

# Appendix I

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## Visual Impact Assessment

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May 7, 2012

Mr. Tod Herman, Senior Planner  
County of Nevada  
Community Development Agency, Planning Department  
950 Maidu Avenue  
Nevada City, CA 95959-8617

**Subject: Teichert Aggregates Boca Quarry Expansion Aesthetics – Viewshed Analysis and Supplemental Visual Impact Assessment**

Dear Mr. Herman:

HELIX Environmental Planning, Inc. (HELIX) is pleased to submit this viewshed analysis and supplemental visual impact assessment for the proposed expansion of the Boca Quarry Project in Nevada County hereinafter referred to as “Project”.

The following is based on the Teichert Boca Quarry Reclamation Plan 2011, The Environmental Assessment for Mining Use Permit Application 2001, the March 5, 2012 letter from the Law Offices of Donald B. Mooney Attorney for Joe McGinity and a site visit by a CA Registered Landscape Architect and Visual Analyst conducted March 21, 2012.

The methodology used in this supplemental visual impact assessment generally follows the guidelines outlined in the publication “Visual Impact Assessment for Highway Projects” Federal Highway Administration (FHWA), March 1981 and current Caltrans guidelines for visual impact assessment.

The six steps in the FHWA/Caltrans guidelines to assess visual impacts are as follows:

1. Define the project setting and viewshed
2. Identify key views for visual assessment
3. Analyze existing visual resources and viewer response
4. Depict the visual appearance of project
5. Assess the visual impacts of project
6. Propose methods to mitigate adverse/significant visual impacts

## ***Project Setting and Viewshed***

### Project Setting

The Project Site is the 230-acre area comprised of the two private parcels within which the proposed expansion of existing permitted mining operation would occur. The existing Boca Quarry East Pit, with approximately 40 acres of disturbance, and proposed (West Pit) mining areas would have an ultimate combined 158 acres of disturbance over the planned 30 years of mining operations. The elevation of the Project Site varies from approximately 5,700 to 6,200 feet above sea level. Interstate 80 (I-80) and the Union Pacific railway adjoin the site on the southwest, with other development on the south side of the Truckee River.

The Project Site is located in the region of the Sierra Nevada north of Lake Tahoe and east of Truckee, California. The regional habitat setting on most sides of the Project Site is undeveloped, with variable amounts of limited, localized disturbance. The predominant habitat type on the site is Jeffrey Pine-Antelope Bitterbrush Woodland, with extensive areas also of Bitterbrush Scrub, Curl-leaf Mountain Mahogany Woodland, and largely barren rock outcrop and talus. A pond and two other small patches of wetland vegetation (supported by irrigation, not natural flows) are found in the extreme southern part of the site.

The regional landscape establishes the general visual environment of the project, but the specific visual environment upon which this supplemental visual impact assessment would focus on is determined by defining landscape units and the project viewshed. A landscape unit is a portion of the regional landscape and can be thought of as an outdoor room that exhibits a distinct visual character. The proposed Project site is located entirely within a single landscape unit, which can be defined as the Union Mills Watershed of the Truckee River Canyon.

The proposed Project proposes to expand existing mining operations in the currently permitted Boca Quarry. The application includes a Conditional Use Permit (U11-008) as well as an Amended Reclamation Plan (RP11-001) to correspond with the proposed mine expansion and importation of clean fill material for pit backfilling. The permit modification proposes to expand the levels of extraction and production to range from 100,000 to 1,000,000 tons of aggregate per year, depending on the local market demand. The Reclamation Plan envisions the removal of 13 million cubic yards of material in three phases over a 30-year period. The proposed expansion would continue to use, and eventually realign, the West Hinton Road haul route to Stampede Meadows Road for all of its aggregate transport and operating equipment access.

The photographs discussed below illustrate the existing Project setting including vegetation and topography, as well as surrounding land uses.



Photograph A, was taken from eastbound I-80 looking northwest approximately 1.2 miles west of the Hirschdale Road interchange. Neither the existing east pit quarry site nor the proposed expansion area is visible from this location; however this view illustrates the visual setting as seen by viewers on the heavily traveled I-80.



