54	0.57	0.60
Medium Density Residential (MDR)	Residential, 14.5 DU/A or less	50	0.55	0.58	0.60	0.63
High Density Residential (HDR)	Residential, 24.0 DU/A or less	65	0.66	0.67	0.69	0.71
High Density Residential (HDR)	Residential, 43.0 DU/A or less	80	0.76	0.77	0.78	0.79
Commercial/Industrial (N. Com)	Neighborhood Commercial	80	0.76	0.77	0.78	0.79
Commercial/Industrial (G. Com)	General Commercial	85	0.80	0.80	0.81	0.82
Commercial/Industrial (O.P. Com)	Office Professional/Commercial	90	0.83	0.84	0.84	0.85
Commercial/Industrial (Limited I.)	Limited Industrial	90	0.83	0.84	0.84	0.85
Commercial/Industrial (General I.)	General Industrial	95	0.87	0.87	0.87	0.87

*The values associated with 0% impervious may be used for direct calculation of the runoff coefficient as described in Section 3.1.2 (representing the pervious runoff coefficient, Cp, for the soil type), or for areas that will remain undisturbed in perpetuity. Justification must be given that the area will remain natural forever (e.g., the area is located in Cleveland National Forest).
DU/A = dwelling units per acre
NRCS = National Resources Conservation Service

County of San Diego Hydrology Manual

Soil Hydrologic Groups



Legend

Soil Groups

- Group A
- Group B
- Group C
- Group D
- Undetermined
- Data Unavailable

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San Diego County Rational Hydrology Program

CIVILCADD/CIVILDESIGN Engineering Software,(c)1991-2009 Version 7.8

Rational method hydrology program based on
San Diego County Flood Control Division 2003 hydrology manual
      Rational Hydrology Study   Date: 02/16/15

Otay Hills Quarry
Existing Conditions
100-Year Storm Event

 *********   Hydrology Study Control Information **********

Program License Serial Number 4028

Rational hydrology study storm event year is   100.0
English (in-lb) input data Units used

Map data precipitation entered:
6 hour, precipitation(inches) = 3.400
24 hour precipitation(inches) = 8.000
P6/P24 =   42.5%
Adjusted 6 hour precipitation (inches) = 3.600
Adjusted P6/P24 =   45.0%
San Diego hydrology manual 'C' values used

++
Process from Point/Station   100.000 to Point/Station   101.000
**** INITIAL AREA EVALUATION ****
_____
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 1.000
[UNDISTURBED NATURAL TERRAIN   ]
(Permanent Open Space   )
Impervious value, Ai = 0.000
Sub-Area C Value = 0.350
Initial subarea total flow distance = 2615.000(Ft.)
Highest elevation = 1585.000(Ft.)
Lowest elevation = 895.000(Ft.)
Elevation difference = 690.000(Ft.) Slope = 26.386 %
Top of Initial Area Slope adjusted by User to 13.000 %
INITIAL AREA TIME OF CONCENTRATION CALCULATIONS:
The maximum overland flow distance is 100.00 (Ft)
for the top area slope value of 13.00 %, in a development type of
 Permanent Open Space
In Accordance With Figure 3-3
Initial Area Time of Concentration =   5.74 minutes

```
TC = [1.8*(1.1-C)*distance(Ft.)^.5)/(% slope^(1/3)]
TC = [1.8*(1.1-0.3500)*( 100.000^.5)/(  13.000^(1/3)]=   5.74
The initial area total distance of 2615.00 (Ft.) entered leaves a
remaining distance of 2515.00 (Ft.)
Using Figure 3-4, the travel time for this distance is   5.42 minutes
for a distance of 2515.00 (Ft.) and a slope of 26.39 %
with an elevation difference of 663.61(Ft.) from the end of the top area
Tt = [11.9*length(Mi)^3)/(elevation change(Ft.))]^.385 *60(min/hr)
 =    5.417 Minutes
Tt=[(11.9*0.4763^3)/(663.61)]^.385=  5.42
Total initial area Ti =   5.74 minutes from Figure 3-3 formula plus
  5.42 minutes from the Figure 3-4 formula =  11.16 minutes
Rainfall intensity (I) =      5.652(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.350
Subarea runoff =     81.574(CFS)
Total initial stream area =       41.240(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      101.000 to Point/Station      102.000
**** IMPROVED CHANNEL TRAVEL TIME ****
________________________________________________________________________
Upstream point elevation =   895.000(Ft.)
Downstream point elevation =   651.000(Ft.)
Channel length thru subarea  =  4193.000(Ft.)
Channel base width      =    3.000(Ft.)
Slope or 'Z' of left channel bank =   2.000
Slope or 'Z' of right channel bank =   2.000
Estimated mean flow rate at midpoint of channel =    320.556(CFS)
Manning's 'N'    = 0.040
Maximum depth of channel  =    5.000(Ft.)
Flow(q) thru subarea =    320.556(CFS)
Depth of flow =   2.933(Ft.), Average velocity =  12.328(Ft/s)
Channel flow top width =   14.732(Ft.)
Flow Velocity =   12.33(Ft/s)
Travel time  =    5.67 min.
Time of concentration =   16.83 min.
Critical depth =      3.688(Ft.)
 Adding area flow to channel
Rainfall intensity (I) =      4.336(In/Hr) for a   100.0 year storm
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 1.000
[UNDISTURBED NATURAL TERRAIN                ]
(Permanent Open Space   )
Impervious value, Ai = 0.000
Sub-Area C Value = 0.350
Rainfall intensity =      4.336(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for total area
(Q=KCIA) is C = 0.350  CA =    129.028
Subarea runoff =    477.896(CFS) for    327.410(Ac.)
Total runoff =    559.470(CFS)      Total area =     368.650(Ac.)
Depth of flow =   3.753(Ft.), Average velocity =  14.192(Ft/s)
Critical depth =      4.781(Ft.)
```

```
++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      101.000 to Point/Station      102.000
**** CONFLUENCE OF MAIN STREAMS ****
------------------------------------------------------------------------
The following data inside Main Stream is listed:
In Main Stream number: 1
Stream flow area =    368.650(Ac.)
Runoff from this stream =    559.470(CFS)
Time of concentration =   16.83 min.
Rainfall intensity =     4.336(In/Hr)
Program is now starting with Main Stream No. 2


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      200.000 to Point/Station      201.000
**** INITIAL AREA EVALUATION ****
------------------------------------------------------------------------
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 1.000
[UNDISTURBED NATURAL TERRAIN                ]
(Permanent Open Space   )
Impervious value, Ai = 0.000
Sub-Area C Value = 0.350
Initial subarea total flow distance  = 1559.000(Ft.)
Highest elevation =  828.000(Ft.)
Lowest elevation =  652.000(Ft.)
Elevation difference =  176.000(Ft.) Slope = 11.289 %
INITIAL AREA TIME OF CONCENTRATION CALCULATIONS:
The maximum overland flow distance is 100.00 (Ft)
for the top area slope value of  11.29 %, in a development type of
 Permanent Open Space
In Accordance With Figure 3-3
Initial Area Time of Concentration =   6.02 minutes
TC = [1.8*(1.1-C)*distance(Ft.)^.5)/(% slope^(1/3)]
TC = [1.8*(1.1-0.3500)*( 100.000^.5)/(  11.289^(1/3)]=   6.02
The initial area total distance of 1559.00 (Ft.) entered leaves a
remaining distance of 1459.00 (Ft.)
Using Figure 3-4, the travel time for this distance is   4.94 minutes
for a distance of 1459.00 (Ft.) and a slope of 11.29 %
with an elevation difference of 164.71(Ft.) from the end of the top area
Tt = [11.9*length(Mi)^3)/(elevation change(Ft.))]^.385 *60(min/hr)
 =    4.939 Minutes
Tt=[(11.9*0.2763^3)/(164.71)]^.385=  4.94
Total initial area Ti =   6.02 minutes from Figure 3-3 formula plus
  4.94 minutes from the Figure 3-4 formula =  10.96 minutes
Rainfall intensity (I) =      5.718(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.350
Subarea runoff =     27.600(CFS)
Total initial stream area =       13.790(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      200.000 to Point/Station      201.000
**** CONFLUENCE OF MINOR STREAMS ****
------------------------------------------------------------------------
```

```
Along Main Stream number: 2 in normal stream number 1
Stream flow area =     13.790(Ac.)
Runoff from this stream =     27.600(CFS)
Time of concentration =   10.96 min.
Rainfall intensity =     5.718(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      210.000 to Point/Station      211.000
**** INITIAL AREA EVALUATION ****
----------------------------------------------------------------------
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 1.000
[UNDISTURBED NATURAL TERRAIN                 ]
(Permanent Open Space   )
Impervious value, Ai = 0.000
Sub-Area C Value = 0.350
Initial subarea total flow distance  = 2258.000(Ft.)
Highest elevation =  997.000(Ft.)
Lowest elevation =  622.000(Ft.)
Elevation difference =  375.000(Ft.) Slope = 16.608 %
INITIAL AREA TIME OF CONCENTRATION CALCULATIONS:
The maximum overland flow distance is 100.00 (Ft)
for the top area slope value of  16.61 %, in a development type of
 Permanent Open Space
In Accordance With Figure 3-3
Initial Area Time of Concentration =   5.29 minutes
TC = [1.8*(1.1-C)*distance(Ft.)^.5)/(% slope^(1/3)]
TC = [1.8*(1.1-0.3500)*( 100.000^.5)/(  16.608^(1/3)]=   5.29
The initial area total distance of 2258.00 (Ft.) entered leaves a
remaining distance of 2158.00 (Ft.)
Using Figure 3-4, the travel time for this distance is   5.75 minutes
for a distance of 2158.00 (Ft.) and a slope of 16.61 %
with an elevation difference of 358.40(Ft.) from the end of the top area
Tt = [11.9*length(Mi)^3)/(elevation change(Ft.))]^.385 *60(min/hr)
 =    5.754 Minutes
Tt=[(11.9*0.4087^3)/(358.40)]^.385=  5.75
Total initial area Ti =   5.29 minutes from Figure 3-3 formula plus
  5.75 minutes from the Figure 3-4 formula =  11.05 minutes
Rainfall intensity (I) =      5.689(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.350
Subarea runoff =     93.541(CFS)
Total initial stream area =       46.980(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      210.000 to Point/Station      211.000
**** CONFLUENCE OF MINOR STREAMS ****
----------------------------------------------------------------------
Along Main Stream number: 2 in normal stream number 2
Stream flow area =     46.980(Ac.)
Runoff from this stream =     93.541(CFS)
Time of concentration =   11.05 min.
Rainfall intensity =     5.689(In/Hr)
Summary of stream data:
```

```
Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                (In/Hr)


1       27.600     10.96               5.718
2       93.541     11.05               5.689
Qmax(1) =
         1.000 *    1.000 *    27.600) +
         1.000 *    0.992 *    93.541) + =     120.390
Qmax(2) =
         0.995 *    1.000 *    27.600) +
         1.000 *    1.000 *    93.541) + =     120.997

Total of 2 streams to confluence:
Flow rates before confluence point:
      27.600      93.541
Maximum flow rates at confluence using above data:
      120.390      120.997
Area of streams before confluence:
       13.790       46.980
Results of confluence:
Total flow rate =    120.997(CFS)
Time of concentration =    11.046 min.
Effective stream area after confluence =     60.770(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      201.000 to Point/Station      211.000
**** CONFLUENCE OF MAIN STREAMS ****
________________________________________________________________________
The following data inside Main Stream is listed:
In Main Stream number: 2
Stream flow area =     60.770(Ac.)
Runoff from this stream =    120.997(CFS)
Time of concentration =   11.05 min.
Rainfall intensity =     5.689(In/Hr)
Program is now starting with Main Stream No. 3


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      300.000 to Point/Station      301.000
**** INITIAL AREA EVALUATION ****
________________________________________________________________________
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 1.000
[UNDISTURBED NATURAL TERRAIN                ]
(Permanent Open Space   )
Impervious value, Ai = 0.000
Sub-Area C Value = 0.350
Initial subarea total flow distance  = 2127.000(Ft.)
Highest elevation = 1015.000(Ft.)
Lowest elevation =  605.000(Ft.)
Elevation difference =  410.000(Ft.) Slope = 19.276 %
INITIAL AREA TIME OF CONCENTRATION CALCULATIONS:
```

```
The maximum overland flow distance is 100.00 (Ft)
for the top area slope value of  19.28 %, in a development type of
 Permanent Open Space
In Accordance With Figure 3-3
Initial Area Time of Concentration =   5.03 minutes
TC = [1.8*(1.1-C)*distance(Ft.)^.5)/(% slope^(1/3)]
TC = [1.8*(1.1-0.3500)*( 100.000^.5)/(  19.276^(1/3)]=   5.03
The initial area total distance of 2127.00 (Ft.) entered leaves a
remaining distance of 2027.00 (Ft.)
Using Figure 3-4, the travel time for this distance is   5.18 minutes
for a distance of 2027.00 (Ft.) and a slope of 19.28 %
with an elevation difference of 390.72(Ft.) from the end of the top area
Tt = [11.9*length(Mi)^3)/(elevation change(Ft.))]^.385 *60(min/hr)
 =    5.178 Minutes
Tt=[(11.9*0.3839^3)/(390.72)]^.385=  5.18
Total initial area Ti =   5.03 minutes from Figure 3-3 formula plus
  5.18 minutes from the Figure 3-4 formula =  10.21 minutes
Rainfall intensity (I) =      5.984(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.350
Subarea runoff =     80.151(CFS)
Total initial stream area =       38.270(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      300.000 to Point/Station      301.000
**** CONFLUENCE OF MINOR STREAMS ****
________________________________________________________________________
Along Main Stream number: 3 in normal stream number 1
Stream flow area =     38.270(Ac.)
Runoff from this stream =     80.151(CFS)
Time of concentration =   10.21 min.
Rainfall intensity =     5.984(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      310.000 to Point/Station      311.000
**** INITIAL AREA EVALUATION ****
________________________________________________________________________
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 1.000
[UNDISTURBED NATURAL TERRAIN                 ]
(Permanent Open Space   )
Impervious value, Ai = 0.000
Sub-Area C Value = 0.350
Initial subarea total flow distance  = 1196.000(Ft.)
Highest elevation =  758.000(Ft.)
Lowest elevation =  576.000(Ft.)
Elevation difference =  182.000(Ft.) Slope = 15.217 %
INITIAL AREA TIME OF CONCENTRATION CALCULATIONS:
The maximum overland flow distance is 100.00 (Ft)
for the top area slope value of  15.22 %, in a development type of
 Permanent Open Space
In Accordance With Figure 3-3
Initial Area Time of Concentration =   5.45 minutes
TC = [1.8*(1.1-C)*distance(Ft.)^.5)/(% slope^(1/3)]
```

```
TC = [1.8*(1.1-0.3500)*( 100.000^.5)/(  15.220^(1/3)]=   5.45
The initial area total distance of 1196.00 (Ft.) entered leaves a
remaining distance of 1096.00 (Ft.)
Using Figure 3-4, the travel time for this distance is   3.53 minutes
for a distance of 1096.00 (Ft.) and a slope of 15.22 %
with an elevation difference of 166.81(Ft.) from the end of the top area
Tt = [11.9*length(Mi)^3)/(elevation change(Ft.))]^.385 *60(min/hr)
 =    3.532 Minutes
Tt=[(11.9*0.2076^3)/(166.81)]^.385=  3.53
Total initial area Ti =   5.45 minutes from Figure 3-3 formula plus
  3.53 minutes from the Figure 3-4 formula =   8.98 minutes
Rainfall intensity (I) =      6.502(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.350
Subarea runoff =     58.255(CFS)
Total initial stream area =       25.600(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      310.000 to Point/Station      311.000
**** CONFLUENCE OF MINOR STREAMS ****
________________________________________________________________________
Along Main Stream number: 3 in normal stream number 2
Stream flow area =     25.600(Ac.)
Runoff from this stream =     58.255(CFS)
Time of concentration =    8.98 min.
Rainfall intensity =     6.502(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                (In/Hr)


1       80.151     10.21               5.984
2       58.255      8.98               6.502
Qmax(1) =
         1.000 *    1.000 *    80.151) +
         0.920 *    1.000 *    58.255) + =     133.766
Qmax(2) =
         1.000 *    0.879 *    80.151) +
         1.000 *    1.000 *    58.255) + =     128.728

Total of 2 streams to confluence:
Flow rates before confluence point:
      80.151      58.255
Maximum flow rates at confluence using above data:
      133.766      128.728
Area of streams before confluence:
       38.270       25.600
Results of confluence:
Total flow rate =    133.766(CFS)
Time of concentration =    10.213 min.
Effective stream area after confluence =     63.870(Ac.)


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Process from Point/Station      301.000 to Point/Station      311.000
**** CONFLUENCE OF MAIN STREAMS ****
```

```
The following data inside Main Stream is listed:
In Main Stream number: 3
Stream flow area =     63.870(Ac.)
Runoff from this stream =    133.766(CFS)
Time of concentration =   10.21 min.
Rainfall intensity =     5.984(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                (In/Hr)


1      559.470     16.83               4.336
2      120.997     11.05               5.689
3      133.766     10.21               5.984
Qmax(1) =
         1.000 *    1.000 *   559.470) +
         0.762 *    1.000 *   120.997) +
         0.725 *    1.000 *   133.766) + =     748.626
Qmax(2) =
         1.000 *    0.656 *   559.470) +
         1.000 *    1.000 *   120.997) +
         0.951 *    1.000 *   133.766) + =     615.406
Qmax(3) =
         1.000 *    0.607 *   559.470) +
         1.000 *    0.925 *   120.997) +
         1.000 *    1.000 *   133.766) + =     585.187

Total of 3 main streams to confluence:
Flow rates before confluence point:
     559.470     120.997     133.766
Maximum flow rates at confluence using above data:
      748.626      615.406      585.187
Area of streams before confluence:
      368.650       60.770       63.870


Results of confluence:
Total flow rate =    748.626(CFS)
Time of concentration =    16.827 min.
Effective stream area after confluence  =    493.290(Ac.)
End of computations, total study area =         493.290 (Ac.)
```

San Diego County Rational Hydrology Program

CIVILCADD/CIVILDESIGN Engineering Software,(c)1991-2009 Version 7.8

Rational method hydrology program based on
San Diego County Flood Control Division 2003 hydrology manual
Rational Hydrology Study Date: 02/19/15

Otay Hills Quarry
Proposed Conditions
100-Year Storm Event

********* Hydrology Study Control Information **********

Program License Serial Number 4028

Rational hydrology study storm event year is 100.0
English (in-lb) input data Units used

Map data precipitation entered:
6 hour, precipitation(inches) = 3.400
24 hour precipitation(inches) = 8.000
P6/P24 = 42.5%
Adjusted 6 hour precipitation (inches) = 3.600
Adjusted P6/P24 = 45.0%
San Diego hydrology manual 'C' values used

++
Process from Point/Station 10.000 to Point/Station 11.000
**** INITIAL AREA EVALUATION ****

Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 1.000
[UNDISTURBED NATURAL TERRAIN]
(Permanent Open Space)
Impervious value, Ai = 0.000
Sub-Area C Value = 0.350
Initial subarea total flow distance = 2998.000(Ft.)
Highest elevation = 1350.000(Ft.)
Lowest elevation = 683.000(Ft.)
Elevation difference = 667.000(Ft.) Slope = 22.248 %
INITIAL AREA TIME OF CONCENTRATION CALCULATIONS:
The maximum overland flow distance is 100.00 (Ft)
for the top area slope value of 22.25 %, in a development type of
Permanent Open Space
In Accordance With Figure 3-3
Initial Area Time of Concentration = 4.80 minutes
TC = [1.8*(1.1-C)*distance(Ft.)^.5)/(% slope^(1/3)]
TC = [1.8*(1.1-0.3500)*(100.000^.5)/(22.248^(1/3)]= 4.80

```
The initial area total distance of 2998.00 (Ft.) entered leaves a
remaining distance of 2898.00 (Ft.)
Using Figure 3-4, the travel time for this distance is   6.45 minutes
for a distance of 2898.00 (Ft.) and a slope of 22.25 %
with an elevation difference of 644.75(Ft.) from the end of the top area
Tt = [11.9*length(Mi)^3)/(elevation change(Ft.))]^.385 *60(min/hr)
 =    6.452 Minutes
Tt=[(11.9*0.5489^3)/(644.75)]^.385=  6.45
Total initial area Ti =   4.80 minutes from Figure 3-3 formula plus
  6.45 minutes from the Figure 3-4 formula =  11.25 minutes
Rainfall intensity (I) =      5.621(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.350
Subarea runoff =    111.199(CFS)
Total initial stream area =       56.520(Ac.)


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Process from Point/Station       11.000 to Point/Station       12.000
**** IMPROVED CHANNEL TRAVEL TIME ****
------------------------------------------------------------------------
Upstream point elevation =   683.000(Ft.)
Downstream point elevation =   680.300(Ft.)
Channel length thru subarea  =   234.000(Ft.)
Channel base width      =    0.000(Ft.)
Slope or 'Z' of left channel bank =  20.000
Slope or 'Z' of right channel bank =  20.000
Manning's 'N'    = 0.030
Maximum depth of channel  =    5.000(Ft.)
Flow(q) thru subarea =    111.199(CFS)
Depth of flow =   1.209(Ft.), Average velocity =   3.802(Ft/s)
Channel flow top width =   48.374(Ft.)
Flow Velocity =    3.80(Ft/s)
Travel time  =    1.03 min.
Time of concentration =   12.28 min.
Critical depth =      1.141(Ft.)


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Process from Point/Station       11.000 to Point/Station       12.000
**** CONFLUENCE OF MINOR STREAMS ****
------------------------------------------------------------------------
Along Main Stream number: 1 in normal stream number 1
Stream flow area =     56.520(Ac.)
Runoff from this stream =    111.199(CFS)
Time of concentration =   12.28 min.
Rainfall intensity =     5.314(In/Hr)


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Process from Point/Station       13.000 to Point/Station       14.000
**** INITIAL AREA EVALUATION ****
------------------------------------------------------------------------
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 1.000
[UNDISTURBED NATURAL TERRAIN                ]
```

```
(Permanent Open Space   )
Impervious value, Ai = 0.000
Sub-Area C Value = 0.350
Initial subarea total flow distance  = 2615.000(Ft.)
Highest elevation = 1585.000(Ft.)
Lowest elevation =  895.000(Ft.)
Elevation difference =  690.000(Ft.) Slope = 26.386 %
Top of Initial Area Slope adjusted by User to 13.000 %
INITIAL AREA TIME OF CONCENTRATION CALCULATIONS:
The maximum overland flow distance is 100.00 (Ft)
for the top area slope value of  13.00 %, in a development type of
 Permanent Open Space
In Accordance With Figure 3-3
Initial Area Time of Concentration =   5.74 minutes
TC = [1.8*(1.1-C)*distance(Ft.)^.5)/(% slope^(1/3)]
TC = [1.8*(1.1-0.3500)*( 100.000^.5)/(  13.000^(1/3)]=   5.74
The initial area total distance of 2615.00 (Ft.) entered leaves a
remaining distance of 2515.00 (Ft.)
Using Figure 3-4, the travel time for this distance is   5.42 minutes
for a distance of 2515.00 (Ft.) and a slope of 26.39 %
with an elevation difference of 663.61(Ft.) from the end of the top area
Tt = [11.9*length(Mi)^3)/(elevation change(Ft.))]^.385 *60(min/hr)
 =    5.417 Minutes
Tt=[(11.9*0.4763^3)/(663.61)]^.385=  5.42
Total initial area Ti =   5.74 minutes from Figure 3-3 formula plus
  5.42 minutes from the Figure 3-4 formula =  11.16 minutes
Rainfall intensity (I) =      5.652(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.350
Subarea runoff =     81.574(CFS)
Total initial stream area =       41.240(Ac.)


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Process from Point/Station       14.000 to Point/Station       15.000
**** IMPROVED CHANNEL TRAVEL TIME ****
________________________________________________________________________
Upstream point elevation =   895.000(Ft.)
Downstream point elevation =   683.000(Ft.)
Channel length thru subarea  =  3369.000(Ft.)
Channel base width      =    3.000(Ft.)
Slope or 'Z' of left channel bank =   2.000
Slope or 'Z' of right channel bank =   2.000
Estimated mean flow rate at midpoint of channel =    250.990(CFS)
Manning's 'N'    = 0.040
Maximum depth of channel  =    5.000(Ft.)
Flow(q) thru subarea =    250.990(CFS)
Depth of flow =   2.579(Ft.), Average velocity =  11.927(Ft/s)
Channel flow top width =   13.317(Ft.)
Flow Velocity =   11.93(Ft/s)
Travel time  =    4.71 min.
Time of concentration =   15.87 min.
Critical depth =      3.313(Ft.)
 Adding area flow to channel
Rainfall intensity (I) =      4.504(In/Hr) for a   100.0 year storm
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
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```
Decimal fraction soil group D = 1.000
[UNDISTURBED NATURAL TERRAIN                ]
(Permanent Open Space   )
Impervious value, Ai = 0.000
Sub-Area C Value = 0.350
Rainfall intensity =      4.504(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for total area
(Q=KCIA) is C = 0.350  CA =     93.331
Subarea runoff =    338.754(CFS) for    225.420(Ac.)
Total runoff =    420.328(CFS)      Total area =     266.660(Ac.)
Depth of flow =   3.253(Ft.), Average velocity =  13.595(Ft/s)
Critical depth =      4.188(Ft.)


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Process from Point/Station       15.000 to Point/Station       12.000
**** IMPROVED CHANNEL TRAVEL TIME ****
________________________________________________________________________
Upstream point elevation =   683.000(Ft.)
Downstream point elevation =   680.300(Ft.)
Channel length thru subarea  =   238.000(Ft.)
Channel base width      =    0.000(Ft.)
Slope or 'Z' of left channel bank =  20.000
Slope or 'Z' of right channel bank =  20.000
Manning's 'N'    = 0.030
Maximum depth of channel  =    5.000(Ft.)
Flow(q) thru subarea =    420.328(CFS)
Depth of flow =   1.998(Ft.), Average velocity =   5.267(Ft/s)
Channel flow top width =   79.901(Ft.)
Flow Velocity =    5.27(Ft/s)
Travel time  =    0.75 min.
Time of concentration =   16.62 min.
Critical depth =      1.938(Ft.)


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Process from Point/Station       15.000 to Point/Station       12.000
**** CONFLUENCE OF MINOR STREAMS ****
________________________________________________________________________
Along Main Stream number: 1 in normal stream number 2
Stream flow area =    266.660(Ac.)
Runoff from this stream =    420.328(CFS)
Time of concentration =   16.62 min.
Rainfall intensity =     4.371(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                 (In/Hr)


1      111.199     12.28               5.314
2      420.328     16.62               4.371
Qmax(1) =
         1.000 *    1.000 *   111.199) +
         1.000 *    0.739 *   420.328) + =     421.721
Qmax(2) =
         0.823 *    1.000 *   111.199) +
```

```
         1.000 *    1.000 *   420.328) + =     511.800

Total of 2 streams to confluence:
Flow rates before confluence point:
     111.199     420.328
Maximum flow rates at confluence using above data:
      421.721      511.800
Area of streams before confluence:
       56.520      266.660
Results of confluence:
Total flow rate =    511.800(CFS)
Time of concentration =    16.620 min.
Effective stream area after confluence =    323.180(Ac.)


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Process from Point/Station       12.000 to Point/Station       16.000
**** IMPROVED CHANNEL TRAVEL TIME ****
________________________________________________________________________
Upstream point elevation =   680.300(Ft.)
Downstream point elevation =   675.500(Ft.)
Channel length thru subarea  =   497.000(Ft.)
Channel base width      =    0.000(Ft.)
Slope or 'Z' of left channel bank =  20.000
Slope or 'Z' of right channel bank =  20.000
Estimated mean flow rate at midpoint of channel =    511.847(CFS)
Manning's 'N'    = 0.030
Maximum depth of channel  =    5.000(Ft.)
Flow(q) thru subarea =    511.847(CFS)
Depth of flow =   2.217(Ft.), Average velocity =   5.209(Ft/s)
Channel flow top width =   88.663(Ft.)
Flow Velocity =    5.21(Ft/s)
Travel time  =    1.59 min.
Time of concentration =   18.21 min.
Critical depth =      2.094(Ft.)
 Adding area flow to channel
Rainfall intensity (I) =      4.121(In/Hr) for a   100.0 year storm
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 1.000
[UNDISTURBED NATURAL TERRAIN                 ]
(Permanent Open Space   )
Impervious value, Ai = 0.000
Sub-Area C Value = 0.350
The area added to the existing stream causes a
a lower flow rate of Q =    488.191(CFS)
therefore the upstream flow rate of Q =    511.800(CFS) is being used
Rainfall intensity =      4.121(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for total area
(Q=KCIA) is C = 0.350  CA =    118.471
Subarea runoff =      0.000(CFS) for     15.310(Ac.)
Total runoff =    511.800(CFS)      Total area =     338.490(Ac.)
Depth of flow =   2.216(Ft.), Average velocity =   5.209(Ft/s)
Critical depth =      2.094(Ft.)
```

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Process from Point/Station       12.000 to Point/Station       16.000
**** CONFLUENCE OF MINOR STREAMS ****
------------------------------------------------------------------------
Along Main Stream number: 1 in normal stream number 1
Stream flow area =    338.490(Ac.)
Runoff from this stream =    511.800(CFS)
Time of concentration =   18.21 min.
Rainfall intensity =     4.121(In/Hr)


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Process from Point/Station       17.000 to Point/Station       18.000
**** INITIAL AREA EVALUATION ****
------------------------------------------------------------------------
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 1.000
[UNDISTURBED NATURAL TERRAIN                 ]
(Permanent Open Space   )
Impervious value, Ai = 0.000
Sub-Area C Value = 0.350
Initial subarea total flow distance  = 2362.000(Ft.)
Highest elevation = 1020.300(Ft.)
Lowest elevation =  684.000(Ft.)
Elevation difference =  336.300(Ft.) Slope = 14.238 %
INITIAL AREA TIME OF CONCENTRATION CALCULATIONS:
The maximum overland flow distance is 100.00 (Ft)
for the top area slope value of  14.24 %, in a development type of
 Permanent Open Space
In Accordance With Figure 3-3
Initial Area Time of Concentration =   5.57 minutes
TC = [1.8*(1.1-C)*distance(Ft.)^.5)/(% slope^(1/3)]
TC = [1.8*(1.1-0.3500)*( 100.000^.5)/(  14.238^(1/3)]=   5.57
The initial area total distance of 2362.00 (Ft.) entered leaves a
remaining distance of 2262.00 (Ft.)
Using Figure 3-4, the travel time for this distance is   6.33 minutes
for a distance of 2262.00 (Ft.) and a slope of 14.24 %
with an elevation difference of 322.06(Ft.) from the end of the top area
Tt = [11.9*length(Mi)^3)/(elevation change(Ft.))]^.385 *60(min/hr)
 =    6.331 Minutes
Tt=[(11.9*0.4284^3)/(322.06)]^.385=  6.33
Total initial area Ti =   5.57 minutes from Figure 3-3 formula plus
  6.33 minutes from the Figure 3-4 formula =  11.90 minutes
Rainfall intensity (I) =      5.422(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.350
Subarea runoff =     69.431(CFS)
Total initial stream area =       36.590(Ac.)


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Process from Point/Station       18.000 to Point/Station       16.000
**** IMPROVED CHANNEL TRAVEL TIME ****
------------------------------------------------------------------------
Upstream point elevation =   684.000(Ft.)
Downstream point elevation =   675.500(Ft.)
```

```
Channel length thru subarea  =   694.000(Ft.)
Channel base width      =    0.000(Ft.)
Slope or 'Z' of left channel bank =  20.000
Slope or 'Z' of right channel bank =  20.000
Manning's 'N'    = 0.030
Maximum depth of channel  =    5.000(Ft.)
Flow(q) thru subarea =     69.431(CFS)
Depth of flow =   1.002(Ft.), Average velocity =   3.456(Ft/s)
Channel flow top width =   40.091(Ft.)
Flow Velocity =    3.46(Ft/s)
Travel time  =    3.35 min.
Time of concentration =   15.25 min.
Critical depth =      0.945(Ft.)


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Process from Point/Station       18.000 to Point/Station       16.000
**** CONFLUENCE OF MINOR STREAMS ****
------------------------------------------------------------------------------
Along Main Stream number: 1 in normal stream number 2
Stream flow area =     36.590(Ac.)
Runoff from this stream =     69.431(CFS)
Time of concentration =   15.25 min.
Rainfall intensity =     4.621(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                (In/Hr)


1      511.800     18.21               4.121
2       69.431     15.25               4.621
Qmax(1) =
         1.000 *    1.000 *   511.800) +
         0.892 *    1.000 *    69.431) + =     573.720
Qmax(2) =
         1.000 *    0.837 *   511.800) +
         1.000 *    1.000 *    69.431) + =     497.986

Total of 2 streams to confluence:
Flow rates before confluence point:
     511.800      69.431
Maximum flow rates at confluence using above data:
      573.720      497.986
Area of streams before confluence:
      338.490       36.590
Results of confluence:
Total flow rate =    573.720(CFS)
Time of concentration =    18.210 min.
Effective stream area after confluence =    375.080(Ac.)


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Process from Point/Station       18.000 to Point/Station       16.000
**** CONFLUENCE OF MAIN STREAMS ****
------------------------------------------------------------------------------
The following data inside Main Stream is listed:
```

```
In Main Stream number: 1
Stream flow area =    375.080(Ac.)
Runoff from this stream =    573.720(CFS)
Time of concentration =   18.21 min.
Rainfall intensity =     4.121(In/Hr)
Program is now starting with Main Stream No. 2


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station       20.000 to Point/Station       21.000
**** INITIAL AREA EVALUATION ****
----------------------------------------------------------------------
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 1.000
[UNDISTURBED NATURAL TERRAIN                  ]
(Permanent Open Space   )
Impervious value, Ai = 0.000
Sub-Area C Value = 0.350
Initial subarea total flow distance  = 1411.000(Ft.)
Highest elevation = 1020.300(Ft.)
Lowest elevation =  787.000(Ft.)
Elevation difference =  233.300(Ft.) Slope = 16.534 %
INITIAL AREA TIME OF CONCENTRATION CALCULATIONS:
The maximum overland flow distance is 100.00 (Ft)
for the top area slope value of  16.53 %, in a development type of
 Permanent Open Space
In Accordance With Figure 3-3
Initial Area Time of Concentration =   5.30 minutes
TC = [1.8*(1.1-C)*distance(Ft.)^.5)/(% slope^(1/3)]
TC = [1.8*(1.1-0.3500)*( 100.000^.5)/(  16.534^(1/3)]=   5.30
The initial area total distance of 1411.00 (Ft.) entered leaves a
remaining distance of 1311.00 (Ft.)
Using Figure 3-4, the travel time for this distance is   3.93 minutes
for a distance of 1311.00 (Ft.) and a slope of 16.53 %
with an elevation difference of 216.76(Ft.) from the end of the top area
Tt = [11.9*length(Mi)^3)/(elevation change(Ft.))]^.385 *60(min/hr)
 =    3.927 Minutes
Tt=[(11.9*0.2483^3)/(216.76)]^.385=  3.93
Total initial area Ti =   5.30 minutes from Figure 3-3 formula plus
  3.93 minutes from the Figure 3-4 formula =   9.23 minutes
Rainfall intensity (I) =      6.389(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.350
Subarea runoff =     13.730(CFS)
Total initial stream area =        6.140(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station       21.000 to Point/Station       22.000
**** IMPROVED CHANNEL TRAVEL TIME ****
----------------------------------------------------------------------
Upstream point elevation =   787.000(Ft.)
Downstream point elevation =   650.500(Ft.)
Channel length thru subarea  =   166.000(Ft.)
Channel base width      =    0.500(Ft.)
Slope or 'Z' of left channel bank =   2.000
```

```
Slope or 'Z' of right channel bank =   2.000
Manning's 'N'    = 0.016
Maximum depth of channel  =    1.000(Ft.)
Flow(q) thru subarea =     13.730(CFS)
Depth of flow =   0.369(Ft.), Average velocity =  30.004(Ft/s)
Channel flow top width =    1.978(Ft.)
Flow Velocity =   30.00(Ft/s)
Travel time  =    0.09 min.
Time of concentration =    9.32 min.
Critical depth =      1.109(Ft.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station       22.000 to Point/Station       23.000
**** IMPROVED CHANNEL TRAVEL TIME ****
------------------------------------------------------------------------------
Upstream point elevation =   650.500(Ft.)
Downstream point elevation =   624.000(Ft.)
Channel length thru subarea  =  1116.000(Ft.)
Channel base width      =    0.000(Ft.)
Slope or 'Z' of left channel bank =  20.000
Slope or 'Z' of right channel bank =  20.000
Estimated mean flow rate at midpoint of channel =     50.273(CFS)
Manning's 'N'    = 0.030
Maximum depth of channel  =    1.000(Ft.)
Flow(q) thru subarea =     50.273(CFS)
Depth of flow =   0.784(Ft.), Average velocity =   4.086(Ft/s)
Channel flow top width =   31.373(Ft.)
Flow Velocity =    4.09(Ft/s)
Travel time  =    4.55 min.
Time of concentration =   13.87 min.
Critical depth =      0.828(Ft.)
 Adding area flow to channel
Rainfall intensity (I) =      4.912(In/Hr) for a   100.0 year storm
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 1.000
[UNDISTURBED NATURAL TERRAIN                ]
(Permanent Open Space   )
Impervious value, Ai = 0.000
Sub-Area C Value = 0.350
Rainfall intensity =      4.912(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for total area
(Q=KCIA) is C = 0.350  CA =     17.661
Subarea runoff =     73.014(CFS) for     44.320(Ac.)
Total runoff =     86.744(CFS)      Total area =      50.460(Ac.)
Depth of flow =   0.962(Ft.), Average velocity =   4.683(Ft/s)
Critical depth =      1.023(Ft.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station       22.000 to Point/Station       23.000
**** CONFLUENCE OF MAIN STREAMS ****
------------------------------------------------------------------------------
The following data inside Main Stream is listed:
In Main Stream number: 2
```

