

4.12 Mineral Resources

4.12.1 Setting

Section 2.2, *Project Location*, provides general information about the Project's regional and local setting. This Section 4.12.1 provides setting information specific to mineral resources.

4.12.1.1 Existing Mineral Resources

The primary mineral resource commodity extracted from the Quarry is limestone, which is used in the manufacturing of cement and other specialty cement products. The Applicant's operations provides more than 70 percent of the cement used in the County - and more than 50 percent of the cement used in the Bay Area (Lehigh, 2011). The geological source of the limestone is the Calera Limestone, which is present within the Permanente Terrane of the Franciscan Complex (see Section 4.7, *Geology, Soils and Seismicity*, for more information on the site's geology). Because the limestone unit is present along with other rocks, including greenstone, greywacke, chert and overburden¹, the Quarry generates large volumes of unmarketable rock material that is stored in the WMSA and the EMSA. However, some of the low-grade limestone, greenstone, and overburden deposits are of suitable quality for use as asphaltic concrete, road base, and Portland Cement concrete aggregate. Materials recovered for the purpose of aggregate base or fill material (rather than the manufacturing of cement) constitute approximately 25 percent of the total recovered by Lehigh (CDMG, 1996).

The Calera limestone formation underlying the Project Area has been mapped by the California State Mining and Geology Board (SMGB) as being within Mineral Resource Zone 2 (MRZ-2), which signifies "areas where adequate information indicates that significant mineral deposits are present or where it is judged that a high likelihood for their presence exists" (CDMG, 1996). The classification of MRZs is based on guidelines adopted by the SMGB, as mandated by the Surface Mining and Reclamation Act of 1975 (SMARA). Due to the Quarry's importance in providing the region with a local supply of cement-grade limestone and aggregate resources, the limestone deposit within the site has been designated by the SMGB, after consultation with the County and other interested parties, as a mineral resource deposit of regional significance (County of Santa Clara, 1994; CDMG, 1996). This area also extends to the north flank of the ridge that generally parallels the south side of Permanente Creek, where geologic mapping of the site has indicated the existence of similar limestone deposits (Golder Associates, 2011).

Most of the area within the Project Area that is outside MRZ-2 is mapped as MRZ-4, which designates areas where geologic information does not rule out either the presence or absence of mineral resources. MRZ-4 classification does not imply that there is little likelihood for the presence of mineral resources, but rather there is a lack of public knowledge regarding mineral occurrence. Small areas near the eastern and southeastern boundary of the Project Area are

¹ This use of the term "overburden" is in the geological context, meaning soil and rock material that is not considered consolidated bedrock, i.e., sedimentary rock of the Santa Clara Formation, colluvium, and surface soils. Elsewhere in this EIR, "overburden" refers to any soil or rock material that is not suitable for use as limestone or aggregate.

mapped as MRZ-3, which generally is defined as areas that contain mineral deposits, but for which their significance cannot be evaluated based on data available to the CDMG (CDMG, 1996). Areas classified as MRZ-3 within the site generally correspond to areas underlain by the Santa Clara Formation, which contains sand, gravel, and conglomerate that may have value as a source of aggregate, but where insufficient data exists regarding the areal extent and quality of the resource, the thickness of the overlying soils, and the economic feasibility of its extraction.

4.12.1.2 Regulatory Setting

State of California

Surface Mining and Reclamation Act (SMARA)

SMARA was signed into law in 1975, went into effect in 1976, and has been amended 24 times since its effective date. The intent of SMARA is to: 1) assure reclamation of mined lands, 2) encourage production and conservation of minerals, and 3) create and maintain surface mining and reclamation policy (regulations). One of the principal requirements of SMARA is the preparation of a reclamation plan. This plan must be prepared by a mining applicant prior to initiation of mining activities. Reclamation plans must be approved by the SMARA lead agency (usually counties or cities) and the California Department of Conservation, Office of Mine Reclamation. The County serves as the SMARA lead agency for the Permanente Quarry.

SMARA mandated the initiation by the State Geologist of mineral land classification in order to help identify and protect mineral resources in areas within the state subject to urban expansion or other irreversible land uses which would preclude mineral extraction. SMARA also allowed the SMGB, after receiving classification information from the State Geologist, to designate lands containing mineral deposits of regional or statewide significance. Construction aggregate was selected by the SMGB to be the initial commodity targeted for classification because of its importance to society, its unique economic characteristics, and the imminent threat that continuing urbanization poses to that resource. The mineral land classification applicable to the site is the Mineral Land Classification of Portland Cement Concrete-Grade Aggregate Materials in the South San Francisco Bay Production-Consumption Region, which initially occurred in 1987 and was updated in 1996 (CDMG, 1987; CDMG, 1996). While cement-grade limestone is the primary mineral resource extracted at the Quarry, it has been designated as a mineral resource deposit of regional importance due to the quality and current production needs for Portland Cement Concrete-Grade Aggregate.