Photograph B, was taken from Hinton Road in Hirschdale approximately 90 feet southwest of the bridge over the Truckee River looking north.



Photograph C, was taken from Hinton Road at the intersection with the existing quarry access road looking north.



Photograph D, was taken from Hinton Road within the Teel parcel looking northeast.



Photograph E, was taken from West Hinton Road near Stampede Meadows Road and quarry haul road gate looking south east.

### Project Viewshed

A Viewshed is an analytical tool to aid in identification of views that could be affected by a project action. A Viewshed is comprised of all the surface areas visible by the human eye from an observer's viewpoint. Viewshed analysis is a method of spatial analysis intended to determine locations visible from a particular observation point or viewer location. The end product is a *Viewshed Map* depicting all areas that can be seen from one or more view points.

The Viewshed Map also includes the locations of viewers likely to be affected by visual changes brought about by Project features. The Viewshed for the Proposed Project determined using these criteria, is shown in Figure 1, and was determined through computer-aided and field-verified analysis of the topography within the Project impact footprint and in the surrounding area. The limits of a viewshed are defined as the visual limits of the views located from the Proposed Project extending out three miles which is generally considered the maximum distance from which the human eye can detect specific visual features.

The Viewshed Map accuracy is somewhat limited by the available topographic data and should be used as a general guide only. Additionally, the computer aided mapping does not take into account existing vegetation, minor variations in topography or other features on the ground that may limit views.

Conversely detailed topographic data for the Proposed Project is available and has been used to depict the Viewshed in another way to aid in the evaluation. Thirty-four (34) specific points on site with distinct elevations were plotted. The colors in the Viewshed Map 2 Figure 2, indicates the number of these points visible within the Viewshed. The darker the color the more of these specific points on site that are visible.

The Viewshed analysis indicates that topography views from higher elevations to the south and west of the Project area. Additionally, intervening topography prohibits most, but not all views of the Project impact footprint from I-80.

### ***Key View Identification***

Because it is not feasible to analyze all the views in which the Proposed Project would be seen, it is necessary to select key viewpoints (Key Views) that would most clearly display the visual effects of the Project. Key Views also represent the primary viewer groups that would potentially be affected by the Project.

Key View locations for public views are eastbound I-80 and Glenshire Drive just east of Truckee town limits. Key View location for private views is along Stallion Way at the eastern boundary of the Town of Truckee approximately 1 mile from the quarry site. Key View locations are shown in Figure 2, Viewshed Map 2.

#### Key View 1 Interstate 80



There is currently a brief view to the existing quarry from I-80 where the freeway crosses East Hinton Road at normal 65 mph highway speeds; the view duration is 1-2 seconds. Existing vegetation (i.e. evergreen trees) block additional views to the proposed expansion area. I-80 is listed as eligible to be a scenic highway; however, it has not been officially designated which would require the local governing body to adopt a Corridor Protection program and receive notification that the highway has been designated as a scenic highway.

#### Key View 2 Glenshire Drive, Nevada County



The view from the publicly accessible Glenshire Drive as depicted in photo 2 has limited views to existing corridor and proposed expansion area. Existing vegetation partially screens this view. With the expansion of the quarry, vegetation at the quarry site would be removed and more rock face/talus would be exposed. The view to the ridgeline would not change.

The lighter colored new exposed rock face contrasts with the older existing rock face. This effect can be expected to change with weather conditions. During the winter and spring months, it is wetter and there is less contrast. During the dryer summer months, the contrast would be more evident.

Key View 3 – Private Residences on Whitehorse Road and Stallion Way in Eastern Truckee



Private views from homes on Whitehorse Road and Stallion Way as depicted in photo 3 show that the vegetation screening in Key View 2 does not exist to such a great extent due to the higher elevation. These private homes have a view into the existing quarry site and would have views to the expansion area. Currently, the view of the quarry is approximately 5 degrees of the 180-degree private view. The expansions of the quarry would approximately triple this to approximately 15 degrees of the 180-degree view for the residences during the 30-year life of the quarry.