```
Stream flow area =     50.460(Ac.)
Runoff from this stream =     86.744(CFS)
Time of concentration =   13.87 min.
Rainfall intensity =     4.912(In/Hr)
Program is now starting with Main Stream No. 3


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station       30.000 to Point/Station       31.000
**** INITIAL AREA EVALUATION ****
------------------------------------------------------------------------
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 1.000
[UNDISTURBED NATURAL TERRAIN                 ]
(Permanent Open Space   )
Impervious value, Ai = 0.000
Sub-Area C Value = 0.350
Initial subarea total flow distance  = 1131.000(Ft.)
Highest elevation = 1015.000(Ft.)
Lowest elevation =  700.000(Ft.)
Elevation difference =  315.000(Ft.) Slope = 27.851 %
INITIAL AREA TIME OF CONCENTRATION CALCULATIONS:
The maximum overland flow distance is 100.00 (Ft)
for the top area slope value of  27.85 %, in a development type of
 Permanent Open Space
In Accordance With Table 3-2
Initial Area Time of Concentration =   6.90 minutes
 (for slope value of  10.00 %)
The initial area total distance of 1131.00 (Ft.) entered leaves a
remaining distance of 1031.00 (Ft.)
Using Figure 3-4, the travel time for this distance is   2.67 minutes
for a distance of 1031.00 (Ft.) and a slope of 27.85 %
with an elevation difference of 287.14(Ft.) from the end of the top area
Tt = [11.9*length(Mi)^3)/(elevation change(Ft.))]^.385 *60(min/hr)
 =    2.670 Minutes
Tt=[(11.9*0.1953^3)/(287.14)]^.385=  2.67
Total initial area Ti =   6.90 minutes from Table 3-2 plus
  2.67 minutes from the Figure 3-4 formula =   9.57 minutes
Rainfall intensity (I) =      6.240(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.350
Subarea runoff =     56.915(CFS)
Total initial stream area =       26.060(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station       31.000 to Point/Station       32.000
**** IMPROVED CHANNEL TRAVEL TIME ****
------------------------------------------------------------------------
Upstream point elevation =   700.000(Ft.)
Downstream point elevation =   605.000(Ft.)
Channel length thru subarea  =  1399.000(Ft.)
Channel base width      =    3.000(Ft.)
Slope or 'Z' of left channel bank =   2.000
Slope or 'Z' of right channel bank =   2.000
Estimated mean flow rate at midpoint of channel =     56.940(CFS)
```

```
Manning's 'N'    = 0.030
Maximum depth of channel  =    3.000(Ft.)
Flow(q) thru subarea =     56.940(CFS)
Depth of flow =   1.076(Ft.), Average velocity =  10.270(Ft/s)
Channel flow top width =    7.305(Ft.)
Flow Velocity =   10.27(Ft/s)
Travel time  =    2.27 min.
Time of concentration =   11.84 min.
Critical depth =      1.594(Ft.)
 Adding area flow to channel
Rainfall intensity (I) =      5.439(In/Hr) for a   100.0 year storm
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 1.000
[UNDISTURBED NATURAL TERRAIN                ]
(Permanent Open Space   )
Impervious value, Ai = 0.000
Sub-Area C Value = 0.350
The area added to the existing stream causes a
a lower flow rate of Q =     55.343(CFS)
therefore the upstream flow rate of Q =     56.915(CFS) is being used
Rainfall intensity =      5.439(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for total area
(Q=KCIA) is C = 0.350  CA =     10.174
Subarea runoff =      0.000(CFS) for      3.010(Ac.)
Total runoff =     56.915(CFS)      Total area =      29.070(Ac.)
Depth of flow =   1.076(Ft.), Average velocity =  10.269(Ft/s)
Critical depth =      1.594(Ft.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station       31.000 to Point/Station       32.000
**** CONFLUENCE OF MINOR STREAMS ****
------------------------------------------------------------------------
Along Main Stream number: 3 in normal stream number 1
Stream flow area =     29.070(Ac.)
Runoff from this stream =     56.915(CFS)
Time of concentration =   11.84 min.
Rainfall intensity =     5.439(In/Hr)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station       33.000 to Point/Station       34.000
**** INITIAL AREA EVALUATION ****
------------------------------------------------------------------------
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 1.000
[UNDISTURBED NATURAL TERRAIN                ]
(Permanent Open Space   )
Impervious value, Ai = 0.000
Sub-Area C Value = 0.350
Initial subarea total flow distance  = 1383.000(Ft.)
Highest elevation =  653.000(Ft.)
Lowest elevation =  572.000(Ft.)
```

```
Elevation difference =   81.000(Ft.) Slope =  5.857 %
Top of Initial Area Slope adjusted by User to 26.570 %
Bottom of Initial Area Slope adjusted by User to  1.400 %
INITIAL AREA TIME OF CONCENTRATION CALCULATIONS:
The maximum overland flow distance is 100.00 (Ft)
for the top area slope value of  26.57 %, in a development type of
 Permanent Open Space
In Accordance With Figure 3-3
Initial Area Time of Concentration =   4.52 minutes
TC = [1.8*(1.1-C)*distance(Ft.)^.5)/(% slope^(1/3)]
TC = [1.8*(1.1-0.3500)*( 100.000^.5)/(  26.570^(1/3)]=   4.52
The initial area total distance of 1383.00 (Ft.) entered leaves a
remaining distance of 1283.00 (Ft.)
Using Figure 3-4, the travel time for this distance is   9.99 minutes
for a distance of 1283.00 (Ft.) and a slope of  1.40 %
with an elevation difference of  17.96(Ft.) from the end of the top area
Tt = [11.9*length(Mi)^3)/(elevation change(Ft.))]^.385 *60(min/hr)
 =    9.992 Minutes
Tt=[(11.9*0.2430^3)/( 17.96)]^.385=  9.99
Total initial area Ti =   4.52 minutes from Figure 3-3 formula plus
  9.99 minutes from the Figure 3-4 formula =  14.52 minutes
Rainfall intensity (I) =      4.770(In/Hr) for a   100.0 year storm
Effective runoff coefficient used for area (Q=KCIA) is C = 0.350
Subarea runoff =     64.570(CFS)
Total initial stream area =       38.680(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station       33.000 to Point/Station       34.000
**** CONFLUENCE OF MINOR STREAMS ****
________________________________________________________________________
Along Main Stream number: 3 in normal stream number 2
Stream flow area =     38.680(Ac.)
Runoff from this stream =     64.570(CFS)
Time of concentration =   14.52 min.
Rainfall intensity =     4.770(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                (In/Hr)


1       56.915     11.84               5.439
2       64.570     14.52               4.770
Qmax(1) =
         1.000 *    1.000 *    56.915) +
         1.000 *    0.816 *    64.570) + =     109.582
Qmax(2) =
         0.877 *    1.000 *    56.915) +
         1.000 *    1.000 *    64.570) + =     114.475

Total of 2 streams to confluence:
Flow rates before confluence point:
      56.915      64.570
Maximum flow rates at confluence using above data:
      109.582      114.475
Area of streams before confluence:
```

```
       29.070       38.680
Results of confluence:
Total flow rate =    114.475(CFS)
Time of concentration =    14.517 min.
Effective stream area after confluence =     67.750(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station       34.000 to Point/Station       34.000
**** CONFLUENCE OF MAIN STREAMS ****
________________________________________________________________________
The following data inside Main Stream is listed:
In Main Stream number: 3
Stream flow area =     67.750(Ac.)
Runoff from this stream =    114.475(CFS)
Time of concentration =   14.52 min.
Rainfall intensity =     4.770(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                (In/Hr)


1      573.720     18.21               4.121
2       86.744     13.87               4.912
3      114.475     14.52               4.770
Qmax(1) =
         1.000 *    1.000 *   573.720) +
         0.839 *    1.000 *    86.744) +
         0.864 *    1.000 *   114.475) + =     745.400
Qmax(2) =
         1.000 *    0.762 *   573.720) +
         1.000 *    1.000 *    86.744) +
         1.000 *    0.955 *   114.475) + =     633.128
Qmax(3) =
         1.000 *    0.797 *   573.720) +
         0.971 *    1.000 *    86.744) +
         1.000 *    1.000 *   114.475) + =     656.065

Total of 3 main streams to confluence:
Flow rates before confluence point:
     573.720      86.744     114.475
Maximum flow rates at confluence using above data:
      745.400      633.128      656.065
Area of streams before confluence:
      375.080       50.460       67.750


Results of confluence:
Total flow rate =    745.400(CFS)
Time of concentration =    18.210 min.
Effective stream area after confluence  =    493.290(Ac.)
End of computations, total study area =         493.290 (Ac.)
```

APPENDIX B

100-YEAR DETENTION ANALYSIS

```
*****************************************
*                                       *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)   *
*               JUN   1998              *
*            VERSION 4.1                *
*                                       *
*  RUN DATE   20JAN12  TIME  15:19:54   *
*                                       *
*****************************************
```

```
*************************************
*                                   *
*    U.S. ARMY CORPS OF ENGINEERS   *
*    HYDROLOGIC ENGINEERING CENTER  *
*          609 SECOND STREET        *
*       DAVIS, CALIFORNIA 95616     *
*           (916) 756-1104          *
*                                   *
*************************************
```

```
X     X  XXXXXXX   XXXXX          X
X     X  X        X     X        XX
X     X  X        X              X
XXXXXXX  XXXX     X        XXXXX  X
X     X  X        X              X
X     X  X        X     X        X
X     X  XXXXXXX   XXXXX         XXX
```

THIS PROGRAM REPLACES ALL PREVIOUS VERSIONS OF HEC-1 KNOWN AS HEC1 (JAN 73), HEC1GS, HEC1DB, AND HEC1KW.

THE DEFINITIONS OF VARIABLES -RTIMP- AND -RTIOR- HAVE CHANGED FROM THOSE USED WITH THE 1973-STYLE INPUT STRUCTURE.
THE DEFINITION OF -AMSKK- ON RM-CARD WAS CHANGED WITH REVISIONS DATED 28 SEP 81. THIS IS THE FORTRAN77 VERSION
NEW OPTIONS: DAMBREAK OUTFLOW SUBMERGENCE , SINGLE EVENT DAMAGE CALCULATION, DSS:WRITE STAGE FREQUENCY,
DSS:READ TIME SERIES AT DESIRED CALCULATION INTERVAL LOSS RATE:GREEN AND AMPT INFILTRATION
KINEMATIC WAVE: NEW FINITE DIFFERENCE ALGORITHM

```
         LINE          ID.....1.....2.....3.....4.....5.....6.....7.....8.....9.....10

                       *DIAGRAM
*** FREE ***
              1        ID   OTAY HILLS QUARRY
              2        ID   100-YEAR DETENTION ANALYSIS
              3        ID   NORTHWEST OUTFLOW LOCATION
              4        IT       1 01JAN90    1200     400

              5        KK   BASIN
              6        KM   RATIONAL METHOD HYDROGRAPH PROGRAM
              7        KM   6-HOUR RAINFALL IS 3.4 INCHES
              8        KM   RATIONAL METHOD RUNOFF COEFFICIENT IS 0.35
              9        KM   RATIONAL METHOD TIME OF CONCENTRATION IS 18.21 MINUTES
             10        BA  0.5861
             11        IN      18 01JAN90    1157
             12        QI       0    26.9    28.8      30    32.6    34.1    37.8    40.1      46    49.9
             13        QI    60.9    69.4   101.9    84.7   573.7    81.7    54.7    42.8    35.8    31.2
             14        QI    27.8       0       0       0       0       0       0       0       0       0
             15        QI       0       0

             16        KK  DETAIN
             17        RS       1    STOR      -1
             18        SV       0     0.6
             19        SQ       0     559
             20        SE     100     101
             21        ZZ
```

```
              SCHEMATIC DIAGRAM OF STREAM NETWORK
INPUT
 LINE      (V) ROUTING          (--->) DIVERSION OR PUMP FLOW

  NO.      (.) CONNECTOR        (<---) RETURN OF DIVERTED OR PUMPED FLOW

    5       BASIN
              V
              V
   16      DETAIN

(***) RUNOFF ALSO COMPUTED AT THIS LOCATION
```

```
*****************************************
*                                       *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)   *
*               JUN   1998              *
*            VERSION 4.1                *
*                                       *
*  RUN DATE   20JAN12  TIME  15:19:54   *
*                                       *
*****************************************
```

```
*************************************
*                                   *
*    U.S. ARMY CORPS OF ENGINEERS   *
*    HYDROLOGIC ENGINEERING CENTER  *
*          609 SECOND STREET        *
*       DAVIS, CALIFORNIA 95616     *
*           (916) 756-1104          *
*                                   *
*************************************
```

OTAY HILLS QUARRY
100-YEAR DETENTION ANALYSIS
NORTHWEST OUTFLOW LOCATION

```
    IT          HYDROGRAPH TIME DATA
                      NMIN          1  MINUTES IN COMPUTATION INTERVAL
                     IDATE      1JAN90  STARTING DATE
                     ITIME        1200  STARTING TIME
                        NQ         400  NUMBER OF HYDROGRAPH ORDINATES
                     NDDATE      1JAN90  ENDING DATE
                     NDTIME        1839  ENDING TIME
                     ICENT          19  CENTURY MARK

                   COMPUTATION INTERVAL     .02 HOURS
                        TOTAL TIME BASE    6.65 HOURS

          ENGLISH UNITS
               DRAINAGE AREA         SQUARE MILES
               PRECIPITATION DEPTH   INCHES
               LENGTH, ELEVATION     FEET
               FLOW                  CUBIC FEET PER SECOND
               STORAGE VOLUME        ACRE-FEET
               SURFACE AREA          ACRES
               TEMPERATURE           DEGREES FAHRENHEIT
```

*** ***

```
            **************
            *            *
  5 KK      *     BASIN  *
            *            *
            **************
```

RATIONAL METHOD HYDROGRAPH PROGRAM
6-HOUR RAINFALL IS 3.4 INCHES
RATIONAL METHOD RUNOFF COEFFICIENT IS 0.35
RATIONAL METHOD TIME OF CONCENTRATION IS 18.21 MINUTES

```
  11 IN          TIME DATA FOR INPUT TIME SERIES
                      JXMIN         18  TIME INTERVAL IN MINUTES
                     JXDATE      1JAN90  STARTING DATE
                     JXTIME        1157  STARTING TIME