County of Santa Clara

General Plan

One of the primary goals contained within the County's General Plan is to manage and protect natural environmental resources, including mineral resource commodities. The General Plan discourages urban encroachment and urban development within areas designated as containing high priority mineral resources, and directs existing or planned mineral resources extraction operations to conduct activities in an environmentally responsible manner, including the reclamation and

rehabilitation of depleted mineral extraction sites. Specific policies contained in the Resource Conservation Element of the General Plan are listed below (County of Santa Clara, 1994):

R-RC 67: Local supplies of mineral resources should be recognized for their importance to the local, regional, and state economy. Countywide strategies for preserving and managing mineral resources include:

- a) ensuring continued availability of mineral resources to meet long term demand;
- b) mitigating environmental impacts of extraction and transportation; and
- c) reclaiming sites for appropriate subsequent land uses.

R-RC 68: Current and future demand for mineral resources in the County, particularly construction aggregates, should be ensured by the following means:

- a) inventorying existing sites, identifying and properly designating potential new sites for protection measures;
- b) preserving deposits and access routes;
- c) increased use of recycled material; and
- d) proper development of new quarry sites.

R-RC 69: Existing sites and access routes for regionally significant resources should be protected from incompatible land uses and development that would preclude or unnecessarily limit resource availability.

R-RC 70: When making land use decisions involving mineral resource areas of state or regional significance, decisions about alternative land uses should be carefully balanced against the importance of the mineral deposits to their market region as a whole.

Implementation of the Project would be consistent with the policies identified above because it would reclaim the Project Area for an appropriate subsequent land use (open space) and otherwise would not hinder or preclude actions in furtherance of the policies.

Surface Mining and Reclamation Ordinance

The County's Surface Mining and Reclamation Ordinance (County Code §4.10.370) was adopted in order to comply with and implement the provisions of SMARA by adopting procedures for reviewing, approving, and/or permitting surface mining operations, reclamation plans, and financial assurances in the unincorporated areas of the County. The ordinance sets forth the general procedural, operational, and reclamation requirements that must be complied with, where applicable, by surface mining and production operations in the County. The Ordinance contains requirements for the content of a reclamation plan, the review procedure, and mining standards.

The County's Surface Mining Ordinance is supplemented by the County's Surface Mining and Land Reclamation Standards, which were approved by the County Board of Supervisors in 1993 and revised on August 29, 2000 (County of Santa Clara, 2000). Among other things, this document provides additional direction related to Standards for Land Reclamation. Consistent with the standards, reclamation may occur in stages to prepare the land for future open space use.

4.12.2 Baseline

The baseline for assessment of mineral resource impacts is June 2007, during which mineral resource extraction operations were ongoing in the Quarry pit and unmarketable waste rock was being placed in the WMSA. The type and significance of mineral resources present at the Permanente Quarry are as described above in Section 4.12.1.2.

4.12.3 Significance Criteria

Consistent with County's Environmental Checklist and Appendix G of the CEQA Guidelines, the Project would have a significant impact if it would:

- a) Result in the loss of availability of a known mineral resource that would be of value to the region and residents of the state; or
- b) Result in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan.

4.12.4 Discussion of Criteria with No Impact to Mineral Resources

The Project could cause adverse impacts with respect to each criterion. Accordingly, both are analyzed below.

4.12.5 Impacts and Mitigation Measures

- a) **Result in the loss of availability of a known mineral resource that would be of value to the region and residents of the state; or**
- b) **Result in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan.**

Impact 4.12-1: The planned backfill of the Quarry pit would hinder further extraction of cement-grade limestone and aggregate resources from the Quarry pit, thereby resulting in the loss of availability of a mineral resource of state, regional, and local significance. (*Less than Significant Impact*)

Under the Project, the Quarry pit would be backfilled with approximately 60 million tons of overburden material that were generated by mining and that have been stored in the WMSA. The bottom elevation of the Quarry pit would be raised from approximately 440 feet to 990 feet above mean sea level, resulting in a maximum fill thickness of over 500 feet. Overburden also would be placed against the west wall of the Quarry pit, resulting in a gentler slope and positive drainage towards Permanente Creek. Reclamation of the Quarry pit effectively would hinder any further access to any remaining limestone deposits within the pit because the pit would be capped by hundreds of feet and 60 million tons of overburden. Access to and extraction of the limestone in the Quarry pit at a future date would be challenging from both an economic and geotechnical standpoint, due to the large quantity of overburden that would have to be removed.