Other Views of the Project

There are no public views from Stampede Meadows Road in the vicinity of Boca Reservoir looking east towards existing East Pit quarry site. Intervening topography and existing vegetation restrict views of the lower sections of the quarry operations areas, although haul trucks and other vehicles associated with quarry operations using the access road will be visible from Stampede Meadows Road. Topography and vegetation would also limit views to the proposed expansion area to about what they are today.

Additional private views from adjacent parcels like the McGinity property referenced in the March 2012 letter from the Law Offices of Donald B. Mooney currently have near unobstructed views into the existing quarry site and would continue to have views of the expansion areas. However, it should be noted that there is no permanent residence on this property nor public access roads or designated trails. Therefore, this property and the surrounding properties immediately adjacent to the quarry site, cannot be considered sensitive receptors at this time.

***Analysis of Existing Visual Resources and Viewer Response***

Visual character is descriptive and non-evaluative, which means it is based on defined attributes that objectively are neither good nor bad in themselves. This objective character includes both pattern elements such as form (e.g., mass), line, color and texture; as well as pattern character, including the dominance, scale, diversity or continuity between these elements.

Visual quality is evaluated by identifying the vividness, intactness and unity present in the viewshed. This method should correlate with public judgments of visual quality well enough to predict those judgments. This approach to evaluating visual quality can also help identify specific methods for mitigating specific adverse/significant impacts that may occur as a result of a Project. The three criteria for evaluating visual quality can be defined as follows:

- **Vividness** is the visual power or memorability of landscape components as they combine in distinctive visual patterns.
- **Intactness** is the visual integrity of the natural and man-made landscape and its freedom from encroaching elements. It can be present in well-kept urban and rural landscapes, as well as in natural settings.
- **Unity** is the visual coherence and compositional harmony of the landscape considered as a whole. It frequently attests to the careful design of individual components in the landscape.

### Existing Visual Resources

The natural setting of this landscape dominates the view with little interference with man-made features. The foreground views (1/2 mile and less) have multiple manmade elements such as I-80 freeway and Union Pacific Railroad facilities but even these large man made features generally follow the natural contours of the native topography and do not overly detract from the visual coherence of the landscape.

The visual quality of the area surrounding the Project is highly vivid, fairly intact with a high degree of visual unity. The uniformity in the natural rock color of chocolate brown and reddish tones interspersed with Jeffrey Pines and native vegetation creates a unified visual pattern and compositional harmony.

### Anticipated Viewer Response

The highest number of viewers in this viewshed are travelers on I-80. This section of I-80 is currently a four-lane divided highway with limited truck climbing lanes, and with a posted speed limit of 65 miles per hour. These viewers can be assumed to be a mix of trucks, commuters, recreational and non-recreational travelers who generally have fleeting views and tend to focus on the traffic and not the surrounding scenery. However, the dramatic topography and dominance of the natural view is why this section of I-80 is eligible as a scenic highway. The viewer sensitivity is therefore moderately-high to high. At highway speeds, views to the existing quarry (east pit) site occur at a single location for duration of approximately 2 seconds and topography and existing vegetation block views to the planned expansion (west pit) areas resulting in low viewer exposure for viewers on I-80.

Viewers on local roads are also a combination of commuters and recreational and non-recreational travelers. The number of viewers on Glenshire Drive is far less than I-80 with an average daily traffic (ADT) of approximately 2,600 vehicles per day. Viewer sensitivity is generally lower for people driving to and from work. Additionally views to the quarry are fleeting and temporary due to intervening topography and vegetation, resulting in low to moderate viewer exposure.

Views from residences typically have extended viewing periods. These viewers can be assumed to be very concerned about changes from the views in their homes. The viewer sensitivity for residential use is considered high with a much longer duration than views from automobiles on local roads or I-80.

**Visual Appearance of Project**

The following images depict the “before and after” visual simulation of the proposed Project from Key View 2 Glenshire Drive.



Before - Key View 2 Glenshire Drive



Visual simulation of the Project at the end of mining, assuming no concurrent reclamation. This is the “worst case” aesthetics impact view. Source - Ecosynthesis



Visual simulation of the Project after reclamation without additional mitigation measures. Source - Ecosynthesis

## ***Assessment of the Visual Impacts of Project***

### Definition of Visual Impact Levels

**Low** - Minor adverse change to the existing visual resource, with low viewer response to change in the visual environment. May or may not require mitigation.