               SUBBASIN RUNOFF DATA

  10 BA          SUBBASIN CHARACTERISTICS
                      TAREA         .59  SUBBASIN AREA
```

***

HYDROGRAPH AT STATION   BASIN

DA	MON	HRMN	ORD	FLOW	DA	MON	HRMN	ORD	FLOW	DA	MON	HRMN	ORD	FLOW	DA	MON	HRMN	ORD	FLOW
1	JAN	1200	1	4.	1	JAN	1340	101	37.	1	JAN	1520	201	78.	1	JAN	1700	301	45.
1	JAN	1201	2	6.	1	JAN	1341	102	37.	1	JAN	1521	202	80.	1	JAN	1701	302	44.
1	JAN	1202	3	7.	1	JAN	1342	103	37.	1	JAN	1522	203	82.	1	JAN	1702	303	43.
1	JAN	1203	4	9.	1	JAN	1343	104	37.	1	JAN	1523	204	84.	1	JAN	1703	304	43.
1	JAN	1204	5	10.	1	JAN	1344	105	38.	1	JAN	1524	205	86.	1	JAN	1704	305	42.
1	JAN	1205	6	12.	1	JAN	1345	106	38.	1	JAN	1525	206	87.	1	JAN	1705	306	42.
1	JAN	1206	7	13.	1	JAN	1346	107	38.	1	JAN	1526	207	89.	1	JAN	1706	307	42.
1	JAN	1207	8	15.	1	JAN	1347	108	38.	1	JAN	1527	208	91.	1	JAN	1707	308	41.
1	JAN	1208	9	16.	1	JAN	1348	109	38.	1	JAN	1528	209	93.	1	JAN	1708	309	41.
1	JAN	1209	10	18.	1	JAN	1349	110	38.	1	JAN	1529	210	95.	1	JAN	1709	310	40.
1	JAN	1210	11	19.	1	JAN	1350	111	38.	1	JAN	1530	211	96.	1	JAN	1710	311	40.
1	JAN	1211	12	21.	1	JAN	1351	112	39.	1	JAN	1531	212	98.	1	JAN	1711	312	40.
1	JAN	1212	13	22.	1	JAN	1352	113	39.	1	JAN	1532	213	100.	1	JAN	1712	313	39.
1	JAN	1213	14	24.	1	JAN	1353	114	39.	1	JAN	1533	214	102.	1	JAN	1713	314	39.
1	JAN	1214	15	25.	1	JAN	1354	115	39.	1	JAN	1534	215	101.	1	JAN	1714	315	39.
1	JAN	1215	16	27.	1	JAN	1355	116	39.	1	JAN	1535	216	100.	1	JAN	1715	316	38.
1	JAN	1216	17	27.	1	JAN	1356	117	39.	1	JAN	1536	217	99.	1	JAN	1716	317	38.
1	JAN	1217	18	27.	1	JAN	1357	118	39.	1	JAN	1537	218	98.	1	JAN	1717	318	37.
1	JAN	1218	19	27.	1	JAN	1358	119	39.	1	JAN	1538	219	97.	1	JAN	1718	319	37.
1	JAN	1219	20	27.	1	JAN	1359	120	40.	1	JAN	1539	220	96.	1	JAN	1719	320	37.
1	JAN	1220	21	27.	1	JAN	1400	121	40.	1	JAN	1540	221	95.	1	JAN	1720	321	36.
1	JAN	1221	22	28.	1	JAN	1401	122	40.	1	JAN	1541	222	94.	1	JAN	1721	322	36.
1	JAN	1222	23	28.	1	JAN	1402	123	40.	1	JAN	1542	223	93.	1	JAN	1722	323	36.
1	JAN	1223	24	28.	1	JAN	1403	124	40.	1	JAN	1543	224	92.	1	JAN	1723	324	35.
1	JAN	1224	25	28.	1	JAN	1404	125	40.	1	JAN	1544	225	91.	1	JAN	1724	325	35.
1	JAN	1225	26	28.	1	JAN	1405	126	41.	1	JAN	1545	226	90.	1	JAN	1725	326	35.
1	JAN	1226	27	28.	1	JAN	1406	127	41.	1	JAN	1546	227	89.	1	JAN	1726	327	35.
1	JAN	1227	28	28.	1	JAN	1407	128	41.	1	JAN	1547	228	89.	1	JAN	1727	328	34.
1	JAN	1228	29	28.	1	JAN	1408	129	42.	1	JAN	1548	229	88.	1	JAN	1728	329	34.
1	JAN	1229	30	28.	1	JAN	1409	130	42.	1	JAN	1549	230	87.	1	JAN	1729	330	34.
1	JAN	1230	31	28.	1	JAN	1410	131	42.	1	JAN	1550	231	86.	1	JAN	1730	331	34.
1	JAN	1231	32	29.	1	JAN	1411	132	43.	1	JAN	1551	232	85.	1	JAN	1731	332	33.
1	JAN	1232	33	29.	1	JAN	1412	133	43.	1	JAN	1552	233	112.	1	JAN	1732	333	33.
1	JAN	1233	34	29.	1	JAN	1413	134	43.	1	JAN	1553	234	139.	1	JAN	1733	334	33.
1	JAN	1234	35	29.	1	JAN	1414	135	44.	1	JAN	1554	235	166.	1	JAN	1734	335	32.
1	JAN	1235	36	29.	1	JAN	1415	136	44.	1	JAN	1555	236	193.	1	JAN	1735	336	32.
1	JAN	1236	37	29.	1	JAN	1416	137	44.	1	JAN	1556	237	221.	1	JAN	1736	337	32.
1	JAN	1237	38	29.	1	JAN	1417	138	45.	1	JAN	1557	238	248.	1	JAN	1737	338	32.
1	JAN	1238	39	29.	1	JAN	1418	139	45.	1	JAN	1558	239	275.	1	JAN	1738	339	31.
1	JAN	1239	40	29.	1	JAN	1419	140	45.	1	JAN	1559	240	302.	1	JAN	1739	340	31.
1	JAN	1240	41	29.	1	JAN	1420	141	46.	1	JAN	1600	241	329.	1	JAN	1740	341	31.
1	JAN	1241	42	29.	1	JAN	1421	142	46.	1	JAN	1601	242	356.	1	JAN	1741	342	31.
1	JAN	1242	43	29.	1	JAN	1422	143	46.	1	JAN	1602	243	384.	1	JAN	1742	343	31.
1	JAN	1243	44	29.	1	JAN	1423	144	46.	1	JAN	1603	244	411.	1	JAN	1743	344	30.
1	JAN	1244	45	30.	1	JAN	1424	145	47.	1	JAN	1604	245	438.	1	JAN	1744	345	30.
1	JAN	1245	46	30.	1	JAN	1425	146	47.	1	JAN	1605	246	465.	1	JAN	1745	346	30.
1	JAN	1246	47	30.	1	JAN	1426	147	47.	1	JAN	1606	247	492.	1	JAN	1746	347	30.
1	JAN	1247	48	30.	1	JAN	1427	148	47.	1	JAN	1607	248	519.	1	JAN	1747	348	30.
1	JAN	1248	49	30.	1	JAN	1428	149	48.	1	JAN	1608	249	547.	1	JAN	1748	349	30.
1	JAN	1249	50	30.	1	JAN	1429	150	48.	1	JAN	1609	250	574.	1	JAN	1749	350	29.
1	JAN	1250	51	30.	1	JAN	1430	151	48.	1	JAN	1610	251	546.	1	JAN	1750	351	29.
1	JAN	1251	52	30.	1	JAN	1431	152	48.	1	JAN	1611	252	519.	1	JAN	1751	352	29.
1	JAN	1252	53	30.	1	JAN	1432	153	48.	1	JAN	1612	253	492.	1	JAN	1752	353	29.
1	JAN	1253	54	30.	1	JAN	1433	154	49.	1	JAN	1613	254	464.	1	JAN	1753	354	29.
1	JAN	1254	55	30.	1	JAN	1434	155	49.	1	JAN	1614	255	437.	1	JAN	1754	355	28.
1	JAN	1255	56	31.	1	JAN	1435	156	49.	1	JAN	1615	256	410.	1	JAN	1755	356	28.
1	JAN	1256	57	31.	1	JAN	1436	157	49.	1	JAN	1616	257	382.	1	JAN	1756	357	28.
1	JAN	1257	58	31.	1	JAN	1437	158	49.	1	JAN	1617	258	355.	1	JAN	1757	358	28.
1	JAN	1258	59	31.	1	JAN	1438	159	50.	1	JAN	1618	259	328.	1	JAN	1758	359	26.
1	JAN	1259	60	31.	1	JAN	1439	160	50.	1	JAN	1619	260	300.	1	JAN	1759	360	25.
1	JAN	1300	61	31.	1	JAN	1440	161	51.	1	JAN	1620	261	273.	1	JAN	1800	361	23.
1	JAN	1301	62	31.	1	JAN	1441	162	51.	1	JAN	1621	262	246.	1	JAN	1801	362	22.
1	JAN	1302	63	32.	1	JAN	1442	163	52.	1	JAN	1622	263	218.	1	JAN	1802	363	20.
1	JAN	1303	64	32.	1	JAN	1443	164	52.	1	JAN	1623	264	191.	1	JAN	1803	364	19.
1	JAN	1304	65	32.	1	JAN	1444	165	53.	1	JAN	1624	265	164.	1	JAN	1804	365	17.
1	JAN	1305	66	32.	1	JAN	1445	166	54.	1	JAN	1625	266	136.	1	JAN	1805	366	15.
1	JAN	1306	67	32.	1	JAN	1446	167	54.	1	JAN	1626	267	109.	1	JAN	1806	367	14.
1	JAN	1307	68	32.	1	JAN	1447	168	55.	1	JAN	1627	268	82.	1	JAN	1807	368	12.

1 JAN 1308	69	32.	1 JAN 1448	169	55.	1 JAN 1628	269	80.	1 JAN 1808	369	11.
1 JAN 1309	70	33.	1 JAN 1449	170	56.	1 JAN 1629	270	79.	1 JAN 1809	370	9.
1 JAN 1310	71	33.	1 JAN 1450	171	57.	1 JAN 1630	271	77.	1 JAN 1810	371	8.
1 JAN 1311	72	33.	1 JAN 1451	172	57.	1 JAN 1631	272	76.	1 JAN 1811	372	6.
1 JAN 1312	73	33.	1 JAN 1452	173	58.	1 JAN 1632	273	74.	1 JAN 1812	373	5.
1 JAN 1313	74	33.	1 JAN 1453	174	58.	1 JAN 1633	274	73.	1 JAN 1813	374	3.
1 JAN 1314	75	33.	1 JAN 1454	175	59.	1 JAN 1634	275	71.	1 JAN 1814	375	2.
1 JAN 1315	76	33.	1 JAN 1455	176	60.	1 JAN 1635	276	70.	1 JAN 1815	376	0.
1 JAN 1316	77	33.	1 JAN 1456	177	60.	1 JAN 1636	277	68.	1 JAN 1816	377	0.
1 JAN 1317	78	33.	1 JAN 1457	178	61.	1 JAN 1637	278	67.	1 JAN 1817	378	0.
1 JAN 1318	79	33.	1 JAN 1458	179	61.	1 JAN 1638	279	65.	1 JAN 1818	379	0.
1 JAN 1319	80	33.	1 JAN 1459	180	62.	1 JAN 1639	280	64.	1 JAN 1819	380	0.
1 JAN 1320	81	34.	1 JAN 1500	181	62.	1 JAN 1640	281	62.	1 JAN 1820	381	0.
1 JAN 1321	82	34.	1 JAN 1501	182	63.	1 JAN 1641	282	61.	1 JAN 1821	382	0.
1 JAN 1322	83	34.	1 JAN 1502	183	63.	1 JAN 1642	283	59.	1 JAN 1822	383	0.
1 JAN 1323	84	34.	1 JAN 1503	184	64.	1 JAN 1643	284	58.	1 JAN 1823	384	0.
1 JAN 1324	85	34.	1 JAN 1504	185	64.	1 JAN 1644	285	56.	1 JAN 1824	385	0.
1 JAN 1325	86	34.	1 JAN 1505	186	65.	1 JAN 1645	286	55.	1 JAN 1825	386	0.
1 JAN 1326	87	34.	1 JAN 1506	187	65.	1 JAN 1646	287	54.	1 JAN 1826	387	0.
1 JAN 1327	88	34.	1 JAN 1507	188	66.	1 JAN 1647	288	53.	1 JAN 1827	388	0.
1 JAN 1328	89	34.	1 JAN 1508	189	66.	1 JAN 1648	289	53.	1 JAN 1828	389	0.
1 JAN 1329	90	35.	1 JAN 1509	190	67.	1 JAN 1649	290	52.	1 JAN 1829	390	0.
1 JAN 1330	91	35.	1 JAN 1510	191	67.	1 JAN 1650	291	51.	1 JAN 1830	391	0.
1 JAN 1331	92	35.	1 JAN 1511	192	68.	1 JAN 1651	292	51.	1 JAN 1831	392	0.
1 JAN 1332	93	35.	1 JAN 1512	193	68.	1 JAN 1652	293	50.	1 JAN 1832	393	0.
1 JAN 1333	94	35.	1 JAN 1513	194	68.	1 JAN 1653	294	49.	1 JAN 1833	394	0.
1 JAN 1334	95	36.	1 JAN 1514	195	69.	1 JAN 1654	295	49.	1 JAN 1834	395	0.
1 JAN 1335	96	36.	1 JAN 1515	196	69.	1 JAN 1655	296	48.	1 JAN 1835	396	0.
1 JAN 1336	97	36.	1 JAN 1516	197	71.	1 JAN 1656	297	47.	1 JAN 1836	397	0.
1 JAN 1337	98	36.	1 JAN 1517	198	73.	1 JAN 1657	298	47.	1 JAN 1837	398	0.
1 JAN 1338	99	36.	1 JAN 1518	199	75.	1 JAN 1658	299	46.	1 JAN 1838	399	0.
1 JAN 1339	100	37.	1 JAN 1519	200	77.	1 JAN 1659	300	45.	1 JAN 1839	400	0.

```
  PEAK FLOW     TIME                         MAXIMUM AVERAGE FLOW
                                     6-HR       24-HR       72-HR      6.65-HR
+   (CFS)       (HR)
                             (CFS)
+     574.      4.15                  74.         67.         67.          67.
                          (INCHES)  1.177       1.182       1.182        1.182
                           (AC-FT)    37.         37.         37.          37.

                           CUMULATIVE AREA =     .59 SQ MI
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            **************
            *            *
  16 KK     *   DETAIN   *
            *            *
            **************

               HYDROGRAPH ROUTING DATA

  17 RS         STORAGE ROUTING
                      NSTPS          1  NUMBER OF SUBREACHES
                       ITYP       STOR  TYPE OF INITIAL CONDITION
                     RSVRIC      -1.00  INITIAL CONDITION
                          X        .00 WORKING R AND D COEFFICIENT

  18 SV           STORAGE          .0        .6

  19 SQ         DISCHARGE          0.      559.

  20 SE         ELEVATION      100.00    101.00
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HYDROGRAPH AT STATION DETAIN