However, while backfill and reclamation of the Quarry pit would hinder future extraction of the remaining limestone deposit beneath the existing pit; the Project as a whole would not reduce the overall availability of mineral resources in the Project Area for several reasons:

- ***Continued mining in the Quarry pit is becoming infeasible from a geotechnical standpoint.*** One of the goals of the Project is to address areas of slope instability on the west and north walls of the Quarry pit, which have developed as a result of steep cut slopes within weak or unfavorably oriented bedrock units. The Applicant is proposing to reclaim the Quarry pit because continued resource extraction and deepening of the pit in the long-term is likely to exacerbate these problems unless the quarry rim is widened enough to reduce overall slope angles along the quarry walls. However, the Quarry pit is bounded on the north by land under different ownership (Mid Peninsula Regional Open Space District) and on the south by the Permanent Creek corridor, each of which constrains the Applicant's ability to expand beyond the existing boundaries of the quarry rim. Due to the inability to excavate deeper without steepening the pit beyond critical slope stability thresholds and causing safety hazards, continued limestone extraction in the Quarry pit is considered infeasible in the long-term.
- ***The Project would not preclude future mineral resource extraction opportunities on the site.*** Because the Cement Plant is not within the Project Area and would not be dismantled as part of the Project, the Applicant would retain its capacity to process limestone onsite for the purpose of cement production. Further, the site contains other areas underlain by limestone deposits that could be extracted with appropriate agency approvals. Implementation of the Project does not prevent the Applicant from extracting mineral resources from the remaining areas zoned as MRZ-2 by the SMGB, which extend further south of the Quarry pit, across Permanente Creek; or from other areas zoned MRZ-3 or MRZ-4, which also would remain available for future mineral exploration and mining.

Under the SMGB's guidelines for the classification and designation of mineral lands, the status of mineral lands previously designated to be of statewide or regional significance may be terminated, either partially or wholly, by the SMGB on a finding that the designation status is no longer necessary or appropriate (CDMG, 1996). The Quarry pit has been the source of mineral extraction at the site for more than 100 years, and the reserves of limestone that feasibly can be extracted are approaching their limits. For these reasons, it is likely that the Quarry pit no longer meets the criteria for designation of lands containing significant mineral deposits and would be eligible for the termination of its designated status. Because the Applicant would retain the property, which contains other areas designated as significant mineral resources, and would retain its ability to process them; the impact of the Project on mineral resources of regional and local significance is less than significant.

4.12.6 Alternatives

4.12.6.1 Alternative 1: Complete Backfill Alternative

Under Alternative 1, overburden materials stored in the EMSA would be backfilled into the Quarry pit upon the conclusion of mineral extraction activities. From the perspective of mineral resource availability, Alternative 1 would result in somewhat less impacts than the Project because relocation of the overburden materials stored in the EMSA into the North Quarry would

ease access to native geologic materials underlying the EMSA, portions of which are mapped by the SMGB as MRZ-3 due to the potential presence of saleable aggregate from the Santa Clara Formation. Under Alternative 1, this area potentially would be available for future mineral resource exploration and extraction with the appropriate state and county approvals. As discussed in the analysis of Project impacts, continued mineral resource extraction within the Quarry pit is approaching the limits of feasibility. Therefore, placing a greater amount of overburden fill in this area, as opposed to other untapped areas of native geology, would ease future access to other areas of the site that might contain saleable mineral resources. For the same reasons discussed in the analysis of Project impacts, Alternative 1 would have the same impact with respect to the limestone deposit that has been designated as a mineral resource of regional significance by the County and the SMGB. Overall significance conclusions under CEQA would remain unchanged.

4.12.6.2 Alternative 2: Central Materials Storage Area Alternative

Under Alternative 2, reclamation of the eastern and central portions of the EMSA (as it exists as of reclamation plan amendment approval) would begin immediately, and overburden generated by continued mining in the Quarry pit would be stored west of the EMSA in the Central Materials Storage Area (CMSA). Compared to the Project, this alternative would have the same impacts with respect to the future availability of mineral resources for the same reasons described under the analysis of the Project.

4.12.6.3 No Project Alternative

Under the No Project Alternative, the Applicant would continue to mine the mineral resource present in the Quarry pit over a greater period of time. The delayed timing of reclamation would not affect the future presence or availability of mineral resources within the site and, therefore, the No Project Alternative would have the same impact as the Project.

References – Mineral Resources

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