**Moderate** - Moderate adverse change to the visual resource with moderate viewer response. Impact can be mitigated within five years using conventional practices.

**Moderately High** - Moderate adverse visual resource change with high viewer response or high adverse visual resource change with moderate viewer response. Extraordinary mitigation practices may be required. Landscape treatment required would generally take longer than five years to mitigate.

**High** - A high level of adverse change to the resource or a high level of viewer response to visual change such that architectural design and landscape treatment cannot mitigate the impacts. Viewer response level is high. An alternative Project design may be required to avoid highly adverse impacts. A high level of adverse visual impact is equivalent to a significant impact per the California Environmental Quality Act (CEQA).

## ***Assessment of the Visual Impacts to Key Views***

### Key View 1 Interstate 80

The one to two second fleeting view at highway speeds of the existing quarry is moderately vivid only because of the change of the rock face color. Intervening topography blocks views of the mining operations in the planned expansion areas. Short duration but moderate to high viewer sensitivity results in a moderate visual impact. Suggested mitigation measures would be coloration of the exposed rock face to match existing native rock and talus areas.

### Key View 2 Glenshire Drive, Nevada County

The view from Key View 2 as depicted in the photo simulation is somewhat screened by existing vegetation. However over time, the exposed rock face would contrast with the native rock and talus. The resulting visual impact is moderate. The same mitigation, proposed for Key View 1 would be appropriate for Key View 2. There are no silhouette views or ridgeline disruption from the Key View 2. Suggested mitigation measures would be coloration of the exposed rock face to match existing native rock and talus areas.

### Key View 3 – Private residences on Whitehorse Road and Stallion Way in eastern Truckee

The long view duration and high viewer sensitivity would result in a moderately-high to high visual impact. Some private residences in eastern Truckee have a near unobstructed view of the walls of the quarry. Intervening topography and vegetation block some views of the quarry floor but not the majority of slope

faces. The mine reclamation plan which includes revegetation of the quarry site would moderate visual impacts over time, however, additional mitigation measures such as the coloration of the exposed rock face would be necessary to lower the visual impacts further and mitigate adverse/significant impacts where possible.

### ***Methods to Mitigate Adverse/Significant Visual Impacts***

Spray "Rock Varnish" (aka Desert varnish) such as Nantina or PERMEON on exposed upper cut face slopes immediately following the completion of mining operations, to blend visually with undisturbed rock face and talus following mining operations. The PERMEON (desert varnish) or approved equal, shall be mixed with water in a 5:1 solution (i.e.: 20 gallons of PERMEON to 100 gallons of water). A compressor shall be used to pressurize the spray to approximately 200 psi for application with an agricultural-type hand-held nozzle sprayer. The desert varnish color can range from almost black to a light tan, depending on the concentration of PERMEON and the number of coats to be made. The solution shall be sprayed on until saturation. When first applied, the PERMEON mixture would not have a tint, and the exposed rock initially returns to its original color as it dries. The desired coloration process is activated by exposure to ultraviolet light from sunshine.

### ***Conclusions***

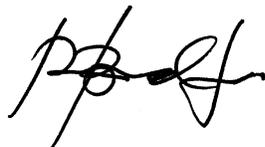
Implementation of the mine reclamation plan and the mitigation measures recommended in this letter report would lessen the adverse/significant visual impacts for some viewers. However, significant unavoidable adverse visual impacts to scenic vistas, visual resources and regional visual quality/character would remain after implementation of the mine reclamation plan and the mitigation measures.

### ***Visual Analyst Qualifications***

California Registered Landscape Architect with 32 years experience in Visual Impact Assessment. Author and/or Co-Author of 20+ Visual Impact Assessment Technical Studies. Author of the current San Diego County Consultant Guidelines for use of Computer-aided Visual Simulations for CEQA Analysis.

Please let me know if you have any question about my findings, methodology used or recommendations made.

Sincerely,



R. Brad Lewis, ASLA, LEED AP BD+C  
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