DA	MON	HRMN	ORD	OUTFLOW	STORAGE	STAGE	DA	MON	HRMN	ORD	OUTFLOW	STORAGE	STAGE	DA	MON	HRMN	ORD	OUTFLOW	STORAGE	STAGE
1	JAN	1200	1	4.	.0	100.0	1	JAN	1414	135	43.	.0	100.1	1	JAN	1628	269	86.	.1	100.2
1	JAN	1201	2	5.	.0	100.0	1	JAN	1415	136	44.	.0	100.1	1	JAN	1629	270	81.	.1	100.1
1	JAN	1202	3	6.	.0	100.0	1	JAN	1416	137	44.	.0	100.1	1	JAN	1630	271	79.	.1	100.1
1	JAN	1203	4	8.	.0	100.0	1	JAN	1417	138	44.	.0	100.1	1	JAN	1631	272	77.	.1	100.1
1	JAN	1204	5	9.	.0	100.0	1	JAN	1418	139	45.	.0	100.1	1	JAN	1632	273	75.	.1	100.1
1	JAN	1205	6	11.	.0	100.0	1	JAN	1419	140	45.	.0	100.1	1	JAN	1633	274	74.	.1	100.1
1	JAN	1206	7	12.	.0	100.0	1	JAN	1420	141	45.	.0	100.1	1	JAN	1634	275	72.	.1	100.1
1	JAN	1207	8	14.	.0	100.0	1	JAN	1421	142	46.	.0	100.1	1	JAN	1635	276	71.	.1	100.1
1	JAN	1208	9	15.	.0	100.0	1	JAN	1422	143	46.	.0	100.1	1	JAN	1636	277	69.	.1	100.1
1	JAN	1209	10	17.	.0	100.0	1	JAN	1423	144	46.	.0	100.1	1	JAN	1637	278	68.	.1	100.1
1	JAN	1210	11	18.	.0	100.0	1	JAN	1424	145	46.	.0	100.1	1	JAN	1638	279	66.	.1	100.1
1	JAN	1211	12	20.	.0	100.0	1	JAN	1425	146	47.	.1	100.1	1	JAN	1639	280	65.	.1	100.1
1	JAN	1212	13	21.	.0	100.0	1	JAN	1426	147	47.	.1	100.1	1	JAN	1640	281	63.	.1	100.1
1	JAN	1213	14	23.	.0	100.0	1	JAN	1427	148	47.	.1	100.1	1	JAN	1641	282	62.	.1	100.1
1	JAN	1214	15	24.	.0	100.0	1	JAN	1428	149	47.	.1	100.1	1	JAN	1642	283	60.	.1	100.1
1	JAN	1215	16	26.	.0	100.0	1	JAN	1429	150	48.	.1	100.1	1	JAN	1643	284	59.	.1	100.1
1	JAN	1216	17	27.	.0	100.0	1	JAN	1430	151	48.	.1	100.1	1	JAN	1644	285	57.	.1	100.1
1	JAN	1217	18	27.	.0	100.0	1	JAN	1431	152	48.	.1	100.1	1	JAN	1645	286	56.	.1	100.1
1	JAN	1218	19	27.	.0	100.0	1	JAN	1432	153	48.	.1	100.1	1	JAN	1646	287	55.	.1	100.1
1	JAN	1219	20	27.	.0	100.0	1	JAN	1433	154	48.	.1	100.1	1	JAN	1647	288	54.	.1	100.1
1	JAN	1220	21	27.	.0	100.0	1	JAN	1434	155	49.	.1	100.1	1	JAN	1648	289	53.	.1	100.1
1	JAN	1221	22	27.	.0	100.0	1	JAN	1435	156	49.	.1	100.1	1	JAN	1649	290	53.	.1	100.1
1	JAN	1222	23	28.	.0	100.0	1	JAN	1436	157	49.	.1	100.1	1	JAN	1650	291	52.	.1	100.1
1	JAN	1223	24	28.	.0	100.0	1	JAN	1437	158	49.	.1	100.1	1	JAN	1651	292	51.	.1	100.1
1	JAN	1224	25	28.	.0	100.0	1	JAN	1438	159	50.	.1	100.1	1	JAN	1652	293	51.	.1	100.1
1	JAN	1225	26	28.	.0	100.0	1	JAN	1439	160	50.	.1	100.1	1	JAN	1653	294	50.	.1	100.1
1	JAN	1226	27	28.	.0	100.1	1	JAN	1440	161	50.	.1	100.1	1	JAN	1654	295	49.	.1	100.1
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1	JAN	1228	29	28.	.0	100.1	1	JAN	1442	163	51.	.1	100.1	1	JAN	1656	297	48.	.1	100.1
1	JAN	1229	30	28.	.0	100.1	1	JAN	1443	164	52.	.1	100.1	1	JAN	1657	298	47.	.1	100.1
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1	JAN	1232	33	29.	.0	100.1	1	JAN	1446	167	54.	.1	100.1	1	JAN	1700	301	45.	.0	100.1
1	JAN	1233	34	29.	.0	100.1	1	JAN	1447	168	54.	.1	100.1	1	JAN	1701	302	45.	.0	100.1
1	JAN	1234	35	29.	.0	100.1	1	JAN	1448	169	55.	.1	100.1	1	JAN	1702	303	44.	.0	100.1
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1	JAN	1237	38	29.	.0	100.1	1	JAN	1451	172	57.	.1	100.1	1	JAN	1705	306	42.	.0	100.1
1	JAN	1238	39	29.	.0	100.1	1	JAN	1452	173	57.	.1	100.1	1	JAN	1706	307	42.	.0	100.1
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1	JAN	1243	44	29.	.0	100.1	1	JAN	1457	178	60.	.1	100.1	1	JAN	1711	312	40.	.0	100.1
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1	JAN	1246	47	30.	.0	100.1	1	JAN	1500	181	62.	.1	100.1	1	JAN	1714	315	39.	.0	100.1
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1	JAN	1249	50	30.	.0	100.1	1	JAN	1503	184	63.	.1	100.1	1	JAN	1717	318	38.	.0	100.1
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1	JAN	1304	65	32.	.0	100.1	*	1	JAN	1518	199	73.	.1	100.1	*	1	JAN	1732	333	33.	.0	100.1
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1	JAN	1312	73	33.	.0	100.1	*	1	JAN	1526	207	88.	.1	100.2	*	1	JAN	1740	341	31.	.0	100.1
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1	JAN	1323	84	34.	.0	100.1	*	1	JAN	1537	218	99.	.1	100.2	*	1	JAN	1751	352	29.	.0	100.1
1	JAN	1324	85	34.	.0	100.1	*	1	JAN	1538	219	98.	.1	100.2	*	1	JAN	1752	353	29.	.0	100.1
1	JAN	1325	86	34.	.0	100.1	*	1	JAN	1539	220	97.	.1	100.2	*	1	JAN	1753	354	29.	.0	100.1
1	JAN	1326	87	34.	.0	100.1	*	1	JAN	1540	221	96.	.1	100.2	*	1	JAN	1754	355	29.	.0	100.1
1	JAN	1327	88	34.	.0	100.1	*	1	JAN	1541	222	95.	.1	100.2	*	1	JAN	1755	356	28.	.0	100.1
1	JAN	1328	89	34.	.0	100.1	*	1	JAN	1542	223	94.	.1	100.2	*	1	JAN	1756	357	28.	.0	100.1
1	JAN	1329	90	34.	.0	100.1	*	1	JAN	1543	224	93.	.1	100.2	*	1	JAN	1757	358	28.	.0	100.0
1	JAN	1330	91	35.	.0	100.1	*	1	JAN	1544	225	92.	.1	100.2	*	1	JAN	1758	359	27.	.0	100.0
1	JAN	1331	92	35.	.0	100.1	*	1	JAN	1545	226	91.	.1	100.2	*	1	JAN	1759	360	26.	.0	100.0
1	JAN	1332	93	35.	.0	100.1	*	1	JAN	1546	227	90.	.1	100.2	*	1	JAN	1800	361	24.	.0	100.0
1	JAN	1333	94	35.	.0	100.1	*	1	JAN	1547	228	89.	.1	100.2	*	1	JAN	1801	362	23.	.0	100.0
1	JAN	1334	95	35.	.0	100.1	*	1	JAN	1548	229	88.	.1	100.2	*	1	JAN	1802	363	21.	.0	100.0
1	JAN	1335	96	36.	.0	100.1	*	1	JAN	1549	230	87.	.1	100.2	*	1	JAN	1803	364	20.	.0	100.0
1	JAN	1336	97	36.	.0	100.1	*	1	JAN	1550	231	86.	.1	100.2	*	1	JAN	1804	365	18.	.0	100.0
1	JAN	1337	98	36.	.0	100.1	*	1	JAN	1551	232	85.	.1	100.2	*	1	JAN	1805	366	17.	.0	100.0
1	JAN	1338	99	36.	.0	100.1	*	1	JAN	1552	233	95.	.1	100.2	*	1	JAN	1806	367	15.	.0	100.0
1	JAN	1339	100	36.	.0	100.1	*	1	JAN	1553	234	119.	.1	100.2	*	1	JAN	1807	368	14.	.0	100.0
1	JAN	1340	101	37.	.0	100.1	*	1	JAN	1554	235	145.	.2	100.3	*	1	JAN	1808	369	12.	.0	100.0
1	JAN	1341	102	37.	.0	100.1	*	1	JAN	1555	236	172.	.2	100.3	*	1	JAN	1809	370	10.	.0	100.0
1	JAN	1342	103	37.	.0	100.1	*	1	JAN	1556	237	199.	.2	100.4	*	1	JAN	1810	371	9.	.0	100.0
1	JAN	1343	104	37.	.0	100.1	*	1	JAN	1557	238	227.	.2	100.4	*	1	JAN	1811	372	7.	.0	100.0
1	JAN	1344	105	37.	.0	100.1	*	1	JAN	1558	239	254.	.3	100.5	*	1	JAN	1812	373	6.	.0	100.0
1	JAN	1345	106	38.	.0	100.1	*	1	JAN	1559	240	281.	.3	100.5	*	1	JAN	1813	374	4.	.0	100.0
1	JAN	1346	107	38.	.0	100.1	*	1	JAN	1600	241	308.	.3	100.6	*	1	JAN	1814	375	3.	.0	100.0
1	JAN	1347	108	38.	.0	100.1	*	1	JAN	1601	242	335.	.4	100.6	*	1	JAN	1815	376	1.	.0	100.0
1	JAN	1348	109	38.	.0	100.1	*	1	JAN	1602	243	362.	.4	100.6	*	1	JAN	1816	377	0.	.0	100.0
1	JAN	1349	110	38.	.0	100.1	*	1	JAN	1603	244	390.	.4	100.7	*	1	JAN	1817	378	0.	.0	100.0
1	JAN	1350	111	38.	.0	100.1	*	1	JAN	1604	245	417.	.4	100.7	*	1	JAN	1818	379	0.	.0	100.0
1	JAN	1351	112	38.	.0	100.1	*	1	JAN	1605	246	444.	.5	100.8	*	1	JAN	1819	380	0.	.0	100.0
1	JAN	1352	113	39.	.0	100.1	*	1	JAN	1606	247	471.	.5	100.8	*	1	JAN	1820	381	0.	.0	100.0
1	JAN	1353	114	39.	.0	100.1	*	1	JAN	1607	248	498.	.5	100.9	*	1	JAN	1821	382	0.	.0	100.0
1	JAN	1354	115	39.	.0	100.1	*	1	JAN	1608	249	525.	.6	100.9	*	1	JAN	1822	383	0.	.0	100.0
1	JAN	1355	116	39.	.0	100.1	*	1	JAN	1609	250	553.	.6	101.0	*	1	JAN	1823	384	0.	.0	100.0
1	JAN	1356	117	39.	.0	100.1	*	1	JAN	1610	251	558.	.6	101.0	*	1	JAN	1824	385	0.	.0	100.0
1	JAN	1357	118	39.	.0	100.1	*	1	JAN	1611	252	538.	.6	101.0	*	1	JAN	1825	386	0.	.0	100.0
1	JAN	1358	119	39.	.0	100.1	*	1	JAN	1612	253	513.	.6	100.9	*	1	JAN	1826	387	0.	.0	100.0
1	JAN	1359	120	39.	.0	100.1	*	1	JAN	1613	254	486.	.5	100.9	*	1	JAN	1827	388	0.	.0	100.0
1	JAN	1400	121	40.	.0	100.1	*	1	JAN	1614	255	458.	.5	100.8	*	1	JAN	1828	389	0.	.0	100.0
1	JAN	1401	122	40.	.0	100.1	*	1	JAN	1615	256	431.	.5	100.8	*	1	JAN	1829	390	0.	.0	100.0
1	JAN	1402	123	40.	.0	100.1	*	1	JAN	1616	257	404.	.4	100.7	*	1	JAN	1830	391	0.	.0	100.0
1	JAN	1403	124	40.	.0	100.1	*	1	JAN	1617	258	376.	.4	100.7	*	1	JAN	1831	392	0.	.0	100.0
1	JAN	1404	125	40.	.0	100.1	*	1	JAN	1618	259	349.	.4	100.6	*	1	JAN	1832	393	0.	.0	100.0
1	JAN	1405	126	41.	.0	100.1	*	1	JAN	1619	260	322.	.3	100.6	*	1	JAN	1833	394	0.	.0	100.0
1	JAN	1406	127	41.	.0	100.1	*	1	JAN	1620	261	294.	.3	100.5	*	1	JAN	1834	395	0.	.0	100.0
1	JAN	1407	128	41.	.0	100.1	*	1	JAN	1621	262	267.	.3	100.5	*	1	JAN	1835	396	0.	.0	100.0
1	JAN	1408	129	41.	.0	100.1	*	1	JAN	1622	263	240.	.3	100.4	*	1	JAN	1836	397	0.	.0	100.0
1	JAN	1409	130	42.	.0	100.1	*	1	JAN	1623	264	212.	.2	100.4	*	1	JAN	1837	398	0.	.0	100.0
1	JAN	1410	131	42.	.0	100.1	*	1	JAN	1624	265	185.	.2	100.3	*	1	JAN	1838	399	0.	.0	100.0
1	JAN	1411	132	42.	.0	100.1	*	1	JAN	1625	266	158.	.2	100.3	*	1	JAN	1839	400	0.	.0	100.0

```
  1 JAN 1412 133      43.       .0   100.1 *  1 JAN 1626 267     130.       .1   100.2 *
  1 JAN 1413 134      43.       .0   100.1 *  1 JAN 1627 268     103.       .1   100.2 *
                                             *                                          *
 ********************************************************************************************************************************************

  PEAK FLOW     TIME                      MAXIMUM AVERAGE FLOW
                                    6-HR       24-HR       72-HR      6.65-HR
+   (CFS)       (HR)
                        (CFS)
+     558.      4.17                74.         67.         67.          67.
                       (INCHES)    1.177       1.182       1.182        1.182
                       (AC-FT)      37.         37.         37.          37.

  PEAK STORAGE  TIME                      MAXIMUM AVERAGE STORAGE
                                    6-HR       24-HR       72-HR      6.65-HR
+  (AC-FT)      (HR)
        1.      4.17                 0.          0.          0.           0.

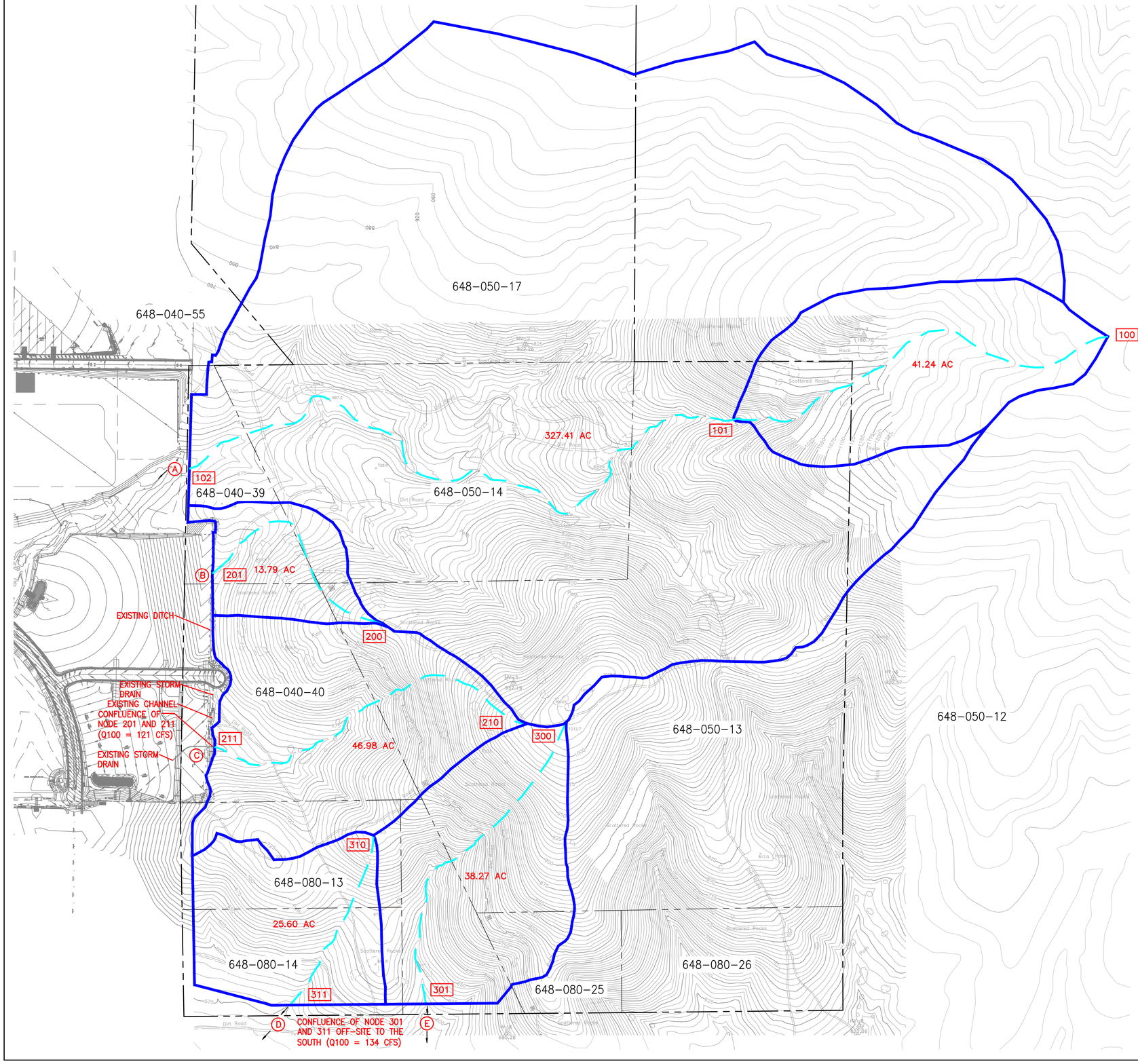
  PEAK STAGE    TIME                      MAXIMUM AVERAGE STAGE
                                    6-HR       24-HR       72-HR      6.65-HR
+   (FEET)      (HR)
    101.00      4.17              100.13      100.12      100.12       100.12

                          CUMULATIVE AREA =     .59 SQ MI
```

RUNOFF SUMMARY
FLOW IN CUBIC FEET PER SECOND
TIME IN HOURS, AREA IN SQUARE MILES

	OPERATION	STATION	PEAK FLOW	TIME OF PEAK	AVERAGE FLOW FOR MAXIMUM PERIOD 6-HOUR	24-HOUR	72-HOUR	BASIN AREA	MAXIMUM STAGE	TIME OF MAX STAGE
+	HYDROGRAPH AT	BASIN	574.	4.15	74.	67.	67.	.59		
+	ROUTED TO	DETAIN	558.	4.17	74.	67.	67.	.59		
+									101.00	4.17

*** NORMAL END OF HEC-1 ***



GRAPHIC SCALE

300 0 300 600 1200

(IN FEET)

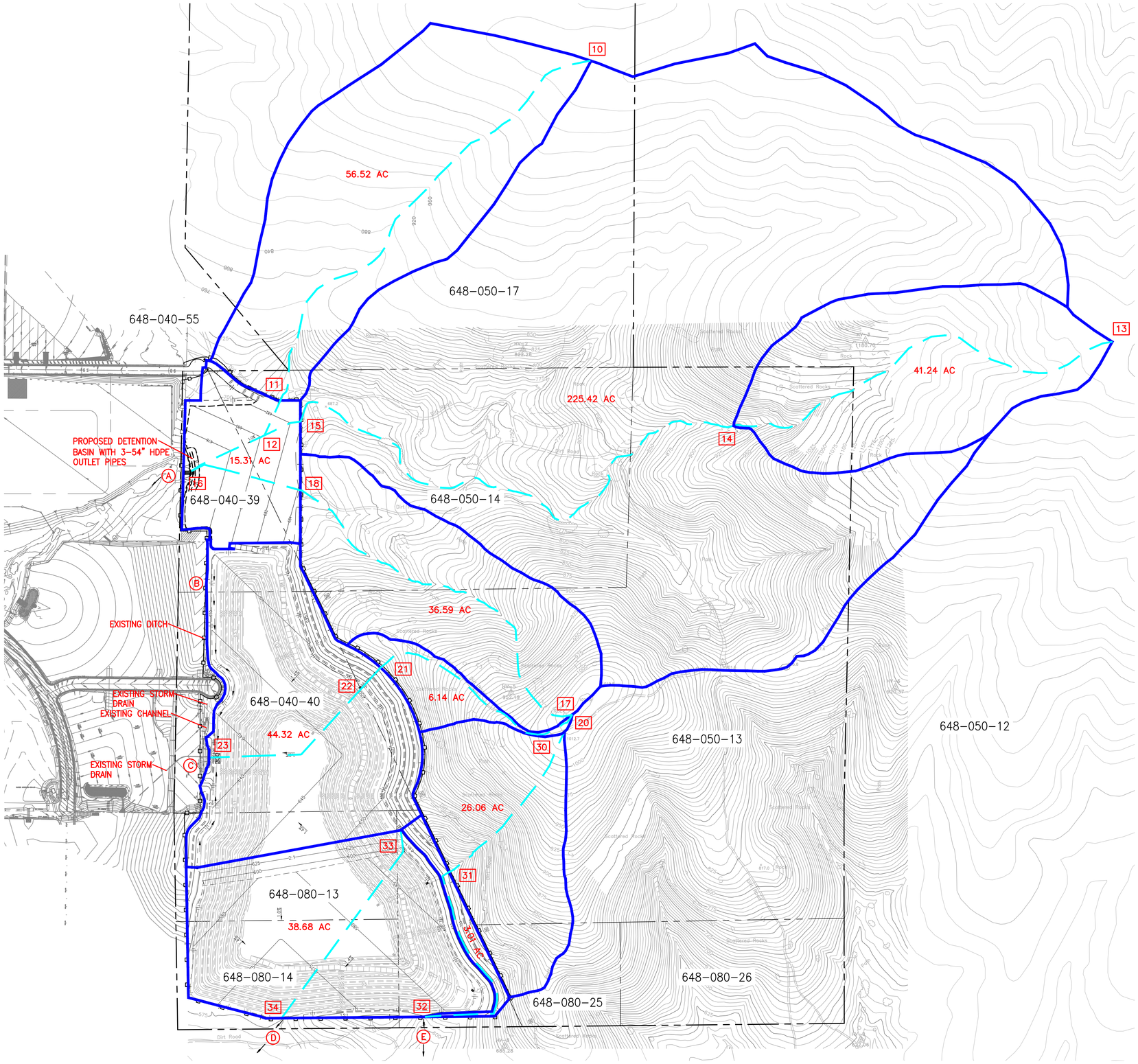
1 INCH = 300 FEET

Discharge Location	Tributary Area	100-Year Flow, cfs
A	368.65	559
B	13.79	28
C	46.98	94
D	25.60	58
E	38.27	80

LEGEND:

- PARCEL BOUNDARIES
- DRAINAGE BASIN BOUNDARY
- OVERLAND FLOW PATH
- 3.62 AC — DRAINAGE BASIN AREA
- 100 — RATIONAL METHOD NODE NUMBER
- (A) — SITE DISCHARGE LOCATION

□□□□□□G □□□□□□□□□
□□□□□□□M□□□□□ □ □□□M□□



GRAPHIC SCALE

300 0 300 600 1200

(IN FEET)

1 INCH = 300 FEET

Discharge Location	Tributary Area	100-Year Flow, cfs
A	375.08	574
B	---	---
C	50.46	87
D	29.07	57
E	38.68	65

LEGEND:

- PARCEL BOUNDARIES
- DRAINAGE BASIN BOUNDARY
- OVERLAND FLOW PATH
- 3.62 AC — DRAINAGE BASIN AREA
- 100 — RATIONAL METHOD NODE NUMBER
- (A) — SITE DISCHARGE LOCATION

Appendix E
Geologic Reconnaissance & Slope Stability Analysis

CHRISTIAN WHEELER
ENGINEERING

December 4, 2014

Superior Ready Mix Concrete, L.P.
1508 West Mission Road
Escondido, California 92029

CWE 2110171.02R

Subject: **Revised Report of Supplemental Slope Stability Analyses and Reclamation Fill Settlement, Proposed Otay Hills Quarry, Alta Road and Otay Mesa Road, San Diego County, California.**

Dear Ladies and Gentlemen,

In accordance with your request and our Proposal dated March 17, 2011, Christian Wheeler Engineering has prepared this revised report to provide the results of our supplemental slope stability analyses for the subject project. Our supplemental analyses addressed the proposed Phase 2A, 2B, and 2C cut (extraction) slopes, the proposed Phases 3A, 3B, 3C, and 3D cut (extraction) slopes, the proposed Phases 4B, 4C, and 4D fill (reclamation) slopes, and the final (post reclamation) project cut and fill slopes. Full descriptions of the site's physical and geologic conditions as well as the scope of the proposed quarry project have been provided in our referenced Report of Geologic Reconnaissance (CWE, 2011).

SUPPLEMETNAL STABILITY ANALYSES: As described in our referenced report (CWE, 2011), "Global stability of steep rock slopes, such as those proposed for the quarry operation, depends on several factors such as type of rock, rock strength, orientation of fractures or other planes of weakness, and slope angles. In quarry operations with steep, high slopes, factors of safety typically range from approximately 1.2 to greater than 1.5. The previous slope stability analysis of the site performed by Testing Engineers in 2005 indicated that the proposed cut slopes should be adequately stable to the proposed heights for slopes as steep as 1:1 (horizontal to vertical), and possibly as steep as 0.5:1. Based on our review of those calculations, as well as our review of other available data pertaining to the stability of rock slopes in quarry operations, it is our opinion that the previous slope stability analysis by Testing Engineers adequately addresses the stability of the proposed cut slopes."

Our initial supplemental analyses performed in the preparation of this report included rock slope stability analyses (modelling planar and wedge failures) of the steepest of the proposed extraction (cut) slopes during Phases 2A, 2B, 2C, 3A, 3B, 3C, and 3D of the project utilizing the referenced Rockpack III © software prepared by C.F. Watts & Associates. Analyses of the extraction slopes that will remain as part of the project after the completion of the Phase 4E reclamation phase were also conducted. The findings presented herein are based on the assumption that the geologic conditions at the site, including rock type, rock strength, and degree and pattern of fracturing, are similar to those described in the Geotechnical Evaluation Report, Proposed Otay Hills Quarry prepared by Testing Engineers in September 2005.

The following Table I presents the results (factors-of-safety against failure) of our static and pseudo-static rock slope analyses for the extraction slopes proposed for this project as well as the final cut slopes to remain upon completion of Phase 4E (completion of reclamation). It should be noted that within Phase 2 of the project the interim and side quarry slopes will be approximately 1:1 (H:V) and during Phase 3 the interim extraction slopes will be approximately 1:1 (H:V) while the side quarry slopes will be cut at inclinations of 0.5:1 (H:V). Our analyses of the Phase 3 slopes focused on the steeper, side quarry slopes.

TABLE I – EXTRACTION & FINAL CUT SLOPES

Phase	Description of Extraction Slope	Static F.O.S.	Pseudo-Static F.O.S.
2A	175' high @ 1:1 (H:V) inclination	4.1	3.2
2B	175' high @ 1:1 (H:V) inclination	4.1	3.2
2C	165' high @ 1:1 (H:V) inclination	4.3	3.4
3A	260' high @ 0.5:1 (H:V) inclination with 1:1 cut above	2.4	2.1
3B	525' high @ 0.5:1 (H:V) inclination with 1:1 cut above	1.4	1.2
3C	525' high @ 0.5:1 (H:V) inclination with 1:1 cut above	1.4	1.2
3D	500' high @ 0.5:1 (H:V) inclination with 1:1 cut above	1.5	1.2
Final Cut Slopes	200' high @ 1:1 (H:V) inclination	4.7	3.7

The results of our rock slope stability analyses indicate that the steepest of the proposed extraction slopes will demonstrate minimum factors-of-safety against static and pseudo-static failure in excess of the minimum County requirements for temporary slopes of 1.3 and 1.1, respectively. Based on these results along with the nature of the material at the site, it is our opinion that the risk of significant, deep-seated slope instability in the native materials at the site can be considered to be low. It should be noted localized areas of potentially unstable slopes might be present where intersecting fractures or other planes of weakness are exposed in steep cut slopes. The potential for such unforeseen areas of potentially unstable conditions could be mitigated during site extraction with recommendations presented by a qualified engineer that would be based on site observations by a qualified geologist.

Furthermore, the final cut slopes will demonstrate minimum factors-of-safety against static and pseudo-static failure in excess of the minimum County requirements for final or permanent slopes of 1.5 and 1.1, respectively. The final cut slopes are anticipated to be stable and should not endanger public or private property or result in the deposition of debris on any public way or interfere with any existing drainage courses. The need for rock fall or debris barriers or fences along final cut slopes should be addressed by a qualified engineer at the completion of site reclamation.

We have also performed supplemental slope stability analyses of the proposed fill slopes associated with the Phase 4 reclamation operations at the site. As described in our previous report, the site will be used as an Inert Debris Engineered Fill (landfill). The material placed in the Inert Debris Engineered Fill will be imported to the site over a space of approximately 90 to 95 years and will consist of a variety of materials (CWE, 2011). The results of the reclamation slope stability analyses herein are based on the assumption that the fill materials will have strength parameters similar to those described in our previous report (CWE, 2011). The following Table II presents the results of our analyses for the proposed fill slopes (reclamation and final) proposed for this project. As necessary, the inclinations of the temporary reclamation slopes were adjusted in our analyses in order to allow the proposed fill slopes to demonstrate minimum factors-of-safety against failure under static and pseudo-static conditions of 1.3 and 1.1, respectively, which are the minimums required by the County.

TABLE II –FILL SLOPES (RECLAMATION & FINAL)

Phase	Slope Description	Static F.O.S.	Pseudo-Static F.O.S.	Required Slope Inclination (max)
4A	285' high @ 2.1:1 (H:V)	1.3	1.0 (inadequate)	**2.25:1**
4A	285' high @ 2.25:1 (H:V)	-	1.1	
4B & 4C	550' high @ 2.5:1 (H:V)	1.4	1.0 (inadequate)	**2.6:1**
4B & 4c	550' high @ 2.6:1 (H:V)	-	1.1	
4D	450' high @ 2.2:1 (H:V)	1.3	1.0 (inadequate)	**2.5:1**
4D	450' high @ 2.5:1 (H:V)	-	1.1	
Final 4D/E	70' high @ 2.0:1	1.5	1.1	**As steep as 2:1**

As demonstrated by the results of our reclamation slope stability analyses (included in Appendix A at the rear of this report), in order to demonstrate minimum factors-of-safety of 1.1 against pseudo-static, temporary slope failure, the temporary Phase 4A reclamation slope will need to be flattened to an inclination of 2.25:1 (H:V), the Phase 4B and 4C slopes will need to be flattened to inclinations of 2.6:1 (H:V), and the Phase 4D reclamation slope will need to be constructed at a 2.5:1 (H:V) inclination.

It should be noted that although the results of our pseudo-static analyses demonstrate that the proposed 450-foot-high 4D reclamation slope will need to constructed at a maximum inclination of 2.5:1 (H:V) in order to demonstrate adequate temporary stability, upon completion of Phase 4E, the proposed 70-foot-high fill slope that will remain could be steepened to 2.0:1 (H:V) and still demonstrate adequate stability.

Included in Appendix B of this report are the results of our surficial stability analysis of the final fill slope (following Phase 4E) that could be constructed as steeply as 2:1 (H:V). This analysis demonstrates that the proposed final fill slope will demonstrate a factor-of-safety against surficial failures of 1.5, which is the minimum that is generally considered to be stable.

From a geotechnical standpoint, the inclusion of drainage terraces on the final cut and fill slopes is not considered necessary as such terraces will not adversely affect or significantly improve the stabilities of the proposed slopes.

RECLAMATION FILL SETTLEMENT: As described on page 6 of our referenced report, "some settlement of the fill will occur. The amount of settlement is expected to range from approximately two percent to approximately five percent. The amount of settlement will depend on a variety of factors such as the type of material used in the fill, the degree of compaction of the fill, and the thickness of the fill. The deeper portions of the fill will probably experience greater settlement than the upper portions of the fill, due in part to the increased weight of the overlying fill. It is recommended that settlement monuments be installed and the potential fill settlement be evaluated by qualified personnel as the backfilling operations approach proposed finish grade elevations" (CWE, 2011). Although difficult to quantitatively predict given the potential variability in the factors described above, for planning purposes we expect that primary settlement of the deeper fill areas will occur from the beginning of reclamation and likely continue over several years. Secondary settlement of the fills may likely continue for a few decades after the completion of reclamation. As such, the placement and periodic monitoring of settlement monuments will be necessary to assist in future development of the site.

If you have any questions after reviewing this report, please do not hesitate to contact this office. This opportunity to be of professional service is sincerely appreciated.

Respectfully submitted,
CHRISTIAN WHEELER ENGINEERING

David R. Russell, CEG 2215

Daniel B. Adler, RCE 36037

cc: (2) Submitted
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(1) via email: travisj@enviromineinc.com

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United States Geological Survey 2004, Geologic Map of the El Cajon 30' X 60' Quadrangle, California, Open-File Report 2004-1361; compiled by Victoria R. Todd.

PLANS AND TOPOGRAPHIC MAPS

Chang Consultants, 2011, Plot Plan for Otay Hills, 2 Sheets; Scale: 1 inch = 200 feet, print date May 5, 2013.

Chang Consultants, 2011, Reclamation Plan for Otay Hills, 3 Sheets; Scale: 1 inch = 200 feet, print date May 5, 2013.

County of San Diego, 1963, Topographic Map Sheet 242-1791; Scale: 1 inch = 200 feet

County of San Diego, 1963, Topographic Map Sheet 242-1797; Scale: 1 inch = 200 feet

County of San Diego, 1963, Topographic Map Sheet 246-1791; Scale: 1 inch = 200 feet

County of San Diego, 1963, Topographic Map Sheet 246-1797; Scale: 1 inch = 200 feet

County of San Diego, 1983, Ortho-Topographic Map Sheet 242-1791; Scale: 1 inch = 200 feet

County of San Diego, 1983, Ortho-Topographic Map Sheet 242-1797; Scale: 1 inch = 200 feet

County of San Diego, 1983, Ortho-Topographic Map Sheet 246-1791; Scale: 1 inch = 200 feet

County of San Diego, 1983, Ortho-Topographic Map Sheet 246-1797; Scale: 1 inch = 200 feet

United States Geological Survey, 1975, Otay Mesa Quadrangle; Scale 1 inch = 2000 feet

PHOTOGRAPHS

San Diego County, 1928, Flight 78A and 78B; Scale: 1 inch = 1000 feet (approximate)

San Diego County, 1953, Flight 3M, Photographs 23, 24, and 25, Scale: 1 inch = 1700 feet (approximate)

San Diego County, 1953, Flight 3M, Photographs 23, 24, and 25, Scale: 1 inch = 1700 feet (approximate)

San Diego County, 1960, Flight 14, Photographs 24 and 25; Scale: 1 inch = 1000 feet (approximate)

San Diego County, 1968, Flight 3JJ, Photographs 41 and 42; Scale: 1 inch = 1000 feet (approximate)

San Diego County, 1970, Flight 13, Photographs 1, 2, and 3; Scale: 1 inch = 2000 feet (approximate)

San Diego County, 1973, Flight 14, Photographs 1, 2, and 3; Scale: 1 inch = 1000 feet (approximate)

San Diego County, 1978, Flight 34D, Photographs 32, 33, and 34; Scale: 1 inch = 1000 feet (approximate)

San Diego County, 1983, Photographs 133 and 134; Scale: 1 inch = 2000 feet (approximate)

San Diego County, 1989, Photograph 18-45; Scale: 1 inch = 2640 feet (approximate)

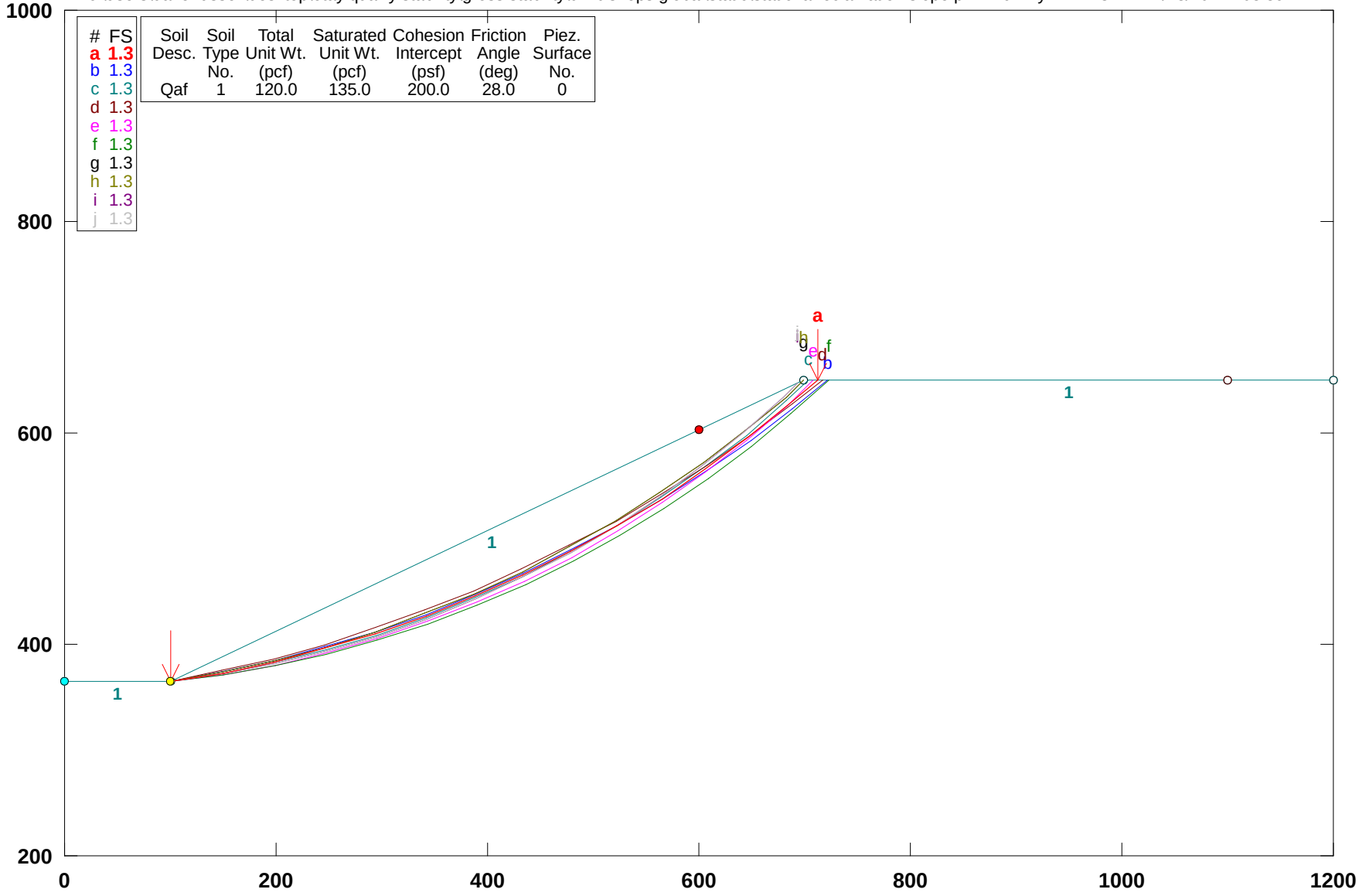
Appendix A

Plots of Global Fill Slope (Reclamation and Final)

Stability Analyses

Otay Hills Quarry - RECLAMATION Phase 4A - 285 High (2.1:1)

c:\users\dave russell\desktop\otay quarry stability\gross stability\drr bishops global\static\static4a reclamation slope.pl2 Run By: DRR-CWE 7/18/2014 08:39PM



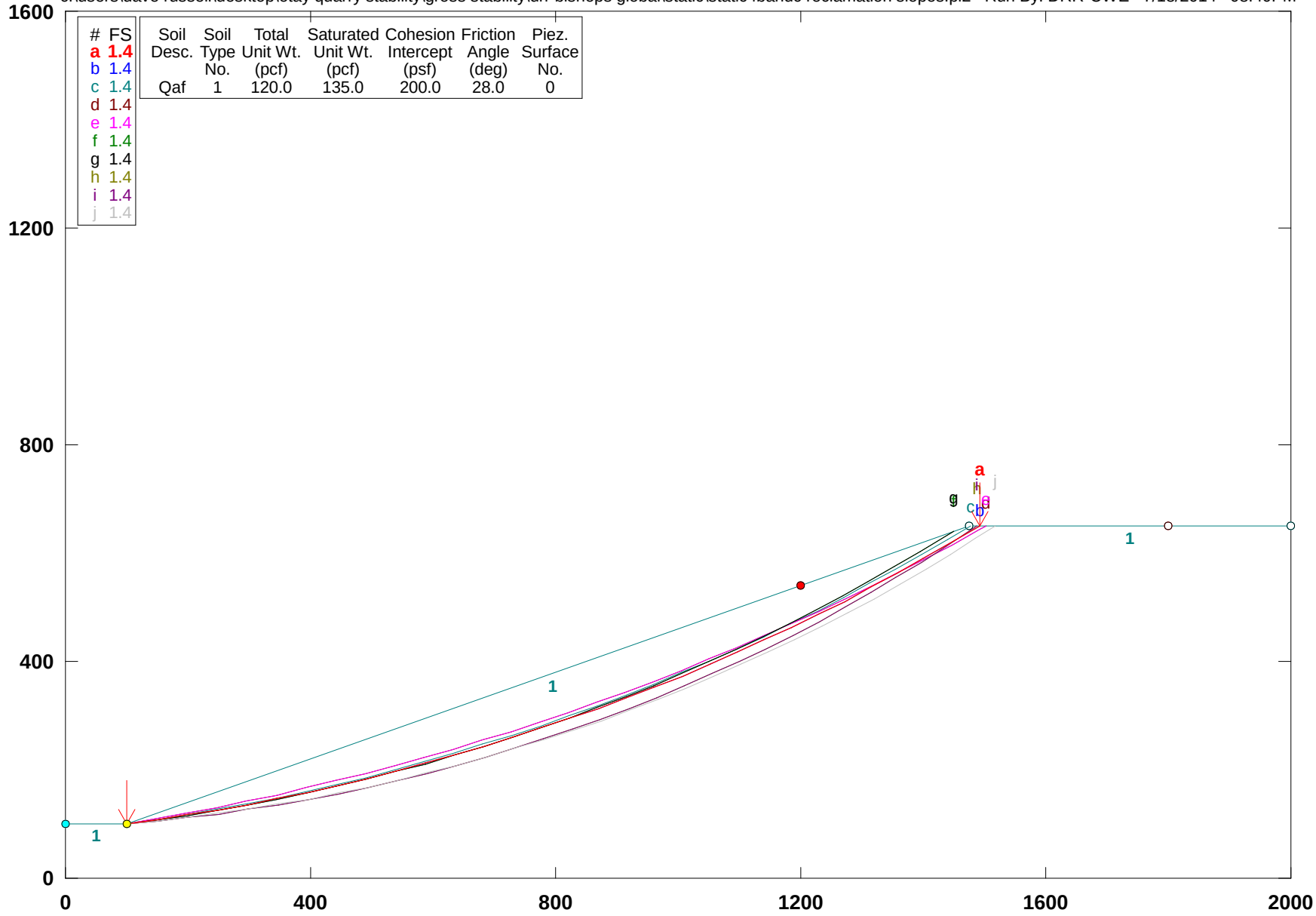
GSTABL7 v.2 FSmin=1.3

Safety Factors Are Calculated By The Modified Bishop Method

CHRISTIAN WHEELER ENGINEERING

Otay Hills Quarry - RECLAMATION Phases 4B & 4C - 550' High (2.5:1)

c:\users\dave russell\desktop\otay quarry stability\gross stability\drr bishops global\static\static4bandc reclamation slopes.pl2 Run By: DRR-CWE 7/18/2014 08:40PM



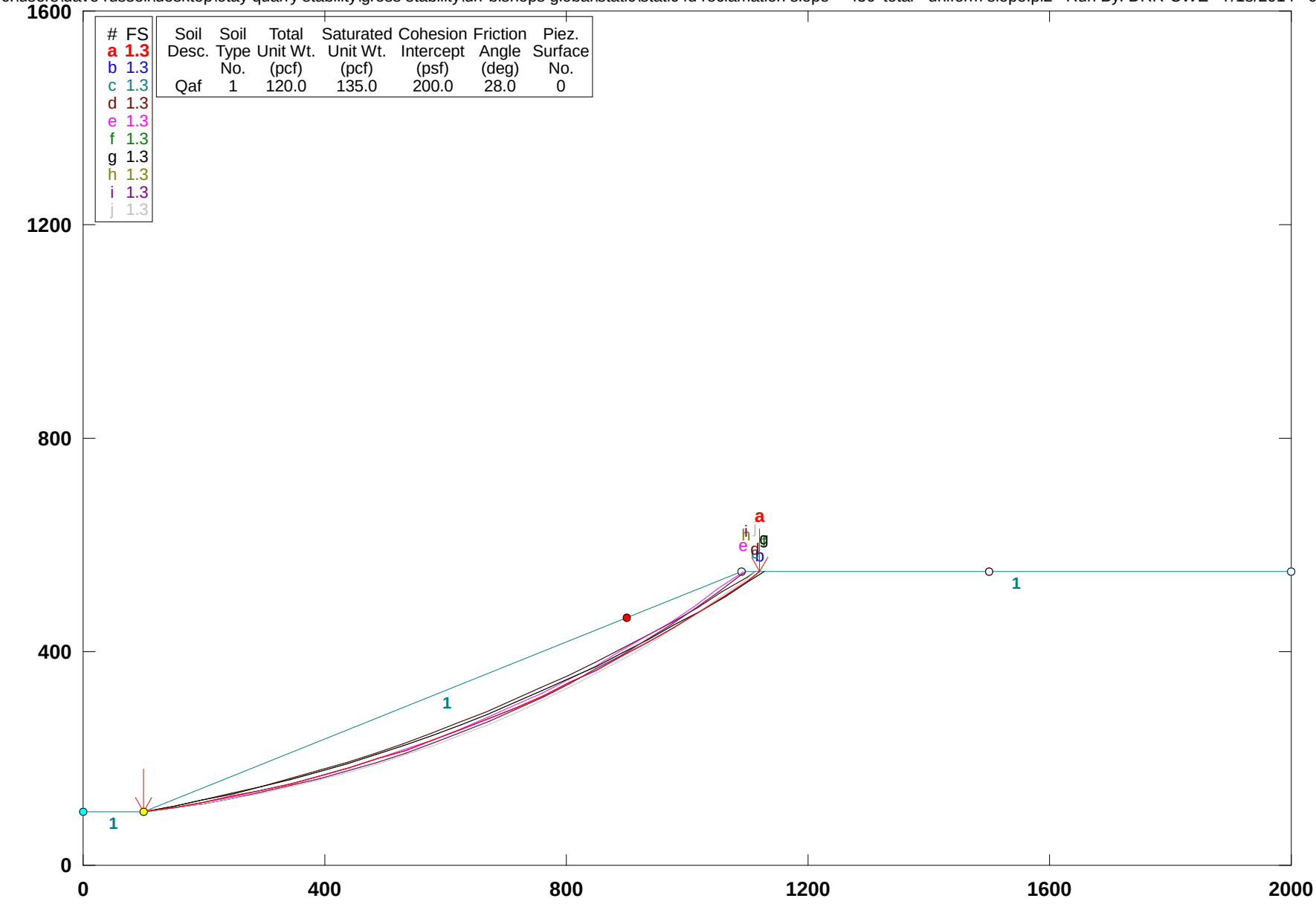
GSTABL7 v.2 FSmin=1.4

Safety Factors Are Calculated By The Modified Bishop Method

CHRISTIAN WHEELER ENGINEERING

Otay Hills Quarry - RECLAMATION Phase 4D - 450' High (2.2:1 UNIFORM)

c:\users\dave russell\desktop\otay quarry stability\gross stability\drr bishops global\static\static4d reclamation slope - 450' total - uniform slope.pl2 Run By: DRR-CWE 7/18/2014 08:39PM



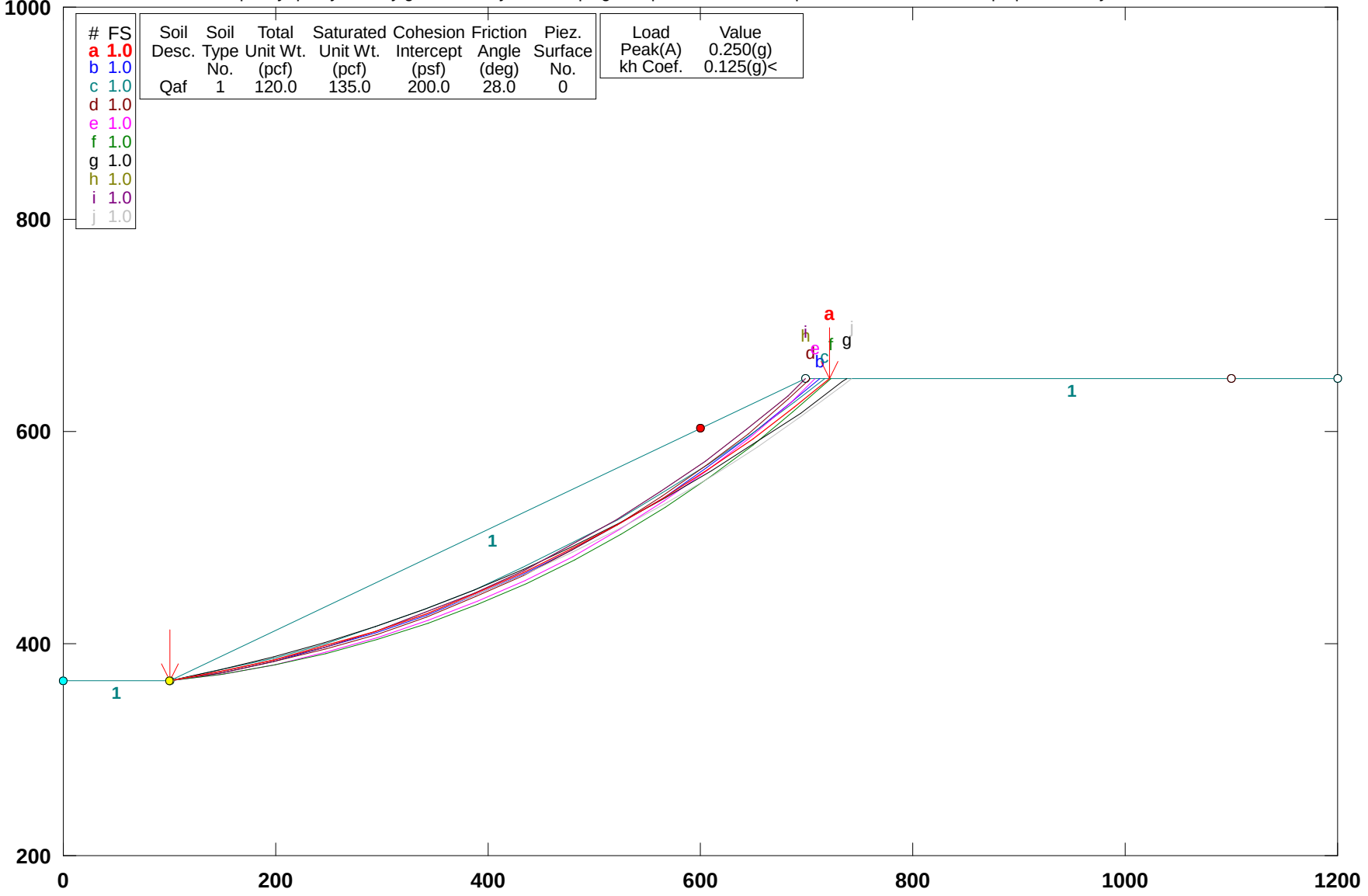
GSTABL7 v.2 FSmin=1.3

Safety Factors Are Calculated By The Modified Bishop Method

CHRISTIAN WHEELER ENGINEERING

Otay Hills Quarry - RECLAMATION Phase 4A - 285 High (2.1:1)

c:\users\dave russell\desktop\otay quarry stability\gross stability\drr bishops global\pseudo static\initialpsstatic4a reclamation slope.pl2 Run By: DRR-CWE 7/24/2014 12:15PM

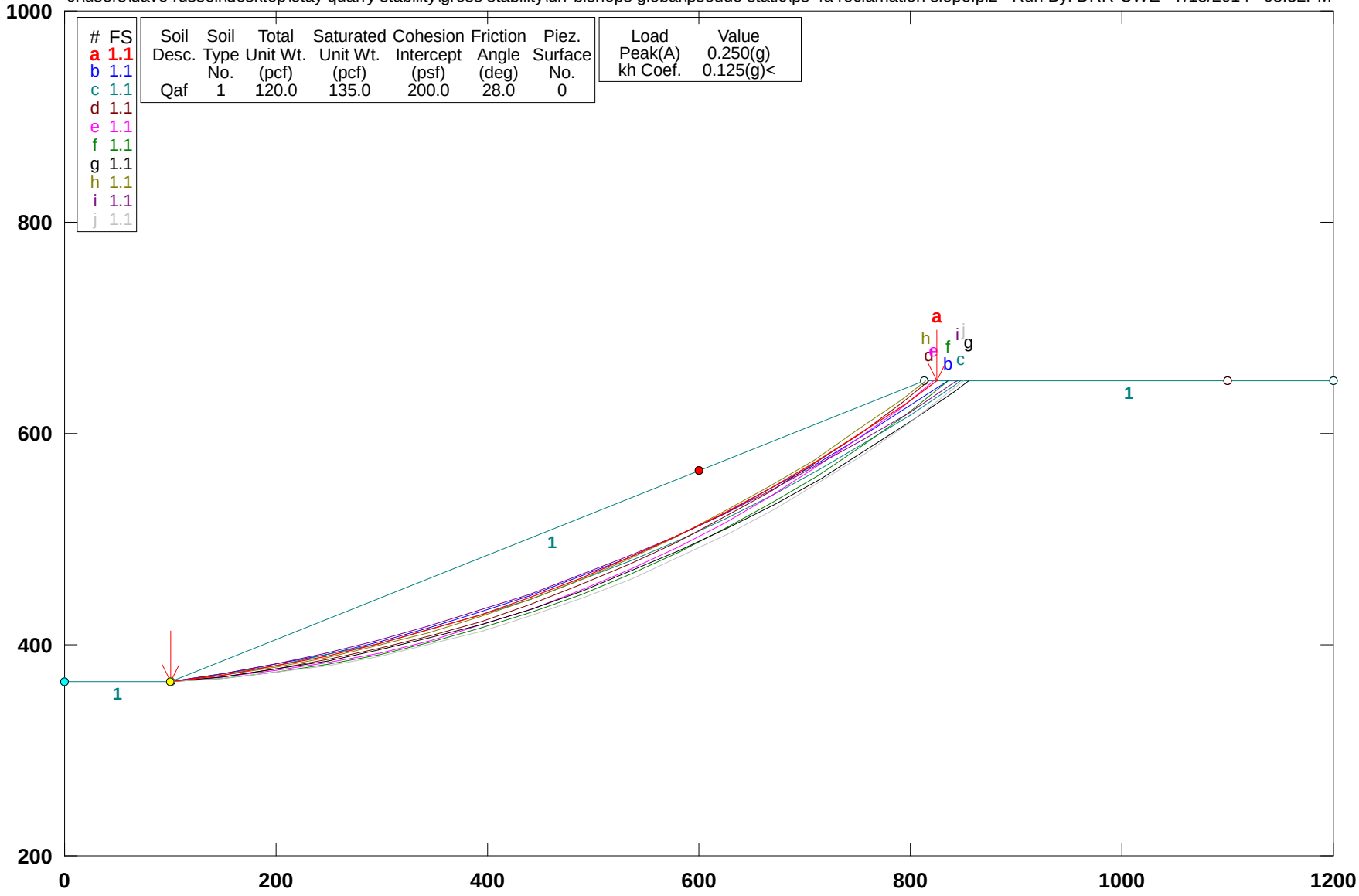


GSTABL7 v.2 FSmin=1.0

Safety Factors Are Calculated By The Modified Bishop Method

Otay Hills Quarry - RECLAMATION Phase 4A - 285 High (2.25:1) PS

c:\users\dave russell\desktop\otay quarry stability\gross stability\drr bishops global\pseudo static\ps 4a reclamation slope.pl2 Run By: DRR-CWE 7/18/2014 08:32PM



#	FS
a	1.1
b	1.1
c	1.1
d	1.1
e	1.1
f	1.1
g	1.1
h	1.1
i	1.1
j	1.1

Soil Desc.	Soil Type No.	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Piez. Surface No.
Qaf	1	120.0	135.0	200.0	28.0	0

Load	Value
Peak(A)	0.250(g)
kh Coef.	0.125(g)<

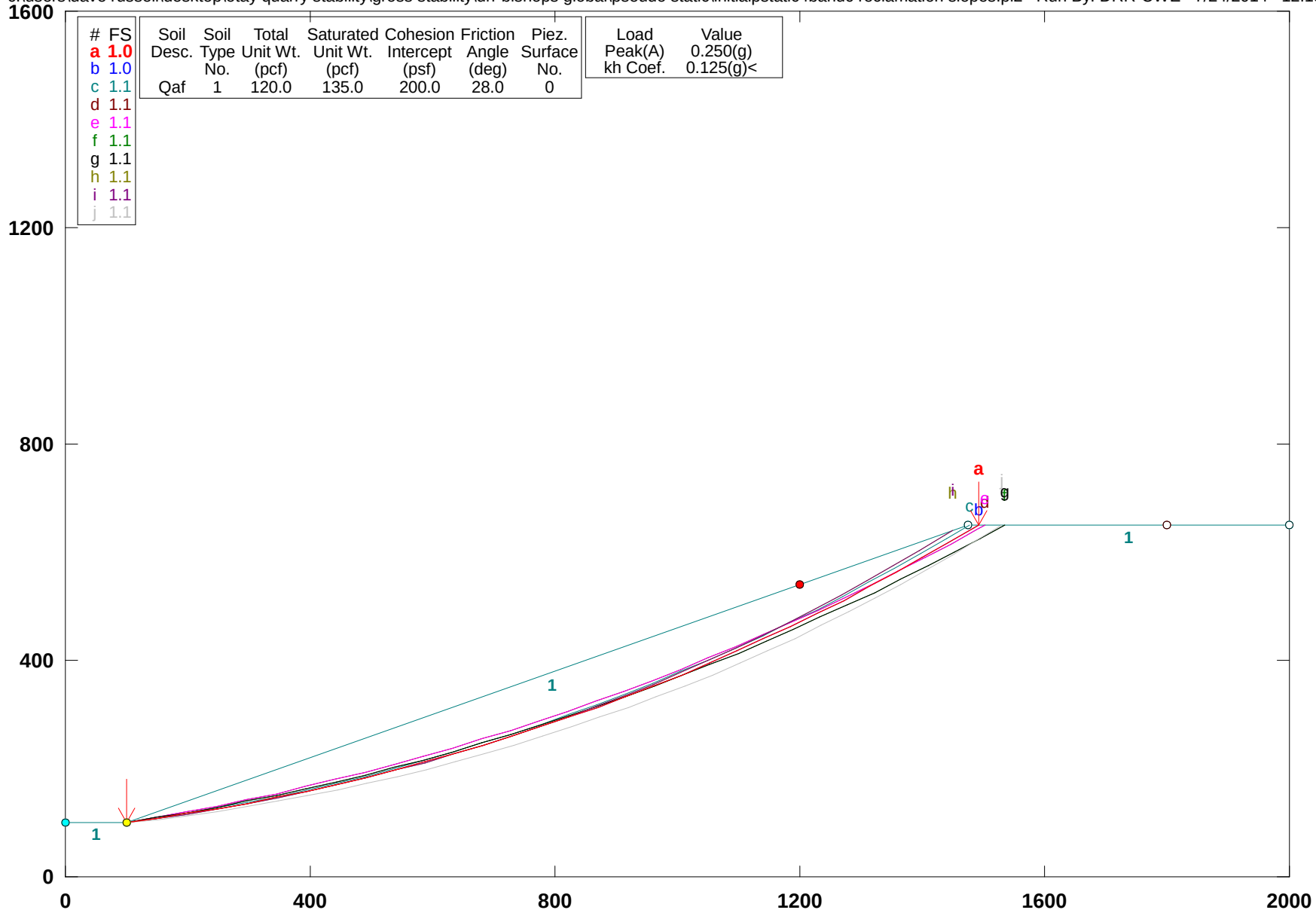
GSTABL7 v.2 FSmin=1.1

Safety Factors Are Calculated By The Modified Bishop Method

CHRISTIAN WHEELER ENGINEERING

Otay Hills Quarry - RECLAMATION Phases 4B & 4C - 550' High (2.5:1)

c:\users\dave russell\desktop\otay quarry stability\gross stability\drr bishops global\pseudo static\initialpstatic4bandc reclamation slopes.pl2 Run By: DRR-CWE 7/24/2014 12:18PM



GSTABL7 v.2 FSmin=1.0

Safety Factors Are Calculated By The Modified Bishop Method

Otay Hills Quarry - RECLAMATION Phases 4B & 4C - 550' High (2.6:1)

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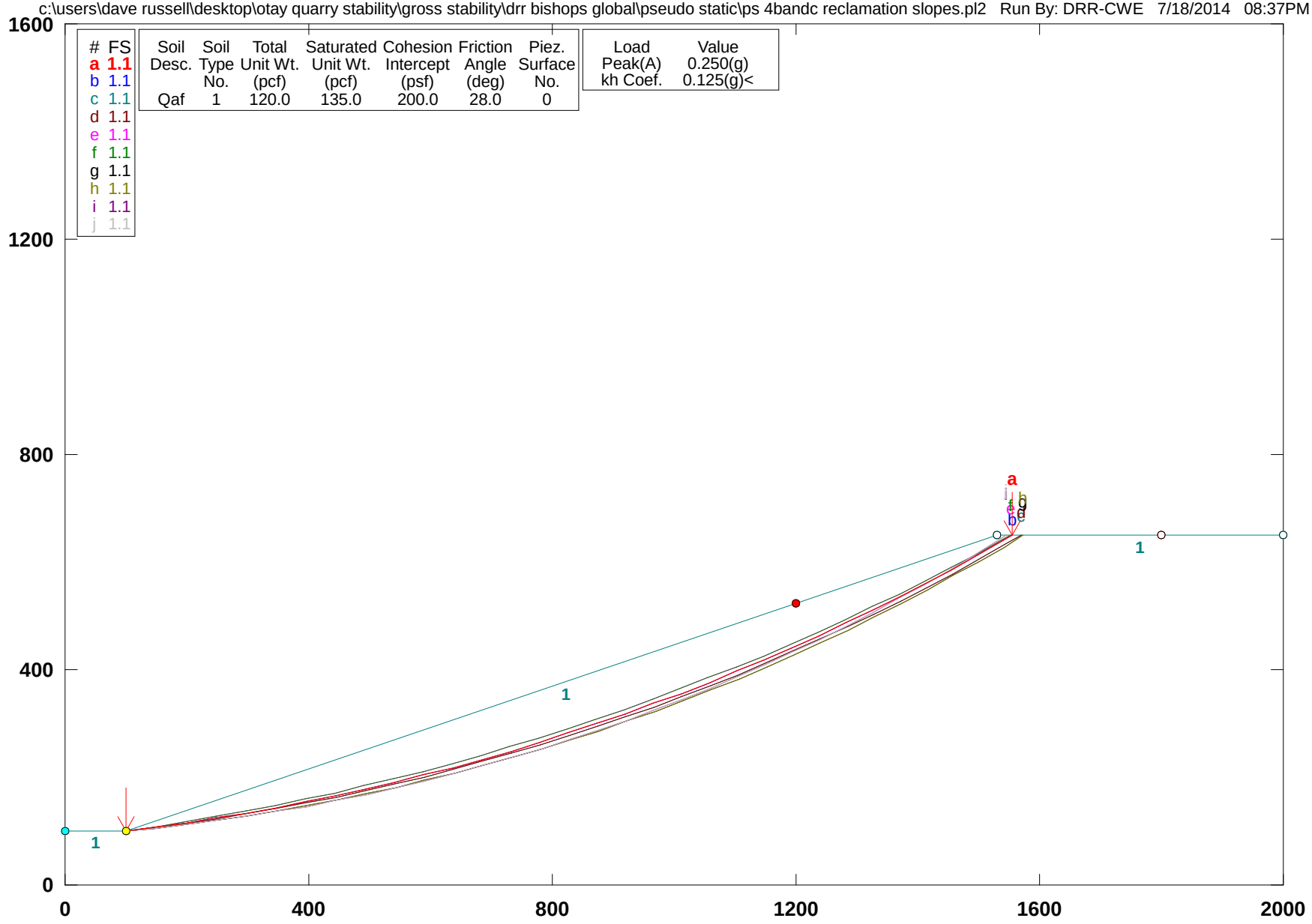


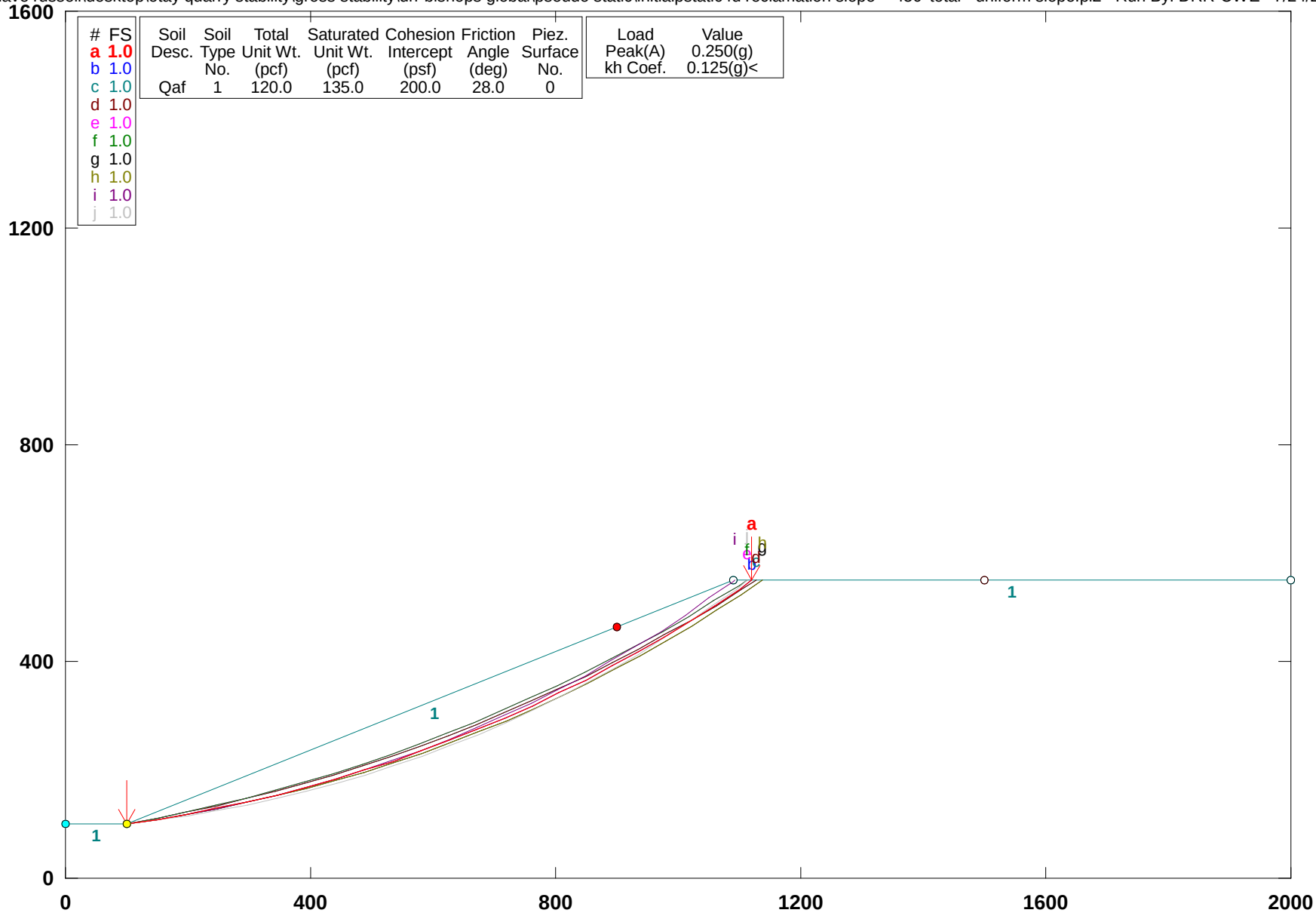
GSTABL7 v.2 FSmin=1.1

Safety Factors Are Calculated By The Modified Bishop Method

CHRISTIAN WHEELER ENGINEERING

Otay Hills Quarry - RECLAMATION Phase 4D - 450' High (2.2:1 UNIFORM)

c:\users\dave russell\desktop\otay quarry stability\gross stability\drr bishops global\pseudo static\initialpstatic4d reclamation slope - 450' total - uniform slope.pl2 Run By: DRR-CWE 7/24/2014 12:20P

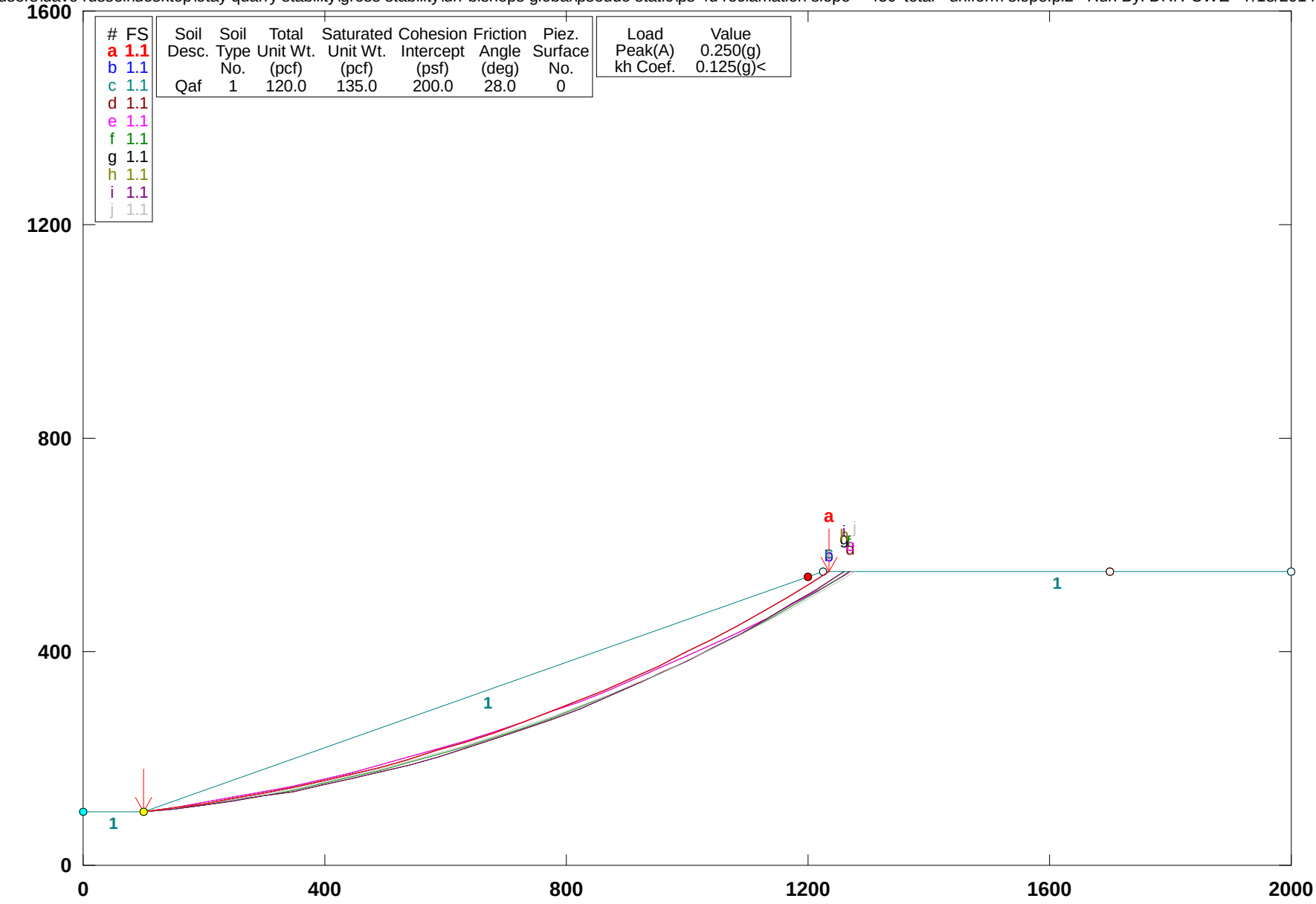


GSTABL7 v.2 FSmin=1.0

Safety Factors Are Calculated By The Modified Bishop Method

Otay Hills Quarry - RECLAMATION Phase 4D - 450' High (2.5:1) PS

c:\users\dave russell\desktop\otay quarry stability\gross stability\drr bishops global\pseudo static\ps 4d reclamation slope - 450' total - uniform slope.pl2 Run By: DRR-CWE 7/18/2014 08:34PM



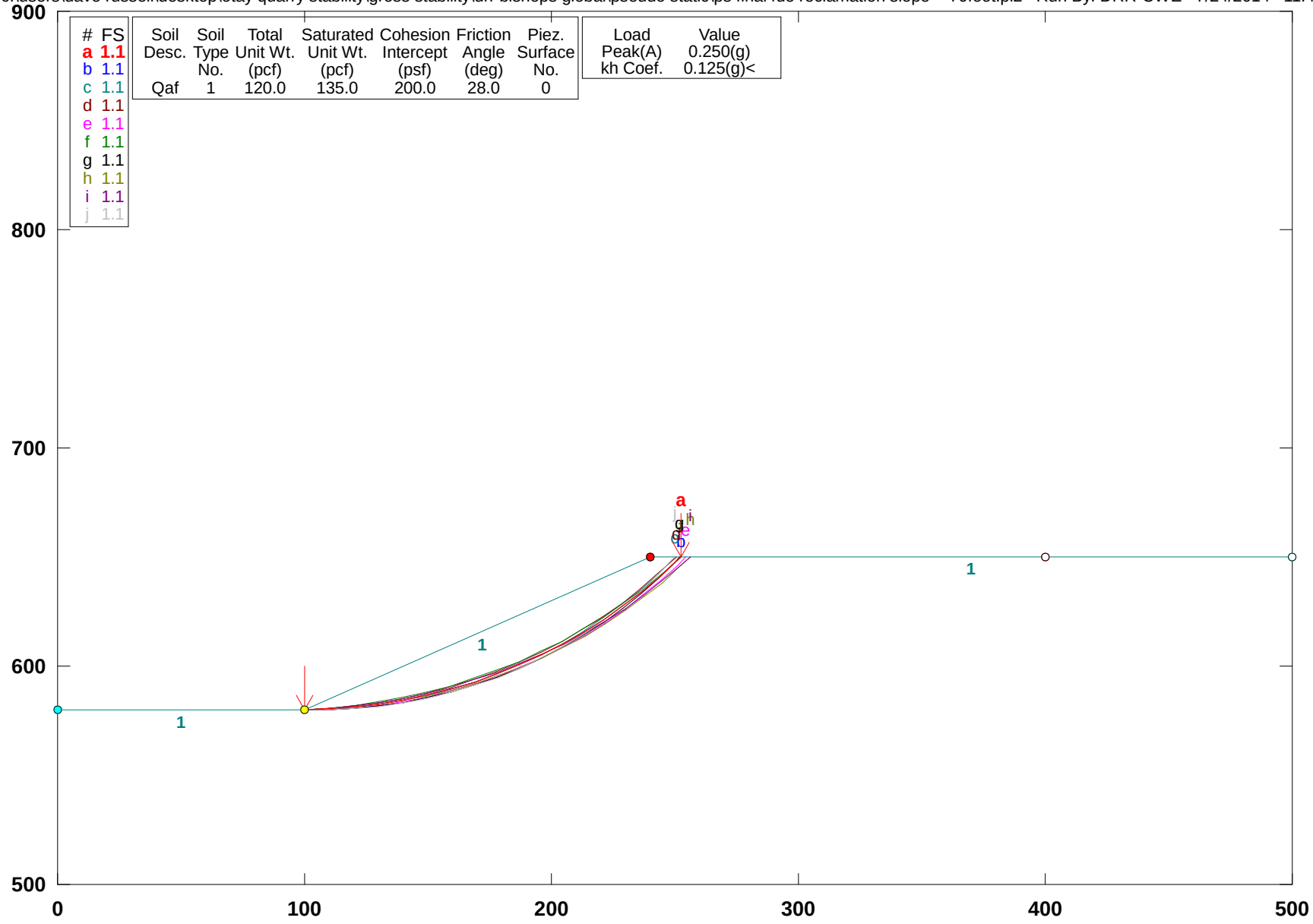
GSTABL7 v.2 FSmin=1.1

Safety Factors Are Calculated By The Modified Bishop Method

CHRISTIAN WHEELER ENGINEERING

Otay Hills Quarry - FINAL FILL SLOPE FINAL 4D/E Fill Slope 70' (2:1) PS

c:\users\dave russell\desktop\otay quarry stability\gross stability\drr bishops global\pseudo static\ps final4de reclamation slope - 70foot.pl2 Run By: DRR-CWE 7/24/2014 11:43AM



GSTABL7 v.2 FSmin=1.1

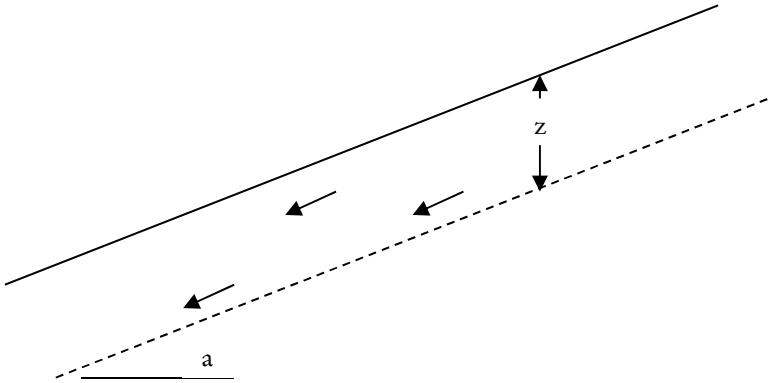
Safety Factors Are Calculated By The Modified Bishop Method

Appendix B

Plot of Surficial Stability Analysis

Final Phase 4D/E Fill Slope

SURFICIAL SLOPE STABILITY - 2:1 (H:V) FILL SLOPE



SEEPAGE PARALLEL TO SLOPE

ASSUMED PARAMETERS

z	Depth of Saturation (ft)	4
a	Slope Angle (H:1)	2
γ_W	Unit Weight of Water (pcf)	62.4
γ_T	Saturated Unit Weight of Soil (pcf)	125
ϕ	Angle of Internal Friction Along Plane of Failure (degrees)	28
c	Cohesion Along Plane of Failure (psf)	200

FACTOR OF SAFETY

$$FS = \frac{c + T(\tan\phi)}{T} \longrightarrow FS = \frac{c + (\gamma_T - \gamma_W)(z)(\cos^2 a)(\tan\phi)}{(\gamma_T)(z)(\sin a)(\cos a)}$$

FS = 1.5

CHRISTIAN WHEELER ENGINEERING	**OTAY HILLS QUARRY** Final Fill Slope	
	BY: DRR	DATE: Jul-14
	JOB NO.: 2110171.02	Appendix B

Appendix C

Landscape Architect Slope Certification

HELIX Environmental Planning, Inc.
7578 El Cajon Boulevard
Suite 200
La Mesa, CA 91942
619.462.1515 **tel**
619.462.0552 **fax**
www.**helixepi**.com

December 10, 2014

Mr. Travis Jokerst
EnviroMINE, Inc.
3511 Camino de Rio South, Suite 403
San Diego, CA

Subject: Otay Hills Quarry Steep Slope Certification

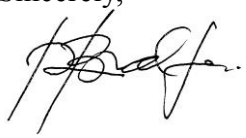
Dear Mr. Jokerst:

As per your request, I have reviewed the Landscape Concept Plan (prepared by HELIX) and the Revegetation Plan for Superior Ready Mix, LP, Otay Hills Quarry Project (prepared by others) and evaluated these documents as they relate to Section 87.401 (a) of the County of San Diego Grading Ordinance related to maximum cut-slopes.

As stated in the Revegetation Plan, slopes steeper than 2:1 are proposed as the final condition for much of the mineral extraction areas on site. These final cut slopes will be as steep as 1:1, graded to create a roughened surface with small benches carved into the cut slope. Revegetation operations will consist of spreading salvaged topsoil over these slopes and the small benches then hydroseeding these areas with a native seed mix. Hydroseeding is to be done between November 15 and January 15, when climatic conditions are expected to be most favorable. Rock outcrops and/or exposed bedrock areas that are not subject to excessive potential erosion and unlikely to support revegetation may be chemically stained to reduce visual contrast with surrounding areas.

I can certify that in my opinion, adherence to the approved Revegetation Plan for Superior Ready Mix, LP, Otay Hills Quarry Project, will support the proposed planting on slopes greater that 2:1 without significant or excessive erosion. If you have any questions or need any additional information please don't hesitate to contact me at (619) 462-1515.

Sincerely,



R. Brad Lewis, ASLA, LEED AP BD+C, CA QSD/QSP
Landscape Architecture Group Manager
CA Landscape Architect RLA #2657